Mississippi River – Twin Cities Watershed: Water Plans

The Mississippi River – Twin Cities Watershed encompasses Anoka, Carver, Dakota, Hennepin, Ramsey, and Washington Counties. Within these counties watershed districts (WDs) and Watershed Management Organizations (WMOs) have been organized. Each county, WMO, and WD has developed a 10-year rotating comprehensive local water management plan (LWMP) in order to improve water quality within Minnesota. The water plans are comprised of a set of concerns the counties, WMOs and WDs have described as a priority, along with how they intend to effectively manage them.

This document contains two parts: (1) A comparison of management goals from each county, WMO and WD, and (2) A summary of each water plan in the watershed including priority concerns, goals and objectives, and actions related to nutrient management.

Water Plans:

Carver County WMO Water Resources Management Plan 2010-2020
Bassett Creek Watershed Management Plan 2004
Capitol Region Watershed Management Plan 2010
Coon Creek Watershed Management Plan 2013-2023 (draft)
Elm Creek Watershed Management Plan 2003 amended 2012
Lower Mississippi River Watershed Management Plan 2011-2020
Lower Rum River Watershed Management Plan 2011
Minnehaha Creek Comprehensive Water Resources Management Plan 2007-2017
Mississippi Watershed Management Plan 2011-2021
Ramsey-Washington Metro Watershed Management Plan 2006-2016 amended 2007
Rice Creek Watershed Management Plan 2010
Shingle Creek & West Mississippi Watershed Management Plan 2013
South Washington Watershed Management Plan 2007
Vadnais Lake Area Watershed Management Plan 2007
Vermillion River Watershed Plan 2005 amended 2008

Water Plan Evaluation

Concern	Carver	Bassett Creek	Capitol Region	Coon Creek	Elm Creek	Lower Rum River
Groundwater						
Surface Water						
Coordination/Partnership						
Wetlands						
Stormwater Management						
Education						
Erosion Control						
Technical/Financial Assistance						
Watershed-based Approach						
Monitoring						
Water Retention						
Sediment						
Drainage Management						
Seek Funding						
Conservation BMPs						
Priority Pollutants						
Shoreland Management						
TMDL - Impaired Water						
New Technology						
Development Concerns						
Municipal Wastewater						
SSTS/ISTS						
Nonpoint Source Pollution						
Abandoned Wells						
Demonstrations						
Feedlot Compliance						
Lake Management Plan						
Nutrient Management						
Point Source Pollution						
Wellhead Protection						

Concerns addressed in County Water Plan associated with nutrient issues

Strong ongoing activities implemented in programs outside of the County Water Plan

Water Plan Evaluation (contin.)

Concern	Minnehaha Creek	Mississippi River	Ramsey-Washington Metro	Rice Creek	Shingle Creek & West Mississippi
Groundwater					
Surface Water					
Coordination/Partnership					
Wetlands					
Stormwater Management					
Education					
Erosion Control					
Technical/Financial Assistance					
Watershed-based Approach					
Monitoring					
Water Retention					
Sediment					
Drainage Management					
Seek Funding					
Conservation BMPs					
Priority Pollutants					
Shoreland Management					
TMDL - Impaired Water					
New Technology					
Development Concerns					
Municipal Wastewater					
SSTS/ISTS					
Nonpoint Source Pollution					
Abandoned Wells					
Demonstrations					
Feedlot Compliance					
Lake Management Plan					
Nutrient Management					
Point Source Pollution					
Wellhead Protection					

Concerns addressed in County Water Plan associated with nutrient issues

Strong ongoing activities implemented in programs outside of the County Water Plan

Water Plan Evaluation (contin.)

Concern	South Washington	Vadnais Lake Area	Vermillion	Lower Mississippi
Groundwater	■	■	■	■
Surface Water	■	■	■	■
Coordination/Partnership	■	■	■	■
Wetlands	■	■	■	■
Stormwater Management	■	■	■	■
Education	■	■	■	■
Erosion Control	■		■	■
Technical/Financial Assistance	■	■		■
Watershed-based Approach	■	■	■	
Monitoring		■	■	■
Water Retention	■	■	■	
Sediment	■			■
Drainage Management		■		
Seek Funding	■	■		■
Conservation BMPs	■		■	
Priority Pollutants	■		■	
Shoreland Management			■	■
TMDL - Impaired Water			■	■
New Technology	■			
Development Concerns			■	■
Municipal Wastewater				■
SSTS/ISTS				
Nonpoint Source Pollution			■	
Abandoned Wells				
Demonstrations				
Feedlot Compliance				
Lake Management Plan				
Nutrient Management				
Point Source Pollution			■	
Wellhead Protection			■	

■ Concerns addressed in County Water Plan associated with nutrient issues
■ Strong ongoing activities implemented in programs outside of the County Water Plan

Carver County WMO Water Resources Management Plan 2010-2020

Priority Concern: Surface Water Management

Goal: Maintain or improve the physical, chemical, biological, and aesthetic condition of surface water resources in the CCWMO, taking into account the watershed context of each resource.

Objective: Shoreland Management

Actions:

- Require all LGUs to update and implement their shoreland ordinance or equivalent development standards in accordance with state regulations
- Review local water plans for compliance with shoreland requirements of this plan.
- Update the Shoreland Management component of the County's Zoning Ordinance to reflect upcoming changes to the minimum shoreland standards in Minnesota Rules Chapter 6120.

Objective: Floodplain Management

Actions:

- Maintain or increase existing water storage capacity below 100-year flood elevations on all waterbodies within CCWMO in order to minimize the severity and frequency of flooding and high water.
- Floodplain Management. Support updates to flood studies and FEMA map revisions as needed or feasible.
- Floodplain Management. Require all LGUs to update and implement their floodplain ordinance or equivalent development standards in accordance with state regulations and this Plan.
- Review local water plans for compliance with the floodplain management requirements of this plan.
- Amend County ordinances so that any volume lost due to fill in the floodplain is mitigated within the same stream reach.
- Complete floodplain map updates as needed.

Objective: Stream Management

Actions:

- Stream Setbacks.

    - Develop stream protection standards (e.g. flexible stream setback standards) that balance environmental protection with sound science and the rights of the private landowner and build on existing studies and available scientific information.
    - Update county ordinance to incorporate stream setbacks. Amend the CCWMO Rules to include stream setback standards. Flexible stream setbacks will be developed using information from the WFVA, NRA, and the factors described in this plan (See Section 2.4).
    - Update the 2000 Carver County Stream inventory
- Stream Restoration.
    - Prioritize restoration of eroded areas on natural streams and/or creeks based on availability of funding, feasibility of implementation, number of project partners, projects that provide multiple benefits will be prioritized above projects that provide only one benefit, projects that restore streambanks in a more natural setting will be prioritized above project that restore streambanks in developed areas, projects that utilize bioengineered solutions will be prioritized above projects that utilize more traditional engineering techniques, inclusion of restoration area on other County or LGU priority lists, inclusion of restoration area in TMDL implementation plans, benefits provided by restoration area to impaired water bodies, and balancing restoration opportunities among major watersheds in the CCWMO.
    - Prioritize stream restoration sites using information from existing studies, TMDL Implementation Plans, and the criteria described in this plan (see Section 2.4).
- Channel Obstructions.
    - Support landowner assistance in evaluating and mitigating the impacts of naturally occurring debris jams on a case by case basis.
    - Provide technical assistance to landowners in evaluating the impacts of naturally occurring debris jams if the obstruction fills approximately 75% of the bankful channel. If it is determined that the obstruction be removed, the County may request the riparian landowner to remove the obstruction. The County reserves the right to assist the riparian landowner with the removal of an obstruction on a case-by-case basis.
- Stream Management – Volume Reductions. Promote additional storage and volume reduction across the watershed through wetland restoration, regional ponding, stream or ditch diversions and impoundments, etc.
- Volume Reductions
    - Prioritize regional ponding projects using Total Maximum Daily Load Studies and Implementation Plans, Local Surface Water Management Plans, and other studies.

Objective: Ditch Regulations

Actions:

- Recognize that historic and current agricultural land uses depend on artificial drainage.

- Maintain the functions of ditches in such a way that the ditch system does not have a detrimental effect on lake and stream water quality (encourage adequate buffers, stable channels, etc.).
- Encourage the use and maintenance of best management practices for ditches that mitigate some of the negative effects of ditched systems while not impeding drainage.
- The Minnesota Public Drainage Law is administered through the Carver County Ditch Board, the Carver County Auditor, and Carver County Soil and Water Conservation District.
- Imp Strategy SW-8 Ditch Regulations. Provide technical and financial assistance for BMPs that mitigate some of the negative effects of ditched systems while not impeding drainage. The CCWMO relies primarily on the SWCD to implement this strategy.
- Imp Strategy SW-9 Ditch Regulations. Review ditch projects (cleanouts, maintenance improvements) through the Carver County
- Ordinance to encourage the use of adequate buffers, stable channels, etc. The CCWMO relies primarily on the SWCD to implement this strategy.

Objective: Outlet Control Structures

Actions:

- Work with LGUs, landowners, and the MN DNR to construct, replace, or repair dams and outlet control structures in the CCWMO. The CCWMO will become involved in the construction, replacement, or repair of an outlet control structure when one or more of the following factors or situations exist:
    - Detriments to the public health and safety or the environment have been demonstrated or are likely due to the condition of an existing dam or outlet structure that does not already have a responsible party to repair and maintain the structure.
    - There is demonstrated need for alteration at an existing outlet where the impacts from the basin or the watershed crossed more than one political boundary.
    - Historical or current disagreements among riparian owners exist on the appropriate type of control structure or outlet condition and a majority of the riparian landowner petition the County to assist in the matter.
- The CCWMO will have a role in the following activities related to outlet controls:
    - Work with the DNR in resolving conflicting interests of riparian property owners and/or the general public;
    - Modeling to assist the DNR in determining the appropriate water level control elevation and capacity for a structure;
    - Structure design and construction;
    - Operation and maintenance of outlet controls; and
    - Funding construction, operation, and maintenance of structures. The CCWMO will seek outside funding of these costs including funding from affected/benefited properties.

Objective: Education

Actions:

- Promote education about the benefits associated with the proper management of surface water resources
- Incorporate the goals, policies, implementation activities listed in this Surface Water Management Chapter into the CCWMO education program. Public involvement processes will be included in the implementation of the activities described above.

Priority Concern: Impaired Waters and TMDL Approach

Goal: Receive EPA approval for TMDLs for all listed impaired waters within the CCWMO

Objective: TMDL Approval and Adoption

Actions:

- This water management plan adopts by reference the approved TMDL Studies listed below. This policy may be amended from periodically to incorporate TMDL Studies completed and approved in the future.
    - Carver, Bevens and Silver Creeks Fecal Coliform TMDL
    - Burandt Lake Excess Nutrients TMDL

Objective: TMDL and Implementation Plan Development

Actions:

- Develop or partner in the development of TMDLs and Implementation Plans for listed impaired waters within the CCWMO, with the final goal of EPA approved TMDLs for all listed impaired waters. The CCWMO does not plan to lead all TMDLs within the watershed, as indicated in Tables 3B-1 and 3B-2.
- Complete TMDLs and Implementation Plans for waterbodies in the CCWMO on 303d TMDL List and referenced in this plan, or pursue removal or delisting of waterbodies from the 303d TMDL List as appropriate. The CCWMO does not plan to lead all TMDLs within the watershed, as indicated in Tables 3B-1 and 3B-2.

Objective: TMDL Funding

Action:

- Pursue funding from outside sources to assist in the completion and implementation of TMDLs.

Objective: Local Plans

Actions:

- Require LGUs to recognize and incorporate into their local water plans approved TMDL Implementation Plans
- Review local water plans for TMDL compliance.

Objective: Monitoring

Action:

- Monitor non-sampled waterbodies depending on local needs, petition requests, waterbody condition, or outside funding assistance. Non-sampled waterbodies may eventually be monitored as part of the MPCA's proposed statewide watershed-based assessment program.

Objective: Delisting Requests

Action:

- Ensure waterbodies currently listed on the 303(d) TMDL list are accurately classified and request delisting for shallow waterbodies with a predominance of wetland characteristics.

Objective: Education

Actions:

- Promote education about the benefits associated with the proper management of surface water resources
- Incorporate the goals, policies, implementation activities listed in this Surface Water Management Chapter into the CCWMO education program. Public involvement processes will be included in the implementation of the activities described above.

Objective: TMDL Implementation

Action:

- The CCWMO may periodically amend this chapter and the list of CWWMO Projects and list of CCWMO Potential Projects to incorporate implementation strategies and activities identified in approved TMDL Implementation Plans.

Priority Concern: Urban Stormwater Management

Goal: Minimize and mitigate the impacts of urban stormwater runoff on water resources

Actions:

- Develop and apply regulatory standards that help the CCWMO meet its goals.

- Ensure compliance with CCWMO regulatory standards through permitting, monitoring, and enforcement.
- Encourage innovation in meeting CCWMO standards by building flexibility and incentives into CCWMO rules.
- Continue to meet or exceed federal and state requirements for stormwater runoff.
- Establish a capital improvement program and cost share program to provide funding for priority stormwater projects and for landowner Best Management Practices.
- Pursue outside funding opportunities including state, federal, non-profit, and other grants to accelerate implementation of stormwater BMP's
- Promote education about the benefits associated with the proper management of urban stormwater runoff.
- Provide landowners with the technical knowledge to properly manage urban stormwater runoff on their own property.
- Utilize existing studies (Total Daily Maximum Load Studies and Implementation Plans, Local Plans, and other studies) to prioritize project implementation.
- Track and evaluate progress towards the goals, policies, and implementation strategies described in this plan.
- Continue to operate the Water Management Permit Program and apply existing CCWMO Rules until they are amended following the adoption of this plan. The CCWMO Rules will be amended to include the standards described in this plan for rate control, volume control, water quality treatment, floodplain impacts, natural resource impacts, and erosion and sediment control. The rules will allow for flexibility and innovation in meeting the standards.
- Cities are required to prepare a local water management (local) plan that conforms with the CCWMO Plan. The CCWMO is required to review and approve each local plan. More information about local plan requirements can be found in the Administration Chapter.
    - Cities are required to prepare or amend their local water management plans and ordinances to be consistent with the CCWMO Plan within two years of the date of this plan's approval by the BWSR Board. The CCWMO will consider alternative local plan amendment and update schedule requests from LGUs and will try to be flexible on due dates to accommodate the update schedules of other WMOs when LGUs are within the jurisdiction of more than one WMO.
    - City local water management plans are required meet Metropolitan Council and applicable state statute requirements.
    - Cities should seek input and assistance from the CCWMO during the preparation of the local plan.
- Follow and incorporate Total Maximum Daily Load Studies and Implementation Plans.
- Continue to meet or exceed the NPDES Phase II MS4 requirements that apply to the CCWMO stormwater system.
- Collaborate with other LGUs to help them implement their NPDES Phase II MS4 requirements and to minimize duplication and increase efficiency.

- Establish a capital improvement program and cost share program to provide funding for priority stormwater projects and for landowner Best Management Practices.
- Prioritize stormwater retrofit projects and regional ponding projects using Total Maximum Daily Load Studies and Implementation Plans, Local Surface Water Management Plans, and other studies.
- Work with Carver County Public Works to develop and adopt a road maintenance and operation plan using the practices described in this section. Carver County Public Works would be responsible for implementation of the Plan.
- Provide technical assistance to both private and public landowners on stormwater management and the BMPs described in this plan.
- Continue to provide necessary resources for implementation of the Water Management Permit Program, Stormwater Design Standards, and Erosion & Sediment Control Standards. The CCWMO will continue to employ staff or a consultant to perform the following tasks:
    - Review Water Management Applications (including stormwater design standards and erosion and sediment control plans)
    - Inspect BMP installations
    - Monitor sites as recommended by the water plan; and
    - Enforce maintenance through procedures in the water resource management ordinance.
- Continue to monitor construction activities and resolve sediment and erosion problems if and when they arise.
- Evaluate Water Plan policy and implementation effectiveness as part of the CCWMO annual report.
- Develop a list of priority subwatersheds based on watershed susceptibility to water quality degradation, water quantity impacts, streambank erosion, wildlife habitat, recreation, and aesthetic impacts from urban and rural practices. The list of priority subwatershed will be used to focus project implementation in high priority watersheds to reduce impacts of impervious development.
- Develop and maintain a database for stormwater related data, such as the location and type of stormwater infrastructure.
- Continue to monitor stormwater management BMPs to provide information on their effectiveness

Priority Concern: Wetland Management

Goal: Manage and restore wetlands in the County to protect and maximize the values of wetlands functions

Objective: Administration & Enforcement

Actions:

- Achieve no net loss in the quantity, quality, and biological diversity of existing wetlands in the CCWMO through competent enforcement of existing laws and regulations (Wetland Conservation Act, Shoreland Management Act, Local Surface Water Management Plans, Total Maximum Daily Load Studies and Implementation Plans, and other relevant laws and regulations).
- Ensure competent administration and enforcement of the Wetland Conservation Act, the Shoreland Management Act, Total Daily Maximum Loads Studies and Implementation Plans, Local Surface Water Management Plans, and other laws and regulations relevant to wetland management by LGU's (county and the cities) within the CCWMO.

Objective: Standards

Actions:

- Develop additional wetland protection standards (e.g. flexible transition setbacks) that balance environmental protection with sound science and the rights of the private landowner and build on existing studies and available scientific information.
- Consider amending the CCWMO Rules to include additional wetland protection standards including, but not limited to, wetland transition setbacks. Flexible transition setbacks will be developed using information from the WFVA, NRA, and the factors described in this plan (See Section 3.2.2). Where further site specific wetland information is presented as part of a detailed site design, wetland functional values may be adjusted.

Objective: Wetland Restoration

Actions:

- Promote wetland restoration, as a way to mitigate historical impacts to wetlands and increase the quantity and quality of wetlands in the CCWMO.
- Develop a list of priority wetland restoration sites. The CCWMO will develop a list of priority wetland restoration sites using the 2003 wetland restoration assessment, the NRA, TMDL Implementation Plans, and the criteria described in this plan (see Section 4.2). The CCWMO will work toward restoring wetlands in cooperation with existing programs through agencies such as the U.S. Fish and Wildlife Service, Soil and Water Conservation District, Reinvest in Minnesota, or through regional stormwater planning by the LGU. The County will prioritize wetland restoration opportunities and will pursue wetland restoration funds on an annual basis.

Objective: Funding

Action:

- Seek and allocate funds through the Capital Improvement Program, the Cost Share Program, and outside sources to accomplish priority wetland restoration projects.

Objective: Education

Actions:

- Promote education about the functions and benefits of wetlands.
- Enable landowners to protect and restore wetlands on their own property.
- Develop programs to educate those who live and work in the watershed about the importance of wetlands and wetland management
- Establish a variety of programs for both private and public landowners for priority natural resources (e.g. wetlands). Programs for landowners may include education and incentive-based conservation activities.

Objective: Data Management

Action:

- Develop and maintain a database for wetland related data, such as the location, type, and acreage of wetland restoration projects, and the location type, and acreage of wetland impacts.

Objective: Plan Evaluation

Actions:

- Track and evaluate progress towards the goals, policies, and implementation strategies described in this plan.
- Evaluate wetland policy and implementation effectiveness as part of the CCWMO annual report.

Priority Concern: Agricultural Practices

Goal: Manage feedlots so that the quality of surface water and groundwater is not impaired

Objective: Feedlot Management

Action:

- All feedlots shall obtain a permit as required by County ordinance and shall be operated and managed according to County ordinance and current best management practices.

Objective: Enforcement

Actions:

- The CCWMO relies on the Carver County Feedlot Program to regulate and enforce feedlots. Carver County Land and Water Services Division is responsible for the implementation of the program, with contributions from the following departments and agencies:

    - Carver County Environmental Services – is responsible for the overall operation of the County Feedlot Program and enforcement of the feedlot ordinance. The County Environmental Services Director is the Feedlot Administrator.
    - Carver SWCD – provides technical assistance to Environmental Services and the operator in the feedlot permitting process. The Carver SWCD evaluates feedlots, performs survey and design work, and works with operators in identifying and resolving problems.
    - Carver County Land Management– processes all applications involving buildings or structures; administers the conditional use permit process for large feedlots or feedlots in shoreland zones.
    - Carver County Planning and Water Management – provides educational opportunities to feedlot operators.
    - NRCS - provides survey and design work and other technical assistance to operators along with the Carver SWCD.
- If needed, prioritize permitting enforcement based on complaints, proposed changes to existing operations (i.e. additional buildings or expansion), location of feedlot relative to sensitive areas, and feedlots located with subwatersheds that are targeted for TMDL implementation.

Objective: Education

Action:

- Provide educational opportunities to encourage feedlot operators to operate in accordance with existing regulations.

Objective: Financial Assistance

Actions:

- Provide financial assistance and/or incentives to encourage existing feedlot operations to upgrade to meet current standards, as funding allows. Existing financial resources include:
    - TMDL grant funding;
    - State Cost Share Funds; State Revolving Loan Funds;
    - BWSR Natural Resources Block Grant;
    - NRCS – EQIP (Environmental Quality Incentives Program) ; and
    - BWSR Challenge Grants.

Goal: Encourage public and private landowners to implement conservation practices on the land they are responsible for

Objective: Incentive-based approaches

Action:

- Utilize an incentive based-approach to encourage the use of conservation practices and other best management practices in agricultural areas.

Objective: Project Prioritization

Action:

- Focus implementation using TMDL studies and Implementation Plans

Objective: Landowners Assistance

Actions:

- Provide technical assistance to rural landowners interested in making improvements
- As discussed in this section, there is a wealth of knowledge related to water resource practices that landowners can implement. Getting the word out and providing the technical assistance or experts from outside the County to interested landowners is a key to the program's success.

Objective: Financial Assistance

Action:

- Provide financial assistance and seek grants from other funding sources in order of priority watersheds and for willing landowners. The funding should be used to implement projects on both private and public property and to assist with education promotions

Objective: Partnership

Action:

- The CCWMO relies, in large part, on the Carver County SWCD to implement rural land use practices. The CCWMO will work with the Carver SWCD to prioritize education, technical assistance, and funding for rural practices as described in this section. First priority will go toward promoting buffer strips, nutrient management, and rock inlet construction. Second priority will go toward tillage and pest management practices.

Objective: Seek funding sources and matching grants

Action:

- The CCWMO will seek funding sources relevant to education and implementation of private landowner practices that will help improve the water quality and water quantity issues within a watershed. State and federal agencies such as the BWSR, NRCS, USDA, U.S. Fish and Wildlife, MPCA and non-profit agencies such as the Nature Conservancy and Friends of the Minnesota River offer matching funds to a variety of programs that support and encourage private

landowner practices that will improve water resources. More and more matching grants encourage partnerships with the private and public sector and a sound watershed management plan. TMDL implementation funding and Clean Water Legacy funding will be important sources of funding.

Priority Concern: Sanitary Sewer Discharge

Goal: Ensure, to the extent possible, that all SSTS are properly designed, installed, operated, maintained and/or replaced in order eliminate health hazards and discharges to surface water or groundwater.

Objective: Regulatory Controls

Actions:

- Follow and implement all state statutes and rules as they are updated. State rules, statutes, and standards change periodically. The County implements the State standards through the SSTS ordinance. The ordinance also includes provisions that the County feels are necessary due to local conditions. At the time of writing of this chapter the County is in the process of updating the SSTS ordinance to comply with the most recent changes in statute and rule.
- Implement the provisions of the County SSTS Ordinance. The SSTS ordinance regulates the design, location, installation, construction, alteration, extension, repair, and maintenance of SSTS's. The County currently enforces the ordinance in the unincorporated area; cities have historically been responsible in their jurisdiction. The law gives responsibility throughout the county unless a city specifically develops and implements its own program and SSTS ordinance.
- Require all lot splits and plats to have systems upgraded. Any time a lot is split or platted, the County requires that the septic system be inspected and brought into compliance. There are currently some limited exceptions to this rule – the appropriate ordinances should be changed to eliminate any loopholes

Objective: Connect to Municipal Systems

Action:

- Eliminate SSTSs in cities by connection to municipal systems. An easy way to remove non-compliant systems is connect the systems to a central sewer system. In most cases in the unincorporated area, this is not feasible for financial and system design reasons. Most systems located near municipalities will slowly be absorbed by growing urban areas and will be connected to municipalities as is feasible.

Objective: Proper Maintenance

Action:

- Continue to implement programs to ensure proper maintenance of SSTS – education, incentives, notification, and inspection. Much of the contamination risk in the county stems from improperly maintained systems. A variety of strategies have been and will continue be used to ensure system maintenance. These strategies include educational programs, incentive programs, notification programs, and inspection programs.

Objective: Proper Disposal

Action:

- Develop and implement a process to eliminate improper disposal, and improper land application of septic waste pumped from SSTS. In addition to improper maintenance of SSTS, improper disposal of pumped waste can pose a direct contamination risk to surface and groundwater. The land use Carver County Water Plan 3F Sanitary Sewer Discharge September 2010 3F.6 Practices chapter of this section provides more detail on the process for encouraging proper disposal of this waste

Objective: Monitor New SSTS Technologies

Action:

- Continue to develop and implement programs, including financial incentives, focused on the replacement of direct discharge systems with highest priority given to TMDL implementation. The replacement of existing failing systems is a major component of an SSTS program. The replacement process can be accelerated by providing financial assistance to property owners. As funding allows, the County and CCWMO will continue to provide assistance to property owners to replace old, failing systems, through grants, loans, and other financial assistance.

Goal: Ensure that waste load reductions for WWTPs identified in TMDLs are incorporated into WWTP permits.

Objective: Urban Discharge

Actions:

- Ensure that waste load reduction for WWTPs identified in TMDLs are incorporated into WWTP permits
- Coordinate with the MPCA, WWTP operators, LGUs, etc., to ensure that waste load reductions identified through the TMDL process are incorporated into WWTP permits

Priority Concern: Upland Natural Resources

Goal: Preserve and restore aquatic, wetland and associated upland habitats in a watershed context.

