Summary of the Nine Mile Creek Watershed District Water Management Plan

2007–2016

Guiding the future use and management of our District's water resources

9 Mile Creek
WATERSHED DISTRICT

Vision Statement

District Accomplishments

- Marsh Lake Dam
- Normandale Lake
- Bredesen Park
- Hopkins Culvert Improvement Project
- Lower Valley Restoration Project
- Smetana Lake Outlet
- Bush Lake Outlet
- Minnetonka Lakes Water Quality Improvement Project
- Eden Prairie Water Quality Improvement Project (commence 2007)
- Third Generation Water Management Plan
- Rules Revisions (complete in 2008)

It is the NMCWD Board of Managers' vision and intent to manage water resources within the District in a manner that will attain and preserve their highest and best intended beneficial uses. Intended use designations have been made in keeping with records of historical use, applicable state and federal water laws, and in consultation with the District's constituent cities, state and regional resource management agencies, and the general public.

The District seeks a proactive role in watershed runoff regulation that anticipates ultimate watershed land use development. The District also seeks to provide its residents with protection against both flood damage and water quality degradation by conducting diagnostic-feasibility studies of watershed runoff-related problems. Where these studies indicate the need for implementation of remedial measures to mitigate current or likely future problems that interfere with attainment of beneficial use goals, the District will sponsor reasonable cost cooperative projects in response to project petitions from its constituent cities.

Throughout all of its water management planning activities, the District will encourage increased stakeholder involvement in its decision-making, especially by public officials and concerned citizens.

Board of Managers (from left to right): Geoffrey Nash, Steve Kloiber, LuAnn Tolliver, Kevin Bigalke (Administrator), Bob Kojetin, and Corrine Lynch.

The Nine Mile Creek Watershed District Managers meet the third Wednesday of each month at 7:00 p.m. at the District Office at 7710 Computer Ave, Suite 135, Edina, MN 55435.

Meetings are open to the public.

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Executive Summary

What is the Nine Mile Creek Watershed District?

Like all watershed districts, the Nine Mile Creek Watershed District (NMCWD) is a special purpose unit of local government that manages water resources on a watershed basis (a watershed is an area of land that drains to a given lake, river, stream or wetland). Watershed district boundaries generally follow natural watershed divides, rather than political boundaries. The general purposes of a watershed district are to conserve natural resources through land-use planning, flood control, and other conservation projects to protect public health and welfare and for the wise use of natural resources (Minnesota Statutes 103D.201).

The NMCWD covers approximately 50 square miles and is located in the south-central region of Hennepin County. The District includes most of Edina, most of Bloomington and portions of Eden Prairie, Hopkins, Minnetonka, and Richfield.

Nine Mile Creek got its name from early settlers in Minnesota. When they traveled west from Fort Snelling along Old Shakopee Road, the creek crossing was nine miles from the fort.

Historical NMCWD Purposes and Successes

The Nine Mile Creek Watershed District (NMCWD) was established on September 30, 1959 in response to a citizen's petition to the State of Minnesota to address water resource issues and was the first urban watershed district formed in Minnesota. For its first 30 years, the NMCWD focused primarily on solving flooding problems in the watershed. This major effort resulted in the construction of six major flood prevention projects, including: Marsh Lake Dam, Normandale Lake, Bredesen Park flood storage area, Bush Lake Outlet, Smetana Lake Outlet, and Hopkins Culvert improvements. Also, a major streambank stabilization project in the lower valley reach of Nine Mile Creek was completed to reduce erosion and sediment export to the Minnesota River.

Lake Studies Determine Water Quality

Since 1997, the NMCWD has concentrated on solving remaining flooding problems and conducting water quality studies. Between 1997 and 2006, the NMCWD completed 15 diagnostic-feasibility studies (termed Use Attainability Analyses, or UAAs) for lakes within the NMCWD. The objective of each study was to determine if the lake's quality is achieving the established goals and to develop a water management plan to improve or protect the quality of the water body.

Rules and Regulations Prevent Problems

The NMCWD rules and regulations have been an essential tool in preventing problems. In 1973, the District adopted rules and regulations to address the water quantity impacts of stormwater (e.g. flooding, rate control) and began reviewing proposed developments and other projects in the watershed through its permit program. As part of the 1996 Water Management Plan, additional emphasis was directed towards water management requirements for stormwater runoff. Revisions to the District's Rules began in 2007 with adoption anticipated in early 2008.

Data Collection Aids Management Decisions

Since the formation of the NMCWD, the District has believed in the importance of using reliable data and sound science to make water resources management decisions. The NMCWD and their partnering entities have been monitoring the water quality of streams in the watershed for decades. In 1968, the District initiated a stream water quality monitoring program that evaluated both chemical and biological parameters at eight locations throughout the District. The stream water quality program has been expanded to include storm event monitoring at four locations along Nine Mile Creek. Water quality of several District lakes was monitored in the early 1970's. The lake monitoring program was expanded in 1997 to intensely monitor 15 lakes throughout the District. The NMCWD also collects monthly water levels on more than a dozen lakes in the District and groundwater levels from numerous NMCWD groundwater observation wells.

Plan Development

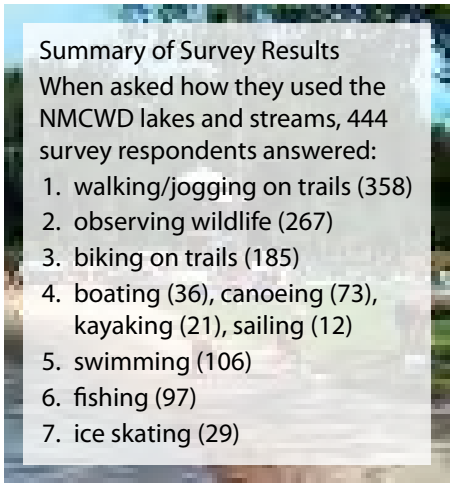
Minnesota statutes require that watershed districts develop watershed management plans, which set forth the vision, guidelines, and proposed programs and tasks for managing surface water within the watershed boundaries. The NMCWD has prepared several plans throughout its history, including in 1961, 1973, and 1996. In 2005, the NMCWD began the process of developing their next watershed management plan (Third Generation Plan).

A significant focus was placed on the involvement of the public and other stakeholders, including municipalities and local and state agencies, from the onset of the plan development process. The NMCWD managers and staff consulted with stakeholders on matters that would shape the District's future direction, including evaluation of the District's future role in water resources management, identification of key issues to be addressed, and prioritization of District objectives. Stakeholder involvement included a survey of NMCWD residents, numerous public meetings, meetings with municipal Engineering and Public Works Department staffs (the District's Technical Advisory Committee (TAC)) and use of the District's website, among other efforts. Feedback on the NMCWD draft plan was solicited from stakeholders throughout every phase of development. In January 2007, the NMCWD's 2007 Water Management Plan was approved by the Board of Soil and Water Resources. The NMCWD Board adopted the plan in March 2007.

