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EXECUTIVE SUMMARY

This Local Surface Water Management Plan (LSWMP) serves as a comprehensive planning document to guide the City of the Village of Minnetonka Beach in conserving, protecting, and managing its surface water resources. This plan has been created to meet the requirements detailed in Minnesota Statutes 103B (Metropolitan Surface Water Management Act), Minnesota Rules 8410, and requirements of the local watershed management organizations. This document provides an inventory of water resource related information including the results of assessments conducted by other governmental units, both local and state. From this inventory and assessment, Minnetonka Beach sets forth its goals and policies and implementation program.

The plan is organized as follows:

- **Section 1** offers an introduction to and purpose of this Plan and includes organizational information on the location of components within this document.
- **Section 2** provides an inventory of land and water resources within the City, including a description of the physical setting, available water resources data, and land use maps.
- **Section 3** documents the regulatory agencies and their role in the City's surface water management.
- **Section 4** describes past studies and plans related to surface water management.
- **Section 5** identifies the stormwater management agreements between Minnetonka Beach and other entities.
- **Section 6** provides a current assessment of surface water management in Minnetonka Beach, including the NPDES permitting process and a regulatory standards comparison. This section also includes the identification of issues and corrective actions, including flooding and stormwater rate control problems.
- **Section 7** lists the goals and policies identified to address surface water management needs in the City, relating to land development and resource management.
- **Section 8** summarizes capital projects planned with known funding sources to implement the goals and policies listed in Section 6, and potential activities and funding mechanisms.
- **Section 9** outlines the continued administration of this plan with respect to plan amendments.

The appendices provide additional detail:

- **Appendix A** includes all figures associated with this Plan.
- **Appendix B** provides technical detail of drainage issues in the City.
- **Appendix C** provides information on Minnetonka Beach's street cleaning program.
- **Appendix D** provides information on natural resources and land cover throughout the City.
- **Appendix E** provides stormwater management standards set forth by Minnehaha Creek Watershed District.

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SECTION 1 – PURPOSE AND SCOPE

1.1 PURPOSE

This Local Surface Water Management Plan will serve as a comprehensive planning document to guide the City of the Village of Minnetonka Beach in conserving, protecting, and managing its surface water resources. This plan has been created to meet the requirements detailed in Minnesota Statutes 103B and Minnesota Rules 8410, administered by the Minnesota Board of Water and Soil Resources. This plan is also consistent with the goals and policies of the Metropolitan Council's *2040 Water Resources Policy Plan*, and the watershed district that has jurisdiction within the City: the Minnehaha Creek Watershed District. This plan may be periodically amended to remain current with local practices and policies.

1.2 SCOPE

This Plan serves multiple purposes including statutory and rule compliance. Minnesota Statute 103B.235 defines content for Local Surface Water Management Plans. According to the statute's text, each local plan, in degree of detail required in the watershed plan, shall:

- (1) describe existing and proposed physical environment and land use;
- (2) define drainage areas and the volumes, rates, and paths of stormwater runoff;
- (3) identify areas and elevations for stormwater storage adequate to meet performance standards established in the watershed plan;
- (4) identify regulated areas; and,
- (5) set forth an implementation program, including a description of official controls and, as appropriate, a capital improvement program.

Minnesota Rules 8410, administered by the Board of Water and Soil Resources, provide more detail on local plan content. Though the BWSR guidance applies specifically to watershed management organizations, this guidance has historically been used to frame expectations for municipal plans. According to Rules 8410, local plans must provide or address:

- (1) Executive summary
- (2) Land and water resource inventory
- (3) Impact on other units of government
- (4) Establishment of goals and policies
- (5) Assessment of problems
- (6) Implementation program
- (7) Implementation priorities
- (8) Plan contents; amendments
- (9) Annual reporting requirements

The reader will find that Minnetonka Beach has structured its LSWMP to provide the information required by 8410 without holding strictly to the outline contained in the rules. Through this

document, the City provides signposts identifying where a statutory or rulemaking requirement might be addressed.

The Minnetonka Beach LSWMP must address requirements of the Minnesota Pollution Control Agency's Municipal Separate Storm Sewer System (MS4) program. This program is designed to reduce the sediment and pollution that enters groundwater and surface waters to the maximum extent practicable. The MS4 program is regulated through the National Pollutant Discharge Elimination System (NPDES) permits. These NPDES permits require the development of Storm Water Pollution Prevention Programs (SWPPP).

The Minnetonka Beach LSWMP must also satisfy Metropolitan Council requirements as contained in their *2040 Water Resources Policy Plan*. These requirements build on those of Minnesota Rules 8410. Beyond state level requirements and those of Metropolitan Council, this plan must be consistent with those of the watershed district that has jurisdiction in the City, MCWD. Often, watershed districts outline specific content for local plans that go beyond that required by statute and rule.

SECTION 2 – LAND AND WATER RESOURCES INVENTORY

2.1 LOCATION AND HISTORY

The City of the Village of Minnetonka Beach is a fully developed city located in Hennepin County. The City is a boot-shaped peninsula on Lake Minnetonka, with a total land area of 981 acres (295 acres of which are land, and 686 acres of which are open water). Its only immediate bordering community is Orono, but Spring Park and Tonka Bay are within proximity, shown in Figure 1.

Minnetonka Beach is a residential community that desires to maintain its small-town, lake-community character. The residential population of the City is around 540. The City has intentionally tried to preserve this character by encouraging residential development and the preservation of parks and open spaces, while limiting other types of development. There are no commercial or industrial land uses in the City, but there is a large Country Club (see Figure 3), the Lafayette Club. This historic club occupies approximately 15 percent of the City's land area.

TABLE 2.1 – MINNETONKA BEACH POPULATION

Year	Population	Households	Employment
2010	539	201	174
2020	520	200	180
2030	490	200	180
2040	510	210	180

Source: Metropolitan Council 2040 Water Resources Policy Plan

2.2 TOPOGRAPHY

The fact that the City is a peninsula means that ultimately all areas of the City drain into one of three locations within Lake Minnetonka, but there are several local high and low points throughout the City. Runoff locations are either one of two bays adjacent to the City, Lafayette Bay (south of City limits) or Crystal Bay (north of City limits), or to the main portion of Lake Minnetonka, directly east of City limits.

Thirteen low points throughout the City were identified as part of the Drainage Report (see Appendix B for more detail) that was completed by Stantec in November 2013. Page 26 of this report includes a figure (labelled Figure 2) that shows the location of these low points. These low points are located on the most western and eastern limits of the City and are prone to flooding in very large storm events. Detail on the locations of these areas, as well as recommendations to reduce flooding issues, is given in Sections 6 and 7 of this Plan.

2.3 SOILS

The Natural Resources Conservation Service (United States Department of Agriculture), in conjunction with the Minnesota Agricultural Experiment Station and Board of Water and Soil Resources, published the *Soil Survey of Hennepin County, Minnesota* in 2000. The *Soil Survey* provides mapping and physical properties for soil types found in the area.

The *Soil Survey* assigns each soil type to a hydrologic soil group, according to the soil's ability to infiltrate water during long-duration storms. The four hydrologic soil groups are: Group A - high infiltration, Group B - moderate infiltration, Group C - slow infiltration, and Group D - very slow infiltration. Most of the soil types in Minnetonka Beach are classified in Hydrologic Soil Group B. This group is characterized by moderately well to well-drained soils, fine to moderately coarse textures, and moderate infiltration rates.

2.4 GROUNDWATER

The City of Minnetonka Beach provides drinking water to residents from groundwater sources. There are two wells in the City at approximately 400 feet depth that provide water from the Jordan Aquifer.

Monitoring of these groundwater sources was completed in 2016. Results of this monitoring indicate that no contaminants were detected at levels that would violate federal drinking water standards. Some contaminants were detected, but at concentrations much below legal limits. These contaminants include haloacetic acids and total trihalomethanes, both of which are by-products of drinking water disinfection, and chlorine, which is a water additive used to control microbes. In addition to these contaminants necessary to treat groundwater sources, there are trace levels of copper and lead (much below the respective legal limit for either contaminant) that are either due to the erosion of natural deposits or the corrosion of household plumbing systems. The City will routinely monitor its drinking water for contaminants.