Actions:

- Increase the quantity, quality, and biological diversity of existing natural areas in the CCWMO through competent enforcement of existing laws and regulations (Wetland Conservation Act, Shoreland Management Act, Local Surface Water Management Plans, Total Maximum Daily Load Studies and Implementation Plans, and other relevant laws and regulations) and through the participation of willing landowners in existing preservation and restoration programs.
- Promote natural area restoration, as a way to mitigate the degradation and fragmentation of natural resources and increase the quantity and quality of natural areas in the CCWMO.
- Educate landowners about the functions and benefits of upland natural resources.
- Provide landowners with opportunities to protect, preserve, enhance or restore natural resources on their property.
- Focus funding and staff resources towards higher priority resources while factoring in other planning efforts and landowner willingness.
- Maintain and update the Minnesota Land Cover Classification System (MLCCS), Natural Resource Assessment, Restoration Assessment, and Corridor Assessment data.
- The County may invest in studies or acquire new data to better evaluate natural resource within the county. County staff may periodically update the NRA to incorporate better data as it becomes available.
- Implement conservation and restoration projects on county-owned land including parks and road rights-of-way, as feasible.
- Explore options for creating County funding to protect or restore natural areas including trading or offsets for implementing TMDLs and/or CCWMO Levy funding for capital projects.
- Seek and allocate funds through the Capital Improvement Program, the Cost Share Program, and outside sources to accomplish restoration and conservation projects.
- Coordinate with Carver County Land Management on the implementation of the Conservation Incentive Zoning option.
- Develop a natural area protection and restoration program for interested landowners with the following elements.
    - Collect, synthesize and distribute resource protection and restoration strategies for landowners incorporated into an educational plan.
    - Assist landowners in the creation of management plans for priority natural resources on their property.
    - Partner with agencies such as the Carver County Soil and Water Conservation District, the Minnesota Department of Natural Resources, the Natural Resources Conservation Service, and the University of Minnesota Extension Service in developing and delivering programs.

    - Evaluate and identify sources of funding for education and cost-share programs, possibly including: grants from agencies and foundations; county general fund; and watershed district funding.
- Evaluate upland natural resource policy and implementation effectiveness as part of the CCWMO annual report.

Priority Concern: Groundwater Management

Goal: Protect groundwater quality and groundwater supplies

Actions:

- Protect water supplies by assisting in the implementation of the MDH Wellhead Protection program.
- Prevent possible aquifer contamination by identifying and sealing unused, unsealed wells.
- Support the Metropolitan Council in their efforts to monitor and protect regional groundwater supply.
- Support the MPCA in regulating storage tanks to eliminate the risk of groundwater contamination Include wellhead protection in the CCWMO Education Program.
- Assist public water supply well operators. Assistance may include providing inventories of potential contaminant sources, mapping and other GIS data, and providing input to WPA committees and plans.
- Continue to operate the well sealing cost share program.
- Collaborate with the DNR and Metropolitan Council in efforts to plan for and monitor water appropriation and long term demand.
- Include, as appropriate, water conservation efforts in the overall CCWMO Education Program.
- Consider updating the Groundwater Chapter of the Plan upon the completion of the Carver County Geologic Atlas

Priority Concern: Education

Goal: To provide those living, working, and recreating in Carver County with the knowledge, skills, and motivation required to assure protection and improvement of the county's surface water and groundwater resources.

Actions:

- Carver County recognizes that education can play a key role in the protection of groundwater and surface water resources. The County supports and encourages education efforts which target a wide range of issues and audiences in the county.
- Carver County will include a water education program as part of implementing this Plan. This will include development of, and annual review of a one-year workplan that outlines education efforts. High and medium priority objectives shall be identified in this workplan.

- Education efforts shall be coordinated between all involved (local, regional, state and federal agencies). Duplicative or overlapping efforts should be reduced as much as possible in order to increase efficiencies and present unified messages in an education program.
- The County strongly encourages LGU's and other agencies to participate in, and initiate education efforts.

Priority Concern: Monitoring and Assessment

Goal: To maintain a comprehensive, accurate assessment of surface and ground water quality trends over the long term and comply with all current and future TMDL's monitoring and assessment protocols. This data will used to compile trend analysis, assess BMP effectiveness, and complete TMDL studies.

Objective: Policies

Actions:

- The CCWMO should continue to monitor lakes, streams, wetland areas, and groundwater to assess water quality trends over the long term.
- The CCWMO should continue to monitor lakes, streams, wetland areas, and groundwater to comply with TMDL studies and Implementation Plans.
- The CCWMO should set goals for water quality in lakes, streams and wetland areas as more data becomes available and Carver County Water Plan 3K Monitoring and Assessment
- September 2010 3K.5 as reasonable expectations can be developed. These goals are developed as part of the TMDL process.
- The CCWMO should establish monitoring networks as required in TMDL Implementation Plans and when needed to complete TMDL studies.
- The CCWMO should partner with municipalities and adjacent watershed districts to monitor additional water resources.

Objective: Surface Water

Bevens Creek Watershed

Actions:

- Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans.
- Establish and/or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.

- Maintain all automated stream sampling sites (Tacoma, BE 9, BE 21, SI 2, Sibley) within the watershed, and ensure the Met Council sites are not abandoned.
- Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.

Carver Creek Watershed

Actions:

- Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans.
- Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.
- Maintain all automated stream sampling sites (CA 8_7, CA 10_4, Bent Cr) within the watershed, and ensure not to abandon the Met Council site.
- Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.

Crow River Watershed

Actions:

- Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans.
- Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.
- Continue to partner with the Met Council to operate the automated WOMP station on the Crow River and ensure it is not abandoned.
- Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.

Chaska Creek – West Watershed

Actions:

- Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans.
- Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.

- Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.
- Maintain all automated stream sampling sites (CH 1_0) within the watershed.
- Maintain bio-monitoring data at sampling sites as volunteers and funding dictate.

Chaska Creek – East Watershed

Actions:

- Maintain baseline water quality data for the lakes in the watershed, with priority given to those on the impaired waters list or that have completed TMDL Implementation Plans.
- Establish or maintain any lake or stream sampling sites that are needed or have been established as part of a TMDL study or TMDL Implementation Plan.
- Maintain all automated stream sampling sites (EC 1, EC 2, EC 3) within the watershed, and ensure the Met Council site is not abandoned.
- Maintain current monitoring regimes or conform as dictated by TMDL studies or TMDL Implementation Plans for fecal coliform (or E.coli) bacteria.
- Establish bio-monitoring data at sampling sites as volunteers and funding dictate.

Groundwater

Actions:

- Carver County will continue to sample and test groundwater as funding allows.
- Groundwater samples will be tested for nitrate, nitrite, ammonia, chloride, sulfate, soluble phosphorus, silica, fluoride, and specific conductivity, arsenic and tritium. To determine if a representative sample from the aquifer has been collected, pH, temperature, dissolved oxygen, conductivity and oxidation-reduction potential will also be measured.
- State Testing. Additional testing may occur through the MDA, the MDH, or the MPCA. Data from these tests will be included with future County results.

Stormwater BMPs

Action:

- Carver County will continue to monitor stormwater best management practices as funding allows.

Annual Water Quality Report

Actions:

- Prepare an annual monitoring water quality monitoring report

Bassett Creek Watershed Management Plan 2004

Priority Concern: Water Quality

Goal: Manage the water resources of the watershed, with input from the public, so that the beneficial uses of wetlands, lakes and streams remain available to the community. Such uses may include aesthetic appreciation, wildlife observation, swimming, boating or others.

Goal: Improve the quality of stormwater runoff reaching the Mississippi River by reducing nonpoint source pollution (including sediment) carried as stormwater runoff.

Goal: Protect and enhance fish and wildlife habitat and maintain shoreland integrity.

Objective: Lake and stream management

Actions:

- Classify major water bodies into one of four management categories (Level I – IV) based on desired water quality goals and recreational uses of the water bodies.
- In their local water management plans, the member cities will classify water bodies into one of four management categories (Level I – IV) based on desired water quality goals and recreational uses of the water bodies (see Table 4-3)
- Work with stakeholders to manage water bodies to attain the BCWMC water quality goals.
- BCWMC and the member cities will implement the improvement options listed in Table 12-2 to improve or maintain the water quality of the water bodies with regional significance, based on feasibility, prioritization, and available funding.
- Give higher priority to water quality improvement projects including nonstructural measures and education that are the most effective at achieving water quality goals.
- Fund 100 percent of the water quality improvement project costs for those projects listed in the 10-year CIP (Table 12-2)
- Cooperate with member cities, the MPCA and other stakeholders in the preparation of TMDL studies for water bodies on the MPCA's current or future impaired waters (303(d)) list (currently Parkers Lake, Medicine Lake, Sweeney Lake, Wirth Lake, Northwood Lake, and Bassett Creek).
- Continue to identify opportunities to maintain or improve the excellent water quality in Twin Lake (in the city of Golden Valley).
- Monitor, or coordinate with others to monitor, the water quality of the lakes and streams in the watershed on a regular basis.
- Consider moving projects listed in Table 12-3 to the 10-year CIP (Table 12-2), using the minor plan amendment process, if water quality problems arise in water bodies that are monitored regularly (e.g., Parkers Lake)
- Include chloride monitoring in its stream water quality testing programs, when appropriate.

- Compile a water quality report for every year sampling is conducted for the BCWMC's lakes and/or streams

Objective: Stormwater runoff management

Actions:

- Require all regulated stormwater to be treated to Level I standards throughout the watershed
- Continue to participate in the Metropolitan Council's Watershed Outlet Monitoring Program (WOMP) to monitor the water quality of Bassett Creek before it enters the Mississippi River.
- Each city shall adopt an ordinance that enforces the Minnesota State Law limiting the use of lawn fertilizers containing phosphorus. The BCWMC shall develop, in conjunction with the cities, an education program that educates residents about the importance of soil testing to determine their lawns' nutrient needs.
- Require developers to consider/evaluate the use of BMPs in the Requirements for Improvements and Development Proposals (1998) (Appendix F), and to submit with their application a report on the BMPs implemented on the proposed project and why the other suggested BMPs cannot be implemented on the project
- Requires that a buffer policy for land adjacent to water resources (including wetlands) be included in the member cities' revised local stormwater management plans.
- When the BCWMC deems appropriate, the BCWMC will react to recommendations from other agencies regarding fish and wildlife issues.
- Collect, or coordinate with others to collect, macroinvertebrate (insect) monitoring data at selected stream locations within BCWMC, preferably through continued support of Hennepin Conservation District's River Watch program.
- Promote and encourage protection of non-disturbed shoreland areas and restoration of disturbed shorelines and streambanks to their natural state where feasible.
- Encourage preservation of streambank and lakeshore vegetation during and after construction projects
- Encourage the creation of a buffer zone along shorelines where natural vegetation is maintained
- The cities are required to maintain control and responsibility for shoreland regulation. Cities are required to adopt DNR-approved shoreland ordinances, in accordance with the DNR's priority phasing list.

Objective: Administration of BCWMC Water Quality Management Standards

Actions:

- Review projects and developments to evaluate compliance with BCWMC water quality management standards. The BCWMC water quality management standards will be revised to reflect treatment of all regulated stormwater from new development to Level I standards and non-degradation (no increase in phosphorus load) for redevelopment projects that result in increased impervious surface.

- Continue to work with other public agencies to gain their compliance with the BCWMC water quality management standards; such compliance will help maintain and possibly improve the quality of stormwater runoff.
- Review local watershed management plans for compliance with this Plan's goals and policies regarding water quality.

Priority Concern: Flooding and Rate Control

Goal: Reduce flooding along the Bassett Creek trunk system

Goal: Protect human life, property, and surface water systems that could be damaged by flood events.

Goal: Regulate stormwater runoff discharges and volumes to minimize flood problems, flood damages and the future costs of stormwater management systems.

Goal: Provide leadership and assist member cities with coordination of intercommunity stormwater runoff planning and design.

Objective: BCWMC Flood Control Project

Actions:

- Reserve the remaining funds from the BCWMC flood control project construction account for floodproofing of homes, for an emergency fund for repairing flood control project features, and for a maintenance fund for flood control project features (see Table 5-2)
- Regularly inspect the flood control project system, including water level control and conveyance structures
- Maintain and repair the flood control project system as needed. This is part of the BCWMC's annual water quality and flood control programs (see Table 12-4)
- Finance maintenance and repair of water level control and conveyance structures that were part of the original flood control project on the same basis as the original project.
- Establish a reserve fund, to be used as needed for emergency repairs to the flood control project system. $500,000 of the remaining flood control project construction account funds will be used to create the reserve fund (see Table 5-2).
- Provide funding assistance for homes along the trunk system that were proposed to be floodproofed as part of the original flood control project that do not have 100-year flood protection.
- Construct and fund modifications to existing structures (e.g., control structure at the Golden Valley Brookview Golf Course) built as part of the original flood control project, excluding improvements to private property (e.g., floodproofing of homes), in accordance with the joint powers agreement

- Construct and fund new features that increase the benefits provided by the flood control project system in accordance with the joint powers agreement.
- The member cities shall provide the BCWMC with information regarding proposed changes to the flood control project system. Before any changes can be made to the flood control project, the BCWMC must review and approve the proposed changes.
- All proposed changes to existing control structures, structures along the BCWMC trunk system, or structures between the BCWMC storage sites and the designated trunk must be submitted to the BCWMC for review and approval.

Objective: Floodplain Management Policies

Actions:

- Monitor (or arrange for monitoring of) water levels on the primary lakes in the watershed. Water levels on Bassett Creek and other water bodies will be monitored periodically during flooding events.
- Review proposed improvements, developments and redevelopment projects in the watershed. The member cities need to continue forwarding proposed projects to the BCWMC for review
- Project proposers must apply best management practices to reduce the volume of stormwater runoff, to the maximum practical extent.
- The BCWMC and the member cities must require rate control in conformance with the flood control project system design and this Plan.
- Allow only those land uses in the BCWMC-established floodplain that will not be damaged by floodwaters and will not increase flooding. Allowable types of land use that are consistent with the floodplain include recreation areas, parking lots, excavation and storage areas, public utility lines, agriculture, and other open spaces
- Generally not allow filling within the BCWMC-established floodplain. Proposals to fill within the BCWMC-established floodplain must obtain BCWMC approval and must provide compensating storage and/or channel modification so that the flood level shall not be increased at any point along the trunk system due to the fill.
- Prohibits expansion of existing non-conforming land uses within the floodplain unless they are fully flood proofed in accordance with existing codes and regulations.
- The lowest floor of all permanent structures must be at least 2 feet above the established 100-year floodplain elevation
- Review changes in municipal water resource management plans, land use plans, zoning, and other plans, for their effect on the adopted floodplain and flood control project, when such plans are submitted to BCWMC.
- The BCWMC will modify the existing flood profile to recognize the increased level once the modification has been approved by the BCWMC, local and state regulatory agencies and after a public hearing on the modification plan has been held.
- Review local watershed management plans for compliance with this Plan's goals and policies regarding flooding and rate control.

- BCWBC will not approve any diversions of surface water within, into, or out of the watershed that may have a substantial adverse effect on stream flow or water levels at any point within the watershed.

Priority Concern: Erosion and Sediment Control

Goal: Prevent erosion and sedimentation to the greatest extent possible to protect the BCWMC's water resources from increased sediment loading and associated water quality problems.

Goal: Implement soil protection and sedimentation controls whenever necessary to maintain health, safety, and welfare.

Objective: Erosion and sediment control policies

Actions:

- Encourage land use planning and development that minimizes sediment yield, through compliance with established BCWMC policies.
- Review projects and developments for compliance with BCWMC erosion and sediment control standards
- Require preparation of erosion control plans for construction projects. Erosion control plans shall show proposed methods of retaining waterborne sediments onsite during the construction period, and shall specify methods and schedules to for restoring, covering, or revegetating the site after construction (Appendix B).
- Perform regular erosion and sediment control inspections and inform member cities of improvements needed for effective erosion and sediment control.
- The member cities must adopt, administer, implement, and enforce ordinances addressing erosion and sediment control, including the permitting and inspection of such controls.
- The member cities' ordinances must include the requirements and procedures for reviewing, approving, and enforcing erosion control plans.
- Require local watershed management plans to describe existing and proposed city ordinances, permits, and procedures addressing erosion and sediment control and preparation of erosion control plans.
- Review local watershed management plans for compliance with this Plan's goals and policies regarding erosion and sediment control.

Priority Concern: Stream Restoration

Goal: Implement stream restoration measures whenever necessary to maintain health, safety, and welfare.

Objective: Stream Restoration Policies

Actions:

- Establish and maintain a Creek and Streambank Trunk System Maintenance, Repair and Sediment Removal Fund through an annual assessment.
- Use the Creek and Streambank Trunk System Maintenance, Repair and Sediment Removal Fund to finance maintenance and repairs needed to restore a creek or streambank area to the designed flow rate.
- Use the Creek and Streambank Trunk System Maintenance, Repair and Sediment Removal Fund to finance work needed to restore a creek or streambank area that has either resulted in damage to a structure, or where structural damage is imminent, based on an assessment of benefits.
- Use the Creek and Streambank Trunk System Maintenance, Repair and Sediment Removal Fund to finance the portion of a project that provides BCWMC benefits. The property owner or city where the project is located will fund the remainder of the project.
- Use the Creek and Streambank Trunk System Maintenance, Repair and Sediment Removal Fund to finance the BCWMC's share of maintenance projects to be applied for by the cities that have a regional benefit, or to partially fund smaller, localized projects that cities wish to undertake.
- The BCWMC member cities will complete and update their inventories of significant erosion and sedimentation areas along the Bassett Creek trunk system and will share this information with the BCWMC.
- Consider the effect of stream/ditch structures on natural habitat and the needs of people/pedestrians
- Review maintenance or enhancement of navigability as part of the feasibility evaluation on all new projects.
- Encourage restoration of stream and streambank areas where the natural beauty of the creek has been compromised.
- Consider the effect of future flood control projects on the natural beauty and wildlife habitat values of Bassett Creek.
- Maintain the scenic and aesthetic qualities of stream channels consistent with public needs and public use.
- The BCWMC Technical Advisory Committee will develop guidelines for the allocation of funds from the Creek and Streambank Trunk System Maintenance, Repair and Sediment Removal Fund.
- Review local watershed management plans for compliance with this Plan's goals and policies regarding stream restoration.

Priority Concern: Wetland Management

Goal: Achieve no net loss of wetlands in the BCWMC, in conformance with the Minnesota Wetland Conservation Act and associated rules (Minnesota Rules 8420).

Objective: Wetland Management Policies

Actions:

- Encourage member cities to complete wetland inventories and assess wetland functions and values.
- Encourage member cities to develop wetland protection ordinances.
- The BCWMC adopts the Minnesota Rapid Assessment Method (MnRAM) as the wetland assessment method and the wetland management classification system for the member cities to utilize when assessing and classifying wetlands located within their cities.
- Require that a buffer policy adjacent to water resources (including wetlands) be included in the member cities' revised local stormwater management plans.
- The member cities are required to manage wetlands in accordance with the WCA. The BCWMC will assist the member cities with managing wetlands in accordance with the WCA, as requested.
- The BCWMC will serve as the LGU responsible for administering the WCA for member cities, as requested (currently Medicine Lake, Robbinsdale, and St. Louis Park).
- Review local watershed management plans for compliance with this Plan's goals and policies regarding wetland management.

Priority Concern: Groundwater

Goal: Protect the quantity and quality of groundwater resources

Objective: Groundwater Policies

Actions:

- Review all DNR groundwater appropriation permits in the BCWMC.
- Encourage state agencies to collect and manage groundwater data.
- Encourage the member cities to adopt wellhead protection programs. These programs will include the identification and sealing of abandoned wells.
- Encourage appropriate agencies to enforce proper well abandonment.
- In sensitive recharge areas, the BCWMC will require that detention ponds be lined or engineered to prohibit infiltration.
- Encourages the member cities to educate the general public concerning the use of BMPs to prevent contamination of groundwater supplies and the importance of these measures in protecting groundwater supplies.

Priority Concern: Public Ditches

Goal: Manage public ditches in a manner that recognizes their current use as urban drainage systems

Objective: Public ditch policies

Actions:

- Support legislation abandoning public ditches in BCWMC and allowing all drainage to be managed in accordance with the BCWMC's latest adopted Plan
- Work with the BWSR to pursue legislation abandoning public ditches on land zoned non-agricultural.
- Manage abandoned public ditches that are part of the trunk system and the cities will be responsible for abandoned public ditches that are not on the trunk system, but are currently part of their municipal drainage system.

Capitol Region Watershed Management Plan 2010

Priority Concern: Education and Outreach

Objective: Increase the awareness of water

Actions:

- Determine the baseline knowledge level regarding basic watershed and stormwater concepts
- Increase the understanding of basic watershed, stormwater, groundwater and water pollution concepts through watershed education and outreach
- Measure the change in knowledge and behavior as a result of the education and outreach efforts

Objective: Increase public knowledge and appreciation for local water resources in the District

Action:

- Utilize District infrastructure to increase awareness and appreciation of water resources and watershed management

Objective: Raise an awareness of the District and increase the interest and public participation in its activities

Objective: Increase communication and encourage long term involvement with groups not previously involved in District programs

Priority Concern: Urban Stormwater Management

Objective: Work to improve the short- and long-term maintenance of stormwater BMPs

Action:

- Coordinate the development and implementation of a multi-jurisdictional BMP management plan that includes identifying responsible parties, define roles and determining maintenance schedules for all stormwater BMPs located in the District

Objective: Reduce the chemical pollutant load to District lakes, wetlands and the Mississippi River

Actions:

- Achieve a Phosphorous Trophic State Index (TSI-P) of 60 for Como Lake by reducing the average annual total phosphorus load to Como Lake by 60%
- Achieve the summer average lake concentration of total phosphorus at 33 parts per billion (ppb) or less for Lake McCarron's
- Maintain water quality of Loeb Lake at current conditions (nondegradation)

- Achieve the District's total phosphorus loading requirements for the Lake Pepin TMDL in the Mississippi River
- Develop a target reduction for metals, pesticides, nutrients, chloride, organic contaminants, etc., discharged to District lakes, wetlands and the Mississippi River and work towards reaching that target
- Identify and manage the internal phosphorus load in District lakes, wetlands and the Mississippi River
- Identify and eliminate illicit discharges into District lakes, wetlands and the Mississippi River

Objective: Reduce physical pollutant load to District lakes, wetlands and the Mississippi River

Actions:

- Develop a target reduction for the amount of trash entering District lakes, wetlands and the Mississippi River and work towards reaching that target
- Develop a target reduction for sediment entering District lakes, wetlands and the Mississippi River and work towards reaching that target
- Achieve District load requirement established in the turbidity component of the future Lake Pepin TMDL
- Identify and eliminate illicit discharges into District lakes, wetlands and the Mississippi River

Objective: Minimize existing and potential flooding problems

Actions:

- Work to identify existing and potential infrastructure capacity issues and flooding problems
- Utilize structural and nonstructural flood control techniques to improve infrastructure capacity and reduce flooding problems
- Evaluate the impact of climate change on infrastructure capacity in the future and identify potential flooding issues
- Preserve existing floodplain storage capacity and prohibit floodplain filling unless compensatory storage is provided
- Identify opportunities to reestablish lost floodplain areas

Objective: Promote groundwater recharge through increased use of infiltration techniques to manage stormwater

Actions:

- Develop incentives/regulations to promote the use of stormwater infiltration techniques
- Identify those portions of the District most conducive to stormwater infiltration

Objective: Protect the groundwater resource

Actions:

- Support and collaborate with Ramsey County, state and regional agencies to better understand and monitor District groundwater resources
- Support and collaborate with Ramsey County, state and regional agencies on groundwater quantity and quality protection avoid infiltrating storm water in areas of contaminated soils

Priority Concern: Monitoring and Data Assessment

Objective: Collect monitoring data and perform research to gather valuable information about the District

Actions:

- Collect data on selected BMPs installed in the District and evaluate performance, maintenance, and longevity
- Monitor the condition of District surface waters and major subwatersheds to establish baseline conditions and determine trends
- Identify and support a program to collect soil and geologic data in order to assess the infiltration potential within the District

Objective: As part of the annual budgeting process, review and refine the monitoring and data assessment program to improve efficiency and utilize the best technology

Objective: Utilize data as part of a regular evaluation of current water issues, performance of District programs and District rules

Objective: Make monitoring and research data available and understandable to a broader audience

Objective: Serve as a clearinghouse for water resource management information to assist District stakeholders and partners

Objective: Establish partnerships to improve the District's ability to increase access and understanding of monitoring and research data

Priority Concern: Future Trends

Objective: Be a leader in conducting original research and reviewing existing research on new stormwater management technologies to facilitate decision making by the District and its partners

Actions:

- The District will evaluate innovative stormwater management techniques, information management techniques, and monitoring and modeling techniques used locally, nationally, and internationally
- The District will conduct research on stormwater management BMP performance, applicability in different settings, and long-term maintenance needs.

Objective: Promote the use of emerging technologies and innovative watershed management techniques

Actions:

- Promote Green Infrastructure initiatives.
- Determine optimal balance of incentive-based strategies and regulatory-based watershed management strategies

Priority Concern: Funding and Organization

Objective: Encourage District partners and residents to implement local water resource improvement projects

Action:

- Provide financial and technical assistance for resource protection projects and efforts by District residents and partners

Objective: Coordinate efforts with partners to ensure the most cost effective uses of funds for water resource management

Actions:

- Coordinate the water resource management efforts that the District and its partners are currently undertaking
- Identify opportunities to incorporate water resource management efforts into capital improvement projects and large scale redevelopment projects of District partners
- Provide support to District partners for activities with a connection to water resources
- Maintain active membership in the Ramsey County Groundwater Partnership

Objective: Increase the funds available to the District to meet its goals and objectives

Actions:

- Identify new and supplemental funding sources
- Evaluate the optimal balance of financing options or revenue Sources

Objective: Utilizes long-term planning and pursue the most cost effective solutions when carrying out resource protection programs and projects

Actions:

- Evaluate the results and costs for programs and projects to demonstrate their effectiveness
- Consider initial and life-cycle costs associated with programs and projects when evaluating their effectiveness

Objective: Strengthen the District's capacity to accomplish its mission

Objective: Strive for excellence, with competent, knowledgeable, committed, and innovative Board members, advisory committees, and staff

Objective: Provide research-based, informed, mission-driven decision making

Objective: Be an open, approachable, facilitator of partnerships to enhance the District's capacity to protect, maintain and improve water resources

Priority Concern: Regulations and Enforcement

Objective: Ensure that the rules are regularly reviewed, updated and readily understood by the regulated community.