The NMCWD 2007 Water Management Plan sets the course for future management of the water resources within the watershed. The NMCWD Plan provides data and other background information, outlines the applicable regulations, assesses specific and watershed-wide issues, sets goals and policies for the NMCWD and its resources, and lists planned actions to achieve the goals. It also discusses the financial considerations of implementing programs and actions, and funding sources that may be available to the District.

Partnerships with Local Government

The NMCWD's goal is to work cooperatively with its municipalities to develop and implement a framework for protecting the water resources within the watershed boundaries. By working in conjunction with the municipalities, it is the District's intention to limit additional requirements imposed upon local units of governments as much as possible while still accomplishing the NMCWD's purposes and implementing its 2007 Water Management Plan. The District strives to provide leadership in water resources management. As the NMCWD moves forward in developing and implementing programs to protect the water resources, the District will work with the cities to update and/or adopt the necessary ordinances or regulatory controls to meet the District's goals and objectives.



Summary of Survey Results

When asked how they used the NMCWD lakes and streams, 444 survey respondents answered:

1. walking/jogging on trails (358)
2. observing wildlife (267)
3. biking on trails (185)
4. boating (36), canoeing (73), kayaking (21), sailing (12)
5. swimming (106)
6. fishing (97)
7. ice skating (29)

Citizen Partnerships

The NMCWD 2007 Water Management Plan highlights the importance of public awareness and involvement in the protection of our water resources. The NMCWD plans to expand their public involvement efforts by increasing awareness of the NMCWD, coordinating and cooperating with other groups (including its Citizen Advisory Committee) to educate the public, recruiting and recognizing volunteers for monitoring efforts and involvement in NMCWD programs, promoting positive behaviors that have a positive impact on water resources, and using its advisory committees in meaningful ways. Through these efforts, the District hopes to increase the public's understanding of water resource management and issues in the watershed, and foster long-term public commitment to protecting these resources.

Surveying the Public

To solicit public input regarding the state of the water resources within the District, a survey was promoted in local publications and randomly sent to 10,000 District households. To encourage participation in the survey, the NMCWD established a website for survey submittal, and offered web respondents free passes to the Great Lakes Aquarium in Duluth. The District received 444 survey responses, with approximately 50% submitted via the website. The responses were compiled into a summary report and considered in the preparation of the District's 2007 Water Management Plan.

Lake Classifications

The District has four lake classifications based on designated use(s):

Class 1—Whole-body contact recreational (swimming)

Class 2—Partial-body contact recreational

Class 3—Fishing and aesthetic viewing

Class 4—Runoff management

In addition to Lone Lake (shown above), there are five other lakes within the NMCWD that have been designated as Class 1 (swimming) lakes: Bryant, Bush, Glen, Minnetoga, and Shady Oak.

Factors that contribute to poor water quality conditions in lakes include watershed runoff, internal nutrient loading, and the presence of invasive exotic plant species.

The NMCWD and its residents value the water resources within the watershed, which include numerous lakes and wetlands, and the Nine Mile Creek system. These resources supply aesthetic and recreational benefits, in addition to providing wildlife habitat and refuge. The NMCWD also values the importance of protecting the quality of groundwater, as most NMCWD residents rely on groundwater for their drinking water supply. The various water resources within the District and the associated challenges are summarized in the following sections.

District Lakes

There are numerous lakes within the watershed (see District Map, page 14). The NMCWD and its residents view each lake as a valuable resource. To monitor the quality of its lakes, the NMCWD has been collecting lake water quality data since 1971. In 1991, the District inventoried and analyzed the historic lake water quality data collected from its lakes. At this time, no statistically significant trends in lake water quality were detected over the 21-year period. In 1997, the District embarked on a more rigorous lake sampling program, with the major lakes within the District being sampled on a rotating basis, once every four years. Evaluation of the more recent data has confirmed that there are no significant historic trends in the water quality of the District lakes, and has demonstrated that the NMCWD and municipal watershed management efforts are generally maintaining lake water quality since the early monitoring periods. Although the water quality of NMCWD lakes has generally remained steady throughout the past four decades, this does not necessarily mean that lake water quality conditions are consistent with the desires of the NMCWD and its residents.

Lake Water Quality Problems

In 1996, the District adopted its own water quality goals based on the NMCWD designated use(s) of a lake. The District classified many of its lakes into four categories (see sidebar). The established criteria for each classification are used to determine if the water quality of each District lake is meeting its designated use(s).

Upon development of the lake management criteria, the NMCWD completed Use Attainability Analyses (UAAs) for 15 of its major lakes to evaluate whether each lake was meeting its NMCWD water quality goals. A UAA is an intensive, watershed-based lake study that diagnoses water quality problems and their causes and evaluates feasible alternative improvement measures. UAAs are intended to be "Total Maximum Daily Load (TMDL) Equivalent" studies and implementation of their recommendations should result in removal of the subject water bodies from the Minnesota Pollution Control Agency's (MPCA's) Sec. 303(d.) Impaired Waters list. The table (at right) summarizes the UAA-identified water quality problems in NMCWD lakes, which include degradation from watershed runoff, internal nutrient loading, and the presence of invasive exotic plant species. The NMCWD has already begun implementing the improvement measures identified in several UAAs, including improvements for Shady Oak, Glen, Lone, Minnetoga, Anderson, Bryant, and Birch Island Lakes.

Lake	Water Quality Problems		
	Watershed Runoff Pollution	Internal Phosphorus Recycle	Exotic Plant Species
Anderson	✓	✓	✓ CLP, PL
Arrowhead	✓	✓	✓ CLP, EWM
Birch Island	✓		✓ PL
Bryant	✓	✓	✓ CLP, EWM, PL
Bush			✓ CLP, EWM, PL
Cornelia	✓	✓	✓ PL
Glen	✓		✓ PL
Indianhead	✓		
Lone	✓		✓ PL
Minnetoga	✓		✓ PL
Mirror	✓	✓	✓ CLP, PL
Normandale	✓	✓	✓ CLP, PL
Penn (Lower)			✓ PL
Shady Oak	✓		✓ EWM, PL
Smetana		✓	✓ CLP, PL

KEY: CLP = Curlyleaf Pondweed EWM = Eurasian Watermilfoil
PL = Purple Loosestrife

Wetlands

There are hundreds of natural wetlands throughout the Nine Mile Creek watershed. The NMCWD has historically and will continue to work with municipalities and other regulatory agencies to minimize human impacts and maintain the health and diversity of wetlands throughout the District.

Groundwater

The NMCWD recognizes the importance of protecting the quality and quantity of groundwater, both because most NMCWD residents rely on groundwater for their drinking water supply and many of the District's surface water resources are dependent on the groundwater supply.

Although the role of groundwater protection generally falls upon Hennepin County, the NMCWD works with the county and municipalities to implement groundwater protection programs. The District acknowledges that there is an interrelationship between surface water and groundwater resources and recognizes that surface water must be managed with a concern for proper management of groundwater resources.