2.5 CLIMATE

Climate data for the Twin Cities are published by the National Weather Service (NWS) station at Chanhassen, MN. The NWS is a branch of the National Oceanic and Atmospheric Administration (NOAA). Table 2.2 provides a summary of average precipitation data for the Twin Cities area.

TABLE 2.2 – AVERAGE MONTHLY PRECIPITATION (INCHES), 1971-2016

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
0.90	0.84	1.80	2.68	3.47	4.52	3.86	4.16	2.80	2.24	1.71	1.12	30.1

Rainfall frequency estimates are used as design tools in water resource projects. Rainfall frequencies are summarized in the National Oceanographic and Atmospheric Administration's (NOAA) Atlas 14-Point Precipitation Frequency Estimates. Previously, Technical Paper No. 40, Rainfall Frequency Atlas of the United States (NOAA), was used to determine rainfall frequency estimates. The use of Atlas 14 estimates provides an advantage to Technical Paper No. 40, as estimates are based on data from denser networks with longer periods of record, and regional

frequency analyses and new spatial interpolation techniques are used. Table 2.3 lists rainfall frequencies applicable to the City of Minnetonka Beach.

TABLE 2.3 – 24-HOUR RAINFALL DEPTHS AND FREQUENCY

Recurrence Interval (yrs)	24-hr Rainfall Depth (in)
2	2.86
5	3.57
10	4.25
50	6.27
100	7.31

2.6 WATER RESOURCES

2.6.1 LAKE MINNETONKA

Over 14,000 acres in size, Lake Minnetonka is the largest lake in the Twin Cities metropolitan area. The Lake has area in both Hennepin and Carver Counties. Given its large size and many bays, there is a great variety in the characteristics of Lake Minnetonka relating to aquatic species presence, lake bottom types, and depths. It is a popular recreation lake, and so the strain on its aquatic resources is known in some areas of the lake.

There are a diversity and abundance of fish species throughout Lake Minnetonka. Species include largemouth bass, sunfish, crappies, muskies and walleye. Some consumption guidelines have been instituted for several species by the Minnesota DNR, given mercury levels in fish tissue.

There are several invasive species in the Lake that have been of concern; curly-leaf pondweed was discovered in 1900, purple loosestrife in 1940 and milfoil in 1987. Zebra mussels were discovered in the lake in 2010, and since that time there have been extensive measures in place to control the spread of invasive species. In addition to invasive species being an issue in Lake Minnetonka, there were issues with surface runoff pollution until the 1970s. Since agencies like Minnesota DNR, the Minnesota Pollution Control Agency, and the Minnehaha Creek Watershed District have focused intensely on monitoring these conditions and educating landowners on the issues with surface runoff, these conditions have improved significantly.

2.6.2 UNNAMED WETLAND

The National Wetland Inventory (NWI) was used to identify wetlands within the City limits. There are two unnamed wetlands in the southwest corner of the City, which border the City of Orono and Minnetonka Beach. The smaller, and more northern of the two wetlands is classified as PEM1F, meaning that it is a palustrine (non-tidal wetland, dominated by shrubs, trees and persistent emergent vegetation), emergent, persistent and semi-permanently flooded wetland. This wetland is 0.28 acres in size. Both this wetland, and the larger wetland to the south, are dominated by cattails with a muck-bottom zone bordering the shoreline. Associated species of cattail marshes include *Carex* (*C. aquatilis*, *C. rostrata*, and *C. lanuginosa*) as well as bulrushes (*Scirpus americanus*, *S. acutus*, and *S. heterochaetus*), milkweed (*Asclepias incarnata*), and broad-leaved arrowhead (*Sagittaria latifolia*).

The second wetland is significantly larger in size, comprising an area of roughly three acres in both the Cities of Orono and Minnetonka Beach. This wetland is classified as PABG, meaning that it is a palustrine, aquatic bed, intermittently-exposed wetland. Wetlands of this type usually include plants that grow on or near the surface of the wetland for much of the year.

2.6.3 IMPAIRED WATERS

Crystal Bay, a portion of which is located within the City limits of Minnetonka Beach, is listed on the Minnesota Pollution Control Agency’s list of impaired waters; lakes and streams in the state that do not meet federal water quality standards. Table 2.4 includes information about this impaired water body and Section 3.7 includes discussion on impaired waters and the TMDL process.

TABLE 2.4 – IMPAIRED WATERS RECEIVING DISCHARGE FROM MINNETONKA BEACH

Impaired Water	Year Listed	Affected Use	Pollutant or Stressor	TMDL Approved
Lake Minnetonka – Crystal Bay 27-0133-10	1998	Aquatic consumption	Mercury in fish tissue	2008

2.7 NATURAL RESOURCES

The City of Minnetonka Beach is a fully-developed city. For a city of its size, there are a good number of community parks and open spaces for the public to use. Community parks and their characteristics are listed in Table 2.5 below.

TABLE 2.5 – COMMUNITY PARKS AND OPEN SPACES

Park or Open Space Name	Area	Uses
City Hall Park	0.60 ac	Lisa Crear flower garden, green space, basketball, play equipment
Docks	1.37 ac	Various dock access areas, green space
Half Moon Park	0.51 ac	Play equipment, picnic tables, green space
Arcola Woods	3.32 ac	City maintenance facility, natural area, wells and water tower
Ray Peters Park	10.01 ac	Hockey rink, picnic tables, community events, walking paths, soccer field
Lafayette Park	3.42 ac	Green space
Lafayette Ridge Park	3.81 ac	Green space
Lafayette Ridge Tennis Court	0.33 ac	Tennis court for public use
Regional Trail	9.71 ac	Bike/walking trail
Swimming Beach	0.56 ac	Public beach
Unnamed Park	0.31	Green space

In addition to these community parks, the Three Rivers Park Dakota Regional Trail runs through Minnetonka Beach. This trail is a 12 to 16-foot regional trail corridor for biking, walking, skating and running. There are also multiple City docks throughout town that provide public access. These docks are: City Beach, Lafayette Bay One, Lafayette Bay Two, Northview Road, Lake Road, Woodbridge Road One, Woodbridge Road Two, Crystal Bay, Smith's Bay, Cross Point and Huntington Point Road West.

The Minnesota Department of Natural Resources, Minnesota County Biological Survey did not have on record any rare, threatened or endangered species within the City.

2.8 DRAINAGE SYSTEMS

Because the City is a peninsula, everything eventually drains into Lake Minnetonka, either to Lafayette Bay to the south, Crystal Bay to the north, or to the main portion of the Lake, east of City limits. Roughly 160 acres of the City drain south to Lafayette Bay, 90 acres drain to Crystal Bay, and 50 acres drain east to the main portion of Lake Minnetonka.

In terms of the storm sewer system that exists in Minnetonka Beach, there is no set pattern or method of design and construction, which is typical of older communities. Almost ninety percent of the pipes in the City are 12-inch diameter pipes or smaller, and roughly forty percent of the pipes in the City are 8-inch diameter pipes or smaller. Older pipes in the City are clay, while newer ones are either corrugated metal pipe (CMP) or reinforced concrete pipe (RCP). The fact that small pipes have been installed in the City may be an indication that pipes were installed as a reaction to ponding in low spots, rather than an overall stormwater management plan. Most of the pipe-drained areas are found in the inner parts of the City. Where there are no storm sewer pipes, shoreline properties and other areas at higher elevations discharge directly to the lake via overland drainage. Homes that are not on lakeshore property or directly connected to the lake will discharge to side yard swales and streets, which will eventually drain to Lake Minnetonka.

2.9 PLANNING AND LAND USE

Minnetonka Beach's last comprehensive plan was adopted in 2008. The City's next comprehensive plan, in which this Local Surface Water Management Plan is included as an appendix, includes updates to the goals and policies related to water and natural resources. The total land area of Minnetonka Beach is approximately 295 acres. Current land uses within the City are shown in Figure 3. Land uses proposed for the 2040 Comprehensive Plan are shown in Figure 4.