Action:

- Ensure effective Rules in meeting the District's goals while allowing some flexibility

Objective: Work with District partners to improve the District Rules and other municipal/agency stormwater ordinances

Actions:

- Work with District partners to make ordinances compatible with stormwater management goals and objectives
- Work with District partners to coordinate permit applications early in the design stage
- Work with District partners to achieve volume reduction on small sites (disturbing less than one acre) through District Rules or municipal ordinances

Objective: Collaborate with partners to ensure that proper BMP construction, and erosion and sediment control techniques are being implemented throughout the District

Actions:

- Ensure that effective routine inspections are conducted on all construction in the District
- Ensure that appropriate long-term maintenance is being performed on stormwater management practices in the District

Objective: Continue to work with surrounding watershed management organizations and state agencies to develop rule language that maximizes effectiveness while ensuring their consistency and ease of use throughout the region/metro area.

Actions:

- Compare District Rule language with that of surrounding watershed management organizations to identify consistencies and inconsistencies
- Evaluate the feasibility of addressing inconsistencies in watershed management organization rules in consultation with the Technical Advisory Committee (TAC)

Objective: Comply with applicable local, state, and federal watershed regulations

Actions:

- Comply with the provisions of the District MS4 permit.
- Collaborate with all permitted MS4s within with District on TMDL load reduction efforts

Coon Creek Watershed Management Plan 2013-2023 Draft

Priority Concern: Declining Regional Surficial Groundwater and the Effect on Groundwater Dependent Resources

Objective: Development Regulation

Actions:

- During review of permit applications and provision of technical assistance, the District will seek to maintain natural drainage patterns of recharge and discharge areas, and minimize disruption of Groundwater levels that are critical to groundwater dependent resources
- Continue to require infiltration of the first 1 inch of a storm event
- Give preferential consideration to Groundwater-dependent resources when conflicts among land-uses activities occur
- Delineate and evaluate both groundwater itself and groundwater-dependent ecosystems before approving any project with the potential to adversely affect those resources
- The District will also evaluate and seek to establish:
    - Maximum limits to which water levels can be drawn down as a specified distance from a Groundwater-dependent ecosystem in order to protect the character and function of that ecosystem
    - Minimum distance from a connected stream, wetland, lake or other Groundwater-dependent ecosystem from which Groundwater withdrawal may be sited.

Objective: Planning

Actions:

- The District anticipates addressing this issue through Groundwater studies, particularly support of the County Geologic Atlas, both through those completed by the District and by others
- As more information becomes available, the District may revise its rules to incorporate the new knowledge
- The District will evaluate adopting a policy that, in all state and water management district funding programs, quantifiable water conservation best management practices are considered an “alternative water supply” and are equally as eligible as capital facility expansion projects for grants and financial assistance
- Evaluate the minimum flows and levels needed to protect water supply needs of natural systems before determining the availability of surface water for water supply

Objective: Research and Monitoring

Action:

- Support research to develop Sand Plain-specific climate change models to foster a sustainability/vulnerability analysis handbook on climate change impacts.

Priority Concern: To Prevent Property Damage from Flooding, Erosion or Degraded Water Quality

Objective: Development Regulation

Actions:

- The District will use its rule and enforcement authority, as well as its ability to comment on state permits and environmental documents
- Require the treatment and construction of water management practices to prevent flooding and discourage erosion and sedimentation
- Require or encourage avoidance or minimization of impacts to the water resource
- Treat runoff to maintain or improve water quality

Objective: Operations and Maintenance

Actions:

- The District will use its authority to inspect, conduct routine and non-routine maintenance and repair and construct water management features
- Detect conditions (such as vegetation or sand bars) or occurrences (such as invasive species) that may result in flooding or degraded water quality
- The District will also use its emergency and disaster response efforts as well as its nuisance animal control efforts to respond to issues which may threaten life or property

Objective: Planning

Actions:

- Continue working with the MN DNR and MPCA to evaluate flood potential and water quality in detail
- The District will continue its involvement in the development of individual lake management plans and water quality retrofit studies for select subwatersheds within the District
- Meet State and Federal requirements of the District to 'Plan' to develop not only policies and procedures but to develop specific plans for lakes, floodplain, and water quality

Objective: Public and Governmental Relations

Actions:

- District information and education efforts will focus on raising awareness of nature of flooding, water quality and invasive species on life and safety, structures and the ability to operate infrastructure as well as property through increased newspaper and other media coverage
- Involvement efforts will focus on developing and maintaining cooperative relations with other staffs and agencies involved in hydrology and water quality and coordinating Watershed District land management planning by State and local agencies
- Technical assistance will occur primarily in the form of modeling and providing information on other agencies on the hydrology and water quality within the watershed

Objective: Research and Monitoring

Actions:

- The District's monitoring efforts will continue to measure and track the nature, condition and trend of water quantity and quality in the watershed's lakes, stream, and wetlands
- The District will also ensure that the location of weather stations meets multiple-use management and/or research needs of the Watershed District and will coordinate weather data collection activities within the Watershed District and with cooperators
- Identification and early warning, if possible, of conditions or events that create damage and flooding

Priority Concern: To Ensure Balance between Inflow, Outflow, and Storage of Water

Objective: Development Regulation

Actions:

- Regulatory efforts and standards will emphasize the need for applicant's to submit proposals at the earliest possible "concept level" stage.
- Infiltration of the first 1 inch of precipitation will be required as will additional storage and rate control for land disturbance upstream from lands which require 'drainage' for their continued use of the land
- Infiltration and groundwater recharge will be strongly encouraged to reduce the volume of runoff and contribute to surficial groundwater levels
- Streamflows will be managed to encourage drainage away from lands that require it, but discourage drainage in areas of the District where low and minimum flows, fish habitat and aesthetics are concerns

Objective: Operations and Maintenance

Actions:

- The public ditch system will be managed for both drainage and conveyance with an awareness of the system's role in retaining or conveying water, and the water quality impacts and varying maintenance needs of both
- Depending on overall hydrologic conditions the District will adjust or modify its maintenance priorities and methods to pursue balance

Objective: Planning

Actions:

- The District will annually review screening and ranking process and use the uniform comparative method to make funding allocations
- The District will also annually review operations and maintenance and contingency funds for emergency repair caused by catastrophic events or similar circumstances

Objective: Public and Governmental Relations

Actions:

- Information and education efforts for citizens and elected officials will focus on the specifics of the hydrologic cycle as it exists within the Coon Creek Watershed
- Information on the various elements leading to hydrologic balance will be placed on the District website and an index for communicating overall hydrologic condition will be evaluated
- The District will seek the involvement of the public, City and County staff, as well as State personnel in the development of innovative technologies that help achieve water resource management goals

Objective: Research and Monitoring

Action:

- Monitor the timing, amount and volume of precipitation events to understand the water balance of the watershed

Priority Concern: To Ensure Water is protected from Contamination

Objective: Development Regulation

Actions:

- Regulatory efforts concerning water quality will focus on and follow the lead provided by the NPDES requirements
- Permit review will provide the key point for the proper choice and design of best management practices to address volume reduction, suspended sediments and phosphorus leaving a site

- Regulatory and enforcement efforts will emphasize the installation and maintenance of erosion and sediment control during construction and the proper design and maintenance of stormwater and water quality facilities post-construction
- Enforcement efforts will also emphasize regular inspection and rapid investigation and mediation of issues related to illicit discharge and violations of the Wetland Conservation Act

Objective: Operations and Maintenance

Actions:

- Routine maintenance will center on annual inspection of 20% of the drainage system and all of the control structures and ponds under direct control of the District
- The District's streambank stabilization efforts will focus on protecting property and reducing or eliminating suspended solids from entering the system as a result of shearing and erosion of ditch banks

Objective: Planning

Actions:

- Assess the various water quality stressors and identifying load allocation for various pollutants in the water shed
- The District will update its Stormwater Pollution Prevention Plan (SWPPP) in concurrence with the three NPDES permit cycles Minnesota will go through during the scope of this Watershed Management Plan
- The District will continue retrofitting select subwatersheds as described in the District's Capital Improvement Plan
- The District will develop a Watershed Restoration and Protection Plan (WRAPP)
- The District will amend the results of the WRAPP, the SWPPs and the retrofit analysis into the District Comprehensive Plan and Rule

Objective: Public and Governmental Relations

Actions:

- The District will develop and maintain cooperative relations with other staffs and agencies involved in hydrology and water quality.
- The District will oversee the policy and direction for the establishment and administration of strategic partnerships for the delivery of high-quality Information and Education Services.
- It will also coordinate District land management planning with water quality management planning by state and local agencies and citizens and groups.

Objective: Research and Monitoring

Actions:

- The District will monitor, report (via EQuIS) and manage for: sediment, nutrients, oxygen demanding substances, bacteria, chloride, water volume, aquatic habitat
- Stream water quality monitoring will continue to include biomonitoring, and the overall water quality monitoring efforts for streams may be expanded to assess select subwatersheds, minor-watersheds and in some instances, drainage catchments as part of the WRAPP
- Continue water quality monitoring efforts for lakes, streams and wetlands

Priority Concern: To efficiently serve many Uses Including the Safety and Enjoyment of the Watershed's Residents

Objective: Development Regulation

Actions:

- The District's regulatory and enforcement efforts will focus on addressing or supporting uses of water within the watershed which may not be under the direct responsibilities of the District other than their effect on the public health, safety, and welfare or compliance with a state permit
- Irrigation, infiltration and groundwater recharge, water conservation and drinking water, aquatic life and recreation and aesthetics are all uses addressed in the Watershed Act and the Metropolitan Surface Water Management Act
- The District's principles, standards and rules, when amended, will seek to provide for development and management of sites consistent with the available natural resources to provide a safe, healthful, aesthetic atmosphere
- Encourage water recreation opportunities that meet the public needs in ways that are appropriate to the Watershed District role and are within the capabilities of the resource base
- Manage District water resources for multiple uses by balancing present and future resource use with domestic water supply needs, and attain the highest possible quality of landscape aesthetics and scenery commensurate with other appropriate public uses, costs, and benefits

Objective: Operations and Maintenance

Actions:

- Routine maintenance will largely involve inspection of 20% of the drainage system for sediment build up and significant changes from the 'approved' elevation of the ditch
- Annual effort to remove litter and debris from the channel
- Non-routine maintenance efforts will involve the removal of trees which may be obstructing or deflecting flows and causing stream bank erosion where private property or public recreation facilities may be located

Objective: Planning

Actions:

- The District will annually review the condition, trend and demand for the other beneficial uses of water within the watershed as part of its annual plan and its budget and plan process for the following year.
- The District will use these processes and input from its advisory committee to provide an early warning of needs to adjust the priorities and content of the District's programs and activities
- The District will continue its Lake Management Planning efforts, developing an assessment and plan for each of the principal lakes (Crooked, Ham, Netta and Sunrise) within the District that are wholly under the jurisdiction of a steward that is actively involved in their conservation and management
- The District will continue to support the County Geologic Atlas as it comes to completion and identify minor sub-watersheds providing water within the drinking water supply management areas of the Cities as defined by the City's well-head protection plan or 1 year travel time of municipal and other public wells and water supplies during land management planning
- The District will also, near the end of this planning period conduct and document a scenery assessment for all activities conducted by the District

Objective: Public and Governmental Relations

Actions:

- The District will increase local TV, radio and newspaper media coverage in an effort to inform the public and decision makers of the varying uses of water within the watershed
- The District will provide leadership during planning, development and management of parks and open space adjacent to public drainageways and waters.
- The District will also establish a training program to provide several levels of understanding and knowledge in landscape aesthetics and scenery management commensurate with the different land and resource management needs and the different levels of responsibility of managers and operational personnel
- The District will also establish a training program to provide several levels of understanding and knowledge in landscape aesthetics and scenery management commensurate with the different land and resource management needs and the different levels of responsibility of managers and operational personnel
- Decrease the waste of groundwater through sensor based drip or trickle irrigation technology plus mulching

Objective Research and Monitoring

Action:

- Monitoring efforts will focus on lake and stream water quality and biomonitoring of streams to assess biota and the condition of Fish habitat

Elm Creek Watershed Management Plan 2003 amended 2012

Goal: Protect, preserve, and manage surface water and groundwater resources.

Goal: Minimize property damages and economic losses through water resource management.

Goal: Manage public expenditures needed to study and control and/or correct flooding and water quality problems.

Goal: Educate and inform the public on pertinent water resource management issues and increase public participation in water management activities.

Goal: Identify and plan for means to effectively protect and improve surface and groundwater quality.

Goal: Establish more uniform local policies and official controls for surface and groundwater management.

Goal: Reduce erosion of soil into surface water systems.

Goal: Promote groundwater recharge.

Goal: Protect and enhance fish and wildlife habitat and water recreational facilities.

Goal: Reduce and control/prevent stream degradation through land protection measures, runoff restrictions, and pollutant restrictions.

Objective: The adequacy of existing technical and background information on systems in the watershed that are used to manage water resources

Actions:

- This lack of data stems from a lack of funding to develop these information resources. The Commission will attempt to identify funding options and alternatives and prioritize this work as part of the implementation of this Plan. It is unknown which parties will be responsible for developing these data.
- Local communities may complete the Minnesota Land Cover Classification System (MLCCS) as a planning tool and to obtain more detailed land cover mapping.

Priority Concern: Water Quantity

Policies:

- The Commission adopts the current FEMA study as part of the Elm Creek floodplain for parts of Hassan and Dayton that drain to the Crow and Mississippi Rivers. This study is available in the Water Resource Library.
- The Commission adopts the Elm Creek Watershed Study and its associated flood elevations. This study is available in the Water Resource Library.
- The Commission shall establish floodplain management standards.
- The Commission shall establish water quantity management standards.
- The Commission shall develop standards to reduce the severity and frequency of flooding and high water by preventing the loss of floodplain storage below the established 100-year flood elevation.
- The Commission shall develop standards to manage the change in conveyance and the timing of flood waters.
- The Commission shall develop standards to reduce the severity and frequency of flooding and high water by avoiding the loss of wetland storage.
- The Commission shall develop standards to reduce the severity and frequency of flooding and high water by minimizing development in 100-year floodplains.
- Costs associated with floodplain management studies or projects shall be borne by all communities in the watershed in an equitable manner, as determined by the Commission and Joint Powers Agreement.
- The Commission prefers that stormwater rate control be provided through the use of regional stormwater retention systems when it is reasonable and practical to do so. The Commission also supports site-by-site retention systems when regional systems are not reasonable and practical.
- The Commission shall promote infiltration of precipitation and runoff.
- The Commission shall establish a water quantity monitoring plan.
- The local communities shall be responsible for removing deadfall in creek channels as appropriate provided that the deadfall is no longer attached to the land. For deadfall that remains attached to the land, it is the responsibility of the landowner to remove the deadfall. The Commission shall mediate deadfall removal issues as requested by the member communities.

Objective: Flooding and stormwater rate control concerns within the watershed

Actions:

- The Commission defers to the member cities the responsibility of addressing stormwater runoff management needs and problems, provided that the impact of the problem and the source of the impact are wholly contained within a given community and the affected community is in conformance with the Commission's Watershed Management Plan. In addition, the Commission will require that flood problems recognized within this plan be recognized for capital improvements within the appropriate member cities' surface water management plan.

- In cases where surface water impacts or the source of impacts transcend municipal boundaries, or the community is found to not be in compliance with this Plan, the Commission shall review such problems and issue directives to the appropriate local governmental unit or units for resolution. It will be the responsibility of the member cities to implement a project that is acceptable to the Commission. In cases where the member city refuses to implement a project per the directives of the Commission, or requests the Commission to facilitate resolution of the problem, the Commission shall perform such a function in conformance with the terms of the Commission's Joint Powers Agreement. Funding for these projects shall be per the Joint Powers Agreement and/or through grants.
- The Commission shall implement the water quantity policies and standards outlined within the Plan in an effort to address flooding and increased flow rate and volume concerns within the watershed.
- The Commission shall implement a water quantity monitoring program to evaluate the water quantity of lakes and streams.
- The local communities shall be responsible for removing deadfall in creek channels as appropriate provided that the deadfall is no longer attached to the land. For deadfall that remains attached to the land, it is the responsibility of the landowner to remove the deadfall. The Commission shall mediate deadfall removal issues as requested by the member communities.
- The Commission shall develop a prioritized list of flooding problems as part of the implementation of this Plan.
- The maintenance of drain tile shall be the responsibility of the landowner or developer for all private, non-public drain tiles. For drain tile that may be identified as a County drainage system or judicial ditch, the maintenance responsibility shall be deferred to the County.
- Cleaning of channels or removal of vegetation from channels that are not public ditches shall be the responsibility of the property owner and/or local government, if an agreement between the parties has been developed. If work is undertaken, it must be in conformance with local, state, and federal requirements.

Objective: Flooding or stormwater rate control issues between the member cities

Actions:

- The Commission shall implement the water quantity standards outlined within the Plan in an effort to address flooding and increased flow concerns within the watershed.
- Where surface water impacts or the source of impacts transcend municipal boundaries, or the member community is found to not be in compliance with the Commission's Watershed Management Plan, the Commission shall review such problems and issue directives to the appropriate local governmental unit or units for resolution. It will be the responsibility of the member cities to implement a project that is acceptable to the Commission. In cases where the member community refuses to implement a project per the directives of the Commission, or requests the Commission to facilitate resolution of the problem, the Commission shall perform

such a function in conformance with the terms of the Commission's Joint Powers Agreement. Funding for these projects shall be per the Joint Powers Agreement and/or through grants.
- The Commission shall implement a water quantity monitoring program to evaluate and track the water quantity of lakes and streams.

Objective: The adequacy of programs to maintain the tangible and intrinsic values of natural storage and retention systems

Objective: The adequacy of programs to maintain water level control structures

Objective: The adequacy of capital investment programs to correct problems relating to water quantity, water quality management, fish and wildlife habitat, public waters and wetland management, and recreation opportunities

Action:

- Implement capital improvement programs in this Plan as funding becomes available. The funding reserves will need to grow to meet grant matching requirements.

Objective: Identification of potential problems which are anticipated to occur within the next 20 years based on growth projections and planned urbanization

Actions:

- The Commission requires member cities to include within their local stormwater management plans a stormwater basin maintenance plan that defines and schedules necessary maintenance actions on stormwater basins.
- The Commission shall implement the studies, programs, and capital improvement projects outlined in this Plan as funding becomes available.

Priority Concern: Water Quality

Policies:

- The Commission encourages the adoption of the DNR's model shoreland ordinance.
- The Commission adopts the Minnesota Pollution Control Agency's Best Management Practices and Metropolitan Council's Minnesota Urban Small Site BMP Manual by reference.
- The Commission shall establish standards for stormwater treatment practices to prevent further degradation of lakes, streams, and wetlands.
- The Commission will establish a comprehensive water quality monitoring plan for area lakes and streams.
- The Commission will establish water quality goals for judging the adequacy of its water quality protection programs.

- The Commission shall promote the management of stormwater runoff quality on a regional basis in areas where it is reasonable and practical to do so. The Commission shall also manage stormwater runoff quality on a site-by-site basis when regional methods are not feasible.
- The Commission will coordinate with other agencies' efforts in monitoring, maintaining, and improving surface water quality within the watershed.
- The Commission shall provide services to assist the member communities in obtaining National Pollutant Discharge Elimination System (NPDES) Phase II permits once this program is implemented by the Minnesota Pollution Control Agency, if requested by the local community.
- The Commission shall establish manure management standards.
- The Commission shall develop standards and/or a model ordinance related to manure management, feedlots, and fencing/setback standards for livestock near water bodies.
- The Commission shall review progress and policies relating to Total Maximum Daily Loads (TMDL's) as they become available.

Objective: Lake, stream and wetland water quality problems

Actions:

- The Commission shall provide assistance as requested by member communities to address water quality issues for water bodies that are located solely within one member communities' boundaries. The Commission shall not take the lead role in implementing water quality projects for these water bodies that are located only within one community.
- The Commission will support local cities' efforts to address and correct degradation problems within existing lakes and wetlands and meet water quality goals set forth in this Plan. These efforts may include but are not limited to the dredging of accumulated sediment or the construction of storm water quality basins.
- The Commission shall support and encourage enforcement of the State's ban on phosphorus fertilizers.
- The Commission shall undertake water quality improvement projects for water quality impacts that transcend municipal boundaries as funding becomes available.
- The Commission shall implement a public educational program targeted at educating the public about water quality.
- The Commission will develop a prioritized list of water bodies within the watershed.
- The Commission shall develop standards and/or a model ordinance related to manure management, feedlots, and fencing/setback requirements for livestock near water bodies.
- The local communities shall be responsible for ensuring that stormwater ponds constructed as part of new development are maintained. The local community will be required to adopt a stormwater system maintenance plan in conformance with this Plan. This maintenance could be funded through a Stormwater Utility Fee by the local government.

Objective: General Impact of land use practices and in particular, land development and land alteration on water quality and water quantity

Actions:

- The Commission will continue to work with the local cities to address the impacts of land use on Elm Creek watershed water resources.
- The Commission shall implement the policies and standards outlined within this plan.
- The Commission shall not become involved in septic system permitting. However, the Commission shall contact the County/PCA to request that the Commission be notified when the Mobile Home Park's effluent treatment permit is up for review.
- The Commission shall defer all well abandonment permitting and regulation to the Minnesota Department of Health and requires that all member communities cooperate with the Department of Health to ensure that all unsealed or improperly abandoned wells within the watershed are properly sealed in accordance with state regulations.

Priority Concern: Enhancement of Public Participation, Information, and Education

Policies:

- The Commission shall establish a public education program regarding watershed management practices. Information about this program can be found in Appendix G.
- The Commission encourages member cities to develop coordinated water resource public education programs to avoid duplication of effort and cost.
- The Commission will work with and support to the extent deemed necessary the efforts of the Hennepin Conservation District, Department of Natural Resources and others to develop and enhance public education programs.

Priority Concern: Public Ditch Systems

Policies:

- The public ditch systems within the Commission will be managed by Hennepin County, which is the public ditch authority.
- The Commission shall work with Hennepin County in resolving any issues associated with management of the public ditch systems in the watershed.

Priority Concern: Groundwater

Policies:

- The Commission shall develop standards to improve and protect the groundwater within the watershed.
- The Commission will promote and coordinate with other agencies the continuation of existing groundwater monitoring, inventories, and/or permitting programs.

- The Commission will encourage member cities to develop and implement wellhead protection plans.
- The Commission will assist member communities or other governmental agencies in resolving groundwater quality problems.
- The Commission shall promote groundwater infiltration and recharge.

Priority Concern: Wetlands

Policies:

- The Commission shall act as the Wetland Conservation Act's Local Government Unit (LGU) for those communities that choose to utilize this service.
- The Commission will protect and manage wetlands in conformance with the State Wetland Conservation Act (WCA).
- The Commission will support the local cities' efforts to become qualified to assume the LGU role to manage wetlands.
- The Commission shall promote and facilitate the creation of new wetland banking areas within the watershed.
- The order of descending priority for the location of replacement wetlands, including the use of wetland bank credits, is as follows:
    - On-site;
    - Within the same subwatershed;
    - Within the Elm Creek Watershed; and
    - Outside the Elm Creek Watershed within major Watershed No. 20 only under extreme and unusual circumstances.

Objective: The adequacy of existing regulatory controls to manage or mitigate adverse impacts on public waters and wetlands

Actions:

- The Commission shall implement a public education program targeted at educating the public and city officials about wetlands and watershed management issues.
- The Commission shall defer the role of the public ditch authority to Hennepin County. The Commission shall be available as a resource to advise and comment on ditch maintenance and ditch designations.
- The local communities shall be responsible for removing deadfall in the creek channels as appropriate provided that the deadfall is no longer attached to the land. For deadfall that remains attached to the land, it is the responsibility of the landowner to remove the deadfall. The Commission shall mediate deadfall removal issues as requested by the member communities.

Priority Concern: Erosion

Policies:

- The Commission shall develop standards to minimize erosion due to development activities.
- The Commission will coordinate, where appropriate, with other agencies' efforts to implement Best Management Practice regarding erosion and sedimentation control.
- The Commission will identify locations for erosion control improvement projects.
- The Commission encourages the implementation of the NRCS standards for cropland erosion control.
- The Commission shall coordinate with the Hennepin Conservation District and the Natural Resource Conservation Service to provide technical assistance and cost share programs regarding erosion control for farmers.

Objective: Impacts of soil erosion on water quality and quantity

Actions:

- The Commission defers to the member cities the responsibility of addressing erosion problems, provided that the impact of the problem and the source of the impact are wholly contained within a given community and the affected community is in conformance with the Commission's Watershed Management Plan. In addition, the Commission will require that erosion problems recognized within this plan be recognized for capital improvements within the appropriate member cities' surface water management plan.
- The local community shall be required to adopt an erosion and sediment control ordinance and policies in conformance with the Commission's policies.
- The Commission shall implement the standards outlined within the Plan to address erosion issues within the watershed.
- The Commission shall maintain a list of erosion problem areas and provide this information to the member communities.
- The Commission will seek grants and, as funds become available, to implement erosion control measures on Elm Creek, Rush Creek, North Fork Rush Creek, and other areas as they are identified within the watershed.
- The Commission shall implement a public education program targeted at educating the public about erosion control.

Objective: The adequacy of programs to limit soil erosion and corresponding water quality degradation

Actions:

- The Commission shall require member communities to develop erosion and sedimentation ordinances in conformance with this Watershed Management Plan's policies and standards.
- The member communities shall be responsible for enforcement of these ordinances. If member communities are not enforcing these ordinances or member communities are not in

conformance with the Commission Watershed Management Plan, the Commission shall exercise authority available to it through the Joint Powers Agreement.