Exotic Plant Species

Water quality problems in the NMCWD include the invasion of three exotic plant species: Curlyleaf Pondweed, Eurasian Watermilfoil, and Purple Loosestrife.

Curlyleaf Pondweed

Eurasian Watermilfoil

Purple Loosestrife

The headwaters of the North Fork of Nine Mile Creek is marked with signage, educating visitors about the creek and its watershed.

Many areas of Nine Mile Creek provide breathtaking beauty.

Like most urban streams, Nine Mile Creek experiences many water quality problems, including streambank erosion.

The ecological use classification assessments of Nine Mile Creek identified the potential suitability of the stream for aquatic life, including macroinvertebrates and fish.

District Streams

Nine Mile Creek has a total watershed area of approximately 50 square miles, 15 square miles of which are landlocked. The topography of the watershed ranges from relatively flat in the upper and middle portions of the watershed, to steep in the lower valley, which descends to the Minnesota River at the downstream portion of the watershed. Nine Mile Creek originates as two branches: a north branch (North Fork) and a south branch (South Fork).

The North Fork begins in Hopkins, south of Excelsior Boulevard (County Road 3) and west of 11th Avenue. It generally flows in a southeast direction, through Bredesen Park in Edina, then continuing southward to join with the South Fork upstream of Normandale Lake.

The South Fork begins at Minnetoga Lake in Minnetonka, and then flows south to Bryant and Smetana Lakes in Eden Prairie before continuing east through Edina toward Normandale Lake. A secondary branch, County Ditch 34, which originates at Birch Island Lake, combines with the Glen Lake outflow in the Eden Prairie Industrial Park area and flows into Bryant Lake.

From Normandale Lake, the creek flows southward through Nord Myr Marsh and Marsh Lake. From here, the creek flows through a residential area, with yards abutting the creek for much of its length. After crossing Old Shakopee Road, the creek steepens as it descends into the lower valley and eventually discharges into the Minnesota River.

Stream Water Quality Problems

Nine Mile Creek experiences many water quality problems characteristic to urban streams. As development has occurred in the watershed and the imperviousness of the land has increased, the rate and volume of stormwater runoff has increased. This increase can lead to instability in the stream system, which results in erosion of the stream channel. The degraded quality of watershed runoff reaching the stream also causes water quality problems.

To diagnose the water quality problems in Nine Mile Creek, the entire creek was surveyed and classified according to the Rosgen Physical Classification system. Stream reach segments were then rated as to their sensitivity to disturbance, recovery potential, and actual condition. In this process, numerous problems were identified that will require remedial attention in the future.

Results of the Nine Mile Creek physical classification were subsequently used in combination with biological and water quality survey information to perform Ecological Use Classification (EUC) assessments of Nine Mile Creek stream reaches. These assessments identified the potential suitability of the stream for aquatic life, including benthic macroinvertebrates and fish. In general, these assessments indicated biological impairments were related to habitat destruction caused by the scouring effects of the increased frequency of bankfull or greater flows in the creek. Desirable remedial measures were identified along with the need for further detailed surveys in the future.

Introduction

In establishing its goals, the District recognizes that the goals are the end point toward which its efforts and ambitions are directed. The goals are not rules but rather a statement of purposes. As with goals, the District's policies are its chosen courses of action selected from several alternatives, in light of given conditions, to guide present and future management decisions. The policies are not regulations or a program, but instead are an effort to prudently manage the affairs of the District. The policies are not static or an end; they are the means to achieve the objectives articulated in the District's goals. Achieving the NMCWD goals will require partnerships between Federal, State, local governments and citizens to be effective. The purpose of the District's Management Plan is to enable a cooperative effort to achieve common goals.

Summary of Goals in this Guidance Document

The Statement of Goals and Policies section in the Water Management Plan presents the issues, goals, and policies that pertain generally to the NMCWD. The section contains an introductory preamble, plus nine subsections or goal topics (see list at right).

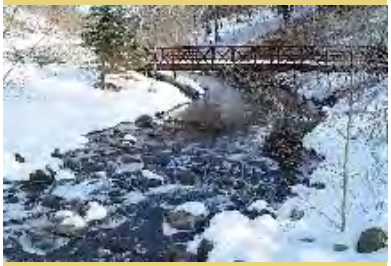
This guidance document provides a summary of each goal topic, including:

- The importance of the topic area
- General issues related to the topic area
- Management goals of the NMCWD
- Implementation program related to each topic area
- Education and outreach goal related to the topic area

The Nine Mile Creek Watershed District has established goals and policies that reflect local desires specific to the District's individual resources.

Goal Topics

- Stormwater Management
- Surface Water Quality
- Wetland Management
- Open Space & Recreational Use
- Groundwater Protection
- Land Use Management
- Floodplain Management
- Education & Outreach
- Administration



Education and Outreach

There is an education and outreach component for each goal topic. See the bright green side bar in each subsequent goal section for details.

Stormwater Management Goals

Goal Topics

Stormwater Management

Surface Water Quality

Wetland Management

Open Space & Recreational Use

Groundwater Protection

Land Use Management

Floodplain Management

Education & Outreach

Administration

Before construction of the Lone Lake infiltration project, rainwater ran off the impervious parking lot.

After construction, parking lot runoff is collected in an attractive rainwater garden that infiltrates stormwater.

Stormwater runoff flows into the infiltration basin during a storm event.

Importance of Stormwater Management

The quality and quantity of surface water is greatly influenced by stormwater runoff. To achieve the NMCWD goals for maintaining and improving water quality, and managing water quantity, stormwater runoff must be carefully and closely regulated. The NMCWD manages stormwater runoff by carrying out its permit program, which includes management requirements so that negative effects of stormwater runoff are addressed (and prevented) at the time of development, not afterwards.

General Issues

The quality and quantity of stormwater runoff, from rainfall and snowmelt, are dependent on the hydrology and the physical conditions of the watershed. Hydrology is dependent on weather, topography, soils, land use/land cover, and other factors. Changes to any of these factors will affect the quality and quantity of stormwater runoff. While some of the factors are difficult to control, changes to land use/land cover can be regulated and/or managed.

Goals

The District's goals include the following:

1. To understand each subwatershed and the uniqueness of its related water resources, and to manage each subwatershed to its realistic water quality, quantity, and ecological potential.
2. To utilize both structural and nonstructural measures to reduce runoff rates and nonpoint source pollutant loading.
3. To manage surface waters collaboratively with cities.
4. To manage both the rate and volume of runoff entering Nine Mile Creek and the lakes and wetlands within the watershed.

Stormwater Management Implementation Program

- Develop stormwater management system maintenance standards with all cities.
- Compile and design a guidance document for stormwater management within the District.
- Utilize the Minnesota Stormwater Manual to guide the development of District standards and rules.
- Require municipalities to adopt, revise, and implement ordinances or other regulatory controls that allow for and encourage innovative stormwater management techniques.
- Require municipalities to update their local surface water management plans so that they comply with and compliment the District Water Management Plan per Minnesota Statutes (MS) 103B.235.
- Provide runoff rate and volume reduction oversight, guidance, and assistance to developers in the planning and designing of onsite water management practices.