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SECTION 3 – REGULATORY SETTING

3.1 OVERVIEW

This section describes the City’s current surface water resources management programs and practices and the agencies and organizations having roles in the City’s management of these resources. Table 3.1 summarizes the City’s and other agencies’ respective regulatory controls related to water resources management and protection. Acronyms used in Table 3.1 are described in Sections 3.2-3.17.

TABLE 3.1 – REGULATORY CONTROLS

Official Control	Responsibility	Mechanism
Erosion and Sediment Control	City, MPCA, MCWD	<ul style="list-style-type: none"> NPDES General Permit – SWPPP MCM 4 – Construction site stormwater runoff control NPDES General Permit – SWPPP MCM 5 – Post-construction stormwater management City Code – Ch. 2, Section 201 (Zoning Ordinance 3.7-F) MCWD – Erosion Control Rule
Shoreland	City, MCWD	<ul style="list-style-type: none"> City Code – Ch. 2, Sections 201 (Zoning Ordinance 3.7-F) MCWD – Shoreline and Streambank Stabilization Rule
Floodplain	MCWD	<ul style="list-style-type: none"> MCWD – Floodplain Alteration Rule
Wetlands	City, MPCA, DNR, USACE, MCWD	<ul style="list-style-type: none"> NPDES General Permit – SWPPP MCM 5 – Post-construction stormwater management NPDES General Permit – SWPPP MCM 6 – Pollution prevention DNR – Public Waters Work Permit USACE – Section 404, Clean Water Act City Code – Ch. 2, Section 201 (Zoning Ordinance 3.7-D) MCWD – Wetland Protection Rule MCWD – Dredging Rule
Illicit Discharge	City, MPCA, MCWD	<ul style="list-style-type: none"> NPDES General Permit – SWPPP MCM 3 – Illicit discharge detection and elimination City Code – Ch. 5, Section 515 MCWD – Illicit Discharge Rule
Water Quality	City, MPCA, MCWD	<ul style="list-style-type: none"> NPDES General Permit MCWD – Illicit Discharge Rule MCWD – Stormwater Management Rule City Code – Ch. 2, Section 201 (Zoning Ordinance 3.7-F)
Water Quantity	City, MPCA, MCWD	<ul style="list-style-type: none"> NPDES General Permit – SWPPP MCM 1 – Public education and outreach NPDES General Permit – SWPPP MCM 4 – Construction site stormwater runoff control MCWD – Appropriations Rule MCWD – Stormwater Management Rule City Code – Ch. 2, Section 201 (Zoning Ordinance Section 3.7-F)
Acronyms are defined in Sections 3.2-3.17 of this Plan.		

3.2 CITY SERVICES

Residential streets, sanitary and storm sewers, waterlines, and park lands within Minnetonka Beach are maintained by the City. Drinking water within the City of Minnetonka Beach is supplied by the City through two wells. Wastewater is collected in the City sewer system and conveyed through the Metropolitan Council trunk sanitary sewer system to Blue Lake Wastewater Treatment Plant in Shakopee, MN. The City most recently adopted utility fees (see Appendix A of the City's Code) in 2017 to pay for the maintenance, operation, and improvement of the City's stormwater, sanitary and water conveyance systems. These utility fees went into effect January 1, 2018.

City staff coordinates with Minnehaha Creek Watershed District and other outside agencies in water resource management and conservation. A collection of City residents and council members manage comprehensive planning for Minnetonka Beach. The City's current regulations are available on the City's website.

3.3 HENNEPIN COUNTY

Hennepin County was created in 1852 by the Minnesota Territorial Legislature and is one of Minnesota's original nine counties. The County provides many services to Minnetonka Beach residents, including health services and property records. Hennepin County Conservation Services provides technical and funding assistance to cities within the County regarding natural resources issues.

Hennepin County was the first county to begin groundwater planning in 1988, with authority delegated to the conservation district. In 1994, Hennepin County prepared a groundwater management plan, which received state approval. The County never formally adopted the Plan, however, County managers have made progress on many of the plan's objectives. The groundwater management plan's objectives include delineation of wellhead protection areas around public supply wells, ranking and mapping environmental hazards throughout the County, and adopting contingency plans for groundwater supply.

3.4 WATERSHED MANAGEMENT ORGANIZATIONS (WMO)

In 1955, the Minnesota State Legislature established the Watershed Act. This act provided the means to create watershed districts, special purpose units of local government with broad authority to regulate land use planning, flood control and conservation issues, to protect and manage water resources. There are currently 46 watershed districts in the state, and 14 in the seven-county metropolitan area. Watershed districts have the authority to:

- Adopt rules with the power of the law to regulate, conserve and control the use of water resources within the district;
- Contract with units of government, as well as private and public corporations, to carry out water resources management projects;
- Hire staff and contract with consultants;
- Assess properties for benefits received and levy taxes to finance direct administration;
- Accept public and private grant funds, and encumber debt;
- Acquire property necessary for projects;

- Construct and operate drainage systems, dams, dikes, reservoirs and waters supply systems; and
- Enter upon lands within and without the district to conduct investigations.

In 1982, the legislature approved the Metropolitan Surface Water Management Act, Chapter 103B of Minnesota Statutes. This act requires all local governments within the seven-county metropolitan area to address surface water management through participation in a Watershed Management Organization (WMO). A WMO can be organized as a watershed district, as a Joint Powers Agreement (JPA) among municipalities, or as a function of county government. There are 36 joint powers WMOs and ten watershed districts within the seven-county metropolitan area. These entities prepare watershed plans to:

- Protect, preserve, and use natural surface and groundwater storage and retention systems;
- Minimize public capital expenditures needed to correct flooding and water quality problems;
- Identify and plan for means to effectively protect and improve surface and groundwater quality;
- Establish more uniform local policies and officials controls for surface and groundwater management;
- Prevent erosion of soil into surface water systems;
- Promote groundwater recharge;
- Protect and enhance fish and wildlife habitat and water recreational facilities; and
- Secure the other benefits associated with the proper management of surface and groundwater.

The City of Minnetonka Beach is located within the jurisdictional boundaries of the Minnehaha Creek Watershed District. See Figure 2 for the boundaries of this District. Minnehaha Creek Watershed District has authority to review and approve this Local Surface Water Management Plan.

3.4.1 MINNEHAHA CREEK WATERSHED DISTRICT (MCWD)

The Minnehaha Creek Watershed District (MCWD) is a local unit of government responsible for managing and protecting water resources within one of the most urbanized watersheds in Minnesota. The watershed area is roughly 180 square miles that drain into Minnehaha Creek, which then discharges into the Mississippi River. The MCWD's vision is for “a landscape of vibrant communities where the natural and built environments in balance create value and enjoyment.” Goals of the MCWD include water quality, water quantity, ecological integrity, and thriving communities. The MCWD updated its 2007 Watershed Management Plan in 2017, which outlines water quality and quantity issues throughout the watershed and goals for the next ten years in terms of mitigating these issues.

3.5 METROPOLITAN COUNCIL

Established by the Minnesota Legislature in 1967, the Metropolitan Council is the regional planning organization for the Twin Cities, seven-county area. The Council manages public transit,

housing programs, wastewater collection and treatment, regional parks and regional water resources. Council members, of which there are seventeen members, are appointed by the Minnesota Governor.

The Metropolitan Council reviews municipal comprehensive plans, including this Local Surface Water Management Plan. The Council adopted the *2040 Water Resources Management Policy Plan* in 2015, establishing expectations to be met in local plans. The Council's goals focus on water quality standards and pollution control, "to reduce the effects of non-point source pollution on the region's wetlands, lakes, streams and rivers."

3.6 STATE BOARD OF WATER AND SOIL RESOURCES (BWSR)

The Minnesota Board of Water and Soil Resources works through local government agencies to implement Minnesota's water and soil conservation policies. The BWSR is the administrative agency for soil and water conservation districts, watershed districts, watershed management organizations, and county water managers. The BWSR is responsible for implementation of the Metropolitan Surface Water Management Act and the Wetland Conservation Act. Staff members are located in eight field offices throughout the state.

First established in 1937 as the State Soil Conservation Committee, the agency became part of the University of Minnesota in the 1950s, transferred to the Department of Natural Resources in 1971, and then transferred to the Department of Agriculture in 1982. In 1987, the State Legislature established the current Board of Water and Soil Resources. The Board consists of 17 members, appointed by the governor to four-year terms. Multiple state and local agencies are represented on the Board. In 1992, the BWSR adopted rules (8410), establishing the required content for Local Surface Water Management Plans.