- The Commission will annually review the development plan review process with its member communities.
- As funding resources allow, the Commission shall periodically review and inspect construction projects to ensure the developers and member communities are adhering to the erosion control and development plans approved by the permitting authority. Based on this review and inspection, the Commission shall review and modify its oversight capability as needed.

Lower Mississippi River Watershed Management Plan 2011-2020

Priority Concern: Organizations Management

Goal: To manage the different roles of the district

Objective: To serve as facilitator

Action:

- Work Cooperatively with Local, State, and Federal Forms of Government; Other Agencies; and Non-Government Organizations on Issues Affecting District Resources.

Objective: To serve as an educator

Action:

- Provide public information services

Objective: To serve as a manager

Actions:

- Provide strategic resource evaluation and management
- Research the options of expanding, contracting, or maintaining the District's boundary
- Perform periodic assessments and program reviews
- Use short-term and long-term metrics to measure progress

Priority Concern: Surface Water Management

Goal: To protect, improve and restore surface water quality

Objective: To use classification categories to manage water resources

Action:

- Lower Minnesota River Watershed District – Water Resources Classification Categories (Minnesota River, Floodplain, Upland, or Unique Natural Resources Category)

Objective: To prevent further degradation of water quality

Actions:

- Watershed management standards (stormwater management, construction erosion control, shoreline and streambank alteration, stream and lake crossing, floodplain and drainage alteration, water appropriations, bluffs, and greenways and open space standards)
- Promote disconnected stormwater management and low impact development
- Water quality restoration program
- Dean Lake feasibility/diagnostic study

Objective: Enable information decisions

Actions:

- Modify and continue the monitoring program
- Complete detailed assessments of data
- Coordinate with other agencies and water quality programs

Priority Concern: Groundwater Management

Goal: To protect and promote groundwater quality and quantity

Objective: To support and assist in intercommunity management of groundwater

Action:

- Support Wellhead Protection efforts

Objective: To promote groundwater recharge

Actions:

- Adopt infiltration standards
- Promote conservation and wise use of groundwater

Objective: To protect and improve groundwater sensitive water resources

Actions:

- Groundwater monitoring
- Regional modeling

Priority Concern: Wetland Management

Goal: To protect and preserve wetlands

Objective: To preserve wetlands for water retention, recharge, soil conservation, wildlife habitat, aesthetics, and natural water quality enhancements

Actions:

- Delegate Wetland Conservation Act (WCA) to LGUs
- Require LGUs to conduct wetland inventories and complete wetland management plans
- Review WCA notices as received
- Wetland standard

Priority Concern: Floodplain and Flood Management

Goal: To manage floodplains and mitigation flooding

Objective: To maintain natural water storage areas and the Minnesota River floodway

Actions:

- Floodplain and drainage alteration standard
- Adopt infiltration and peak flow standards
- Manage localized flooding

Priority Concern: Erosion and Sediment Control

Goal: To manage erosion and control sediment discharge

Objective: Endorse the NPDES General Permit

Actions:

- Support the NPDES general permit
- Erosion and sediment control standard

Objective: Adopt vegetation management standard

Action:

- Develop a vegetarian management standard/plan

Objective: Manage streambank and mainstem erosion

Action:

- Continue work of addressing gully erosion

Objective: To maintain the integrity of shorelands

Actions:

- Promote and encourage shoreland protection

- Shoreland and streambank standard

Priority Concern: Commercial and Recreational Navigation

Goal: To maintain and improve navigation and recreational use of the Lower Minnesota River

Priority Concern: Public Education and Outreach Program

Goal: To increase public participation and awareness of unique natural resources and the Minnesota River

Objective: Encourage public participation

Action:

- Maintain the Citizen Advisory Committee (CAC)
- Develop an outreach program
- Engage and utilize volunteers
- Provide opportunity for public input

Objective: Provide education and marketing to foster sustainable behavior and environmental stewardship

Actions:

- Produce scientific studies and work products
- Promote a variety of education programs
- Use multiple outlets to distribute information

Lower Rum River Watershed Management Plan 2011

Priority Concern: Lake and Stream Water Quality Problems

Objective: Implement a water quality monitoring plan to track water quality trends and evaluate effectiveness of policies and land use practices

Actions:

- The LRRWMO will continue with the assistance of the Anoka Conservation District (ACD) a water quality monitoring program to track trends in water quality over time within the watershed. A 10-year monitoring plan has been prepared by the ACD. The monitoring plan includes Round Lake, Sunfish Lake, Trott Brook, and the Rum River

Objective: Manage water bodies that have been listed as impaired by the MPCA (Rum River – mercury; Rogers Lake (104p): Ramsey – nutrients; Mississippi River – mercury and PCB in fish tissue)

Objective: Monitor and manage water quality impacts as a result of on-going urbanization

Objective: Monitor water quality of Round Lake

Actions:

- For all mercury impairments the LRRWMO will not take an active role because the nature of the impairment is regional and being addressed at a state level.
- For the nutrient impairment in Rogers:
    - Contributed to additional monitoring to determine if an impaired state still exists following dramatically increased plant growth and improved water quality from 2007-09.
    - Work with the Upper Rum River Water Management Organization (URRWMO), ACD, municipalities, and the MPCA to complete a TMDL if an impaired condition persists.
- Work cooperatively with other agencies and communities on TMDL's for any additional waterbodies that are discovered to be impaired.
- The LRRWMO permitting program requires water quality management of development projects meeting the Nationwide Urban Runoff program guidelines. All of the member municipalities have approved Storm Water Pollution Prevention Plans with the objective to improve water quality. Stormwater standards have been developed and are included as Appendix E.
- LRRWMO will continue collecting data to be able to complete a trend analysis. As outlined in Table 3, Appendix F, if the decline continues for a second year the LRRWMO will work with the ACD and other regulatory agencies on reviewing the situation and determine an appropriate action.

Objective: Monitor dissolved pollutant concentration in the Rum River

Action:

- The LRRWMO will continue monitoring for conductivity and chlorides until state standards are exceeded. At that time, consideration will be given to involvement in the Metro Chloride Project.

Objective: Monitor total suspended solid levels in the Rum River

Action:

- The LRRWMO will continue monitoring TSS at County Road 7 and at the Anoka Dam. The LRRWMO stormwater standards will be applied to projects requiring permits from the LRRWMO.

Priority Concern: Flooding and Stormwater Rate Control Concerns within the Watershed

Objective: Maintain consistent guidelines or minimum runoff control requirements for new development and redevelopment

Action:

- The LRRWMO has developed water quality, rate control, and volume control policies for new and redevelopment projects. Water quantity, quality management, and volume control is provided through the permitting program.

Priority Concern: Impacts of Erosion and Sedimentation on Water Resources

Objective: Prevent erosion along the banks of the Rum River contributing to sediment load within the Rum River system

Action:

- The LRRWMO will undertake a biannual tour of the Rum River to determine the location and extent of erosion along the Rum River and use the study to determine next steps to address this issue. This is coordinated through the municipalities and funded by the municipalities.

Objective: Encourage member communities to address the illicit discharge component of the NPDES Phase II permit

Action:

- Member communities shall undertake illicit discharge detection and elimination activities per the NPDES Phase II rules.

Priority Concern: Impact of Land Use Practices and Development on Water Resource Issues

Objective: Manage the sanitary sewer that serves non-sewered or undeveloped areas, particularly in both the cities of Andover and Ramsey

Action:

- The LRRWMO shall require all Cities to develop a wetland management plan on a case-by-case basis to address water quality, wetland, and habitat impacts of the proposed new development areas that will occur with the extension of sanitary sewer systems.

Objective: Manage land use changes within the LRRWMO from row crop agriculture to rural residential, which is expected to result in reductions of runoff volumes, sediment and pollutant loading when compared to agricultural uses

Action:

- The LRRWMO developed volume control standards for higher density development that may cause an increase in runoff volume and pollutant loads.

Priority Concern: Adequacy of Existing Regulations to Address Adverse Impacts on Water Resources

Objective: Create guidelines for wetland buffer standards

Objective: Maintain water control structures

Objective: Review of the member communities' regulatory programs for conformance with the LRRWMO requirements

Actions:

- The LRRWMO has developed, with the assistance of the Technical Advisory Committee, guidelines for LRRWMO wetland protection standards and Best Management Practices (BMPs).
- The LRRWMO requires local government units to inspect and maintain all water level control structures at least once every 5 years, in accordance with MS4 permit requirements
- The LRRWMO will undertake a review of the member communities' regulatory programs. This review will be done as part of the local water resource plan review for conformance with LRRWMO policies.

Priority Concern: Identification of Potential Problems which are anticipated to occur in the Next 20 Years based on Growth Projections and Planned Urbanization

Objective: Continue use and maintenance of ISTS systems that may impact the quality of groundwater

Objective: Monitor existing groundwater supplies and potential impacts on surface waters within the LRRWMO

Actions:

- Require member communities to implement and enforce a policy that ISTS must be installed in conformance with State and County regulations.
- The LRRWMO will work with ACD, Anoka County, MDNR, and other agencies to develop a plan to track ground water levels, trends, and water quality.

Priority Concern: Availability of Existing Technical Information to Manage Water Resources

Objective: Continue monitoring groundwater and surface water to track long-term trends on water quality and quantity

Actions:

- The LRRWMO will continue the surface water monitoring program with the Anoka Conservation District.
- The LRRWMO will work with ACD, Anoka County, MDNR, MDH, and other agencies to complete a groundwater capacity study to determine if the population can be supported by private wells. The LRRWMO recognizes the need to work with agencies outside of the LRRWMO as this issue transcends the LRRWMO boundaries.

Objective: Study hydrologic/hydraulic information needs to continue to be developed for the watershed

Action:

- The LRRWMO requires that member communities develop their local surface water management plans using industry-approved hydrologic/hydraulic models. The management plans must provide: subwatershed boundaries, indicate direction of flow, predict 100-year peak flows, and show location of discharge points at municipal boundaries.

Objective: Acquire funding

Actions:

- The LRRWMO will actively pursue grant opportunities to off-set costs to the member municipalities.
- The LRRWMO will add a budget item to meet the LRRWMO obligation for matching funds that may occur as part of future grants. The municipalities will apply for grants through the LRRWMO with the municipalities providing the match funds required.

Priority Concern: Education

Actions:

- Distribute educational material aimed at fostering responsible water quality management practices. Topics are anticipated to include:
    - Wetland Protection BMPs
    - Water quality monitoring
    - Groundwater quality and protection
    - Controlling invasive species
    - Water conservation and the water cycle
    - Proper hazardous waste disposal
    - Yard waste management
    - Agricultural BMPs
    - Pet waste disposal
    - Activities of the LRRWMO
- The LRRWMO will maintain or expand their website for water resource management information; include sample articles for local communities. This could be coordinated with the ACD's web-site.
- Make available Permit Requirements
- Solicit volunteers for water quality monitoring. This includes high school Biomonitoring of the Rum River
- Require member communities to develop a public education program as part of local plan development.
- Possible educational programs include newsletters, door hangers, catch basin stenciling, cable television, etc.

Priority Concern: Regulation

Actions:

- In cases where surface water impacts as defined in Appendix F Water Quality Standards the source of impacts transcend municipal boundaries, or the community is found to not be in compliance with this plan, the LRRWMO shall review such problems and provide direction to member communities for resolution.
- The LRRWMO recommends volume reduction of treated storm water whenever a development or redevelopment project increases storm water volume runoff, provided that past and existing

land use practices do not have a significant potential to contaminate the storm water runoff and the soil characteristics are suitable for infiltration, if proposed.

- Newly constructed storm water management basins that are constructed as part of private development shall be placed in drainage and utility easements dedicated to the member community.
- The LRRWMO encourages storm water pond design to include habitat enhancement and aesthetic features of the pond.
- The LRRWMO will work cooperatively with member municipalities and other agencies in the preparation of Total Maximum Daily Loads (TMDL) studies on the listed impaired waters in the watershed. The LRRWMO will assist from a technical basis in the development of an implementation program to meet the goals of the TMDL. Funding will be budgeted on a case-by-case basis in accordance with the Joint Powers Agreement of the LRRWMO.
- Water Quality Standards for Round Lake, Rogers Lake, Sunfish Lake, and the Rum River are presented in Appendix F. The LRRWMO will work with member municipalities and adjacent WMOs and Watershed Districts on the development of an action plan when water quality goals are not met. Budgets will be developed as needed and funded in accordance with the Joint Powers Agreement of the WMO.
- The LRRWMO will require member communities to develop and implement wetland protection BMPs or alternative measures. The LRRWMO worked with member communities and the Technical Advisory Committee through a public process to define the minimum requirements of these BMPs. This will be completed within 2 years of the adoption of this Plan.
- The LRRWMO will undertake the Local Government Unit (LGU) role for implementation of Wetland Conservation Act (WCA) Rules for the cities of Andover, Anoka, and Ramsey. This responsibility will remain with Coon Rapids or Mn/DOT.
- The LRRWMO requires that the design, installation and inspection of ISTS shall be in conformance with standards in compliance with Minnesota Rules Chapter 7080 for the cities of Andover and Ramsey.
- The LRRWMO shall require the submission and implementation of erosion and sediment control plans for the prevention of erosion and sedimentation from land disturbance activities of 1 acre or more in size unless the project is for agricultural purposes, as defined by the Municipal Comprehensive Land Use Plans These plans shall conform to the general criteria set outlined in the Minnesota Pollution Control Agency "Protecting Water Quality in Urban Areas," Erosion Control Ordinance, and the NPDES Construction Site permit. http://www.pca.state.mn.us/publications/wq-strm2-51.doc. As applicable, permits from other regulatory agencies must be obtained.
- The LRRWMO requires member communities to enforce all erosion and sedimentation control plans for projects requiring a permit from the LRRWMO.
- The LRRWMO requires member communities to adopt an erosion and sediment control ordinance. The ordinance should require measures similar to those of the MPCA Best Management Practices (BMPs). A model erosion and sediment control ordinance available on the MPCA's website at www.pca.state.mn.us/publications/wqstrm2-16b.pdf
- The LRRWMO requires member communities and involved agencies to manage the land use within the 100-year flood level as designated by the National Flood Insurance Program Flood Insurance Rate Maps (FIRM).

- The LRRWMO shall prohibit filling/encroachment into floodways as delineated in the FEMA studies.
- The member cities shall adopt, as a minimum, a floodplain ordinance that conforms to Minnesota Rules, Chapter 6120.5000.
- Wetland excavation for the enhancement of wildlife habitat will only be allowed if the project proposer applies for a LRRWMO approval and the excavation is in conformance with the Wetland Conservation Act as well as guidance from the Board of Water and Soil Resources, Department of Natural Resources, and US Army Corps of Engineers.

Priority Concern: Operation

Actions:

- Each member community is responsible for developing, adopting, and implementing a local water resource management plan in conformance with Minnesota Rules 8410 and the LRRWMO Plan.
- The LRRWMO will review the member municipalities Storm Water Pollution Protection Plans (SWPPP) and recommend sweeping of hard surfaced streets, including parking lots, a minimum of two times per year.
- The LRRWMO will require that member communities inspect storm water treatment basins at least every years and sump catch basins/manholes inspected in accordance with the requirements of the municipal SWPPP. Maintenance activities undertaken by member communities shall be included in the annual report to the LRRWMO.
- Regional detention areas receiving runoff from more than 1 acre of surface area will be identified by member communities in their Local Water Management Plans to comply with MS4 requirements
- The Anoka Conservation District shall act as a depository and coordinator for the collection of water quality data to assure consistency and comparability of data.
- The LRRWMO, with assistance from the Anoka Conservation District, will continue to conduct water quantity and quality studies to understand baseline conditions as outlined in Chapter III, A.2 and Appendix F. Where problems are identified, with the assistance from the ACD, the LRRWMO will take actions as outlined in Appendix F. The LRRWMO will oversee the studies since many of the issues cross municipal boundaries.
- The LRRWMO will provide guidance as requested about upstream projects, outside of the LRRWMO, that may affect water quality or flooding in the LRRWMO.
- The LRRWMO shall review local water management plans and evaluate their consistency with the Watershed Plan. All local water management plans shall be consistent with the LRRWMO Watershed Management Plan.
- Member communities shall have two years from the date of the Board of Water and Soil Resource's approval of this Plan to adopt their local water management plans.
- The LRRWMO shall provide an annual review of the Watershed Management Plan and its implementation to ensure it reflects the current goals of the cities, county, and ACD.
- Member communities shall prepare and submit an annual status report to the LRRWMO by January 1 of each year reviewing the status of their local plans, the status of the implementation

of their plans, and a review of the implementation of the policies that are outlined in the LRRWMO plan. This will be similar to the MS4 reports that some member communities are required to submit to the MPCA. The LRRWMO will create a template for this report in 2011 with the assistance of the ACD. Funding for this is listed on Table 9.

- The LRRWMO will actively seek partners to strive to be the lead agency on sustainability and contamination of groundwater supplies within the LRRWMO and will seek partners to enhance the scope of any study. When such information becomes available, including information on the location of ground water recharge areas, the LRRWMO will take into consideration these areas for the purpose of maintaining their recharge capabilities and protection of groundwater quality
- Each community will be responsible to perform maintenance measures to assure proper function of public drainage system, with the exception of County ditches.
- The responsibility for inspection maintenance or repairs on County Ditches shall be the responsibility of the Anoka County Highway Department, except for County Ditch 3/66 and Ditch 43 the responsibility of the City of Ramsey, per Joint Powers Agreement dated April 18, 2002. The primary reason the LRRWMO does not, at this time, see the advantage to managing any of the ditches (public or private) is due to lack of funding by the WMO.
- The LRRWMO shall encourage donations, grants, and in kind contributions of public and private organizations for plan implementation.
- The LRRWMO will work with the member cities in the maintenance and control of the Rum River Dam. An ownership/responsibility plan will be developed with the member cities.
- The LRRWMO will create a permit review checklist to accompany permit applications through both the LRRWMO and City process to minimize duplication of review efforts.
- The LRRWMO will determine an amount of performance sureties for stormwater facilities. This will be completed by July 1, 2012. A cost for this task is shown on Table 9.
- The LRRWMO will determine the appropriate contribution to a stormwater impact fund for projects that are unable to meet the infiltration requirements. The contribution will be based upon the expenses incurred by actual projects to meet LRRWMO standards, calculated per acre of impervious surfaces and be reviewed no less than every 2 years.
- The LRRWMO will create process and record-keeping methods for “banking” excess volume.
- Reducing discharge of sediment, nutrients and bacteria into the Mississippi River and its tributaries, along with the confinement of above ground tanks, will help protect this resource. Projects of this nature are a high priority for the LRRWMO

Goal: Abstraction/Filtration

Objective: Promote abstraction and filtration of surface water where feasible for the purposes of improving water quality and increasing groundwater recharge throughout the watershed.

Actions:

- Promote abstraction as the preferred method of stormwater management wherever feasible and appropriate.
- Develop methods to facilitate abstraction and infiltration, minimize risk and create awareness of its benefits.
- Discourage the creation of impervious surface adjacent to surface waters or in areas where infiltration is particularly ideal.
- Encourage the conservation of green space within development and creation of green space within redevelopment.

Goal: Ecological Integrity

Objective: Promote activities which maintain, support and enhance floral, faunal quantity and ecological integrity of upland and aquatic resources throughout the watershed.

Actions:

- Increase the ecological integrity of the environmental resources within MCWD.
- Incorporate considerations of ecological integrity into decision making and land use planning.
- Manage water quality and quantity to meet the needs of the ecosystems and water resources of MCWD.
- Utilize the best available scientific data to conserve high quality habitat and improve degraded habitat through projects and programs.

Goal: Water Quality

Objective: Conserve, maintain and improve aesthetic, physical, chemical and biological composition of surface waters and groundwater within the District.

Actions:

- Establish individual water quality goals for water resources based on both the realistic potential for the individual resource as well as its historic use to meet human and natural resource needs.
- Evaluate water resources using appropriate parameters to gauge progress towards meeting the established goals.

- Manage the impacts from land use, development and stormwater *runoff* to meet the established goals.

Goal: Public Health

Objective: Minimize the risks of threats to public health through the development of programs, plans and policies that improve the quality of surface and groundwater resources.

Actions:

- Manage water resources to meet the requirements of their designated use.
- Incorporate considerations of public safety and health into decision making.

Goal: Water Quantity

Objective: Maintain or reduce existing flows from drainage within the watershed to decrease the negative effects of stormwater runoff and bounce from existing and proposed development as well as provide low flow augmentation to surface waters.

Actions:

- Establish individual hydrograph and water quality goals for subwatersheds based on both the realistic potential for that resource as well as its historic use in order to meet both the human and natural resource needs of the waterbody.
- Manage resources to achieve balance between excessive flow and insufficient flow volumes.
- Maintain vigilance with regard to flooding, minimizing impacts to low flow while protecting the public from dangers of flooding.

Goal: Shorelines and Streambanks

Objective: Preserve the natural appearance of shoreline areas and minimize degradation of surface water quality which can result from dredging operations.

Actions:

- Preserve and enhance the natural appearance and function of shorelines and streambanks.
- Preserve and enhance wildlife, fisheries, and recreational resources of surface waters.
- Surface water quality and ecological integrity of the riparian environment should not be compromised as a result of stabilization practices.
- Assure that improvement of shoreline and streambank areas to prevent erosion complies with accepted engineering principles in conformity with Department of Natural Resources construction guidelines.
- Encourage and foster the use of bioengineering, lakescaping and conservation of natural vegetation as preferred means of stabilizing shorelines and streambanks.

- Discourage the use of beds and banks of waterbodies for the placement of roads, highways, and utilities.

Goal: Best Management Practices

Objective: Improve water quality by promoting best management practices (BMPs) requiring their adoption in local plans and their implementation on development sites.

Actions:

- Promote site design associated with land disturbing activities which minimizes impacts to water resources.
- Require stormwater management facilities to be included in land development projects where practical and effective.
- Manage stormwater and snowmelt runoff on a regional or subwatershed basis throughout the watershed to: a) promote effective water quality treatment, where feasible, prior to *discharge*to surface waters; b) limit developed peak rates of runoff into major surface waters to less than or equal to existing peak rates; and c) promote infiltration of both precipitation and runoff.

Goal: Education and Communications

Objective: Enhance public participation and knowledge regarding District activities and provide informational and educational material to municipalities, community groups, businesses, schools, developers, contractors and individuals.

Actions:

- MCWD will develop, approve and maintain a strategic education and communications plan which will be reviewed and evaluated annually.
- Effectively inform the general public, legislators, County Commissioners, and City officials in the eleven subwatersheds of MCWD about water resources management issues as well as MCWD projects, programs and rules using the most effective communications tools and tactics available.
- Target groups in which education can change behavior and positively affect the habits and activities of individuals in the watershed community.
- Use science-based information for discussions with communities about water resource issues and MCWD programs, projects and rules.
- Promote the most appropriate Best Management Practices (BMPs) for use within each subwatershed and communicate strategically about how to put them into practice.
- Continue to inform the general and community news media about programs, capital projects, issues, rules, controversies and crises with appropriate news releases, graphics and media relations.

Goal: Public Ditches

Objective: Maintain public ditch systems within the District as required under Statutory jurisdiction.

Actions:

- Regularly inspect the public ditches of MCWD and maintain as needed to adjust for changes within the regulatory scope and authority under Statute.
- Evaluate, consider, and where feasible incorporate ecological benefits into the improvement of public drainage systems.
- Upstream storage, detention and infiltration will be preferred to and evaluated in comparison to restoring drainage capacity relative to drainage maintenance or repairs.
- Drainage improvements and maintenance with localized benefits will be funded through assessment to the benefited properties and in most cases require a petition signed by the majority of the benefiting property owners.
- MCWD will seek to abandon ditches where appropriate and redefine ditches within the watershed as streams where natural conditions dominate in the context of State Law.

Goal: Wetlands

Objective: Preserve, create and restore wetland resources and maximize the benefits and functionality of wetlands to the watershed.

Actions:

- Achieve no net loss in the quantity, quality, and biological diversity of existing wetlands in the watershed.
- Increase the quantity, quality, and biological diversity of MCWD wetlands by restoring or enhancing diminished or drained wetlands.
- Avoid direct or indirect impacts from activities that destroy or diminish the quantity, quality, or biological diversity of wetlands.
- Mitigate historical impacts to wetlands by replacing or providing substitute wetland resources or environments as feasible.
- Promote competent administration of the Wetland Conservation Act within the watershed.

Goal: Groundwater

Objective: Protect and maintain existing groundwater flow, promote groundwater recharge and improve groundwater quality and aquifer protection.

Actions:

- Protect groundwater resources through coordinated efforts among appropriate agencies.

- Encourage infiltration as a preferred method of stormwater management in a manner consistent with source well protection areas; and avoid infiltration where such action may pose a threat to public health.
- Protect groundwater flow regimes and their relationships to surface water resources.
- MCWD will take groundwater quality impacts into consideration in its decision making.

Goal: Floodplains

Objective: Reduce the severity and frequency of flooding and high water by preserving and increasing the existing water storage capacity below 100-year flood elevations on all waterbodies within MCWD.

Actions:

- Preserve existing water storage capacity below 100-year high water elevations on all waterbodies in the watershed to minimize the frequency and severity of high water.
- Minimize development below 100-year high water elevations that will unduly restrict flood flows or aggravate known high water problems.
- Mitigate historical losses in floodplain volume and promote the conservation and restoration of floodplain habitat where feasible.
- Promote uniform and consistent application of floodplain regulation throughout the watershed.
- Promote the natural functions and benefits of floodplains.

Goal: Erosion Control

Objective: Control temporary sources of sediment resulting from land disturbance and identify, minimize and correct the effects of sedimentation from erosion-prone and sediment source areas.

Actions:

- Minimize, in area and duration, exposed soil and unstable soil conditions.
- Minimize disturbance of natural soil cover and vegetation.
- Protect receiving waterbodies and wetlands by retaining sediment at its source.
- Retain sediments from disturbed areas on site.
- Minimize off-site sediment transport related to land use.
- Minimize work in and adjacent to waterbodies and wetlands.
- Maintain stable slopes.
- Avoid steep slopes and the need for high cuts and fills.
- Minimize disturbance to surrounding soils, root systems and trunks of trees and shrubs adjacent to site activity that are intended to be left standing.
- Minimize the compaction of soils.