- Require municipal stormwater management plans to include documentation adequate to ensure that urban runoff will meet District water quality and quantity standards and not adversely impact Nine Mile Creek and other water bodies of the District.
- Identify opportunities to retrofit existing developments with low impact development techniques & establish low impact development (LID) demonstration projects.
- Use LID demonstration projects for education programs for municipalities and developers.
- Implement a permitting program for stormwater management and sediment and erosion control.
- Review municipal National Pollutant Discharge Elimination System (NPDES) permit applications, renewals, revision, etc. and comment on aspects of the permit application that impact water resources of the District.

Storm drains in the NMCWD are labeled with "no dumping" signs, reminding residents that local stormwater reaches Nine Mile Creek.

Practices such as street sweeping help reduce the number of pollutants that reach the District's water bodies from stormwater runoff.

The NMCWD encourages the construction of rainwater gardens, such as the one pictured here in a commercial parking lot.

Education and Outreach

The stormwater management education program will focus on raising awareness of how individual actions can impact stormwater. The District has a storm drain marking program to promote resident education and awareness about stormwater drainage and its impact on the quality of their lakes and creeks. The program enlists the help of volunteers from District schools and communities.

Surface Water Quality Goals

The 98th Street WOMP (Watershed Outlet Monitoring Program) station.

Importance of Surface Water Quality

Water quality is commonly defined by its physical, chemical, biological and aesthetic (e.g., appearance and smell) characteristics. Good water quality is more than these few measurements, especially when considered as part of a healthy environment whose water quality supports a rich and varied community of aquatic organisms and protects public health.

The lakes, ponds, streams and wetlands in the District are an important local asset. These resources supply recreational and aesthetic benefits, enhance property values, serve as sources for groundwater recharge, provide nutrient removal, wildlife habitat and fishery resources. The high quality of the watershed's natural resources makes it an attractive place for people to live. Preserving the high quality of the watershed's natural resources is critical to the existence of a high quality of life among the citizens residing in the watershed and in the larger metropolitan region.

If water quality becomes degraded, a water resource will lose its value. If water quality is not maintained, it is not just the environment that will suffer, but the commercial and recreational value of our water resources will diminish and public health may be compromised.

General Issues

Water quality is closely linked to the surrounding environment and land use. The water quality of a lake, pond, wetland, or stream is dependent on the hydrology and the physical conditions of the resource. Hydrology is dependent on the weather, the topography of the landscape, the soils, the land cover, and other factors. Changes to any of these factors will influence the water quality of a water resource. While some of the factors are difficult to control, changes to land cover can be regulated and/or managed.

Goals

The District's goals include the following:

1. To manage and protect our water resources: lakes, ponds, creeks, streams, wetlands, drainages, and groundwater by improving and protecting the quality of water for all water bodies within the District.
2. To protect and enhance surface water quality of the lakes and streams of the District.
3. To maintain and enhance current range of uses for District water resources.
4. To strengthen construction-site permit compliance and reduce non point source pollution from other land use activities.
5. To establish and maintain water quality monitoring program to systematically assess achievement of all District water quality goals for targeted lakes, streams, and wetlands.
6. To establish and support a citizen monitoring program.
7. To coordinate efforts with regulatory agencies on pollutant spills.

Surface Water Quality Implementation Program

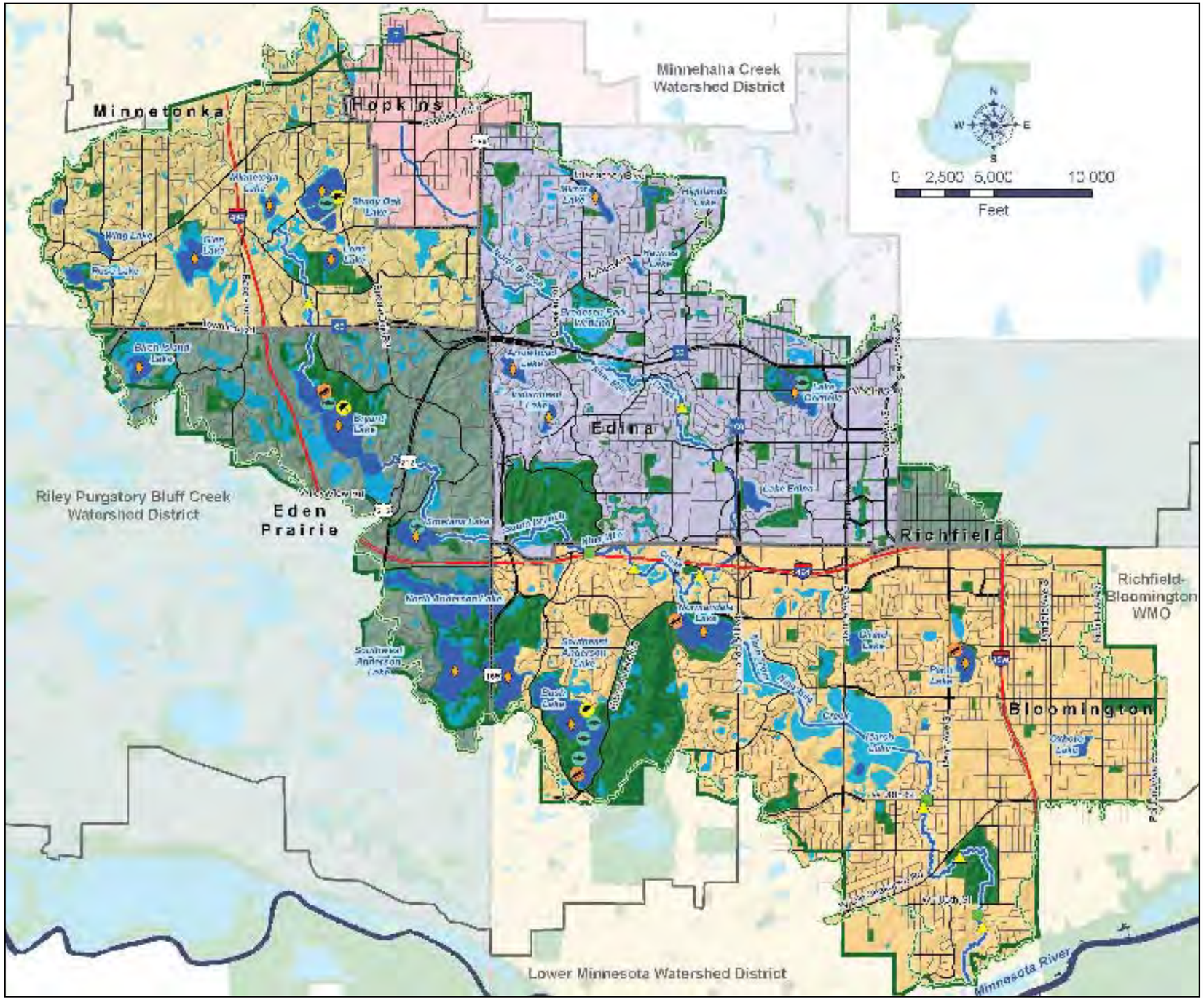
- Participate in the TMDL process, including conducting or assisting with TMDL or other water quality studies.
- Amend UAA studies to better reflect TMDL plans.
- Determine appropriate responsibilities in implementing load reduction measures identified in TMDL and UAA studies.
- Implement the recommendations identified in the UAAs for water bodies in the District.
- Explore a watershed-based approach to Municipal Separate Storm Sewer Systems (MS4) permitting.
- Conduct water quality improvement projects identified in the UAAs or petitioned for by municipalities.
- Prepare and make available informational materials related to Total Maximum Daily Load (TMDL) and UAA studies and load restrictions.
- Expand and enhance water quality & habitat monitoring in the Watershed.
- Establish and fund a citizen stream and lake monitoring program for the District.
- Assess and monitor streambank stability along Nine Mile Creek.
- Request that the MDNR conduct an expanded fisheries survey of the water resources in the District to better identify and understand aquatic habitat issues and restoration opportunities.
- Implement streambank restoration projects to restore natural functions, scenic values, and enhance public access.
- Monitor lake water quality, vegetation, shore erosion, etc.
- Continue to fund surface water monitoring network—Watershed Outlet Monitoring Program (WOMP) stations. Use data to calibrate and refine hydrologic models.
- Develop and distribute water quality education/awareness materials on the quality of our lakes and Nine Mile Creek.
- Require cities to develop stormwater plans and ordinances or other regulatory controls that ensure that the costs for constructing, operating, and maintaining stormwater management systems for new developments and redevelopments are fairly allocated so as not to unduly burden local governments or the District.
- Provide educational workshops and information to general public about Nine Mile Creek and its watershed.
- Host clean up events in partnership with cities and other organizations.
- Provide technical and financial assistance to establish Low Impact Development (LID) demonstration projects, shoreland and streambank restoration projects, and other water quality Best Management Practices (BMPs).