3.7 MINNESOTA POLLUTION CONTROL AGENCY (MPCA)

The MPCA is the state's lead environmental protection agency. Created by the State Legislature in 1967, the MPCA is responsible for monitoring environmental quality and enforcing environmental regulations to protect land, air, and water in the state of Minnesota. The MPCA regulates the City's management of wastewater, stormwater and solid waste. The MPCA administers the federal Clean Water Act (CWA) in Minnesota.

The MPCA is the permitting authority in Minnesota for the Municipal Separate Storm Sewer Systems (MS4) program under the National Pollutant Discharge Elimination System (NPDES), the federal program administered by the Environmental Protection Agency to address polluted stormwater runoff. Certain MS4s in Minnesota are subject to stormwater regulation under the Clean Water Act and Minnesota Rule 7090. There are multiple ways for a City or township to be subject to the MPCA's stormwater regulation under the MPCA's general permit. The MPCA regulates the entire jurisdiction of a city (or township) that is located fully or partially within an urbanized area as determined by the latest Decennial Census and that owns or operates an MS4. Consequently, Minnetonka Beach has developed a stormwater pollution prevention program (SWPPP) to address six minimum control measures: 1) public education, 2) public involvement, 3) illicit discharge detection and elimination, 4) construction site runoff control, 5) post-construction runoff control, and 6) pollution prevention in municipal operations. As the SWPPP is

reviewed and updated as necessary on an annual basis, a copy of the SWPPP is not included in this LSWMP as it would eventually become outdated.

In addition to the NPDES program, the MPCA is required to publish a list of impaired waters; lakes and streams in the state that are not meeting federal water quality standards. For each water body on the list, the MPCA is required to conduct a study to determine the allowable Total Maximum Daily Load (TMDL) for each pollutant that exceeds the standards. The 2016 MPCA list of impaired waters identifies 2,660 TMDL reports needed for 1,808 lakes, rivers and streams in the state. Local governments are required to incorporate completed TMDL studies into their Local Surface Water Management Plans and review their SWPPPs to determine if additional BMPs are needed to comply with the TMDL waste load allocation. Currently, there are no listed waters within the City of Minnetonka Beach. Table 2.4 identifies impaired waters that ultimately received discharge from the City of Minnetonka Beach.

In response to these multiple regulatory activities, the MPCA published the *Minnesota Stormwater Manual* (Version 1.1, 2006), providing stormwater management tools and guidance. The Manual presents a unified statewide approach to stormwater practices.

3.8 MINNESOTA DEPARTMENT OF NATURAL RESOURCES (DNR)

Originally created in 1931 as the Department of Conservation, the DNR has regulatory authority over the natural resources of the state. DNR divisions specialize in waters, forestry, fish and wildlife, parks and recreation, land and minerals, and related services. The Division of Waters administers programs in lake management, shoreland management, dam safety, floodplain management, wild and scenic rivers, the Public Waters Inventory (PWI), and permitting of development activity within public waters.

3.9 MINNESOTA DEPARTMENT OF HEALTH (MDH)

The MDH manages programs to protect public health, including implementation of the Safe Drinking Water Act (SDWA). The MDH has regulatory authority for monitoring water supply facilities such as water wells, surface water intakes, water treatment, and water distribution systems. The MDH is also responsible for the development and implementation of the wellhead protection program. It should be noted that the City does not have jurisdictional areas within the source water protection area for surface water intakes identified in the source water assessments conducted by the Minnesota Department of Health.

3.10 MINNESOTA ENVIRONMENTAL QUALITY BOARD (EQB)

The EQB is comprised of five citizen members and the heads of ten state agencies that play an important role in Minnesota's environment and development. The EQB develops policy, creates long-range plans and reviews proposed projects that may significantly influence Minnesota's environment.

3.11 MINNESOTA DEPARTMENT OF TRANSPORTATION (MNDOT)

Within the City, MnDOT administers several state highway systems. MnDOT approval is required for any construction activity within state rights-of-way. MnDOT also administers a substantial

amount of funding for transportation projects completed in the City. Anticipated activities of MnDOT are periodically published in their State Transportation Improvement Plan (STIP).

3.12 U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

The EPA develops and enforces the regulations that implement environmental laws enacted by Congress, however the MPCA bears responsibility for implementing many of the resulting programs within Minnesota. The NPDES program and the Impaired Waters List are both the result of the Clean Water Act, administered by the EPA.

3.13 U.S. ARMY CORP OF ENGINEERS (USACE)

Under Section 404 of the Clean Water Act, including subsequent modifications, the EPA and the USACE regulate the placement of fill into all wetlands of the U.S. In 1993, there was a modification of the definition of "discharge of dredged material" to include incidental discharges associated with excavation. This modification meant that any excavation done within a wetland required the applicant to go through Section 404 permitting procedures. In 1998, however, this decision was modified so that excavation in wetlands is now regulated by the USACE only when it is associated with a fill action.

3.14 FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

FEMA manages federal disaster mitigation and relief programs, including the National Flood Insurance Program (NFIP). This program includes floodplain management and flood hazard mapping. Portions of Minnetonka Beach, closest to the Lake Minnetonka shore, are within Zone AE and Zone A, mapped floodplain areas.

3.15 NATURAL RESOURCES CONSERVATION SERVICE (NRCS)

The Natural Resources Conservation Service (NRCS) is a division of the U.S. Department of Agriculture. Formerly named the Soil Conservation Service (SCS), the NRCS provides technical advice and engineering design services to local conservation districts across the nation. The *Soil Survey of Washington and Ramsey Counties, Minnesota* was published by the Soil Conservation Service in 1977. The SCS also developed hydrologic calculation methods that are widely used in water resources design.

3.16 U.S. GEOLOGICAL SURVEY (USGS)

The USGS provides mapping and scientific study of the nation's landscape and natural resources. USGS maps provide the basis for many local resource management efforts.

3.17 U.S. FISH AND WILDLIFE SERVICE (USFWS)

The USFWS works to conserve and protect the nation's fish, wildlife, plants and habitat. The USFWS developed the National Wetlands Inventory (NWI) beginning in 1974, to support federal, state and local wetland management work.

SECTION 4 – RELATED STUDIES, PLANS AND REPORTS

4.1 MINNETONKA BEACH DRAINAGE STUDY

In 2013, Stantec prepared a drainage study for the City of Minnetonka Beach. The goals of the study were to provide a greater understanding of the storm sewer system, develop preliminary cost estimates for system improvements, and provide the City with information with which to make policy decisions. A summary of information from the study is provided below, and the full text of the study is provided in Appendix B.

Most of the existing storm sewer system in Minnetonka Beach includes 12-inch diameter pipes or smaller, with roughly half of the pipes in the City being smaller than 8-inch diameter pipes. The size of these pipes indicates that pipes in the City have been installed mostly as a reaction to ponding in low spots, rather than as part of an overall stormwater management system. The majority of the City's storm sewer system was installed in the 1930s, with the City's water main installation. In the 1970s, additional pipes were added or replaced when the City's sanitary sewer system was added. There were projects to add additional pipes in the early 2000s to alleviate ponding issues in low points throughout the City. Most of the pipe-drained areas are in the inner parts of the City, where overland drainage cannot occur. In other areas of the City, particularly in high points close to the shoreline, properties discharge directly to the lake. Areas that are not adjacent to Lake Minnetonka discharge to side swales and streets, which eventually discharge into Lake Minnetonka.

The Drainage Study lists thirteen properties throughout the City where there are drainage or flooding issues. Solutions to drainage issues include grading lots, adding overland emergency overflow structures, and adding storm water pipes to convey drainage off the property into the City's storm sewer system. Costs for these preliminary solutions range from \$30,000 to \$60,000, depending on the proposed solution.

4.2 MINNETONKA BEACH STREET CLEANING PROGRAM PHOSPHORUS REDUCTION AMOUNTS

In 2008, Stantec prepared a Phosphorus Load Reduction and BMP Guidance Plan for the City of Minnetonka Beach. The City of Minnetonka Beach requested that Stantec examine their street cleaning program to provide the MCWD with updated phosphorus load reduction amounts. The full text of this memo can be found in Appendix C.