Goal: Regulation

Objective: Promote effective planning to minimize the impact of development and land use change on water resources as well as achieve watershed District Goals.

Actions:

- Conserve the water resources of the District by assuring compliance with District Rules in the performance of activities which affect water resources.
- Develop and apply regulatory standards that focus on results that assist MCWD in fulfilling its mission, goals and defined objectives.
- Require land use and development methods that minimize impacts to the environment and water resources.

Goal: Public Input

Objective: Solicit input from the general public with the intent that policies, projects and programs will address local community values and goals as well as protect historic and cultural values regarding water resources; strive to manage expectations; base decisions on an educated public; foster an educated and informed public within the watershed.

Actions:

- Allow citizens to voice their opinions or concerns for the record within the context of a public hearing or meeting; the MCWD Board of Managers will consider these opinions and concerns in its decision making.
- Appoint and utilize the MCWD Citizens Advisory Committee as a body representative of the general populace and sensitive to the desires and needs of the citizens within the MCWD.
- Take measures to engage communities and seek participation in District activities.

Mississippi Watershed Management Plan 2011-2021

Priority Concern: Water Quality: Protect and improve the water resources of the MWMO

Goal: Protect and improve the Mississippi River

Objective: Quantify MWMO's contribution to pollutant loading in the Mississippi River

Actions:

- Provide information and participate in meetings with federal and state agencies to set state water quality standards specific to big river systems
- Quantify each subwatershed contribution to pollutant loading
- Determine and prioritize subwatershed-specific MWMO Standards needed to meet state water quality standards
- Model water quality in the MWMO

Objective: Monitor the water quality of the river upstream and downstream of the MWMO's reach of the Mississippi River

Action:

- Collaborate with stakeholders to obtain and share data

Objective: Eliminate remaining combine sewer overflows

Actions:

- Provide feasibility studies and services to members with infrastructure improvements to reduce volume and rate of water leaving the land
- Fund infrastructure improvements when feasible

Objective: Work with appropriate agencies to limit resuspension of sediment and pollutants in the water column

Action:

- Model hydraulic and mixing characteristics and recommend a management strategy

Objective: Manage riverbanks to allow multiple uses

Actions:

- Identify and mitigate acute erosion
- Implement practices that improve habitat structure and ecosystem function

Goal: Protect and improve the quality of lakes and wetlands in the watershed

Objective: Quantify pollutant loading to each waterbody in the watershed

Actions:

- Delineate lake and wetland subwatersheds
- Quantify pollutant loading from each subwatershed
- Set MWMO Standards for each natural waterbody in the watershed

Objective: Reduce pollutants to lakes and wetlands

Actions:

- Collaborate with stakeholders to implement activities to reduce pollution
- Identify and mitigate acute erosion
- Implement practices that improve habitat structure and ecosystem function

Priority Concern: Water Quality: Account for water quality conditions upstream that impact the MWMO

Goal: Take a leadership role in protecting the health of the Mississippi River

Objective: Work with stakeholders within the Mississippi River basin to establish common goals to improve the health of the river

Action:

- Implement riparian BMPs that limit the transport of pollutants to the Mississippi River

Objective: Share information on efforts and successes to demonstrate the feasibility of meeting standards in a highly urban watershed

Actions:

- Develop and implement outreach programs
- Develop and implement training programs
- Present information on successful protection efforts at neighborhood meetings and local civic groups to share practical ideas and to promote similar activities and the efforts of MWMO

Objective: Partner with watersheds that manage headwaters discharging into the MWMO to help achieve the MWMO's water quality goals for the Mississippi River

Action:

- Coordinate with regional planning efforts to ensure that state and federal water quality standards set for upstream reaches and streams will be stringent enough to allow the Mississippi River to meet state and federal standards

Priority Concern: Water Quality: Participate in the development and implementation of TMDLs

Goal: Take an active role in TMDLs affecting the Mississippi River and the resources within the MWMO

Objective: Work with MPCA on TMDLs

Actions:

- Participate in a dialogue with member cities and MPCA staff on TMDLs to determine the MWMO's leadership and active partner roles
- Lead TMDL studies where the MWMO was identified to have a leadership role

Objective: Participate in the development and implementation of TMDLs

Actions:

- Provide information, attend meetings and review draft state water quality standards for water entering the MWMO
- Coordinate with agency TMDL assessment and planning

Priority Concern: Water Quality: Identify the role the MWMO will take in addressing soil contamination and groundwater quality

Goal: Engage in effective watershed management that does not adversely affect groundwater

Objective: Account for the effect of contaminated soils and groundwater when setting watershed performance standards or rules

Actions:

- Gather information on areas of contaminated soils and groundwater within the watershed
- Develop an incentive or cost-share program for landowners to assist with clean-up activities that enhance the overall watershed

- Ensure that databases that include data on location, type, pollutants of concern, and status of clean-up for contaminated sites within the WMO are complete and accurate

Objective: Account for the effect of contaminated soils and groundwater when planning capitol and infrastructure projects

Action:

- Incorporate contaminated soils investigation into capital improvement project planning

Objective: Monitor the quality of groundwater discharging into the Mississippi River

Action:

- Monitor the quality of groundwater reaching the Mississippi River

Objective: Manage areas of groundwater-surface water interaction (e.g. areas of recharge and discharge) with a heightened awareness of pollution potential between two systems

Actions:

- Provide assistance with sealing groundwater wells
- Identify areas of groundwater-surface water interaction
- Develop a groundwater-surface water interaction management plan for the identified areas

Goal: Protect, improve and conserve the groundwater resources that support surface and drinking water resources

Objective: Work with municipalities and stakeholders to promote groundwater conservation measure that includes a cost-share program for water use audits

Actions:

- Develop guidance and a cost-share program for water use audits
- Develop and implement an education and outreach program to promote water conservation in landscaping

Objective: Quantify the interaction of groundwater and any associated contamination within the WMO's natural resources

Actions:

- Identify areas of groundwater and contaminated soil interaction and areas of groundwater contamination
- Provide studies and data for a groundwater contamination management plan for the identified areas

Objective: Minimize unintended impacts to the Mississippi River and the local groundwater system resulting from new policies or program initiatives

Action:

- Identify any secondary resource impacts resulting from eliminating inflow and infiltration from sanitary sewer

Priority Concern: Water Quantity: Manage the causes and reduce the effects of flooding that impact the watershed

Goal: Prevent the flooding of streets and structures due to surface water runoff

Objective: Identify vulnerable areas and appropriate flood control projects

Actions:

- Map the stormwater storage and conveyance total capacity, full build out demand, and existing buildout demand
- Develop policies and programs with member organizations that encourage stormwater to be managed as close to the site as possible
- Identify vulnerable areas and appropriate flood control projects that the MWMO can help implement

Objective: Encourage flood control projects that include water quality treatment, habitat improvement and erosion control

Actions:

- Provide additional funding for flood control projects that are multipurpose in function
- Complete a feasibility study for a flood control project that reduces, surficial flooding, pressurization in the pipeshed, redevelops condemned residential lots and creates a neighborhood amenity

Objective: Acquire and share monitoring data to inform flood control decision

Actions:

- Gather data on high water levels during large storm events
- Evaluate monitoring data against predicted flood levels from regional models
- Present monitoring data and predictions of large storm event flood elevations to member organizations

Objective: Work with member organizations and other entities to manage drainageway routes

Actions:

- Identify areas where the existing natural landscape will serve drainage and filtration needs
- Provide example policies to member organizations to set policies that protect intended functions of drainage ways

Priority Concern: Water Quantity: Manage the causes and reduce the effects of drought that impact the watershed

Goal: Minimize the impact of drought conditions on environment, economics, infrastructure, health, and aesthetics

Objective: Monitor and engage in agency led water supply planning efforts

Actions:

- Attend water supply planning sessions
- Develop a drought response plan and/or assist member organizations in developing municipal drought response plans
- Monitor demand for water and address areas of wasteful processes through water use audits
- Attend water supply trainings and conferences

Objective: Promote and engage in policies, programs, and projects that encourage conserving water resources

Actions:

- Partner with municipalities and stakeholders to promote groundwater conservation measures
- Identify ways to conserve and reuse water for landscaping
- Develop guidance and cost-share program for water use audits

Objective: Restore localized storage and infiltration into the landscape

Actions:

- Develop volunteer participation
- Implement capital improvements and projects that restore localized storage and infiltration

Priority Concern: Monitoring & Data Assessment: Make decisions based on science and best available data

Goal: Assemble best scientific data

Objective: Collaborate with stakeholders to effectively monitor watershed resources

Actions:

- Coordinate and develop partnerships with other organizations and/or agencies
- Participate in the development of and revisions to models and databases
- Participate in the development of monitoring protocols

Objective: Monitor and compile environmental data on the watershed to make management decisions and evaluate progress

Actions:

- Develop a comprehensive monitoring plan
- Identify data gaps
- Gather data from other organizations and agencies
- Collect biological, physical and chemical data for the Mississippi River and key subwatersheds
- Monitor stormwater management practices within the watershed
- Collect data to support regulatory standards

Objective: Compile socio-economic data to inform program activities and policy decisions

Actions:

- Identify socioeconomic data needs
- Collect socioeconomic data

Goal: Process data to make it usable

Objective: Collaborate with stakeholders to analyze data

Action:

- Develop and apply an approach for data analysis

Objective: Analyze data to make and track science-based management decisions

Actions:

- Analyze trends in local data
- Incorporate information from regional and statewide sources in local analyses
- Develop methods to characterize the condition of watershed resources
- Determine whether regulatory standards are being met
- Use data to support reassessment of MWMO's Standards
- Inform prioritization of MWMO projects
- Understand hydraulic and mixing characteristics of the Mississippi Rier and major water discharges impacting the MWMO

Objective: Analyze socioeconomic data

Action:

- Understand connection between socioeconomic data and water resources

Goal: Share the data with other entities

Objective: Provide access to data

Actions:

- Make data available to the public
- Share data through federal, state and regional databases
- Prepare and distribute Annual Monitoring Report

Objective: Use data to track and evaluate the condition of water resources

Actions:

- Develop criteria for evaluating the effectiveness of MWMO's Standards
- Evaluate effectiveness of stormwater management practices
- Evaluate the long-term outcomes of projects, programs and management decisions

Priority Concern: Education Outreach: Provide resources and opportunities to build capacity and leadership and promote responsible stewardship of water and natural resources

Goal: Educate to increase the knowledge and awareness of the connections between land use and water quality

Objective: Develop and implement audience appropriate information, programs, materials and trainings for watershed constituents

Actions:

- Connect constituents to existing environmental information and activities
- Present locally relevant water resource information at meetings and events
- Support community-initiated environmental education efforts
- Draw attention to and interpret significant watershed features, landmarks and projects
- Create and conduct presentations and workshops for policy – and decision-makers and community leaders
- Provide technical training and guidance to public and private entities who conduct routine maintenance and construction activities

- Articulate the connections between resources and design standards (amongst municipal officials, developers, design professionals, etc…)
- Integrate watershed education into existing formal education structures

Objective: Build community leadership and capacity for water education

Action:

- Train and develop community leaders

Goal: Create and support opportunities for public participation and involvement

Objective: Provide opportunities for community initiated projects to be realized

Action:

- Conduct a community grant program

Objective: Provide opportunities for the public to be involved in MWMO projects and programs

Actions:

- Create and convene a Citizen Advisory Committee in the MWMO process (MWMO CAC)
- Connect volunteers to existing and new MWMO activities

Goal: Collaborate with agencies, partners and networks in developing education, outreach materials and stewardship activities to increase the reach and effectiveness of watershed education

Objective: Leverage MWMO expertise and funding

Actions:

- Identify educational needs of different audiences
- Identify shared program activities with member communities to help meet watershed education needs
- Create and promote new and existing workshops and training opportunities
- Partner with local entities to hold events and implement programs
- Seek funding from outside sources

Goal: Recognize and respond to educational needs and opportunities of the diverse communities represented in the MWMO

Objective: Customize education and outreach efforts for individual communities

Actions:

- Conduct assessments
- Develop an education plan the customize content, approaches, and communications
- Build community capacity and leadership by implementing custom education plan

Objective: Capitalize on opportunities to expand MWMO's reach into diverse communities

Actions:

- Develop ongoing and responsive relationships with key stakeholders and leaders
- Support and participate in community meetings, events and programs
- Develop new and adapt existing materials, training and programs

Priority Concern: Education Outreach: Create education and outreach connections within MWMO programs

Goal: Integrate education into MWMO programs

Objective: Plan and implement education as part of MWMO projects and programs

Actions:

- Identify and prioritize educational opportunities at the planning stages
- Support and implement educational elements
- Respond to needs of MWMO staff, board and committee

Priority Concern: Education Outreach: Enhance communications between MWMO and constituents

Goal: Increase awareness and knowledge of the MWMO

Objective: Increase the visibility of the MWMO by collaborating and partnering with others engaged in watershed management activities

Actions:

- Establish an exchange program with organizations that work on similar watershed issues and big river systems
- Participate in Upper Mississippi River regional working groups develop and maintain partnerships

Objective: Create and maintain organizational identity

Actions:

- Ensure that statements about the MWMO are clear and differentiate the MWMO from other local water-related groups
- Develops a communications plan for marketing

Objective: Document and disseminate MWMO accomplishments and activities

Action:

- Create and interactive map of the watershed that identifies and describes programs and projects and their locations

Goal: Provide water and natural resource information and data to the public

Objective: Document and disseminate information collected by the MWMO

Actions:

- Place assessments, reports and/or studies generated by the MWMO on MWMO website
- Present findings and MWMO work at professional forums and conferences

Objective: Interpret and make technical data and information available to non-technical audiences

Actions:

- Plan for and develop materials that are able to be understood by a broad audience
- Respond the requests by the public for assistance in understanding data and complex issues

Goal: Coordinate communication networks

Objective: Prepare consistent guidelines to represent the MWMO outwardly

Actions:

- Revise and update crisis communications plan
- Implement a branding exercise to more clearly define the mission, goals and objectives of the organization

Objective: Plan for making MWMO information available to constituents from different backgrounds, income levels, etc.

Actions:

- Identify and prioritize strategies for reaching MWMO's diverse public
- Customize development of general materials for particular audiences

- Identify which audiences are relevant to what projects and anticipate the need to develop supporting materials, provide translators and honor non mainstream communication normsion

Priority Concern: Ecosystem Health: Find ways to protect, create and enhance vegetated areas, springs, native plant communities, habitat, open space, and green infrastructure

Goal: Protect and restore ecosystems

Objective: Increase, improve and connect functional ecosystem within the watershed

Actions:

- Identify, inventory and prioritize land water ecosystems in the watershed
- Create and restore ecosystem function and structure in MWMO priority areas
- Identify and evaluate opportunities to integrate historic ecosystem function with urban stormwater management in MWMO
- Create opportunities for the public to help protect and restore ecosystems
- Increase public awareness of ecosystem structure and function
- Restore and protect natural areas through easements, buffers, acquisition and native plantings
- Create greenway systems that provide open space, recreational opportunities, and stormwater management
- Reestablish connections between existing natural areas by returning converted lands to native vegetation
- Partner with member organizations and other entities to identify and remove populations of invasive species
- Establish operations and maintenance procedures to assure the long-term effectiveness of acquired properties

Objective: Integrate ecosystem health throughout land use decision-making processes

Actions:

- Integrate ecosystem management into land use and infrastructure planning, operation and management
- Provide information and request that member organizations and other entities to develop management plans for public lands within the watershed
- Modify site development processes to consider ecosystem health at early planning stages
- Use of easements, buffers, land conservation and native plantings to restore and protect natural areas
- Provide information and request that member organizations and other entities to create greenway systems that provide open space, recreational opportunities, and stormwater management

- Identify a network of public lands to be managed to improve ecosystem health
- Identify opportunities to reestablish connections between existing natural areas by returning converted lands to native vegetation
- Educate local government and inform the general public about invasive species that environmental, economic or social risks
- Provide information about landscaping with native and noninvasive species
- Promote ecosystem benefits through existing regulatory and permitting processes

Priority Concern: Ecosystem Health: Protect more land that significantly impacts surface and groundwater resources and natural resources

Goal: Identify and respond to opportunities for protecting and acquiring land

Objective: Establish priorities and strategies for land conservation

Actions:

- Develop the land conservation program
- Create a uniform land-use map for all municipalities within the MWMO
- Develop an open space corridor map for the MWMO
- Balance economic reasonableness and ecosystem health benefits
- Identify and prioritize land available for acquisition, sale, trade, etc.
- Define a land conservation site evaluation methodology based on ecosystem factors
- Acquire land within the MWMO

Objective: Leverage land conservation funds to the greatest extent possible

Actions:

- Evaluate interest of other agencies/entities and feasibility of purchase
- Collaborate with member organizations and other entities and avoid duplication of activities
- Seek grants and partnerships with government agencies and non-profits

Objective: Encourage landowners to enter land into conservation easements

Action:

- Provide technical assistance to landowners regarding land conservation options

Objective: Section on regulations/enforcements

Priority Concern: Urban Stormwater Management (USM): Promote unique and innovative solutions for stormwater management in highly developed urban areas

Goal: Collaborate with member organizations to incorporate stormwater management solutions

Objective: Maximize opportunities for stormwater management early in the planning and development process

Actions:

- Review member's planning and development processes
- Incorporate strategies to slow runoff, to increase infiltration, and to increase filtration of stormwater into planning and development processes
- Incorporate lifecycle costs of stormwater strategies into planning and development processes
- Evaluate member's revised planning and development processes

Objective: Incorporate stormwater management into multi-functional corridors

Actions:

- Raise awareness of the potential to create multi-functional corridors
- Prioritize corridors that should be multi-functional
- Provide feasibility, planning and design services for creating new or retrofitting existing of multi-functional corridors

Objective: Assess current knowledge for stormwater management

Actions:

- Identify stormwater management practices which will protect groundwater on contaminated sites
- Identify stormwater management practices for abstraction, reuse, filtration and detention
- Identify methods to restore pre-development characteristics of soils
- Identify successful adaptive management techniques for stormwater
- Evaluate the pretreatment standard of 50% TSS capture

Objective: Evaluate the installed performance of stormwater management practices

Actions:

- Assemble a record of stormwater management practice locations within the MWMO
- Evaluate effectiveness of maintenance techniques to preserve stormwater management practice function
- Evaluate effectiveness of individual stormwater management practices most likely to be used in the MWMO

- Document, over time, the net effects of multiple stormwater management practices on a subwatershed

Goal: Publicize the value and benefits that stormwater can provide

Objective: Encourage stormwater to be thought of as a valued resource in an effort to increase local stewardship efforts

Action:

- Identify benefits associated with stormwater practices that create greenspace

Priority Concern: Emerging Issues: Develop new approaches that protect water and natural resources as conditions change and emerging issues arise

Goal: Identify emerging issues related to water and natural resources

Objective: Maintain and prioritize a list of emerging issues

Actions:

- Conduct assessments to identify emerging issues.
- Gather stakeholder input on key emerging issues
- Gather information (e.g. precipitation, snow, policy language etc.) that can be used to define the impact of an emerging issue
- Develop criteria for prioritizing emerging issues

Goal: respond to emerging issues related to water and natural resources

Objective: Fund research and development related to emerging issues and make the information available to others

Actions:

- Provide funding for statewide revisions to model and precipitation databases.
- Provide funding for research on urban watershed issues
- Share information on the effects of emerging issues on local water resources.

Objective: Keep Watershed Management Plan current to address emerging issues

Actions:

- Use a minor amendment process for emerging issues.
- Develop programs as necessary to address local impacts of emerging issues.

Goal: Support new policies and regulatory systems needed to manage emerging issues

Objective: Encourage the use of new and innovative infrastructure systems

Actions:

- Identify and pilot alternative systems, including energy, water supply, stormwater and wastewater treatment and reuse systems.
- Request policies that allow for innovative infrastructure systems
- Ensure effectiveness of stormwater management practices under changing conditions.

Priority Concern: Financial Responsibilities and Strategies: Develop a comprehensive financial framework to implement goals, strategies and actions of the plan

Goal: Utilize funds to actively protect and improve the quality and quantity of water and natural resources

Objective: Fund the evaluation, development, and use of new technologies and management practices

Actions:

- Stormwater management practices for highly urban settings.
- Retrofit sites with appropriate stormwater management practices.
- Create new and support training and certification programs.
- Support development of statewide revisions to stormwater model and precipitation databases.
- Provide economic analysis of stormwater management practice, e.g. return on investment or cost benefit
- Support staff attendance at water resource related trainings and certification programs

Objective: Fund activities primarily in the public sector. Activities in the private sector may be funded on a limited basis in unique and rare circumstances and only where there is demonstrative public benefit

Action:

- Select public sites for projects within member communities.

Objective: Fund community initiated stewardship activities

Action:

- Identify potential community projects

Objective: Fund activities outside of the watershed that impact water and natural resources of the MWMO.

Action:

- Identify potential upstream projects

Objective: Fund capital improvement projects

Actions:

- Provide operation and maintenance funding to MWMO projects.
- Conduct a feasibility study of areas most suitable for regional ponding in MWMO
- Provide funding for diagnostic, feasibility, and design expertise for Member Grants and capital projects.
- Reassess and maintain a five-year capital and financial plan.
- Provide funding for new office building

Objective: Fund land conservation

Action:

- Purchase land for new offices

Objective: Grant funds to projects that surpass regulatory standards requirements

Actions:

- Use MWMO Standards and design guidelines as a baseline for funding.
- Create financial incentives that support the MWMO minimum standards and move projects toward meeting the MWMO's maximum resource-based standards and design guidelines.

Objective: Fund approaches that protect and minimize the impact of emerging issues on water and natural resources

Priority Concern: Financial Responsibilities and Strategies: Maintain a funding strategy that is effective, efficient and transparent

Goal: Leverage MWMO funding and staff expertise from other sources

Objective: Collaborate with other entities to carry out program activities

Actions:

- Seek grants and partnerships providing cash or in-kind contributions.
- Apply for matching grants for restoration projects along the Mississippi River
- Identify and implement stormwater management practices for highly urban settings
- Provide financial incentives for creative approaches to addressing stormwater runoff quality and quantity.

- Fund community initiated stewardship activities.
- Partner with agencies whose boundaries extend beyond the MWMO whose activities will benefit the MWMO.

Goal: Use funds in ways that are fiscally responsible and provide public benefit

Objective: Be accountable to the taxpayers and member organizations of the MWMO.

Action:

- Report spending activities.

Objective: Involve the public and member organizations in major funding processes

Actions:

- MWMO CAC Review
- Review and coordinate the budget process with member organizations and partners.
- Provide clear direction and parameters for prioritizing Member Grant and capital implementation funding.
- Fulfill statutory reporting requirements.

Objective: Evaluate cost benefit of MWMO program expenditures

Action:

- Revise evaluation metrics for program areas

Goal: Expend administrative funds on activities that increase the effectiveness and efficiency of personnel

Objective: Carry out annual work planning within the MWMO

Actions:

- Develop a framework for annual work planning within the MWMO.
- Efficiently and effectively manage office administrative processes to maximize people's time/productivity

Ramsey-Washington Metro Watershed Management Plan 2006-2016 amended 2007

District-Wide

Priority Concern: Water Quality

Priority Concern: Provide for Flood Control

Priority Concern: Achieve Healthy Ecosystems

Goal: Maintain or improve the quality of surface waters to meet or exceed water quality necessary to support RWMWD designated beneficial uses

Goal: Maintain or improve the quality of surface waters to meet or exceed water quality necessary to support RWMWD designated beneficial uses

Goal: Ensure that the watercourse and banks of Willow Creek are stable to minimize erosion and sediment problems

Goal: Meet MPCA's proposed shallow lake criteria for total phosphorous, chlorophyll a, and Secchi disc

Goal: Protect the public from flooding through measures that ensure public safety and prevent inundation of occupied structures.

Goal: Management the ecosystems associated with watershed projects and programs to achieve the characteristics of healthy urban ecosystems

Goal: Achieve healthy urban ecosystems through restoring and enhancing natural habitat conditions and aesthetic value where appropriate

Actions:

- Inspect stability of creek channel and banks and implement structural improvements and habitat restoration projects to address identified streambank erosion, gully erosion, and other stream degradation problems
- Monitor in-lake water quality on all District lakes to evaluate achievement of lake goals
- Implement or continue subwatershed outlet monitoring to measure subwatershed outlet monitoring to measure subwatershed pollutant reduction performance
- Conduct biomonitoring surveys that examine wetland, stream and lake habitats

- Inspect and maintain District improvements
- Implement BMP cost-share program for private and public installation of BMPs in the subwatershed
- Implement District rules for stormwater runoff volume control, rate management, and erosion control
- Implement habitat restoration projects and provide continued maintenance of habitat improvement projects
- Complete flood management modeling and studies as needed to identify potential flood prone areas and identify solutions to protect residences, businesses, and public infrastructure
- Continue intergovernmental coordination and collaboration for groundwater studies as needed to sustain quality groundwater resources
- Implement public information and education program directed at multiple audience groups that includes: education events, K-12 watershed education, public education and outreach, city collaboration and support, and metro education support
- Implement research projects as needed to support the District program and collaborate with other research organization to complete watershed management and BMP research
- Manage District organization and operation effectively by providing effective and qualified staff, efficient office facilities, operational expenses, services and equipment, Board and staff training, planning support, and accounting and audit services

Willow Creek Subwatershed

Actions:

- Prepare a Lake Status Report for Willow Lake and feasibility studies for identified improvements needed to maintain or achieve identified water quality and ecological goals for Willow Lake
- Implement projects or programs determined to meet feasibility criteria

Kohlman Creek Subwatershed

Action:

- Collaborate with City of Maplewood on the maintenance and improvement of the Beam Avenue Pond (Markham Pond), if found beneficial for Kohlman Lake water quality

Kohlman Lake Subwatershed

Actions:

- Complete feasibility study for dredging Kohlman Lake
- Implement improvements identified in the Phalen Chain of Lakes SLMP, as refined by recent feasibility studies, the Kohlman Lake TMDL, and the cost-benefit analysis – possible improvement projects include lake macrophytes study, carp control, sediment inactivation,

dredging, direct watershed drainage area BMPs and education program, Kohlman Basin wetland enhancements, shoreline management study and restoration

- Monitor Kohlman pipeline flow at County Road D to insure continued flow capacity. Coordinate with Maplewood to address any developing issues

Twin Lake Subwatershed

Actions:

- Prepare a Lake Status Report for Twin Lake and feasibility studies for identified improvements needed to maintain or achieve identified water quality and ecological goals for Twin Lake
- Implement Twin Lake projects or programs determined to meet feasibility criteria
- Continue to work with Mn/DOT and Little Canada to develop flood protection plans for Twin Lake

Gervais Creek Subwatershed

Actions:

- Prepare Lake Status Reports for Round Lake (Little Canada) and Savage Lake and feasibility studies for identified improvements needed to maintain or achieve identified water quality and ecological goals
- Implement Round Lake (Little Canada) and Savage Lake projects or programs determined to meet feasibility criteria
- Continue to coordinate with DNR and Little Canada to improve habitat in Gervais Mill Park and maintain the urban fishing pond status
- Maintain the District Office building and landscape as an education and BMP demonstration site
- Continue Owasso Basin Proprietary Device monitoring as needed to complete research study of water quality benefits and performance

Gervais Lake Subwatershed

Actions:

- Continue coordination with the Gervais Lake Association to address concerns about lake management and conditions.
- Implement a shoreline management study and assist homeowners with lakeshore restoration to enhance lakeshore native habitat.
- Implement improvements identified in the Phalen Chain of Lakes SLMP as refined by recent feasibility studies – lake macrophytes study, and carp control.