Education and Outreach

The surface water quality education program will focus on how individuals can help protect and improve the quality of District lakes and Nine Mile Creek. The District supports a citizen lake monitoring program to get individuals involved in monitoring water quality.

Source: www.pca.state.mn.us

District Map



Location Map

Wetland Management Goals

Wetlands provide a number of valuable functions:

- They serve as filters that prevent pollutants from entering lakes, creeks, and groundwater.
- They provide important habitat for birds, animals, and plants.
- They help control stormwater by providing flexible storage which minimizes the impacts of flooding.

Importance of Wetland Management

Wetlands are an important resource within the NMCWD, providing value to the community. Wetlands come in many different shapes, sizes, and types and perform a variety of physical, chemical, and ecological functions. A healthy watershed is one in which wetlands are an integral part of the ecosystem.

Wetlands are among the most productive ecosystems in the world. These resources can support an immense variety of species of microbes, plants, insects, amphibians, reptiles, birds, fish, and mammals. Wetlands supply recreational and aesthetic benefits, flood reduction benefits, biodiversity, low stream flow augmentation, enhance property values, serve as sources for groundwater recharge and discharge, provide nutrient cycling, provide wildlife habitat and provide fishery resources.

Well-planned wetland protection and management efforts can have far-reaching benefits within the watershed and beyond. Active wetland management can improve water quality and wildlife habitat as well as providing recreational and educational opportunities for the public.

General Issues

Wetland quality is closely linked to the surrounding environment and land use. The quality of a wetland is dependent on the hydrology and the physical conditions of the resource and its watershed. Hydrology and ecology are dependent on the weather, the topography of the landscape, the soils, the land cover, and other factors. Changes to any of these factors will influence the quality of a wetland.

Preservation of wetlands is controlled by various local, state, and federal laws. Effective wetland management depends on an accurate inventory and classification of wetland resources and a local wetland management plan developed with input from community residents and agencies.

Goals

Healthy and well-managed wetland resources will be maintained by pursuing the following NMCWD goals:

1. Maintain and enhance the functions and values of wetlands within the watershed.
2. Continue to administer the Wetland Conservation Act (WCA) requirements as the responsible local government unit for wetlands within the cities of Eden Prairie, Edina, Hopkins, and Richfield. Also, provide technical assistance in wetland-related matters in Bloomington and Minnetonka—cities that administer the requirements of WCA. The Minnesota Department of Transportation (Mn/DOT) is the local governmental unit for Mn/DOT transportation projects.

3. Manage wetlands to achieve no net loss of acreage, function, and value; and maintain the complex ecosystems that serve a variety of functions and values, including improving water quality and providing flood storage, wildlife habitat, open space, and aesthetics.
4. Practice responsible wetland stewardship by increasing city, government, and citizen knowledge and understanding of wetland ecology and management.
5. Protect all rare and high-quality wetland plant communities within the NMCWD.
6. Protect current populations and habitats of rare, endangered, and threatened plants and animals.
7 Protect and improve wetlands in identified open-space corridors.
8. Allow for multiple uses of protected wetlands, while ensuring that functions and values are maintained or enhanced.
9. Establish a wetland bank within the District for NMCWD-sponsored projects.

Wetland Management Implementation Program

- Assist local governments in the development and implementation of local wetland management plans.
- Serve as the Local Governmental Unit (LGU) for the administration of the Wetland Conservation Act for Eden Prairie, Edina, Hopkins, and Richfield.
- Provide technical assistance in administration of the Wetland Conservation Act for the Cities of Bloomington and Minnetonka as they serve as the LGU for WCA.
- Provide technical assistance to municipalities in the development of wetland protection ordinances or other regulatory controls.
- Require municipalities to conduct function and values assessments as part of their local wetland management plans.
- Identify and implement priority wetland protection and restoration projects, and wetland banks.
- Implement a public education effort regarding the importance and value of wetlands and other fish and wildlife habitat in partnership with LGUs.
- Provide support to local communities to continue the Wetland Health Evaluation Program.
- Manage invasive species in cooperation with regulatory agencies.
- Protect high-quality wetland areas, sensitive habitats and rare or endangered species.
- Implement a wetland replacement sequencing policy that keeps wetlands within the Nine Mile Creek watershed.

A wetland mitigation project under construction. When wetlands are impacted due to construction, wetland mitigation is required.

Wetlands play an integral role in the migratory process. They provide food, resting places, and seasonal habitats.

Education and Outreach

The wetland management education program will focus on the importance of wetlands, the impacts that behaviors can have on the health of wetlands, and how the health of wetlands affects the other natural resources in the District.