As part of the MCWD's 2007 Lake Minnetonka Subwatershed Phosphorus Load Reduction Plan, Minnetonka Beach was assigned a phosphorus load reduction of 13 lbs/yr. The original phosphorus loading reduction plan included reductions of roughly 1 lb/yr for street sweeping and leaf removals. However, between 2005 and 2012, the City completed infrastructure improvements that resulted in a phosphorus load reduction of roughly 3 lbs/yr. Since the time of the original plan, studies have been conducted that show street sweeping and leaf litter removal can result in phosphorus removal rates much larger than originally anticipated.

The conducted study shows, through use of a spreadsheet model, that Minnetonka Beach removes over 70 lbs/yr of phosphorus through its street sweeping program. Thus, this conservative analysis yields results that the phosphorus removed by street sweeping and leaf pick-up far exceed the required load reduction of 13 lbs/yr. The City received written confirmation from the MCWD that the City is meeting its requirements for phosphorus reduction.

4.3 STUDIES COMPLETED BY THE MCWD

In addition to the two studies that were prepared by Stantec for the City of Minnetonka Beach, the Minnehaha Creek Watershed District has also completed studies that are relevant to stormwater management in the City. These studies include the Hydrologic, Hydraulic and Pollutant Loading Study (2003), Functional Assessment of Wetlands (2003), and two Annual Monitoring Reports. The following provides information on these four studies, but the full text of these studies can be found on the MCWD website (<http://minnehahacreek.org/project>).

The MCWD, with Emmons and Olivier Resources, Inc., compiled a multi-year Hydrologic, Hydraulic, and Pollutant Loading Study in 2003. Goals of this watershed study were: 1) to document the nature of the physical and biological characteristics of the watershed, 2) to quantify the amount of water moving through the watershed and assess its quality; 3) to gather public input to assist in problem identification and determination of solutions, and 4) to provide the study results to implementation partners.

The MCWD also conducted a Functional Assessment of Wetlands in 2003. The purpose of this assessment was to provide a comprehensive inventory and assessment of wetlands in the watershed. Wetlands were assigned to one of four categories – Preserve, or Manage 1, 2, or 3. These management categories will be used to determine regulation standards for each wetland based on an evaluation of their existing conditions.

Two annual Monitoring reports have been completed by the MCWD (1968-1988; 1992 to 2016). These reports summarize water quality monitoring data collected throughout the watershed.

SECTION 5 – WATER RESOURCES RELATED AGREEMENTS

Water resources agreements can include water supply and conveyance agreements, stormwater utility service agreements, and cost sharing agreements, between cities or WMOs. At this time, there are no water resources related agreements that the City of Minnetonka Beach has entered. Should the City enter into any agreements with adjacent cities or other agencies, this LSWMP will be amended to include information on the details of those agreements.

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SECTION 6 – CURRENT ASSESSMENT

6.1 OFFICIAL CONTROLS

Codes and ordinances (official controls) are necessary tools supporting implementation of this Local Surface Water Management Plan. Many of the stated goals and policies specifically reference City codes that exist or need to be created. The City's MS4 permit includes a summary of ordinances required to comply with NPDES requirements.

After adoption of this Local Surface Water Management Plan, all applicable portions of City Code will need to be updated to achieve consistency with local watershed plans. Per Minnesota Statute, this implementation step must be completed within 180 days after adoption of this plan. In addition, over time, codes must be updated to remain consistent with City goals, policies, and practices. Table 6.1 assesses the status of City codes related to surface water management.

TABLE 6.1 – SURFACE WATER MANAGEMENT RELATED CODES

Chapter	Section	Code Name	Status
1	110	Violations and Enforcement	Update as needed as required by MS4 permit
2	201 (Zoning Ordinance Section 3.7-F)	Vegetation Removal; Grading, Filling, Shoreline Preservation and Post Construction	Update as needed as required by MS4 permit
		Grading and Erosion Control	Update as needed as required by MS4 permit
3	306	Storm Water Utility	No update is necessary
5	515	Illicit Discharge and Connection	Update as needed as required by MS4 permit
Appendix B	N/A	Fee Schedule	Update if stormwater fees change

6.2 HYDROLOGIC AND HYDRAULIC MODEL

The City is divided into three major drainage districts as shown in the attached Drainage Report (see Figure 1 of Appendix B for detail). These three drainage districts are Crystal Bay (CB), Lafayette Bay (LB) and Lake Minnetonka (LM). These sub-districts are further divided into numbered sub-districts, to account for specific watershed features that impact the functionality of the stormwater system, such as vegetation type, topography, and stormwater conveyance features.

The Drainage Report (Appendix B of this document), includes a summary of results for the HydroCAD model developed for the City of Minnetonka Beach in 2013. Results of the drainage model include the identification of several areas throughout the City that are prone to flooding during the 100-yr, 24-hr storm. On the eastern tip of the City limits (bordered to the east by Lake Minnetonka), these flood-prone areas include areas along Lafayette Road, Woodbridge Road, and Lafayette Park. On the western side of the City, these areas include Brooks Lane and

Northview Road. Flooding during the 100-yr event would include local street flooding and issues with drainage between homes. More detail on these areas is provided in Appendix B (Minnetonka Beach Drainage Study), with potential solutions provided for each area. In many cases, replacing existing storm sewer with larger pipes would mitigate potential flooding problems; however, these reconstructions and additions would be costly for the City.

There are currently no capital improvements planned to address flood issues in Minnetonka Beach.

6.3 WETLAND MANAGEMENT

From the *2040 Water Resources Management Policy Plan*, the Metropolitan Council requires the City to include the following in the LSWMP Update:

'All communities need to include a wetland management plan or a process and timeline to prepare a plan. At a minimum, the wetland management plan should incorporate a function and value assessment for wetlands. Other items to address in the plan include the pretreatment of stormwater prior to discharge into all wetland types, and the use of native vegetation as buffers for high quality wetlands. Buffers should be consistent with the functions and values identified in the plan.'

The MCWD is identified as the Local Government Unit (LGU) responsible for the administration and enforcement of the Wetland Conservation Act (WCA). WCA requires anyone proposing to drain, fill, or excavate a wetland first to try to avoid disturbing the wetland; second, to try to minimize any impact on the wetland; and, finally, to replace any lost wetland acres, functions, and values. Certain wetland activities are exempt from the act, allowing projects with minimal impact or projects located on land where certain pre-established land uses are present to proceed without regulation.

The City of Minnetonka Beach will work with the MCWD to ensure that a wetland management plan is completed that incorporates a function and value assessment for wetlands.

6.4 IMPAIRED WATERS AND TMDLS

Section 303(d) of the Federal Clean Water Act requires that states create impaired waters lists for waterbodies that do not meet water quality standards due to the presence of a pollutant or stressor. Impaired waters lists are published biannually, following monitoring and assessment of the waterbody. Total Maximum Daily Loads (TMDLs), developed for impaired water bodies, specify the maximum pollutant amount that the waterbody can receive to meet water quality standards. A TMDL is the sum of waste load allocations, load allocations, and a margin of safety. Waste load allocations are expressed in numeric form, and municipal stormwater sources fall under waste load allocations because they are regarded as point sources. Load allocations are those loads that do not fall under NPDES permit areas.

Information for impaired waters identified in Minnetonka Beach are identified in Table 2.4 in Section 2.6.3. The absence of a waterbody from the 303(d) list does not necessarily mean the

waterbody is meeting its designated use(s). It may be that it has either not been sampled or there is not enough data to make an impairment determination.