Keller Lake Subwatershed

Actions:

- Implement a shoreline management study and assist homeowners with lakeshore restoration to enhance lakeshore native habitat
- Implement improvements identified in the Phalen Chain of Lakes SLMP, lake macrophytes study, and shoreline management study
- Seek delisting of Keller Lake from the Minnesota Impaired Water List (303b List)

Lake Phalen Subwatershed

Actions:

- Continue coordination with the City of St. Paul Parks Department, the Minnesota DNR and other agencies and citizen organizations, to address concerns about lake management and conditions.
- Continue to collaborate with the City and neighborhood organizations for the restoration and maintenance of the Ames Lake project and Phalen wetland restoration.
- Implement improvements identified in the Phalen Chain of Lakes SLMP as refined by recent feasibility studies – lake macrophytes study, carp control, and direct watershed drainage area BMPs and education program.
- Complete a Lake Status Report for Round Lake (Maplewood) and a SLMP for Wakefield Lake and feasibility studies for identified improvements needed to maintain or achieve identified water quality and ecological goals.
- Implement Round Lake (Maplewood) and Wakefield Lake projects or programs determined to meet feasibility criteria.
- Complete TMDL Study for Wakefield Lake as required by the MPCA.
- Implement TMDL for Wakefield Lake

Beaver Lake Subwatershed

Actions:

- Implement improvements identified in the Beaver Lake SLMP and TMDL studies – continue lake macrophytes surveys and evaluate the need for plant management and implement direct watershed drainage area BMPs and education program
- Continue collaboration with the Maplewood Nature Center in the management and improvement of the Nebraska neighborhood wetland and the Priory wetland system

Betline Subwatershed

Action:

- Implement water quality and flood control improvements listed in the Beltline CIP Feasibility Report and as recommended by additional analysis

Mississippi River Bottomlands Subwatershed

Actions:

- Collaborate with the City of St. Paul and Ramsey County on water management issues related to stormwater runoff from the Beltline Interceptor, Battle Creek, and Fish Creek Subwatersheds
- Coordinate with the Metropolitan Council and the MPCA on results and issues related to potential phosphorus discharge limits to the Mississippi River

Tanners Lake Subwatershed

Actions:

- Finalize the Tanners Lake Flood Emergency response plan and implement needed improvements
- Continue alum treatment system operations and maintenance
- Continue alum system monitoring and reporting as required by current and future NPDES permit

Battle Creek Lake Subwatershed

Actions:

- Prepare and implement Battle Creek Lake TMDL study as required by MPCA
- Design and implement Weir Drive flood protection project in collaboration with the City of Woodbury

Battle Creek Subwatershed

Action:

- No subwatershed-specific projects/programs are identified for this subwatershed; District-wide projects and activities will be implemented in this subwatershed.

Blufflands Subwatershed

Action:

- No subwatershed-specific projects/programs are identified for this subwatershed; District-wide projects and activities will be implemented in this subwatershed

Carver Lake Subwatershed

Actions:

- Identify and implement new infiltration projects with the cooperation of the City of Woodbury to achieve the lake management phosphorus goal for Carver Lake
- Implement additional water quality improvement projects identified in the Carver Lake SLMP if the infiltration strategy is not effective at achieving the phosphorus goal

- Collaborate with the City on improvements to existing water quality ponds if shown to be cost-effective and beneficial to Carver Lake

Fish Creek Subwatershed

Action:

- No subwatershed-specific projects/programs are identified for this subwatershed; District-wide projects and activities will be implemented in this subwatershed.

Rice Creek Watershed Management Plan 2010

Priority Concern: Education, Data and Information

Goal: Use education and outreach tools as an integral element within the many aspects of the operation of the District to credibly convey data and information, thereby increasing knowledge, awareness and the capacity for decision-making among the constituents of the District

Objective: Manage information and data collected by the District in an effective and efficient manner in accordance with applicable laws, obligations and best practices.

Actions:

- Develop a database for resource monitoring data, reasonably compatible with other environmental monitoring systems.
- Develop a comprehensive workflow database for administering the permit program, and make the database available internal and external to the District to enhance understanding of the permit program.
- Maintain Geographic Information System (GIS) data layers created by the District and create metadata to describe the origin of the data.
- Develop an effective system for recording and managing natural resource data gathered by the RCWD in an information system accessible to staff and partners.
- Develop and implement specifications for the collection of consistent data related to water resources and model development.
- Continue compliance with applicable laws and legal requirements related to the management of information and data and communications (e.g., Minnesota Government Data Practices Act).

Objective: Share infrastructure information developed through the Municipal Separate Storm Sewer System (MS4) program for District-owned facilities to educate the public about how water resources are managed, the programs and policies and projects of the District, and to encourage public involvement.

Actions:

- Develop and maintain a comprehensive inventory of District-owned facilities, their locations and characteristics and prepare a map showing these facilities. Create a database of these facilities which includes the intended function.
- Provide information on the web page about District-owned facilities and their importance in resource management.
- Collaborate with local governments to develop a toolkit of shared educational materials achieving a consistent and streamlined municipal education program to meet MS4 requirements.

- Develop and share information about the effectiveness of Best Management Practices.
- Continue to financially support the Northland NEMO program (Nonpoint Education for Municipal Officials) and the East Metro Water Resources Education Program.

Objective: Provide data in a manner which maximizes use by the public, share and distribute data and information in the most efficient manner possible, and minimize the duplication of data collection through cooperative data collection efforts and information sharing.

Actions:

- Develop surface water and ground water monitoring plans which identify specific goals and objectives and establish an effective long term monitoring strategy. Use these plans to convey information about District monitoring activities to stakeholders.
- Use the data collected by the District to develop interpretative reports and educational materials which convey resource condition and trends to the constituents of the District.
- Use emerging technologies including internet based applications and solutions to distribute data collected by the District, streamline the flow of permit related information, and conserve staff resources by improving the efficiency in the distribution of information.
- Implement internet based tools to disseminate information about the need for permits from the RCWD, the permit process, technical guidance related to permitting and to provide technical assistance to the development community.
- Utilize the RCWD website to provide access and distribution of data and information.
- Update MLCCS data in accordance with documented protocols when local inventories are performed.

Objective: Develop educational materials and programs for targeted audiences including local governments, citizens, educators and the development community.

Actions:

- Develop and carry out a formal (written) information and education program plan. Include in this plan a process for and the content of the District's Annual Report to BWSR.
- Support, use and adapt the Resource Teachers Program to provide an effective natural resources based curriculum to grades K through 12.
- Implement internet based tools to disseminate information about, manage and communicate information about the Resource Teachers Program.
- Offer schools service learning opportunities through restoration projects.
- Support, use and adapt the Blue Thumb – Planting for Clean Water™ Program as an outreach program to meet the water quality goals of the District and to help their cities meet their federal Clean Water Act mandates.
- Utilize the Citizen Advisory Committee to engage private citizens and inform them about resource management issues and the activities of the RCWD.

- Utilize a Technical Advisory Committee to engage local government and state and federal agencies and inform them about resource management issues, the activities of the RCWD and opportunities to partner.
- Develop, conduct and sponsor workshops, participate in speaking engagements, and prepare press releases as a component of the educational efforts of the District.
- Consider a district-wide signage campaign for streams or other similar resources.

Objective: Encourage landowners and cities to improve water quality, reduce runoff volume, and enhance ecological systems through the use of cost-share programs.

Actions:

- Encourage fully developed communities to improve water quality using a targeted education program and sharing the cost of BMP implementation. Support, use, and adapt the Urban Stormwater Cost Share Remediation Program as an outreach program to encourage cities to install BMPs within developed areas to remediate the effects of development on water quality and the volume of runoff.
- Encourage individuals to implement water quality improvement practices at their homes and businesses, using education and cost share for the implementation of BMPs. Support, use, and adapt the Water Quality BMP Cost Share Program as an outreach program to encourage citizens to install BMPs for the purpose of improving water quality and reducing the volume of runoff.
- Evaluate the need for and implement additional cost-share programs to provide incentives to landowners and others responsible for resource management.

Priority Concern: Lakes

Goal: Manage lake systems for their ecological and community value, in a manner consistent with user expectations and technically achievable goals and the resources available for preservation, maintenance and restoration.

Objective: Utilize and engage citizens to promote sustainable stewardship of lakes.

Actions:

- Implement a District-wide user perception survey of lake water quality which includes information about recreational use suitability.
- Continue Citizen Assisted Monitoring Program efforts with adequate and well-trained volunteer staff.
- Regularly recognize the contributions of citizens through certificates and / or annual gatherings.
- Support the formation and operation of lake associations.

Objective: Collaboratively manage lakes and shoreland resources, by empowering lake associations, lakeshore residents and cities, and engaging state agency management efforts.

Actions:

- Use special purpose management districts (e.g., Water Management Districts) and other funding tools to provide for localized financing for lake related projects and programs.
- Evaluate the need for implementation of a Lake Surface Water Management Program and other cost-share program(s) for the establishment of natural buffers, watershed projects, or bank stabilization, establishment buffer strips and similar resource management, restoration, maintenance and rehabilitation projects.
- Use lake management plans as a tool to cooperatively manage lakes with interested cities, counties and other potential resource management partners.
- Share lake and sub-watershed boundaries, developed by the RCWD with the Minnesota Department of Natural Resources Lakeshed effort.

Objective: Develop attainable lake water quality targets, while recognizing water quality standards developed by the State of Minnesota and natural year-to-year variability in water quality

Actions:

- Develop, in partnership with the State of Minnesota, TMDL studies for lakes identified as impaired.
- Explore the concept of developing a watershed based TMDL for addressing impairments for lakes within the District.
- Develop a schedule for the implementation of lake management plans for lakes placing priority on those lakes currently meeting designated uses.
- Use results of “Data and Information” actions to identify goals for lakes where data currently are not available.
- Periodically review and assess lake classifications and make changes where necessary, in coordination with affected local government units.

Objective: Promote and foster activities, which result in sustainable, healthy, aquatic eco-systems.

Actions:

- Develop and implement a plan to address invasive species that are detrimental to aquatic life.
- Re-establish native aquatic plant communities where appropriate.
- Identify alternatives and implement sustainable watershed based practices to manage lake systems affected by high sedimentation rates.

Objective: Manage lake levels in a manner which enhances ecological integrity and function (e.g., shallow lake systems) and acknowledges the effect of water levels on agricultural drainage and flooding.

Actions:

- Evaluate the feasibility of removing or enhancing the operation of water level control structures originally established for the purposes of potable water supply, recreation and other intended benefits, to provide greater system wide ecological benefits.
- Obtain basic information about the temporal variability of lake levels throughout the District, supplementing the efforts of the Minnesota Department of Natural Resources.
- Actively plan, implement, and operate district facilities to manage lake levels to protect riparian properties from flooding and excessive shoreline erosion.
- Develop policies and/or regulations necessary to address landlocked water bodies.
- Develop, research and understand the relationship between water levels and undesirable fish species population dynamics. Use this information when developing lake-specific management plans and in assisting with achieving lake management goals.

Priority Concern: Wetlands

Goal: Manage wetlands in a manner which improves diversity and ecological integrity on a district-wide basis, consistent with the Wetland Conservation Act and local opportunities for preservation, enhancement, and restoration, while balancing multiple resource issues.

Objective: Manage wetland resources using the flexibility afforded by state and federal rules, including the development of Comprehensive Wetland Protection and Management Plans and Special Area Management Plans.

Actions:

- Coordinate and collaborate with affected municipalities and the Technical Evaluation Panel to establish innovative Comprehensive Wetland Management Plans, to provide wetland management flexibility where needed because of unique landscape settings.
- Coordinate with the Army Corp of Engineers to evaluate the development of Special Area Management Plans upon the completion of a Comprehensive Local Wetland Protection and Management Plan.
- Identify the locations of high quality wetlands, and consider methods to preserve these wetlands throughout the District.
- Use wetland functions to determine and classify wetland degradation status and opportunities for wetland restoration throughout the District.
- Develop and use wetland replacement and credit ratios based upon wetland functions tailored to the specific needs of the District and local communities consistent with a no-net loss of wetlands.
- Develop and implement the use of standardized technical methods endorsed by the Technical Evaluation Panel to estimate and quantify wetland impacts, including lateral affects, as a result of project proposals.
- Evaluate the opportunity for regulatory uniformity across the District when developing wetland rules.

- Implement and operate a District wide wetland banking program which reflects accounts for differing replacement and credit ratios for state and federal permitting programs.

Objective: Manage wetlands and establish wetland management goals based on benchmark or reference and ecological condition.

Actions:

- Develop information to establish reference conditions for each wetland type within the District for the purposes of defining high wetland quality, wetland restoration goals and establishing replacement and credit ratios.
- Use reference wetlands to evaluate, modify and improve methods currently used to characterize wetland functions and values within completed and future Comprehensive Wetland Management Plans.
- Evaluate the need for a bio-monitoring program for high quality and other wetlands to better quantify existing conditions and assess the benefits of stormwater controls.
- Evaluate monitoring reference wetlands to determine hydrologic regimes and use data to refine wetland management efforts.

Objective: Provide incentives to private landowners to avoid wetland impact, minimize wetland impact, and restore wetlands, while acknowledging that wetland management and the monetary value of wetlands can be based upon differing value systems.

Actions:

- Develop maps and other tools which identify the locations of degraded wetlands and therefore opportunities for restoration.
- Quantify values for the change in runoff volume, nutrient loads, and the reduction in sedimentation for wetland restoration and enhancement, which in turn may be used as a financial incentive to landowners to manage wetland systems.
- Evaluate alternatives for establishing inclusive management boundaries along waterways that can provide multiple benefits including wetland functions and values, floodplain management, natural resource restoration, and open space.
- Sponsor and conduct workshops for local governments and landowners to communicate the opportunity for wetland restoration, clarify the process for wetland restoration and understand the potential financial implications of restoration.
- Cooperate with others to control the spread of exotic plants species, including purple loosestrife, within private wetlands and manage exotic species and weeds on district-owned lands.

Objective: Operate a wetland permit program as an integrated component of the District's development review program, both under watershed district regulatory authority and as the Local Governmental Unit responsible for implementing the Wetland Conservation Act.

Actions:

- Maintain a staff complement capable of executing the requirements of the Wetland Conservation Act.
- Coordinate with the Technical Evaluation Panel.
- Review the potential impact of District-initiated projects for Wetland Conservation Act permit requirements.
- Facilitate discussions with the Army Corps of Engineers on behalf of landowners and cities when in the best interest of the wetland resource.

Priority Concern: Drainage Systems and Waterways

Goal: Manage and operate drainage systems and manage and use waterways in a manner which recognizes the origin of the system (e.g., constructed vs. natural), the interconnectedness of resources, and present and future conveyance needs, while considering legally established rights.

Objective: Apply methods, procedures, standards and criteria for the maintenance, repair, restoration, rehabilitation, and improvement of drainage systems and waterways, while acknowledging that traditional drainage repairs, to the as-constructed and subsequently improved condition, are generally not going to be feasible or cost effective due to changes in land uses, wetland replacement obligations, and resulting excessive cost and assessments to benefitted landowners compared to the benefits.

Actions:

- Initiate a systematic undertaking of drainage system repair proceedings to develop a predictable mechanism for both present and future land uses for each of the legal drainage systems in the District.
- Consider the need to develop a classification system for drainage systems and waterways which recognizes the influence of human activities (e.g., a constructed waterway, an altered natural waterway or an unaltered natural waterway).
- Map waterways and drainage systems based upon the classification system.
- Evaluate standards and criteria for channel stability based on sediment transport and geomorphic considerations consistent with the waterway classification system. Consider the most appropriate method for implementing these standards if necessary.
- Define, identify, and monitor reference reaches including the use of indices of biotic integrity.
- Develop an index of biotic integrity goals for drainage systems and waterways.

Objective: Drainage system maintenance and wetland replacement activities can have both public and private benefits. Therefore the District will develop a funding system that considers both: 1) localized charges on lands contributing to the drainage system management costs or benefitting from the system; and 2) ad valorem levies on lands and taxpayers benefited at large by the District's management program.

Actions:

- Map the benefited areas and contributing hydrologic areas for all legal drainage systems.
- Develop methods and procedures to generally characterize the kind of benefit, the type of benefit, the entities accruing benefits, whether benefits can be quantified, and categorization of the probable project costs, for use at the discretion of the Board when evaluating the range of drainage system repair alternatives.
- Use implementation processes and funding mechanisms consistent with the anticipated benefits received.
- Re-evaluate and formalize processes and procedures for funding repairs including the use of ad-valorem funds for the trunk drainage system and the use of water management districts for localized benefits.
- The district will identify the level of drainage system maintenance on which landowners can depend, which in some instances could be less than the as-constructed and subsequently improved condition.
- Maintain and operate public drainage systems in a manner which recognizes the need to provide agricultural drainage to lands currently in agricultural production and the future need to manage runoff as a result of development while considering natural resource issues and concerns, until a system is transferred or abandoned.
- Identify and map land currently in agricultural production.
- Evaluate a range of repair alternatives to provide an adequate level of service to agricultural lands, while considering and planning for future conveyance needs.
- Investigate ownership strategies and develop an approach for the transfer of public drainage systems when converted municipal use as a storm sewer trunk system.

Objective: Manage public drainage systems in a manner that recognizes the need to provide a functional level of service to benefitted lands, within the context of local, state and federal laws and programs.

Actions:

- Identify waters of the state, which, are also public drainage systems.
- Lead efforts to evaluate water quality issues associated with public drainage systems in the watershed.
- Explore alternative means for best addressing habitat adjacent to public drainage systems, including but not limited to abandonment of the drainage system and establishing management corridors.
- Look for opportunities to establish voluntary rate control measures and other practices to improve drainage system water quality.
- Evaluate locations where waterway buffers are lacking and where implementation can improve water quality.

Objective: Develop a hybrid legal framework that includes Minnesota Statutes103E, 103D, and 103B that balances the legal interests of the Wetland Conservation Act and the Public Waters law, along with other laws that have placed boundaries on drainage rights.

Actions:

- Develop a budgeted, capital improvement program for public drainage system maintenance and repair.
- Adopt and implement standard operating procedures and policies for inspections and minor repairs and update periodically.
- Establish a contingency fund for emergency repair caused by natural (catastrophic) events or similar circumstances.
- Evaluate the ability to use a "hybrid" legal framework of Minnesota Statues 103E, 103B, and 103D to balance legal rights, drainage authority obligations, and compliance with conservation laws when considering drainage system activities.
- Develop Management Plans to integrate hybrid framework and land use planning
- Work with the Technical Evaluation Panel to fully explore and utilize alternative methods for evaluating wetland replacement obligations.
- Explore the conservation benefits of certain drainage activities, and consider a system of reasonable and fair compensation for conservation rights and other voluntary or incentive approaches.
- Resolve uncertainty surrounding definitions used to communicate activities associated with drainage, including the terms "official profile" and "hydraulic efficiency".
- Determine the as-constructed and subsequently improved condition for public drainage systems.
- Consider establishing a "repair profile" for a legal drainage system as a "negotiated profile" to balance competing private and public rights, benefits and interests.
- By policy, establish a "repair profile" for a legal drainage system, if the repair profile provides a lesser level of service for agricultural drainage than the as-constructed and subsequently improved condition.

Objective: The management of drainage systems and conservation programs within the legal authority of the District may involve impacts to landowner's rights. In such cases it may be appropriate to explore the conservation benefits of drainage related activities and consider a system of reasonable and fair compensation for the drainage rights and other voluntary or incentive approaches.

Objective: Recognize the landowner as the primary entity responsible for maintaining, managing, and operating private drainage systems and mitigating wetland impacts associated with private drainage.

Actions:

- Identify and map existing private drainage systems within the District when convenient, as a component of drainage system related activities.

- Complete legal review on a case-by-case basis to identify private versus public drainage systems, as a component of the Districts legal drainage system modernization program.
- Convert private drainage systems to legal (public) systems when conveyance functions are determined to be in the best interests of the District.

Objective: Minimize and address channel instability as a result of additional runoff due to land use changes, and promote ecological value as appropriate for the type of open channel.

Actions:

- Develop management goals for open channels within the District which incorporates their classification (e.g., a constructed waterway, an altered natural waterway or an unaltered natural waterway), geomorphic stability and condition, ecological integrity and importance as a conveyance system.
- Identify reference reaches or similar baseline conditions as a management target.
- Identify priority reaches for stream rehabilitation.
- Develop a method to assess response of natural waterways to changes in bank-full discharge.
- Implement feasibilities studies to define ways to address channel instability, bank erosion and promote ecological value.

Objective: Maintain legal right of entry and access along pubic drainage systems and formally document easements along public drainage systems as part of drainage system legal proceedings and the permit review process.

Actions:

- Identify and map areas where easements presently exist or are needed, and evaluate existing easement widths and adjust as necessary.
- Determine criteria for reasonable cost thresholds for easement acquisition.
- Explore acquisition of easements in existing conveyance locations, where reasonable and feasible.
- Establish drainage easements for new conveyance systems and acquire easements during the development permit process.

Objective: Inventory, manage, and provide access to public drainage system records to improve operational efficiency, make accessible common information to constituents and improve the basic understanding of public drainage systems.

Actions:

- Create an electronic (GIS) system for capturing, modernizing, and managing drainage system records.
- Maintain electronic versions of the as-constructed and subsequently improved and repair profiles, as established by the Board of Managers.

- Convert records on a case-by-case basis to an electronic format.
- Develop and update Geographic Information System (GIS) records pertaining to legal drainage system records and a component of the normal, work-flow process.
- Develop or use existing GIS data models to manage drainage system records.
- Seek funding external to the District for the modernization of drainage system records.
- Develop an automated reporting system for results of a formal inspection cycle.

Objective: Use consistent terms and definitions when describing the maintenance, repair, improvement and general management of public and private drainage systems. In support of the orderly and consistent management of public drainage systems in the District, it is the policy of the District to utilize the following definitions, to facilitate understanding and describe the work to be completed within repair reports and the need for maintenance activities, various public drainage system proceedings, and routine operation and maintenance.

Objective: Use the range of legal process and funding sources available to the RCWD to manage the public drainage and currently designated trunk system during the implementation of the hybrid legal framework, which includes Minnesota Statutes 103E, 103D, and 103B. Until implementation of the hybrid legal framework is completed for a public drainage system or currently designated trunk system, funding approaches may include: 1) the use of ad valorem funds to complete minor maintenance; 2) the use of proceedings as described within MS 103E and assessments to benefited lands when permits and/or wetland mitigation is required; 3) and various combinations of 103E, 103D and 103B for systems where a repair report has been adopted and implemented., and 4) Ad- valorem funds the maintenance, repair, rehabilitation, or restoration of the trunk drainage system.

Priority Concern: Excess Runoff

Goal: Minimize the potential damage to public and private infrastructure, private property, the land and other important water related natural resources caused by excess runoff and flooding.

Objective: Minimize, avoid and reduce flood damages through the use of a floodplain management program including analyses completed by the District, which is focused on identifying and assessing flood prone areas, characterizing flood damages and regulating the placement of structures within the floodplain.

Actions:

- Implement a District-wide survey and modeling program to develop 100-year floodplain boundaries and base flood elevations, consistent with the methods of the Federal Emergency Management Agency (FEMA).
- Consider the advantages and disadvantages of becoming a Cooperative Technical Partner with FEMA.

- Collaborate with cities and counties in the development of floodplain boundaries and base flood elevations.
- Engage in FEMA's Risk MAP (Mapping, Assessment, and Planning) Strategy.
- Submit Letters of Map Revision (LOMR) to FEMA & the MN DNR to include RCWD floodplains in FEMA FIRM (Flood Insurance Rate Map) panels.
- Use updates to FEMA FIRM panels and other credible floodplain information when establishing regulatory 100-year elevations for the District permit program.
- Coordinate with agencies to address water levels controlled by Peltier Lake and consider modification or removal of the control structure to achieve management objectives for the lake.
- Continue to monitor lake levels within the RCWD and use periodically to update frequency analyses to estimate the 1% chance elevation.
- Establish maximum allowable flow rates between cities based upon the risk of flooding.

Objective: Use the District rules and the permit program to mitigate the increase in the rate and volume of runoff resulting from land disturbance, land development, an increase in the amount of impervious surface, and other changes to the landscape.