The public is becoming more aware of the importance of wetlands to the health of our District's waterbodies. It is the District's goal to further educate the public on ways they can preserve and protect this valuable resource.

Open Space & Recreational Use Goals

Education and Outreach

The open space and recreational use education program will focus on the importance of open space and using corridors to link larger open spaces for wildlife, habitat, and water quality benefits. The NMCWD will seek opportunities to use interpretive signage in unique and sensitive areas to educate the public and protect the resources.

Importance of Open Space and Recreational Use

Improving and maintaining water quality in the Nine Mile Creek Watershed District is the main concern and focus of the District. Improved water quality is essential to enhancing and increasing recreational uses, which are secondary benefits. Increasing public access to Nine Mile Creek and the lakes of the NMCWD and providing places that offer a variety of water resource-related experiences can be the long-term results of improved water quality. Recreational and open space uses by the public can enhance people's understanding of the importance of protecting the natural resources in the NMCWD.

General Issues

Water quality is closely linked to the surrounding environment and land uses. Protecting and enhancing open spaces and natural areas near water resources can aid in improving the water quality of the lakes of the NMCWD and Nine Mile Creek.

Providing open spaces and recreational uses of the NMCWD water resources for the public can enhance the public's understanding of the importance of our water and natural resources to our communities' vitality and health.

Goals

The primary goal of the NMCWD is to maintain or expand current ranges of recreational uses for NMCWD water resources.

Open Space & Recreational Use Implementation Program

- Implement an education program to provide information to the public about Nine Mile Creek and the lakes of the District through maps, brochures, interpretive signage, etc.
- Distribute (and develop or assist in developing) educational materials or programs that provide information on the natural resources of the NMCWD and the steps being taken to preserve habitat.
- Improve creek corridor using buffers, riparian plantings and restoration projects in partnership with cities and private landowners.
- Establish stream buffers on publicly owned lands along Nine Mile Creek in partnership with cities.
- Review projects and plans with an awareness of sensitive habitats and communities, and rare species, as listed in the Water Management Plan or the County Biological Survey or other biological inventories.
- Develop or enhance wildlife habitat corridors that connect open space, stream corridors, lake buffers, wetland buffers, and stormwater management facilities.
- Identify and participate in appropriate partnership opportunities (Metro Conservation Corridors, Regional Greenways, etc.).
- Support community efforts to create a continuous trail system along Nine Mile Creek.
- Implement recreational/natural resource/fish & wildlife habitat protection, enhancement, and accessibility projects and land conservation efforts.

Groundwater Protection Goals

Importance of Groundwater Protection

Most NMCWD residents obtain their drinking water from groundwater. This makes it especially important to ensure that these aquifers are uncontaminated, protected from future contamination and provide adequate supplies. NMCWD water bodies also are groundwater-dependent and need an adequate supply of clean groundwater.

General Issues

Groundwater is a finite resource with inputs (generally rainwater and snowmelt) and output (groundwater pumped out for human use and groundwater that naturally discharges to water bodies). Maintaining clean, safe groundwater supplies is critical to human and environmental health and to our economic and social vitality. Groundwater can be contaminated by commercial and industrial waste disposal, landfills, leaking petroleum tanks, septic systems, mining operations, feedlots and fertilizer/pesticide applications. Within the NMCWD, groundwater quality is good over the majority of the area; however, contaminants have been found in some locations. In these areas, there are added financial and social costs to manage the affected water supply.

Goals

1. To manage and protect our groundwater by understanding the effects of community growth and other activities on it, and focusing on groundwater-surface water interactions.
2. To protect groundwater quality and quantity to preserve it for appropriate and sustainable beneficial uses.
3. To protect groundwater recharge areas.

Groundwater Protection Implementation Program

- Collect static groundwater levels throughout the District and report annually in the District Engineer's Report.
- Research infiltration impacts on groundwater and develop a consistent approach to protecting areas sensitive to groundwater contamination.
- Provide technical assistance to the Minnesota Department of Health (MDH) and municipalities on the development and implementation of Wellhead Protection Plans.
- Provide groundwater monitoring data/information and work with municipalities to use data/information to develop targeted educational messages.
- Provide technical assistance to cities that are developing or implementing Wellhead Protection Plans.
- Review and comment on wellhead protection plans as they are completed.
- Provide technical assistance on the implementation of best management practices for wellhead protection areas.
- Partner with cities and other public water agencies to educate the public on BMPs to prevent contamination of groundwater supplies.
- Partner with other agencies and local governments to develop water conservation educational materials.
- Promote and encourage public and non-public water suppliers to institute phased water conservation techniques.
- Support the implementation of the Hennepin County Groundwater Protection Plan.
- Encourage development of water conservation plans as required by the Minnesota Land Planning Act.

Groundwater quality and quantity are closely linked to the above ground environment. They are dependent on the infiltration of surface water/rainfall through the soil, which is dependent on soil type, land cover, weather, and other factors. Changes to any of these factors will influence groundwater.

Education and Outreach

The groundwater protection education program will focus on ways to protect and conserve groundwater, ensuring healthy groundwater for future generations.

Land Use Management Goals

Aerial imagery shows land use changes as a result of development.

Residential rainwater gardens are a great example of a low-impact development technique that residents can do themselves.

Education and Outreach

The land use management education program will focus on how our land use decisions directly impact the health of our water resources, emphasizing sustainable land use practices.

Importance of Land Use Management

Land use management plays a fundamental role in the management and protection of water resources. Municipalities in the NMCWD have the fundamental responsibility for comprehensive land use planning and zoning. These municipalities also have significant challenges in meeting state water quality requirements for stormwater management. Cooperative land use and water resource management planning is critical to assuring the long-term health of local communities and natural resources.

General Issues

Some of the pollutant loadings to resources identified in the District's Plan are best addressed through the guidance and regulation of future land use development and redevelopment, rather than through the construction of capital improvements.

The District values its strong working relationship with municipalities, and seeks to integrate its water resource protection goals with the land use plans of the municipalities.

Goals

The primary goal of the NMCWD is to protect and conserve water resources by integrating water resources management with land use planning, and encouraging low impact development approaches that reduce non-point sources of pollution from urban land uses.

Land Use Management Implementation Program

- Encourage low impact development techniques and approaches throughout the District.
- Provide technical assistance to municipalities in developing criteria to consider potential downstream impacts of developments on water resources.
- Integrate open space, greenway planning, and water resource protection into local comprehensive plans.
- Use low impact development demonstration projects as an educational tool for local governments and developers.
- Coordinate with municipalities on development/permit review and provide for effective technical input at the earliest possible point in the development process.
- Identify stormwater best management practices as part of the development review and approval process.
- Incorporate NMCWD standards and rules into local Comprehensive Management Plans.
- Provide technical assistance to municipalities in addressing the requirements of the NPDES Phase II MS4 permit.
- Adopt the recommendations of the Minnesota Stormwater Manual as a guiding document for developments within the District.
- Provide technical assistance to cities to develop and adopt rate and volume control ordinances or other regulatory controls to achieve overall discharge reductions.