As part of the NPDES program, the City of Minnetonka Beach is required to review all discharges from their MS4 system to impaired waters, as defined by the current USEPA approved 303(d) list. As a part of this review they are required to do the following:

1. Review the Impaired Waters List to determine whether there are any impaired waters located within five miles of the City's boundaries that receive discharge from the City's MS4. For waters that are impaired only for mercury, the review process stops here.
2. Identify the location(s) of discharge(s) from the City's MS4 to the impaired waters. Discharges may include pipes, outlets, ditches, swales, street gutters, or other discrete conveyances for stormwater runoff.
3. Delineate the watershed area within the City's jurisdiction that discharges to each impaired water.
4. Prepare an impaired water evaluation addressing the hydrology, land use, and other characteristics of each watershed area delineated.
5. Prepare an impaired waters report. This report will address the results of the impaired waters evaluation along with a determination of whether changes to the City's SWPPP are warranted to reduce the impact from the City's MS4 stormwater discharge to each impaired water.
6. The City will incorporate the changes identified in the impaired waters report into the City's SWPPP and be reported through the annual reporting process.

At some point, a strategy would be developed that would lead to attainment of the applicable water quality standard for these impaired waters. The process of developing this strategy is commonly known as the Total Maximum Daily Load (TMDL) process and involves the following phases: 1) Assessment and listing, 2) TMDL study, 3) Implementation plan development and implementation, and 4) Monitoring effectiveness of implementation efforts.

Responsibility for implementing the requirements of the Federal Clean Water Act falls to the U.S. Environmental Protection Agency. In Minnesota, the EPA delegates much of the program responsibility to the Minnesota Pollution Control Agency (MPCA). Information on the MPCA program can be obtained at the following web address:
<http://www.pca.state.mn.us/water/tmdl/index.html>.

6.5 NPDES PERMITTING PROCESS

The MPCA has designated the City of Minnetonka Beach as an NPDES Phase II MS4 community (MN Rules 7090). The NPDES State Disposal System (SDS) General Permit (MNR040000) for discharges of stormwater associated with Municipal Separate Stormwater Systems (MS4s) was issued initially in 2003, and the permit is updated every five years; thus, the permit will be

updated in 2018. The permit application outlined Minnetonka Beach's Stormwater Pollution Prevention Plan (SWPPP), to address six minimum control measures:

1. Public education and outreach
2. Public participation/involvement
3. Illicit discharge detection and elimination
4. Construction site stormwater runoff control
5. Post-construction stormwater runoff control
6. Pollution prevention in municipal operations

The City's SWPPP contains several best management practices within each of the listed control measures. These were identified using a self-evaluation and input process with City staff.

Many of the goals and policies discussed in this Local Surface Water Management Plan are related to requirements listed in the NPDES program. As a result, the Goals and Policies section of this plan repeatedly reference items listed in the City's SWPPP. Per the requirements of the MS4 Permit, the City will review their SWPPP and update as necessary on an annual basis.

The City will coordinate water resource education effort with outside agencies to complete the City's goals as outlined in their MS4 SWPPP, which may include fulfilling their public education requirements by obtaining educational information and assistance from local WMOs.

6.6 SUMMARY OF STORMWATER MANAGEMENT GOALS AND POLICIES

A summary of the stormwater management policies, including those policies identified in the MCWD Watershed Management Plan applicable to Minnetonka Beach, is included in Appendix E. Where a specific watershed policy directly impacts the City of Minnetonka Beach, the policy will be incorporated into the City's stormwater management policies in Section 7 of this LSWMP.

6.7 WATER-RESOURCE RELATED PROBLEMS AND POSSIBLE CORRECTIVE ACTIONS

An assessment of specific existing and potential water resource-related problems is summarized below. These problems have been identified based on current information available to the City and include problems identified in any of the documents listed in Section 4. Possible corrective actions have been listed for each problem and those that the City has scheduled to complete are incorporated into an implementation program (Section 8).

City-owned real property includes the Minnetonka Beach water tower, public works building, city hall, and parks. The City will continue to monitor ponding and drainage issues within several parks in the City; however, there are currently no plans to add drain tile or storm sewer to these areas. In many of these natural areas, there is not enough fall to convey flows to the lake from these low-lying areas. There are no other water-resource related issues relevant to City-owned real property in the City, however the City is considering the rehabilitation or replacement of its existing water storage infrastructure and water treatment plant.

TABLE 6.2 – FLOODING AND STORMWATER RATE CONTROL PROBLEMS

	Problem, Issue, or Concern	Possible Corrective Action
6.7.1.1	Drainage Issues on Lafayette Road	<ul style="list-style-type: none">• Replace/add storm sewer on Lafayette Road, provide overland emergency overflow to the lake
6.7.1.2	Drainage Issues on Beach Lane	<ul style="list-style-type: none">• Replace/add storm sewer on Beach Lane, reconstruct road to drain
6.7.1.3	Ponding in Lafayette Park	<ul style="list-style-type: none">• Re-grade or add drain tile/storm sewer to park
6.7.1.4	Ponding/drainage issues in individual lots (such as the backyards between Lafayette Road and Woodbridge Road, or lots on Brooks Lane)	<ul style="list-style-type: none">• Re-grade or add drain tile to lots; addressed on a per-lot basis, provide overland emergency overflow to the lake

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SECTION 7 – GOALS AND POLICIES

7.1 SUMMARY

Surface water management issues within the City are primarily defined by the requirements of current or pending programs. The goals and policies outlined in this plan are grouped by their relationship to the key issues listed below:

- **Section 7.2 - Land Development and Redevelopment** – Goals and policies to prevent flooding and adverse impacts to water resources from land disturbance and impervious surfaces.
- **Section 7.3 - Resource Management** – Goals and policies for managing Minnetonka Beach’s wetlands, lakes, and groundwater, to preserve the functions and values of these resources.
- **Section 7.4 - Citywide Program Elements** – Goals and policies for managing water resources and drainage systems on a citywide scale, to effectively achieve surface water management goals.
- **Section 7.5 - Support of Other Agencies** – Goals and policies to coordinate local surface water management with the work of watershed management organizations and state agencies.

The goals and policies listed below are consistent with the NPDES MS4 General Permit and the City of Minnetonka Beach’s SWPPP. These goals are also in alignment with the MCWD’s Watershed Management Plan.

7.2 LAND DEVELOPMENT AND REDEVELOPMENT

Overall Goal: *Manage land disturbance from new development, redevelopment, street reconstruction projects, or any other public or private land disturbing activity that creates new impervious surface to prevent flooding and adverse impacts to water resources through the cooperation with the stormwater management standards identified by the MCWD, who has jurisdiction in Minnetonka Beach. To make this process effective, the City will strive through an up-front stormwater assessment and planning process to incorporate best management practices that focus on treating runoff at the source and not in typical end of pipe treatments. The incorporation of these Best Management Practices will coincide with the guidance provided in the Minnesota Stormwater Manual.*

The City will enforce the MCWD standards for stormwater management for all new construction and redevelopments. These following projects are exempt from the stormwater management rules described below:

- **Single family homes:** *Construction or reconstruction of a single-family home.*
- **New development:** *New development for a residential, commercial, industrial, or institutional use that will result in less than 20 percent impervious surface over the site, or on a site of less than one acre.*

- **Redevelopment:** Redevelopment for a residential, commercial, industrial, or institutional use, on a site that is less than five acres in size that will result in at least a ten percent reduction in impervious surface, or on a site of five acres or greater where the proposed activity disturbs less than 40 percent of the site and results in at least a ten percent reduction in impervious surface.
- **Linear Transportation Projects:** Construction of a new or reconstruction of an existing road, trail, sidewalk, utility or other linear transportation project that will create less than 10,000 square feet of new impervious surface, or for the construction of sidewalks and trails that will not exceed 12 feet in width and will be bordered on the downgradient side(s) by a pervious buffer averaging at least one-half the width of the sidewalk or trail.

More information on these requirements can be found in the MCWD's stormwater management rule, on the Watershed's website: <http://www.minnehahacreek.org/permits/regulatory-rules/stormwater-management-rule>.