Actions:

- Operate a permit and inspection program to regulate the rate and volume of runoff from development and land disturbing activities.
- Periodically update and evaluate trends in design standards and criteria, Best Management Practices and approaches, and effectiveness monitoring results, for possible incorporation into District rules.
- Periodically evaluate District rules related to stormwater control and evaluate ways to minimize costs and labor for all parties involved in the permit process.
- Consider implementing criteria and standards within the permit program, which protect waterways from erosion resulting from peak discharges and specifically, natural waterways used as stormwater outlets.
- Identify sites which fail to comply with District permit requirements.
- Develop a database to track volume debits and credits, in connection with a database for overall permit workflow and tracking.
- Periodically evaluate, inspect, document, and monitor facilities constructed under a permit issued by the RCWD.
- Test and when appropriate, implement innovative water quality improvement products, equipment, methods, and Best Management Practices to address sites with limited land area for conventional means to control the volume and rate of runoff.

Objective: Preserve and manage the storage associated with the 100-year floodplain along and within water-bodies to minimize the frequency and severity of flooding cause by high water.

Actions:

- Identify water-bodies providing flood storage important for reducing the frequency and severity of flooding.
- Update and maintain elevation – storage relationships for water-bodies providing important flood storage.
- Update and establish the normal water elevation and 100-year water surface elevations for water-bodies providing important flood storage. Identify the emergency overflow elevations and directions of flow for these water-bodies.
- Consider using financial incentives to landowners to preserve important flood storage areas, prior to receiving a specific development proposal or permit from the landowner.
- Maintain flood storage capacity along waterways of the District.
- Objective: Recognize the potential uncertainty associated with managing water resources and understand the implications of emerging issues including climate change, the use of monitoring data, and the interpretation of scientific and technical data, in the decision-making process.
- Consider providing financial support to revise current rainfall bulletins (e.g., TP-40).
- Consider incentives or methods to incorporate carbon sequestration into projects.

Objective: Foster and encourage the use of agricultural conservation practices and management practices, and the implementation urban BMP's, to reduce the rate and volume of runoff.

Actions:

- Continue aggressive inspection of Best Management Practices required by the permit program, evaluate effectiveness and modify and adjust methods to improve volume and rate control performance.
- Minimize erosion from construction sites and prevent sedimentation downstream.
- Cooperative with the Soil and Water Conservation Districts to identify lands which may benefit from soil and water conservation planning and implementation of best management practices to control erosion and stormwater runoff.
- Continue the Municipal Early Coordination Capital Improvement Program to develop and implement runoff control BMPs with communities.
- Identify target volume control needs by planning region, as a component of the District-wide modeling initiative.

Objective: Foster and encourage the use of regional Best Management Practices, to reduce the rate and volume of runoff.

Actions:

- Coordinate with municipalities to evaluate the feasibility of implementing regional BMPs and evaluation of their use to meet the District’s volume control and water quality requirements.

- Coordinate with municipalities to identify regional BMPs that may best be implemented by the RCWD.
- Implement the District's requirement for review and approval of city local surface water management plans.

Priority Concern: District Facilities

Goal: Construct, maintain and operate facilities owned or operated by the District in accordance with their resource management purposes and gage their effectiveness over time.

Objective: Manage district-owned facilities subject to Municipal Separate Storm Sewer System (MS4) program requirements consistent with permit conditions and facilitate data sharing among public entities within the District, subject to MS4 program requirements.

Actions:

- Develop and implement specific operation and management plans for District facilities, which reflect the goal of this management category.
- Annually inspect facilities owned by the District.
- Assess the condition of water resources infrastructure including inspecting a representative number (around 20 percent) of MS4 outfalls, sediment basins and ponds annually that are permitted by the District, for compliance with Local Surface Water Management Plan requirements.
- Develop general maintenance agreements for municipalities or other public entities to address district permitted stormwater facilities which have been turned over to them and are part of the municipal stormwater system.
- Obtain GIS data, maps, and MS4 related information from cities within the RCWD as a means to improve water resource data developed by the RCWD.
- Develop, create or use existing databases based upon standardized data models, to share information about municipal storm sewer outfalls, structural practices, and maintenance activities among MS4 permit holders, to increase operational efficiency.
- Participate in user and GIS groups focused on MS4 issues and stormwater data.

Objective: Manage district-owned facilities in accordance with the original design purposes, periodically review these purposes, and modify operation in consideration of current resource management objectives.

Actions:

- Inventory historical records to identify District-owned facilities and basic information about these facilities.

- Define the purposes, locations, operations conditions, and maintenance needs for District-owned and operated facilities and create a modern records management program
- Develop and implement a “Facilities Operations and Maintenance Plan”, which includes information about inspection frequency, infrastructure condition, maintenance requirements, maintenance and repair priority, and the funding needed for maintenance and repair.
- Create a database and map of District-owned facilities.
- Establish a dedicated maintenance and repair fund, and complete maintenance and repair in accordance with the “Facilities Operations and Maintenance Plan

Priority Concern: Open Space

Goal: Capitalize on opportunities to enhance water quality, reduce runoff volume and flood damages, and enhance ecological resources by using open space and greenways.

Objective: Encourage the use of open space in the design of district sponsored projects when multiple benefits are realized and the benefits are consistent with the mission of the District.

Actions:

- Identify open space priority benefits of interest to the District.
- Evaluate methods to incorporate these benefits into cost-share programs operated by the District.
- Incorporate open space into the design of District projects when the open space priority benefits can be realized.

Objective: Capitalize on the efforts of others responsible for managing open space to enhance their ongoing recreational programs, when these programs are related to the water and resource management effort and are consistent with District open space priorities.

Actions:

- Identify existing and planned city and county parks, open space locations, and greenway corridors along with the responsible department, and the appropriate management contact person and evaluate for opportunities for incorporation of these spaces into District plans and projects.
- Implement improvements to Rice Creek that serve mutual recreation and water resource benefits within the riparian corridor through publically controlled land including the former Twin Cities Army Ammunition Plant area.
- Collaborate with local governments to develop conservation and restoration plans for land and water resources with areas having unique value, such as a MN DNR Heritage Rank of "A/B" or better, sites of biodiversity significance of High or Outstanding, and/or highly rated Native Plant Communities.
- Evaluate the need to create and implement a Conservation and Restoration Program.

- Facilitate and / or support projects to remove and control the spread of exotic species such as buckthorn and purple loosestrife.
- Use Resource Management Plans developed by the District as a means to identify and protect open space areas serving multiple District established priority benefits.
- Assist in large scale efforts to improve the natural resource functions and recreational potential of open space and natural resource corridors.
- Seek opportunities to enhance habitat function and integrity, to benefit water resources and eco-systems.
- Preserve and enhance the natural vegetation existing in floodplain areas for fish and wildlife habitat and improving water quality.
- Provide regulatory incentives for the conservation of desirable undisturbed vegetation as sites develop.
- Continue to operate a cost-share program for creating and maintaining natural buffers along lakes and streams, when in the best interest of the District.

Priority Concern: Groundwater

Goal: Incorporate ground water considerations into the decision making process with mindfulness of the interconnectedness of water and water dependent natural resources.

Objective: Continue to evaluate and monitor County Groundwater Plans and participate in collaborative efforts to manage groundwater resources.

Action:

- Work with Anoka, Hennepin, Ramsey and Washington Counties on development and implementation of groundwater protection plans and programs. Assess a rule revision to address gravel mining activities and runoff volume control in the Anoka Sand Plain to protect groundwater from contamination and potential impacts from groundwater appropriations on surface water elevations.

Objective: Collaborate with other Metropolitan watershed districts with volume control requirements to develop a consistent message for managing groundwater concerns due to infiltration.

Action:

- Participate in inter-agency and / or inter-watershed task force to assess information on pollutants entering shallow groundwater through infiltration.

Objective: Achieve a better understanding of local surface and ground water dynamics and interactions.

Actions:

- Identify groundwater-dependent resources.

- Identify existing MN DNR groundwater monitoring wells / network within the RCWD and evaluate opportunities for collaboration.
- Consider augmenting the monitoring wells in conjunction with an overall monitoring program to gain a better understanding on inter-connectiveness of surficial groundwater and surface water resources in the District.
- Research and develop a pilot study for detailed hydrologic modeling at the site-scale for shallow groundwater dynamics.

Objective: Guide the use of stormwater infiltration BMPs in sensitive areas such as DWSMAs.

Actions:

- Provide information and guidance from Minnesota Department of Health to developers during the permit application process.
- Develop a panel of local member communities to assess the on-going success of source water protection and excess runoff reduction.

Shingle Creek and West Mississippi Third Generation Watershed Management Plan 2013

Priority Concern: Improve lake water clarity in all lakes in the watershed

Priority Concern: Educate residents on what they can do on their own properties to improve water quality in lakes and streams

Priority Concern: Restore wetlands that have been filled in, have been drained, or are dry

Priority Concern: Provide financial assistance to residents to install rain gardens or other improvements

Priority Concern: Increase the recharge of our groundwater

Priority Concern: Improve the appearance of streams like Shingle Creek or Bass Creek

Priority Concern: Meet state water quality requirements for lakes and streams

Priority Concern: Work with developers to get more pollutant reductions when property is developed or redeveloped

Priority Concern: Educate citizens, students, elected officials, and city staff about stormwater management and water quality issues

Goal: Water Quantity

Objective: Maintain the existing 100-year flood profile throughout the watersheds

Objective: Determine ecological low flows for Shingle and Bass Creeks

Actions:

- Maintain and update as necessary a calibrated hydraulic model of Shingle Creek and its tributaries

- Maintain rules and standards requiring new development and redevelopment to control the rate and volume of runoff discharged from their sites, and update those standards as necessary.
- Develop a sustainable water budget for each watershed and an action plan for management activities necessary for its achievement

Goal: Water Quality

Objective: As lake water quality improves and lakes are removed from the State's Impaired Waters list, implement management strategies to protect lake water quality. It is anticipated that Schmidt, Lower Twin, and Ryan Lakes will be removed in 2014.

Objective: Implement phosphorus and sediment load reduction actions sufficient to achieve de-listing from the Impaired Waters list for Bass, Eagle, Crystal, and Middle Twin Lakes.

Objective: Improve water clarity in the balance of the lakes by 10% over the average of the previous ten years.

Objective: Improve at least 30% of the length of Shingle Creek to meet Corridor Study and TMDL design standards.

Objective: Maintain nondegradation of all waterbodies compared to 1985 conditions.

Actions:

- Maintain and update as necessary calibrated P8 models for each lakeshed in Shingle Creek and the major drainage areas of West Mississippi.
- Maintain rules and standards requiring new development and redevelopment to control the total phosphorus and total suspended solids discharged from their sites, and update those standards as necessary.
- Conduct an intensive BMP assessment for at least 25% of that part of the watershed that developed prior to Commission rules in 1984, and achieve 25% of the recommended load reduction within 10 years of the analysis.
- Contribute 25% of the cost of TMDL capital implementation projects (up to $250,000).
- Pursue grant and other funding to implement improvement projects and feasibility studies.
- Prepare and implement an Annual Monitoring Plan and conduct monitoring necessary to evaluate water quality conditions and trends in the lakes and streams in the two watersheds.
- Evaluate progress toward achieving TMDL goals every five years following adoption of the respective Implementation Plans.

Goal: Groundwater

Objective: Infiltrate stormwater runoff from new impervious surface.

Objective: Identify opportunities for and implement projects to infiltrate runoff from existing impervious surface.

Objective: Work with the appropriate state agencies to incorporate groundwater assessment into the sustainable water budget analysis for each watershed

Actions:

- Maintain rules and standards requiring new development and redevelopment to abstract or infiltrate stormwater runoff from new impervious surface, and update those standards as necessary.
- Conduct an intensive BMP assessment for at least 25% of that part of the watershed that developed prior to Commission rules in 1984, and achieve 25% of the recommended volume reduction within 10 years of the analysis.
- Coordinate with the Minnesota DNR and other agencies to develop an action plan addressing surficial groundwater elevation issues in northern Brooklyn Park and the associated impacts on wetlands and Lake Success

Goal: Wetlands

Objective: Maintain the existing functions and values of wetlands identified in the Commissions' Water Quality Plan as high-priority.

Objective: Informed by the sustainable water budget study, improve functions and values of wetlands.

Actions:

- Adopt a wetland replacement sequencing policy.
- Identify wetland restoration opportunities and implement projects to restore wetland functions and values or to create new wetland acreage

Goal: Drainage Systems

Objective: Continue current Hennepin County jurisdiction over County Ditch #13

Action:

- Periodically reconsider the appropriate jurisdiction over County Ditch #13

Goal: Commission Operations and Programming

Objective: Identify and operate within a sustainable funding level that is affordable to member cities.

Objective: Foster implementation of TMDL and other implementation projects by sharing in their cost and proactively seeking grant funds.

Objective: Operate a public education and outreach program that meets the NPDES Phase II education requirements for the member cities.

Objective: Operate a monitoring program sufficient to characterize water quantity, water quality, and biotic integrity in the watersheds and to evaluate progress toward meeting TMDL goals.

Objective: Maintain rules and standards for development and redevelopment that are consistent with local and regional TMDLs, federal guidelines, source water and wellhead protection requirements, sustainable water yields, nondegradation, and ecosystem management goals.

Objective: Serve as a technical resource for member cities.

Actions:

- Annually review the budget and Capital Improvement Program.
- Maintain an Education and Public Outreach Committee (EPOC) that is charged with developing and implementing an annual education and outreach plan.
- Prepare and implement an annual monitoring plan and summarize the results in an annual water quality report.
- According to the schedules set forth in TMDL Implementation Plans, every five years evaluate progress toward meeting TMDL water quality goals, and adjust the Implementation Plans as necessary to achieve progress.
- Every five years or as necessary review the development rules and standards for adequacy and make revisions as necessary.
- Continue research projects on innovative and cost-effective stormwater management practices and technologies.
- Coordinate water resources management between the Commissions and the member cities.

South Washington Watershed Management Plan 2007

Priority Concern: Floodplain Management

Goal: Opportunistically manage floodplains for multiple, non-development uses

Objective: Maintain requirements established (adopted) for floodplain management, (including floodplain alterations, development within floodplains, minimum building elevations).

Objective: Manage floodplains in a manner that reflects the rate and volume of runoff from ultimate development.

Actions:

- Establish specific floodplain elevations at ultimate development conditions, and seek agreement from involved parties.
- Establish peak and base flow conditions for watershed streams.

Objective: Incorporate appropriate opportunities for multiple floodplain uses (e.g., greenspace, recreation and ecological enhancement).

Priority Concern: Stormwater Runoff Rate and Volume

Goal: Minimize existing and future potential damages to property, public safety, and water resources due to flood events

Objective: Maintain requirements established (adopted) for floodplain management, (including floodplain alterations, development within floodplains, minimum building elevations).

Objective: Manage floodplains in a manner that reflects the rate and volume of runoff from ultimate development.

Actions:

- Establish specific floodplain elevations at ultimate development conditions, and seek agreement from involved parties.
- Establish peak and base flow conditions for watershed streams.

Objective: Incorporate appropriate opportunities for multiple floodplain uses (e.g., greenspace, recreation and ecological enhancement).

Actions:

- Size stormwater conveyance and detention facilities in accordance with the need to protect infrastructure such as roads and utilities, and maximize safety.
- Identify and preserve critical areas necessary for the temporary storage of runoff.
- Identify and preserve critical areas necessary for the conveyance of stormwater runoff.
- Provide assistance (technical or other) for addressing deteriorating emergency flood control structures such as levees.

Objective: Protect natural waterways from channel instability induced by additional runoff.

Actions:

- Develop a design method / standard which can be used to gage the response of natural waterways to the rate of runoff.
- Design and carry out stabilization of the Newport Ravine. Design and construct stormwater BMPs for rate and volume control above the ravine. Construction activities may include controls within the ravine in cooperation with the City of Newport, upon a request by the City of Newport.

Objective: Along with cities, incorporate Emergency Response Planning into the stormwater management program for flood-prone areas.

Actions:

- Along with cities, develop an Emergency Response Plan.
- Set action triggers based on monitored lake water levels and Ordinary High Water Levels.

Priority Concern: Water Quality

Goal: Maintain, or improve, the water quality of wetlands and water bodies within the District

Objective: Implement a biological, physical, and chemical monitoring program for surface waters.

Objective: Manage lake water quality expectations consistent with a rapidly urbanizing landscape

Actions:

- Utilize monitoring data to establish an attainable range for lake water quality in District Lakes
- Establish numeric lake water quality goals and maximum allowable nutrient loading rates
- Prepare lake-specific management plans and, where appropriate, for priority shallow basins. (Consider implementing an overall chain-of-lakes study approach to developing lake management plans)

Objective: Use design criteria and performance standards to ensure appropriate best management practices: for mitigating development impacts to surface and groundwater resources

Actions:

- Use National Urban Runoff Program water quality improvement practices as the minimum requirement.
- Establish additional measures necessary to protect unique or high quality water resources within the District.
- Establish collaborative efforts for addressing nonpoint source pollution with regulated NPDES Phase II MS4* communities, or communities with impaired waters.
- Evaluate issues associated with the nondegradation of receiving waters from stormwater runoff.
- Develop a BMP selection process to assist communities in choosing BMP tools to mitigate stormwater impacts.

Objective: Use innovative methods and techniques to maintain and improve water quality when appropriate.

Actions:

- Evaluate a process to utilize nutrient trading in new developments to achieve maximum benefit in addressing District-wide water quality.
- Develop a cost-sharing program to encourage the use of innovative or demonstration technologies.
- Develop a Stormwater Utility Fee credit program and credit manual to reduce downstream impacts from urbanization.
- Monitor and evaluate the effectiveness of innovative and demonstration technologies.
- Replace Grey Cloud Island earthen dam and culverts to restore flow through the Grey Cloud Slough and improve water quality.

Objective: Recognize the inherent variability in water quality concentrations and loads when managing surface and groundwater resources.

Action:

- Use monitoring data to aid in establishing subwatershed annual load values reflective of variability in climate and land use.

Objective: Promote the use of best management practices in areas of agriculture land use.

Action:

- Participate by cost-sharing of programs and projects to support Washington Conservation District.

Objective: Promote and support efforts to improve water quality of lakes and streams within the District.

Actions:

- Participate in or lead efforts to develop Total Maximum Daily Load studies (TMDLs) or TMDL alternatives for impaired waters within the District.
- Support implementation of approved TMDLs or TMDL alternatives for impaired waters using existing District programs and authorities.
- Cooperate with river basin planning teams to improve the water quality of the St. Croix and Mississippi Rivers.
- Implement the Trout Brook Management Plan.
- Implement the O'Conners Creek and Lake Management Plan.
- Identify stream restoration opportunities.

Priority Concern: Wetlands

Goal: Manage the quantity and quality of wetlands within the watershed for their best function in a rapidly urbanizing environment

Objective: Use a functional assessment approach to define a wetlands best value allowing for multiple or singular use.

Actions:

- Establish a method and / or process for defining functional values.
- Inventory the wetland resource and analyze wetland functions and values.
- Develop a weighting system reflecting importance, based on the values of the District, for the managing wetlands.
- Periodically re-evaluate a subset of inventoried wetlands to assess for signs of impact to identified function and value.
- Inventory wetland functions and values in East Mississippi subwatershed in accordance with the draft Comprehensive Wetland Management Plan methods.
- Inventory wetlands in the former LSCWMO.

Objective: Maximize the preservation of wetlands providing critical flood control function.

Actions:

- Use hydrologic modeling to identify those wetlands providing important peak flow reduction and needing preservation to maintain flood damage reduction function.
- Complete technical analysis to identify the volume of storage by subwatershed as needed for ultimate development conditions.
- Evaluate legal options for preserving critical wetland storage areas.

Objective: Preserve high priority wetlands.

Actions:

- Identify functional values characteristic of high priority wetlands.
- Identify the locations of these wetlands within the District.
- Identify methods and processes for protecting and preserving high priority wetlands.

Objective: Participate in wetland permitting activities within the District, in support of the responsible local governmental unit (LGU).

Actions:

- Recommend requirements for buffer strips, inundation duration and bounce, and nutrient pre-treatment based on the draft Comprehensive Wetland Management Plan.
- Minimize the presence of invasive plant species and maximize ecological diversity in replacement wetlands within the district.
- Where possible, maintain wetland connections with adjacent undisturbed areas to promote connectivity and linear corridors.

Objective: Promote the enhancement or restoration of wetland basins.

Action:

- Establish a priority ranking for potential wetland restoration sites identified in the draft Comprehensive Wetland Management Plan.

Priority Concern: Natural Resources and Recreation

Goal: Participate in conservation or creation of key natural areas with respect to habitat, wildlife, or recreation

Objective: Promote and pursue land acquisition by the District for identified greenway corridors when the acquisition is also a component of runoff management or otherwise helps protect surface water resources.

Actions:

- Define thresholds and boundaries for the District's role in greenway implementation.
- Identify lands necessary for managing runoff that may be incorporated into greenway.
- Establish criteria for establishing greenway, with special importance given to managing runoff.

Objective: Coordinate placement of stormwater management practices such as ponds to minimize potential negative impacts to greenways or open spaces due to seasonal aesthetic concerns, or to minimize potential functional (fragmentation) issues with the landscape.

Objective: Identify and protect key natural areas with multiple benefits including groundwater recharge.

Actions:

- Integrate key natural areas into local plans for recreation or habitat improvement.
- Support efforts to prevent the loss of rare and unique species.

Objective: Manage land and water resources of the District to improve habitat for fish and wildlife.

Actions:

- Promote the use of native vegetation.
- Promote the use of management tools such as buffers and setbacks to preserve the quality of natural resources.

Priority Concern: Groundwater

Goal: Pursue a sustainable balance between surface water management, land use activities, and groundwater integrity

Objective: Promote the use of optimal infiltration areas which achieve reasonable reductions in surface water runoff volume which minimize risk to groundwater quality.

Actions:

- Identify surface water resources which may be dependent on adequate groundwater flow or quantity.
- Develop performance specifications for identifying the risk of impacts or degradation of groundwater such as may arise from infiltration practices.
- Monitor groundwater quality and condition for potential impacts from stormwater runoff and management activities.

Objective: Manage groundwater using a regional and local approach.

Actions:

- Coordinate with Washington County in managing groundwater in accordance with the County's 2003-2013 Groundwater Plan, including associated work plans and actions listed for watershed districts as team members or project partners.
- Collaborate on the development of existing and future groundwater studies, management plans, and wellhead protection plans and implement recommendations when applicable.
- Cooperate with Washington County in their efforts to mitigate for high nitrate concentrations present in the groundwater.
- Assess the cumulative impact to surface and groundwaters based on turf irrigation and similar practices.

- Evaluate the establishment of thresholds for groundwater depletion impacts above which the District will take action in surface water management.
- Quantify and manage road deicing impacts in regional groundwaters.
- Continue data collection to analyze groundwater levels as relates to surface water management such as infiltration practices.
- Implement the LSCWMO Karst Feature Inventory & Management Plan.

Objective: Increase awareness of karst features in South Washington County to help guide decisions for surface water management.

Actions:

- Develop and provide maps which illustrate known karst features in the watershed.
- Assist in studies to understand karst features and dynamics in the watershed.
- Prevent active karst regions from contamination through rule development and education.

Priority Concern: Erosion and Sediment Control

Goal: Facilitate erosion control and reduce impacts to wetlands and water bodies from sedimentation

Objective: Establish consistent methods, procedures and criteria for erosion and sediment control.

Actions:

- Provide technical and / or financial support to Washington Conservation District or suitable entity to provide construction site inspections for erosion and sedimentation control practices.
- Establish a template for erosion and sediment control plans that assist cities with the NPDES permit process.
- Evaluate the need for more stringent requirements for areas that drain to landlocked or semi-landlocked depressions and those areas identified as regional infiltration areas.
- Create, or otherwise adopt, a SWPPP template as a tool for use by the development community.
- Establish sediment loads as a basis for evaluating the nondegradation of surface waters in accordance with the NPDES MS4 permit program.

Objective: Manage erosion and sediment delivery from agricultural lands in accordance with allowable levels.

Actions:

- Coordinate and / or cost share with Washington Conservation District to pursue positive conservation measures for lands with traditional agricultural practices.
- Evaluate the sediment transport capability of natural channels and the delivery of sediment to these channels.

- Reasonably ensure the stability of natural waterways and drainageways.

Objective: Protect areas with high erosion potential or areas that are highly sensitive to erosion.

Actions:

- Adopt rules requiring buffers along bluffs and ravines.
- Restore and manage currently eroding areas within the watershed, specifically streambank and channel erosion.

Priority Concern: Education

Goal: Heighten the awareness of key constituencies within the District, sufficient to modify behavior to improve the recognition and implementation of District policies, programs and activities

Objective: Use emerging technologies and tools to inform target audiences of District activities and programs.

Actions:

- Implement a web page that includes conveying educational materials.
- Complete and implement a stakeholder involvement program.
- Web-enable databases and information collected by the District.

Objective: Maximize the use of shared education resources and joint participation in educational activities.

Actions:

- Provide funding to the Washington Conservation District or suitable entity to develop and implement education programs and materials to cities and Townships in the watershed.
- Initiate city collaboration regarding NPDES MS4 education requirements and use of Washington Conservation District resources.
- Pursue partnerships between public and private entities within the District, with an emphasis on schools, to implement educational programs and projects.

Objective: Structure education activities to mesh with defined target audience.

Actions:

- Develop an education plan that defines the target audiences.
- Organize education outreach opportunities for target audiences.

Objective: Use existing facilities and natural resources to apply education programs.

Actions:

- Elevate the public awareness of significant surface waters (e.g., Powers and Ravine lakes) and their habitat values.
- Identify high quality landscapes which may be used for education or interpretive activities.
- Pursue educational opportunities at stormwater demonstration sites or notable low impact development facilities in the District.

Objective: Continue water quality cost share program that encourages landowners in the District to implement management practices.

Priority Concern: Long Range Work Planning and Financing

Goal: Utilize District funds to initiate or support long range work plan projects which reduce flooding or otherwise benefit key District resources

Objective: Proactively coordinate with cities and others to effectively synchronize long range work plan projects thereby best value to watershed constituents.

Action:

- Initiate contact and dialogue with affected parties to begin coordination efforts with city's Capital Improvement Plans.

Objective: Maintain a flexible approach to long range work planning.