Importance of Floodplain Management

The protection of human life and improvement structures was the first priority of the District and continues to be a primary objective of the District.

General Issues

The District established a 100-year frequency flood envelope along the creek in 1961. The flood envelope was based on runoff from a totally urbanized watershed. The District has been managing/regulating development riparian to the creek based on the flood envelope since 1961.

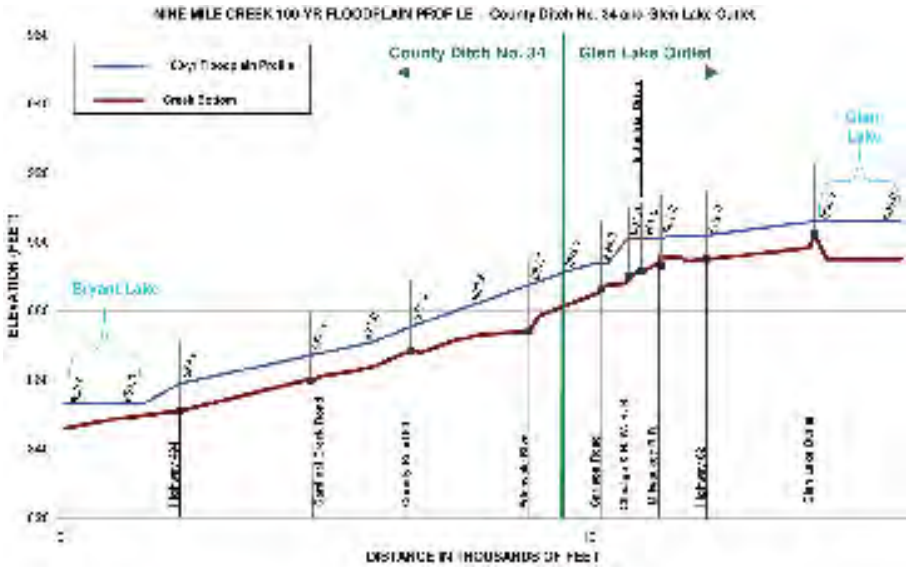
Goals

The primary goals of the NMCWD include the following:

1. To manage and protect the floodplains of the watershed from encroachment.
2. To protect human life and permanent improvements that could be damaged by flood events.

Floodplain Management Implementation Program

- Provide technical assistance to municipalities with the development and adoption of floodplain ordinances to be compliant with District, County, and State requirements.
- Assist local governments with the development and adoption of ordinances compatible with Watershed District and State requirements.
- Develop and distribute educational materials regarding floodplain locations, protection, and floodplain land use and land alteration restrictions in partnership with cities.



The District established a flood profile along the entire reach of the creek in 1961, eight years prior to the 1969 Floodplain Management Act.

Education and Outreach

The floodplain management education program will focus on the importance of maintaining a natural floodplain to allow the creek to meander and manage itself.

Education & Outreach Goals

General Issues

NMCWD needs to educate and involve the public to meet the challenges of managing NMCWD's water resources. NMCWD needs public participation and support to balance interests and protect the watershed.

Children from Highland Elementary get involved labeling storm drains.

Education and outreach goals for all the goal topics include developing an education program; providing information to the public and community groups; and providing opportunities for public involvement and input on District programs and activities.

Importance of Education and Outreach

Public involvement and public information efforts are becoming increasingly important to the NMCWD. It is through these efforts that the District will increase the public's understanding of water resource management and issues in the watershed, and foster long-term public commitment to protecting these resources.

Goals

1. To manage and protect our water resources: lakes, ponds, creeks, wetlands, drainage ditches, and groundwater by:
   a. Promoting open communication with our constituents, both our citizen base and pertinent governmental units.
   b. Educating the general public and the local government units within the NMCWD on water quality and quantity issues, management and means of improvement.
2. To offer programs, educational opportunities, and information that facilitate an understanding of watershed principles.

Open Space & Recreational Use Implementation Program

- Implement NonPoint Education for Municipal Officials (NEMO) program throughout the District in coordination with municipalities and other watershed districts.
- Incorporate water quality education/information regarding the Nine Mile Creek Watershed into all District activities.
- Prepare and distribute educational materials related to UAA and TMDL studies and load restrictions.
- Make water quality reports available via website or other means and summarize data for public information purposes.
- Address lake management problems through the development of educational programs and materials.
- Use NMCWD website to provide information on the watershed.
- Post meeting dates, times, and locations on the NMCWD website.
- Provide education to local governments, residents, school groups, civic organizations, and others regarding District activities, the hydrologic cycle, groundwater/surface water interactions, surface water quality, and best management practices.
- Implement an education program including brochures, local television public service announcements, and presentations, to educate the public about the Nine Mile Creek watershed and its characteristics.
- Assist with signage of the Creek and other location-specific educational activities in public open spaces.
- Publish an annual communication piece on the activities of the Nine Mile Creek Watershed District.
- Publish articles about the District resources in other organizations' publications (e.g. city newsletters, local newspapers, etc.).
- Publish and distribute Nine Mile Creek Watershed map.
- Continue to sponsor storm drain markering program.
- Hold photo contest and produce calendar for annual communication piece.

Administration Goals

Importance of Administration

Effective and efficient operation of the Watershed District's work is essential to ensure public support.

General Issues

1. Oversight of basic water management projects, long-range planning, and other special needs can overburden the engineering and legal resources of the District. In order to assure timely, effective oversight, a District Administrator has been hired to perform such duties as may be delegated.
2. The administrative levy of the District will be in accordance with Minn. Stat. §103D.905, Subd. 3. An annual budget will be adopted following public hearing on the proposed budget. Minn. Stat. §103D.911.
3. The District is authorized to levy to pay the cost attributable to the basic water management features of projects initiated by petition of a municipality of the District. Minn. Stat. §103D.915.
4. When projects are properly initiated, the District will expend funds in accordance with priorities and available financial resources. First-priority is given to basic water management projects that are needed for proper and sufficient water quantity and quality management of streams and major lakes within the District. Second-priority is given to ancillary features of basic water management projects that will enhance waters and related land resources within the District. Third-priority is given to land acquisition for special purposes such as preservation of ecologically important or unique areas.
5. The District is a special taxing district governed by a citizen board appointed by county commissioners. Due to the significant costs associated with basic water management projects, the District believes that local elected officials should support implementation of basic water management projects so that District residents may influence elected officials.
6. The District is authorized to levy a tax to pay for the increased costs of preparing a water resources management plan or for projects identified in an approved or adopted plan.

Goals

The goal of the District is to manage its affairs in a fiscally responsible manner and to encourage citizen involvement in District activities.

Administration Implementation Program

- Support and oversee a Citizen Advisory Committee.
- Support Technical Advisory Committee.
- Develop performance standards for land-altering activities to achieve lower runoff rates and reduced volumes.
- Develop, adopt, and oversee official rules to implement the Nine Mile Creek Watershed District standards for water quality, runoff rate and volume, including urban runoff BMPs.