In addition to the MCWD stormwater management program requirements listed above that the City will enforce, consistent with the City's Table One Performance Standards, the City Engineer will not waive post-construction stormwater runoff requirements if one of the following criteria is met:

- a. *New or substantially new development or building, or redevelopment where one or more acres of land are disturbed by construction or landscaping, or any subdivision of land where 5 or more residential dwelling units are to be built.*
- b. *Any improvements to a Country Club, Church or Public Facility, Park, or Public Open Space in which such improvements are greater than 5,000 square feet.*
- c. *A land use requiring a General National Pollution Discharge Elimination System (NPDES) Permit for stormwater discharges associated with industrial activities.*
- d. *Any new hard surface roads or trails or substantial regrading of existing roads or trails.*
- e. *Any improvement involving the material and substantial installation of new storm drains or substantial and material alteration to existing storm drains.*
- f. *Any non-residential land use involving vehicle and/or equipment fueling, washing or maintenance areas.*
- g. *New construction or substantial rehabilitation of an existing land use where runoff from the property will cause pollution to Lake Minnetonka or not conform to the City's Comprehensive Plan Water Quality Management Plan or Storm Water.*
- h. *Any non-residential land use involving commercial or industrial waste handling or storage, excluding typical office or household wastes.*

In addition to the MCWD erosion control permit, a grading, erosion and sediment control plan must be submitted for City Engineer approval in the following circumstances:

- a. *The Development of land that is a part of an application for grading and erosion control permit required by the City Code of Ordinances (Chapter 2, Zoning Ordinance, 3.7 – F or Chapter 5, Section 515), the MCWD or MPCA.*
- b. *The Development is part of a required building permit for new construction, an addition the existing land use where the earth is to be substantially materially altered by new*

construction. 2. The project includes land to be altered within 20 feet of a private or public street or neighboring property, or where the water flow from the subject property to a neighboring property, or where the water flow from the subject property to a neighboring property is proposed to be changed due to the project. 3. The project is within 75 feet of Lake Minnetonka's OHWL or within 25 feet of a protected wetland. 4. The project is adjacent or within a Flood Plain, Flood Prone Area, or Area identified in the City Engineer's Report "Drainage Study" dated November 12, 2013 as an area subject to flooding. 5. The existing or proposed slopes on the land to be altered exceed 1.5%.

7.2.1 RATE CONTROL

Goal: Control the rate of stormwater runoff from development to reduce downstream flooding and erosion.

Policy: The City will enforce the MCWD rate control rule to ensure that the peak rate of runoff from regulated land development or redevelopment does not exceed existing rates for the 1-year, 10-year, and 100-year rainfall events. Rate control below existing rates may be necessary where downstream capacity issues are identified, which will require coordination with the local WMOs.

Policy: The City will require that the maximum duration for rainfall critical event analysis shall be 24 hours. The City will require the use of the hydrograph method of analysis, the MSE Type III storm distribution, and NOAA Atlas-14 rainfall data.

7.2.2 FLOOD PREVENTION AND FLOODPLAIN MANAGEMENT

Goal: Provide adequate storage and conveyance of runoff and control development in flood prone areas to protect the public safety and minimize property damage.

Policy: The City will require that no person shall alter or fill land below the projected 100-yr high water elevation of a waterbody without a permit from the MCWD.

Policy: The City requires that encroachment into floodways that reduces conveyance capacities or expedites flood flows not be allowed.

Policy: For new construction, the City will ensure that stormwater features have emergency overflow spillways sufficiently stabilized to convey flows greater than the 100-year critical storm event.

7.2.3 VOLUME CONTROL

Goal: Reduce pollutant loads and impacts to water bodies and encourage groundwater recharge, by reducing the volume of stormwater runoff from development and redevelopment areas.

Policy: The City will review and update City Code as necessary to ensure that volume control standards are consistent with current engineering practices and current regulations of local and state agencies having jurisdiction within the City.

Policy: The City will ensure that stormwater management plan provides for the abstraction of the first one inch of rainfall from the site's impervious surface. Credit toward compliance with the one-inch volume control standard will be calculated by the applicant using industry accepted hydrologic models and the MCWD's Appendix A - Volume Abstraction and Credit Schedule, following guidance provided in the MPCA's Minnesota Stormwater Manual.

Policy: Per the MS4 Permit, new development and redevelopment projects with land disturbances of greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, within the permittee's jurisdiction and that discharge to the City's MS4 must follow the Post-Construction Stormwater Management requirements of Part III D.5 of the MS4 Permit. Refer to the MS4 Permit for further information.

Goal: *Reduce the volume of stormwater runoff from existing developed areas.*

Policy: The City will coordinate efforts with the MCWD to minimize impervious surfaces where feasible when reconstructing streets and other paved surfaces and provide volume control mitigation per the MCWD requirements.

Policy: Where practical, the City will encourage the use of infiltration systems that promote water conservation and reuse to reduce discharge volumes and conserve groundwater in existing developed areas, taking into consideration site limitations such as soil conditions, depth to groundwater, safety, snow removal, and maintenance issues.

Policy: The City will ensure that applications for new development or redevelopment provide at least two vertical feet of separation between low openings of structures and the 100-yr high water elevations of stormwater BMPs and waterbodies.

7.2.4 NUTRIENT AND SEDIMENT LOADING

Goal: *Reduce the nutrient and sediment loads discharged from land development or redevelopment.*

The following policies are consistent with SWPPP minimum control measure MCM 5 (post-construction storm water management) and MCM 6 (pollution prevention/good housekeeping for municipal operations).

Policy: The City will strive for the non-degradation of receiving waters within the City by enforcing current stormwater management standards, in cooperation with the local WMOs' stormwater management standards.

Policy: The City will defer the enforcement of nutrient and sediment load requirements to that of the MCWD for construction activities within these jurisdictions. Applicants must follow the MCWD's phosphorus control standard; for new developments and linear transportation projects, there shall be no net increase in phosphorus loading from existing conditions.

Policy: The City will require that developments incorporate non-point source pollution reduction BMPs to achieve 90% total suspended solids removal from the runoff generated by a Nationwide Urban Runoff Program (NURP) water quality storm (2.5" rainfall), or on an annual basis.

7.2.5 EROSION AND SEDIMENT CONTROL

Goal: *Prevent sediment from construction sites from entering the City's surface water resources.*

The following policies are consistent with SWPP MCM 4 (construction site stormwater runoff and control) and MCM 5 (post-construction stormwater management).

Policy: The City will enforce its Erosion and Sediment Control Ordinance.

Policy: The City will require that erosion and sediment control practices are consistent with the standards identified in the current MPCA Construction General Permit, the Minnesota Stormwater Manual, and the MCWD Erosion Control Rule.

Policy: The City will require that a wetland assessment be prepared for any project that includes a wetland not already assessed. Minnesota Routine Assessment Methodology (current version) is the required method of assessment for evaluating wetland functions and values.

7.3 RESOURCE MANAGEMENT

Goal: *Protect the City's wetlands, lakes, streams, groundwater, and natural areas to preserve the functions and values of these resources for future generations through the Wetland Conservation Act, buffer standards, groundwater protection rules and coordination with outside agencies.*

7.3.1 WETLAND MANAGEMENT

Goal: *Protect and preserve wetlands to maintain or improve their function and value.*

Policy: The MCWD will continue to administer WCA LGU responsibilities within the City to ensure no net loss of wetland functions and values. The City will coordinate wetland restoration activities with the MCWD. The MCWD describes its rules for wetland protection in its Wetland Protection Rule.

Policy: The City will require that runoff from development and redevelopment projects be pre-treated prior to discharge to wetlands.

Policy: The City will require that, prior to development activities or public projects, a wetland delineation must be completed, including a field delineation and report detailing the findings of the delineation.

Policy: The City will require that a wetland assessment be prepared for any project that includes a wetland not already assessed. Minnesota Routine Assessment Methodology (current version) is the required method of assessment for evaluating wetland functions and values.

7.3.2 LAKE MANAGEMENT

Goal: *Improve water quality and protect resource values of lakes.*

Policy: The City will cooperate with the MCWD to identify possible activities to improve water quality in Lake Minnetonka.

Policy: The City will defer to the MCWD dredging rule. No dredging shall be permitted:

- Above the ordinary high-water level or into the upland adjacent to the lake or watercourse;
- That would enlarge a natural watercourse landward or that would create a channel to connect adjacent backwater for navigational purposes;
- Where the dredging would alter the natural shoreline of a lake;
- Where the dredging might cause increased seepage, or result in subsurface drainage;
- Where any portion of dredged area contains any slope steeper than 3:1 (H:V) in a marina or channel, or steeper than 10:1 (H:V) for an area adjoining residential lakeshore; or
- Where adverse ecological impact to a preserve wetland or other ecologically sensitive area cannot be minimized.