Action:

- The District's long range work plan will be periodically reviewed and adjusted as new information, circumstances or resources arise.

Objective: Use Special Purpose Districts and Stormwater Utilities as funding mechanisms.

Action:

- Include East Mississippi subwatershed in the assessment of stormwater utility fees.

Objective: Identify key District resources.

Action:

- Specify criteria generally used to identify key District resources; either surface waters, natural communities, or others as determined.

Objective: Develop and execute an annual work plan.

Priority Concern: Data Management

Goal: Collect and Manage data in a manner which maximizes the availability to and use by constituents of the District

Objective: Maintain data in an electronic or other suitable format enhancing the ease of distribution to others.

Actions:

- Post data in electronic format for downloading on the District web page.
- Require those providing services to the District to provide data and work products in an electronic format.
- Create an electronic bibliography of reports and other technical information pertinent to the District.
- Inventory, share and distribute computer models developed by the District.
- Serve as the source for FEMA boundary information and data.

Objective: Encourage the development of hydrologic, hydraulic and water quality models within the District using consistent methods, input parameters and procedures.

Actions:

- Establish modeling specifications for use by Cities and consultants working within the District.
- Define hydrologic parameter development methods.
- Collect data to characterize hydrology, waters, and regional assessment locations within the District.

Objective: Maintain the data collection program for District resources.

Actions:

- Define goals, objectives, and protocols for the data collection program (Monitoring Program Plan/Manual).
- Evaluate the data collection network and revise program to fill gaps or streamline efforts.
- Recognize the efforts of volunteers in collecting lake quality data.

Vadnais Lake Area Watershed Management Plan 2007

Goal: Prevent Flooding

Objective: Ensure new/re-development construction, minimizing flooding risk and loss of floodplain capacity

Actions:

- Floodplain and Shoreland Ordinances
- Low Floor Certification.

Objective: Manage new development and drainage alterations

Actions:

- Rate and control standards
- Landlocked basin standards

Objective: Maintenance of public ditches

Actions:

- Regular Inspection and Maintenance
- Repairs

Objective: Study and improve areas along Lambert Creek

Actions:

- Lower Lambert Creek Flood Reduction Study
- County Road E and Highway 61 Area Storm Water Study

Goal: Protect and improve surface water quality

Objective: Prevent further degradation of surface water

Actions:

- Storm Water Standards
- Storm Water Management Maintenance Standards

Objective: Improve the quality of surface waters

Actions:

- Numerical Standards for Lakes
- Development of SLMPs
- Promotion of Water Quality Improvement And Wetland Restoration/Enhancement Projects
- Management of Lambert Creek
- Source Water Protection and Emergency Response Planning
- Control Soil Loss on Small Construction Sites in Shoreland Areas
- Support and Coordinate TMDL Studies

Goal: Protect and improve groundwater quality and quantity

Objective: Promote management practices that protect recharge

Objective: Promote management practices that protect groundwater quality

Actions:

- Wellhead Protection Assistance
- General Permit for Small Appropriations

Goal: Protect and enhance wetland resources

Objective: Continue Wetland Conservation Act permitting

Action:

- WCA Permitting

Objective: Implement the VLAMWO Wetlands Management Plan

Action:

- Implement Wetland Protection Standards

Objective: Enhance or restore wetlands

Goal: Protect and improve waters for wildlife habitat and recreation

Objective: Protect and improve aquatic habitat

Objective: Protect and improve waters for recreation

Goal: Enhance public participation and stewardship

Objective: Assist and enable MS4s

Action:

- Assist and Enable MS4 Public Information and Education Efforts.

Objective: Encourage public participation

Action:

- Develop and Maintain a CAC or Vehicles for Public Input

Objective: Inform the public

Action:

- Keep the Public Apprised of VLAWMO Activities

Objective: Promote education and marketing to foster stewardship

Action:

- Develop and Implement an Education and Marketing Program to Foster Sustainable Behaviors.

Goal: Avoid duplications of management efforts

Objective: Minimize public expenditures

Objective: Avoid duplications of management efforts

Actions:

- Build on Existing Regulatory Program Efforts.
- Implement Standards through LWPs.

Objective: Utilize volunteers

Objective: Promote cost sharing

Objective: Coordinate data collection and management efforts

Goal: Analyze and use alternative funding sources

Objective: Continue to Analyze and use alternative funding sources

Goal: Make and enable informed decisions

Objective: Develop environmental data collection programs

Actions:

- Modify and Continue the VLAWMO CLMP.

- Promote Efforts to Collect Additional Environmental Data.

Objective: Water quality modeling

Actions:

- Complete Detailed Assessments of Data
- Water Quality Modeling

Goal: Improve communications

Objective: Involve the public in decisions

Action:

- Annual planning meetings

Vermillion River Watershed Plan 2005 amended 2008

Priority Concern: Surface Water Quality

Goal: Protect and enhance surface water quality in the Vermillion River Watershed

Objective: Work with the MPCA and other agencies to develop and implement Total Maximum Daily Load (TMDL) studies on all impaired water bodies, including, but not limited to those included on the 303(d) list

Actions:

- Actively participate in the TMDL process (e.g., study sponsorship, participation in public meetings, education, liaison activities, and assistance in seeking and providing funding).
- Determine appropriate responsibilities in implementing load reduction measures identified in TMDL studies.

Objective: Continue and improve the water quality monitoring program for the Vermillion River and its major tributaries.

Actions:

- Expand and enhance water quality monitoring in the Watershed.
- Collect, organize, and interpret water quality monitoring data.
- Continue to fund the Vermillion River Watch program.
- Collect information on the location of agricultural drainage installations (tile systems) and the effect of these systems on downstream waters.
- Monitor runoff from urban and agricultural areas, and determine the sources of pollutants of concern.
- Make water quality monitoring data available via website or other means and summarize data for public information purposes

Objective: Establish implementation programs on a subwatershed basis through establishing water quality goals and evaluating the effectiveness of management activities on affected water bodies.

Actions:

- Coordinate with cities, townships, and other agencies and groups to conduct an inventory of existing and desired uses for major water bodies within the Watershed.
- Analyze monitoring data, identify trends, identify data gaps, and target areas or subwatersheds with water quality issues.

- Develop a management framework for water bodies, based on existing statutory classifications, desired uses, existing conditions, and the priorities of the VRWJPO.
- Where water quality does not support desired uses, prepare and implement subwatershed plans to meet required water quality.
- Implement a program to establish buffers along major waterways wetlands, and other water bodies.
    - Inventory, map, and prioritize water features with existing buffers and those in need of buffers.
    - Determine appropriate buffer locations and widths according to: priorities within each subwatershed, type of waterbody, and adjacent land use.
    - Coordinate buffer configuration and acquisition efforts with the Dakota County Farmland & Natural Areas Program, the Scott County SWCD buffer program, and similar or related local, state, or federal programs.
    - Implement the buffer program through cost sharing with other voluntary programs and through requirement of local ordinances that mandate creation of buffers as part of approval of developments and land-disturbing activities

Objective: Monitor management of recreational lakes

Actions:

- Identify and prioritize recreational lakes that are to be the responsibility of the VRWJPO.
- Review the status of lake water quality and management plans on at least a five-year basis as part of VRWJPO planning.
- Work with local units of government to develop management framework that assigns roles and responsibilities for implementation of lake management projects.
- If problems or shortcomings exist, work with affected municipalities to address problems through regulation, education, and/or implementation of capital projects.
- Collaborate with Soil and Water Conservation Districts (SWCD), federal, State and local programs to cost share for lake shore restoration projects undertaken by landowners.
- Collaborate with cities and townships to monitor lakes, including participation in citizen volunteer monitoring efforts such as CAMP and CLMP.

Objective: Minimize water quality impacts (including thermal impacts) from land disturbing activities, including new development and redevelopment (urban/rural), road construction, agricultural production, and other rural uses.

Actions:

- Review federal, State, and local agency programs and designations related to water quality and identify where additions or changes are needed.
- Develop Watershed standards as a minor amendment to this Plan
- Develop and adopt official rules to implement the standards

- During the interim period between VRWJPO rule adoption (March 2007) and local government adoption of ordinances and controls, the VRWJPO will, in LGUs without Local Water Plans approved by the VRWJPO:
    - Work with local governments to revise/adopt their ordinances and other controls to incorporate the VRWJPO standards.
    - Assist the townships in developing a model ordinance that incorporates the VRWJPO standards.
    - Require that local governments submit proposed land alteration plans to the VRWJPO for review and comment, prior to the local government issuing a permit, if the plans include any of the following conditions:
        1. Variances from the local government's ordinances that affect surface water or impact surface water/groundwater interactions
        2. Diversions
        3. Intercommunity flows (to or from)
        4. Project site size of 40 acres or more
        5. Other proposed activities, as identified in the VRWJPO rules.
- Require city and township stormwater plans to include documentation adequate to ensure that urban runoff will meet VRWJPO water quality standards and not adversely affect the Vermillion River, its major tributaries and other waterbodies.
- Require cities and townships to develop stormwater plans and ordinances that ensure that the costs of constructing, operating, and maintaining stormwater management systems for new development are fairly allocated so as not to unduly burden local governments or the VRWJPO (development pays for itself).
- Monitor emerging technologies for protecting the cold-water fishery, including reducing thermal impacts to streams from stormwater runoff, and constructing or sponsoring construction of demonstration or research projects that show promise to protect the cold-water fishery.
- Develop and implement an incentive program to encourage implementation of additional (beyond what is required) BMPs.

Objective: Ensure stormwater management systems are maintained.

Action:

- Establish stormwater management system maintenance standards for cities and townships within the Watershed.

Objective: Monitor individual NPDES permits for point source discharges in the Watershed

Actions:

- Inventory individual NPDES point source permits in the Watershed. Identify the permits the VRWJPO should monitor.

- Review water quality standards for the identified NPDES permits. Determine if there are gaps between the permit standards and what the VRWJPO believes is needed to protect Watershed water resources.
- If there are gaps, develop recommendations and/or options for addressing the gaps/deficiencies, such as new water quality standards (e.g., thermal standards) to apply to these point sources.
- Review NPDES permit applications, renewals, revisions, etc. and comment on aspects of the permit application that impact the water resources in the Watershed. Suggest additional or modified standards to MPCA, when/if appropriate.
- Review annual monitoring reports of wastewater discharge facilities within the Vermillion River Watershed

Priority Concern: Surface Water Quantity

Goal: Manage the rate and volume of runoff entering rivers, streams, lakes and wetlands within the Watershed

Objective: Advance the understanding of the hydrology of the Vermillion River.

Actions:

- Monitor and document the surface water origins of Vermillion River flows, based on actual flows from treatment plants and River tributaries (Note: groundwater origins are addressed in Section 4.3 – Groundwater).
- Seek funding for monitoring network.
- Monitoring data will be used, when needed, to calibrate and refine hydrologic models.
- Develop and implement a program to monitor streambank stability along the Vermillion River and its major tributaries (North Creek, South Creek, Middle Creek, South Branch, and Etter Creek).

Objective: Minimize impacts of runoff from land disturbing activities including new development and redevelopment (urban/rural), road construction, agricultural production, and other rural uses and preserve a viable cold-water fishery by developing stormwater rate and volume control techniques

Actions:

- Provide funding for staff time or contracted services to provide oversight and guidance to assist developers in planning and designing onsite water management practices to meet VRWJPO standards.
- Develop Watershed standards as a minor amendment to this Plan
- Compile design and guidance documents for stormwater management within the Watershed.
- Develop and adopt official rules to implement the standards

- Require city and township stormwater plans to include documentation adequate to ensure that urban runoff will meet VRWJPO water quality standards and not adversely affect the Vermillion River, its major tributaries and other waterbodies.
- Develop and implement an incentive program to encourage implementation of additional (beyond what is required) BMPs

Objective: Mitigate and reduce the impact of past increases in stormwater discharge on downstream conveyance systems

Actions:

- Identify River corridor reaches for streambank erosion reduction projects, and restore damaged stream banks at priority locations, taking advantage of partnerships and cost-sharing whenever possible.
- Collaborate with Soil and Water Conservation Districts (SWCD), federal, State and local programs to cost share for streambank restoration projects undertaken by landowners.
- Complete a feasibility study that identifies sources of sedimentation in the Vermillion River and its major tributaries. Implement sediment removal projects based on results of feasibility study.
- Seek opportunities to retrofit existing developments with low impact development techniques, in partnership with cities and other units of government.

Objective: Reduce soil erosion (sheet and rill, wind erosion, gully and streambank erosion) on rural land to the recommended "T" value (the maximum rate of soil erosion that will maintain a high level of long-term crop production) or below by requiring implementation of rural best management practices (BMPs).

Actions:

- Promote participation in existing local, State, and federal agriculture and conservation programs [e.g., Environmental Quality Incentives Program (EQIP), Conservation Reserve Enhancement Program (CREP), Reinvest in Minnesota (RIM), MN Cost Share Program, Dakota County Farmland & Natural Areas Program, Conservation Security Program, Wildlife Habitat Incentives Program (WHIP), Farm and Ranch Lands Protection Program, Conservation Reserve Program (CRP)] and to identify rural areas needing the most assistance.
- Collaborate with other agencies to provide best management practices (BMPs) information in targeted rural areas.

Objective: Address known flooding/erosion problems that cross jurisdictional boundaries and address other boundary issues (e.g., inflows from Goodhue County into Ravenna and Douglas Townships, boundary issues with Gun Club Lake WMO, Lower Mississippi River WMO, and other WMOs, Lebanon Hills Park/Minnesota Zoo), and diversion/alteration of watershed flows in local water management plans.

Actions:

- Document intergovernmental hydrology.
- Establish a workgroup to study issues.
- Establish agreements and funding to address priority issues.

Objective: Address gully erosion problems in the Watershed.

Actions:

- Identify, inventory, and prioritize gully erosion problems in the Watershed (e.g., gully erosion within communities directly tributary to the Mississippi and Vermillion Rivers below the falls in Hastings).
- Work cooperatively with other government entities to address identified gully erosion problems in the Watershed.

Priority Concern: Groundwater

Goal: Protect groundwater quality and quantity to preserve it for sustainable and beneficial purposes

Objective: Continue monitoring and research on the Vermillion River Watershed groundwater system and development of groundwater management strategies.

Actions:

- Collaborate with other agencies to develop and implement a groundwater monitoring system along the Vermillion River to better understand surface water/groundwater interactions.
- Collaborate with other agencies to develop and implement a groundwater monitoring system throughout the Watershed to monitor changes in groundwater levels and contaminants.
- Assess nitrogen application rates in high infiltration areas of the watershed and strive for nitrogen application rate reductions, starting in the targeted areas.
- Collect information on the location of agricultural drainage installations and their effects on nitrate concentrations (and other pollutants of concern) in surface water and groundwater resources.
- Identify natural and unnatural conduits from the ground surface to the groundwater (e.g., Karst features) that have the potential to introduce pollutants into drinking water and develop management strategies to protect groundwater in these areas.
- Use collected data, identify needed research, and seek partnerships with other entities to develop and implement collaborative groundwater projects and programs [e.g., Hastings Area Nitrate Study (HANS) future phases, Vermillion River Headwaters Groundwater Study].
- Provide annual budget funding to leverage other funds and collaborate with other entities.

Objective: Avoid reductions in the base flow of the River and its tributaries, and reductions in "normal" water levels of lakes and wetlands, due to increased appropriations

Actions:

- Review current water conservation standards and practices and develop standards for the Watershed by 2005.
- Collaborate with other agencies to develop a water conservation guidance document and provide this guidance document to cities and agriculture-related agencies and groups.
- Implement an educational campaign to distribute Watershed water conservation standards and monitoring requirements to public and non-public water suppliers by 2006.
- Encourage public and non-public water suppliers to institute phased water conservation techniques through education, monitoring, and development and implementation of standards by 2008. VRWJPO will provide assistance to public and non-public water suppliers to develop standards by 2007.
- Develop a program to determine the most effective water conservation techniques for water supplies and local waters.
- Encourage development of local water conservation plans as required by the Minnesota Land Planning Act.
- Work with the Minnesota Department of Natural Resources (MDNR) and Southwest Metro Groundwater Workgroup to address well interference and water appropriation issues in the Watershed.
- If requested, provide education to local governments and residents regarding the hydrologic cycle, groundwater, groundwater/surface water interactions, groundwater recharge areas, and groundwater conservation.

Objective: Eliminate discharges of fecal coliform bacteria and minimize discharges of nitrate and other pollutants to groundwater and surface waters of the Watershed.

Actions:

- Encourage local governments and rural subdivision developers to install community wells and septic systems, when feasible, as a method to reduce pollution potential and increase groundwater resource management; include educating developers and local government representatives as a part of this action.
- Work with the Minnesota Pollution Control Agency (MPCA) and local governments to develop watershed standards and requirements for community wells and septic systems.
- Work with LGUs and others to develop an information piece about wells and septic systems to distribute to developers and well and septic contractors.
- Educate land use authorities about community wells and septic systems.
- Develop a model zoning ordinance to promote community wells and septic systems.
- Require communities to adopt and implement an inspection program for septic systems within the Watershed

- Support the counties' efforts to inventory failing and non-compliant septic systems and jointly prioritize areas for septic system upgrades.
    - Consider alternatives to upgrade non-compliant septic-systems, including:
        - Support of focused enforcement of ISTS requirements, in potential partnership with other units of government; and/or
        - Utilization or development of a cost-share or loan program to implement septic system upgrades within the Watershed, in potential partnership with the counties, Community Development Agencies, MPCA, etc.
- Support Minnesota Department of Health (MDH) development of standards for pesticide degradates and mixtures.
- Inventory abandoned wells in key/sensitive areas for potential groundwater contamination.
- Provide cost-share funding to seal abandoned wells in key/sensitive areas for potential groundwater contamination.

Objective: Use Dakota County Well Management database and Scott County well index database in plan and permit reviews, and provide education (e.g., landowner outreach).

Action:

- Assist counties in developing and distributing general well and well sealing information, or distribute existing information pieces, and identify opportunities to make landowners aware of general well information and well sealing programs

Objective: Implement or assist in implementing the VRWJPO's priority strategies and objectives from the Dakota and Scott County Groundwater Protection Plans by 2009

Actions:

- Identify priority strategies and objectives in both County Groundwater Protection Plans (e.g., defining groundwater recharge areas).
- Develop a strategy/action that supports or corroborates the implementation of County Plan objectives, but that does not duplicate County efforts, and implement these actions (e.g., model ordinance to protect recharge areas).

Objective: Support the Minnesota Department of Health (MDH) and other State, regional and local agencies in implementing wellhead protection programs and plans within the Watershed through policies and actions contained in this Plan.

Actions:

- Encourage communities in the Watershed to – within five years – assure that non-compliant Individual Sewage Treatment Systems (ISTS) located in wellhead protection areas are upgraded.
- Support the implementation of best management practices (BMPs) for wellhead protection areas.

Objective: Distribute (and develop or assist in developing, if necessary) educational materials or support programs that provide information on groundwater and how land use impacts our drinking water supply.

Actions:

- Develop (or assist in developing) and distribute groundwater protection areas information. The VRWJPO will use existing information and modify/create new information only if necessary.
- Research the issue of infiltration impacts on groundwater and develop a consistent approach to protecting areas sensitive to groundwater contamination.

Objective: Support and assist in groundwater research, regulation and education.

Actions:

- Collaborate with State and local agencies to provide groundwater monitoring data/information and use the data/information to develop targeted educational messages.
- Work with partners to develop a distribution strategy to get the right information to the right public and private sector groups.
- Encourage cities and townships to work with the Minnesota Department of Health (MDH) and Dakota and Scott Counties to periodically assess the vulnerability of groundwater used for drinking water supplies.

Priority Concern: Wetlands and Habitat

Goal: Maintain and enhance, where possible, the functions and values of existing wetlands and habitats within the Watershed.

Goal: Promote the restoration and/or creation of wetlands.

Objective: Require local governments to develop and implement Comprehensive Wetland Management Plans.

Action:

- Support and/or assist local governments in the development and implementation of Comprehensive Wetland Management Plans.

Objective: Require local governments to adopt land use and development ordinances to complement existing wetland protection regulations.

Action:

- Support and/or assist local governments in the development of the above ordinances.

Objective: Identify and pursue wetland restoration opportunities within the Watershed

Actions:

- Identify priority wetland restoration project opportunities.
- Explore and implement partnership opportunities and implement priority restoration projects. As part of the funding process, the VRWJPO will provide incentives to landowners and local governments for restoration projects.

Priority Concern: Floodplains

Goal: Manage and protect the floodplains of the Watershed from encroachment.

Objective: Require adoption of shoreland and floodplain ordinances that are compatible with existing County and State ordinances

Actions:

- Review the status of local floodplain and shoreland ordinances.
- Work with local governments that lack adequate ordinances to develop and adopt ordinances compatible with VRWJPO, County, and State requirements.

Objective: Require local governments to identify and protect Watershed floodplains

Actions:

- Encourage local participation in the National Flood Insurance Program.
- Require local stormwater management plans to identify 100-year floodplains for all water bodies, and be consistent with the counties' revised FEMA floodplain maps.
- Require local governments to establish minimum building elevations for any structures allowed in the floodplain.
- Require cities and townships to obtain flood and drainage easements and easements for maintenance access and over emergency overflow routes during development and/or building permit processes.
- Coordinate with responsible government units to ensure that structures are properly located relative to the floodplain before permits are issued.
- Conduct an inventory of "grandfathered structures" within floodplain setbacks.
- Assist local governments in developing, if necessary, and distributing educational materials regarding floodplain locations, protection, and floodplain land use and land alteration restrictions.

Objective: Limit floodplain alterations in order to obtain "no net loss" of floodplain storage, and including the preservation, restoration and management of floodplain wetlands.

Actions:

- Ensure that local governments require compensatory storage for future filling or structures within the floodplain.
- Create a policy to guide the proportion of local and Watershed financial contributions to flood storage projects (e.g., Farmington basin that would serve more than one community).
- Establish a funding program to obtain easements within floodplains to prevent and minimize flood damages, preserve the thermal integrity of the stream, and reduce and prevent sedimentation.

Priority Concern: Land Use Management

Goal: Protect and conserve water resources by promoting sustainable growth, integrated land use and land use planning, rural land conservation methods that reduce non-point sources of pollution from agricultural lands, and water resource management.

Objective: Require land disturbing activities including new development and redevelopment (urban/rural), road construction, agricultural production, and other rural uses within the Watershed to address impacts on water resources, including cumulative impacts.

Actions:

- While conducting environmental reviews [e.g., Environmental Assessment Worksheets (EAW), Alternative Urban Area Reviews (AUAR) and Environmental Impact Statements (EIS)] and reviewing local plan amendments, the VRWJPO will evaluate the impacts of proposed and existing land uses on surface water and groundwater resources in the Watershed.
- Assist local governments within the Watershed in developing criteria to consider potential off-site impacts (e.g., how far downstream to evaluate, what types of problems to look for).
- Require development plans to consider impacts on local natural resources and corresponding receiving waters.
- Work with local governments to:
    - Inventory road crossings
    - Identify opportunities for flood control, water quality improvement, and channel/stream restoration initiatives
    - Set standards for managing stormwater and culvert flows on road and other public improvement projects.

Objective: Coordinate the implementation of the Vermillion River Watershed Management Plan with the implementation of the Dakota and Scott County Comprehensive Plan updates.

Objective: Reduce non-point source pollution from agricultural activities through education, incentives and initiatives.

Actions:

- Encourage Dakota and Scott Counties to update and maintain their feedlot inventories.
- Assist Dakota and Scott Counties, where appropriate, in implementing/administering their delegated county feedlot permitting programs.
- Assist State and local agencies in providing technical assistance to feedlot operators and other agricultural landowners whose operations are causing pollution problems. Assist agencies and/or feedlot operators and other agricultural landowners in obtaining grants to correct/mitigate pollution problems.
- Assist State and local agencies in the distribution of research data, information and case studies showing how to reduce non-point source pollution from agricultural land by implementing best management practices (BMPs).
- Coordinate with State, local and federal agencies to identify tiled farmland and potential point and non-point pollution sources.
- The VRWJPO will identify the resource-based voids/gaps in existing local, State and federal agricultural/rural incentive and regulatory programs, and will seek to build on and fill voids in these programs
- Develop standards for agricultural/rural lands to fill identified resource-based voids/gaps in existing agricultural/rural programs and regulations.
- Develop and adopt official rules to implement the standards
- Work with State and local agencies to provide local, State and federal cost-share money to landowners implementing BMPs.
- Along with appropriate State and local agencies, work with livestock owners to eliminate direct access by livestock to natural waterbodies (e.g., lakes, wetlands, rivers, streams). [Minnesota Rules, Chapter 7020 only prohibits livestock from standing in lakes.]
- Work with State and local agencies to educate landowners regarding the potential liabilities associated with continuing to maintain fencing across public waters (e.g., Vermillion River and tributaries).
- Promote participation in local, State and federal conservation programs [e.g., Reinvest in Minnesota (RIM), Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), Environmental Quality Incentives Program (EQIP), Dakota County Farmland & Natural Areas Program, MN Cost Share Program, Conservation Security Program, Wildlife Habitat Incentives Program (WHIP), Farm and Ranch Lands Protection Program].

Priority Concern: Education

Goal: Offer programs, educational opportunities, and information that facilitate an understanding of watershed principles and objectives.

Objective: Develop an educational program related to each goal area in the Plan that includes marketing and other efforts to educate and motivate the target audience (e.g., elected officials, general public).

Objective: Provide information to the public, and provide opportunities for public involvement and input on Watershed policies and programs.

Actions:

- Use the VRWJPO web page to provide pertinent information about the Watershed.
    - Post all agendas, background materials and meeting minutes to web.
    - Post all major proposed plans and projects to web and request public comment through published notices and news releases.
- Regularly publish VRWJPO newsletters.
- Publish articles about the Watershed in other organizations' publications (e.g. the Scott County Scene and Dakota County Update).
- Recruit volunteers for monitoring efforts (e.g., stream and lake sampling) and involvement in other VRWJPO programs and projects.
- Provide or support formal volunteer training for Watershed projects and programs.
- Develop and implement a recognition program for volunteers.
- Publish Watershed map and handbook.