Getting residents to volunteer goes a long way toward increasing the public's understanding of water resource management and issues in the watershed, and fostering their commitment to protecting these resources.

Above: Volunteers help clean up local parks and along the creek on Earth Day.

Prioritization of Projects

The Nine Mile Creek Watershed District has developed a prioritization tier system for considering projects that are initiated by the District or through petition (see below).

The Implementation Program will be reviewed and updated at least biannually.

The District will continue to implement its projects typically through a petitioning process to assure strong coordination and partnership with the affected municipalities. However, the District can implement projects on its own without a petition.

First Priority

Projects based on the Nine Mile Creek Use Attainability Analysis, Completed and Future Use Attainability Analyses, and TMDL-related Projects/ Studies.

Second Priority

Enhancement/Improvements to Previously Completed UAA or Other Projects Completed by the District.

Third Priority

Other projects related to water resources management.

Background and Historic Projects

The Nine Mile Creek Watershed District (NMCWD) prefers to undertake Basic Water Management Projects on a cooperative basis in response to petitions from its constituent cities, but reserves the right to initiate projects itself. Many of the projects completed previously, for either flood control or water quality management purposes, were cooperative Basic Water Management Projects, including:

- Marsh Lake Dam, 1970
- Bredesen Park, 1973-86
- Normandale Lake, 1978
- Lower Valley Restoration Project, 1990-91
- Hopkins Culvert Improvement Project, 1993
- Smetana Lake Outlet, 1998-99 and 2001-02
- Bush Lake Outlet, 1999-2000
- Minnetonka Lakes Water Quality Improvements, 2003-06
- Bloomington Culvert Improvements, 2006–ongoing

Pending Projects

With the completion of the Minnetonka Lakes Water Quality Improvements Project, the District is now shifting its focus to implementation of the recommended BMPs from the remaining lake/watershed Use Attainability Analyses (UAAs) completed during the past 10 years.

Future Capital Improvement Projects

In addition to pending water quality improvement projects recommended by UAA reports, the District intends to be actively involved in TMDL studies and other programs that may lead to future capital improvement projects.

Infiltration pipes being installed under a parking lot near Glen Lake.

Lake	Recommended Best Management Practices (BMPs)						
	Watershed Runoff BMPs				In-Lake BMPs		
	Upgrade Existing Runoff Detention Pond(s)	Construct New Runoff Detention Pond(s)	Restore Wetland	Construct Rainwater Garden(s)	Normal Water Level Manipulation	Reduce Internal P Recycle w/ In-Lake Alum Treatment	Manage Exotic Plant Species**
Anderson	✓				✓		✓ CLP, PL
Arrowhead*							
Birch Island	✓	✓			✓		✓ PL
Bryant			✓			✓	✓ CLP, EWM, PL
Bush							✓ CLP, EWM, PL
Cornelia*							
Glen		✓					✓ PL
Indianhead*							
Lone				✓			✓ PL
Minnetoga		✓					✓ PL
Mirror	✓	✓				✓	✓ CLP, PL
Normandale		✓				✓	✓ CLP, PL
Penn (Lower)							✓ PL
Shady Oak	✓						✓ EWM, PL
Smetana							

*Lakes currently meet NMCWD water quality goals. Future implementation plans to be determined.

**CLP = Curlyleaf Pondweed EWM = Eurasian Watermilfoil PL = Purple Loosestrife

Normandale Lake features a natural-appearing boulder outlet structure.

Bredesen Park offers biking, pedestrian, and nature trails.

Budget Overview

Capital Projects*			
Anderson Lakes	$832,000	Mirror Lake	$182,000
Arrowhead Lake	$17,000	Normandale Lake	$489,000
Birch Island Lake	$395,000	Penn Lake	TBD**
Bryant Lake	$990,000	Streambank Stabilization and Corridor Management	$25,000,000
Indianhead Lake	TBD**		
Lake Cornelia	$24,000		

**To be determined

Nine Mile Creek Watershed District Budget for 2007-2016*

Category	2007-2016 Budget
Stormwater Management	$697,000
Surface Water Quality	$2,918,000
Open Space and Recreational Uses	$449,000
Wetlands Management	$788,000
Groundwater Protection	$197,000
Land Use Management	$571,000
Floodplain Management	$32,000
Education and Outreach	$537,000
Administration	$165,000
TOTAL	$6,352,000

*Costs listed are 2006 dollars

District Contact Information & Acknowledgements

District Contact Information

The Nine Mile Creek Watershed District Managers meet the third Wednesday of each month at 7:00 p.m. at the District Office at 7710 Computer Ave, Suite 135, Edina, MN 55435.

Meetings are open to the public.

Acknowledgements

The Nine Mile Creek Watershed District would like to acknowledge the significant time and effort of all those who assisted in the development of the Nine Mile Creek Water Management Plan by completing the citizen surveys, attending the Public Water Forums, and providing valuable insight on the water and natural resources of the Nine Mile Creek Watershed. The Nine Mile Creek Water Management Plan is a stronger, more progressive plan due to their contributions. The Nine Mile Creek Watershed District is thankful for the commitment of its partners and constituents to the protection and management of the resources of the Nine Mile Creek Watershed.

The District specifically would like to acknowledge the following partners:

Members of the Nine Mile Creek Watershed Citizen Advisory Committee

Technical Advisory Committee

Scott Anderson, City of Bloomington
Shelly Pederson, City of Bloomington
Leslie Stovring, City of Eden Prairie
Gene Dietz, City of Eden Prairie
Wayne Houle, City of Edina
Steve Stadler, City of Hopkins
John Bradford, City of Hopkins
Lee Gustafson, City of Minnetonka
Liz Stout, City of Minnetonka
Mike Eastling, City of Richfield
Kristin Asher, City of Richfield
Joel Settles, Hennepin County Environmental Services
Tim Larson, MN Pollution Control Agency
Kate Drewry, MN DNR - Waters
Julie Ekman, MN DNR - Waters
Nick Tiedeken, MN DOT
Beth Nuendorf, MN DOT
Brad Wozney, Board of Water & Soil Resources
Jack Frost, Metropolitan Council

Partner Cities

City of Bloomington
City of Eden Prairie
City of Edina
City of Hopkins
City of Minnetonka
City of Richfield

Citizens (too numerous to list) that participated in the Public Water Forums and completed the Citizen Survey

District Advisors

Barr Engineering—Bob Obermeyer, Hal Runke, Scott Sobiech, Janna Kieffer, Tim Anderson, Yvonne Huffman

Smith Partners—Louis Smith, Chuck Holtman, Michael Welch

District Managers

Managers are appointed at large for three-year terms by the Hennepin County Board of Commissioners

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Resides in Eden Prairie
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Fourth of July fireworks at Normandale Lake

9 Mile Creek
WATERSHED DISTRICT