Policy: The City will defer to the MCWD's Shoreland and Streambank Stabilization Rule.

7.3.3 GROUNDWATER RECHARGE AND PROTECTION

Goal: *Protect groundwater resources and groundwater-dependent surface water and natural resources.*

Policy: The City will cooperate with Hennepin County, the Minnesota Department of Health, and the MCWD to identify and protect critical groundwater resources areas.

Policy: The City will cooperate with other agencies to implement actions identified in the Hennepin County Groundwater Protection Plan.

7.3.4 NATURAL AREA MANAGEMENT

Goal: *Protect and enhance natural areas within the City to provide wildlife habitat and water resource benefits.*

Policy: The City will support programs to maintain and restore the resource value of natural areas and enhance water-based recreational opportunities.

7.4 CITYWIDE PROGRAM ELEMENTS

Overall Goal: Manage water resources and drainage systems on a citywide scale, including monitoring and maintenance of drainage systems, targeted pollution prevention, public education, system reconstruction projects, and equitable collection of supporting funds.

7.4.1 POLLUTION PREVENTION

Goal: *Detect and address urban pollutants discharged to storm sewers.*

The following policies are consistent with SWPP MCM 3 (illicit discharge detection and elimination) and MCM 6 (pollution prevention/good housekeeping for municipal operations).

Policy: The City will actively implement the NPDES Stormwater Pollution Prevention Plan as stated in the most current version of the MS4 permit.

Policy: The City will maintain an effective spill response plan.

Policy: The City will complete employee training in the operation, maintenance and inspection of stormwater facilities, as included in the SWPPP.

Policy: The City will monitor stormwater system facilities for pollutants as outlined in the City's SWPPP.

Policy: Illicit connections and discharges to the City of Minnetonka Beach's Municipal Separate Storm Sewer System (MS4) are prohibited. Refer to the City of Minnetonka Beach's Illicit Discharge and Connection Ordinance for further information.

7.4.2 MONITORING AND MAINTENANCE

Goal: *Maintain the function and effectiveness of stormwater management structures through monitoring and maintenance.*

The following policies are consistent with SWPP MCM 3 (illicit discharge detection and elimination), MCM 5 (post-construction stormwater management), and MCM 6 (pollution prevention/good housekeeping for municipal operations).

Policy: The City will continue to conduct annual street sweeping.

Policy: The City will continue inspection and maintenance of the city's stormwater conveyance and ponding system as outlined in the City's SWPPP. Private facilities, such as the stormwater ponds that are owned by the Lafayette Club, will be inspected and maintained by private landowners, not the City.

Policy: The City will inspect and monitor the construction and installation of all new stormwater facilities and require that such facilities be surveyed to create as-built drawings.

7.4.3 PUBLIC EDUCATION

Goal: *Inform and educate residents about stormwater pollution, the effects of urban runoff and the need to protect natural resources.*

The following policies are consistent with SWPPP MCM 1 (public education and outreach).

Policy: The City will implement a public education and outreach program as identified in the City's NPDES permit.

Policy: The City will coordinate public education work with Hennepin County and local WMOs.

Policy: The City will promote citizen and volunteer efforts to protect, restore and enhance local water and natural resources.

Policy: The City will use available opportunities through its newsletter, public meetings, website, Comprehensive Plan, or interpretive elements at parks and open space sites to inform its residents about the value of local water resources, the effects of stormwater runoff, and opportunities for stewardship of water and natural resources.

7.4.4 FUNDING

Goal: *Secure adequate funding to support implementation of the Local Surface Water Management Plan.*

Policy: The City will fund implementation of the plan with revenue from the stormwater utility. The City will periodically review utility rates to ensure that funding is adequate, and fees are equitably distributed.

Policy: The City will seek grant funds or other resources to assist with special projects or implementation of plan goals.

7.5 SUPPORT OF OTHER AGENCIES

Overall Goal: *Cooperate and coordinate local surface water management with the work of local WMOs and state agencies.*

Goal: *Facilitate watershed district review of development projects and enforcement of watershed standards.*

Policy: The City will coordinate development review activities with the MCWD. The City will defer to the MCWD for review and enforcement of stormwater management standards for construction projects in accordance with its permit programs. The City will notify and include the MCWD in development concept reviews. This policy is consistent with SWPP MCM 4 (construction site stormwater runoff control) and MCM 5 (post-construction stormwater management).

Goal: *Cooperate with other organizations to complete management plans and studies for water resources in Minnetonka Beach.*

Policy: The City will work with local WMOs, Hennepin County, and others, when appropriate, and as resources are available to participate in resource management plans or studies that benefit water and natural resources in Minnetonka Beach.

Goal: *Cooperate with other organizations working to protect groundwater resources.*

Policy: The City will cooperate with the County and the MCWD to implement the recommendations of the Hennepin County Groundwater Protection Plan, to protect groundwater quality by reducing the potential for transport of stormwater pollutants into the groundwater and maintaining the functions of groundwater recharge areas.

Goal: *Cooperate with the Minnehaha Creek Watershed District in addressing existing TMDLs and new TMDLs as they are identified for Lake Minnetonka.*

Policy: The City will cooperate with the Minnehaha Creek Watershed District in an assessment of current and future demands on the stormwater infrastructure and how it might affect future Capital Improvement Projects (CIP). These evaluations could include:

- Analyzing the effect of a proposed project on the downstream conveyance system and drainage area.
- Identifying any future problems that may arise from additional project-related stormwater demands on the system.
- Analyzing stormwater Best Management Practices that may be included with CIP projects. These BMPs will reduce volume demands on the stormwater conveyance system and enhance water quality.

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SECTION 8 – IMPLEMENTATION

8.1 OVERVIEW

The City has developed an implementation program based on the information developed in earlier sections of this Local Surface Water Management Plan. This program reflects the needs and concerns of many stakeholders including the City Council, City Staff, citizens, watershed management organizations, and funding capabilities.

This Section summarizes the implementation items identified in Sections 6 and 7 of this LSWMP, prioritizes these items, and presents a preliminary cost estimate to complete the items based on the best available information. It should be noted that estimated costs presented in the section are preliminary and are presented for long-term budget planning purposes.

8.2 IMPLEMENTATION ACTIVITIES

The City's current, overall Capital Improvement Plan includes several projects that address issues identified in Section 6, and goals and policies identified in Section 7. A summary of those projects is provided in Table 8.1, showing proposed start year, responsibility and budgeted cost. The City will use the implementation project information presented in Table 8.1 to update their current CIP, as necessary. The City updates its Capital Improvement Plan on an annual basis.

TABLE 8.1 –IMPLEMENTATION PROJECTS

Activity #	Activity	Proposed Start	Budgeted Cost	Responsibility
1	Lafayette Road Storm Sewer Replacement	2019	\$62,300	City
2	Beach Lane Storm Sewer – Street Reconstruction		\$135,000 (\$91,000 – street/storm sewer; 44,000 – water main)	
3	Various Street and Storm Sewer Reconstruction Projects	2020-2015	TBD	City
4		2025-2028		

Table 8.1 includes planned projects for the time period 2018-2028, after which the City will reassess its implementation in the 2028 LSWMP. Regarding activities three and four above, the City is currently studying road and storm sewer rehabilitation and will come up with a rehabilitation program.

8.3 POTENTIAL FUNDING

Implementation of the proposed studies, programs, and improvements identified in this plan will affect City finances. To quantify this effect, a review of the ability of the City to fund these studies, programs, and improvements is required. Below is a listing of various sources of revenue that the City will attempt to utilize:

- Existing stormwater utility
- Grant and partnership monies possibly secured from various agencies for projects
- General fund, reserve fund
- General Obligation Bonds
- Project funds could be obtained from watershed district levies as provided for in Minnesota Statutes Chapter 103D.905 for those projects being completed by or in cooperation with, the MCWD.
- Special assessments for local improvements performed under authority of Minnesota Statutes Chapter 429.
- Revenue generated by Watershed Management Special Tax Districts provided for under Minnesota Statutes Chapter 473.882.
- Other sources potentially including tax increment financing, tax abatement, state aid, and others.

The City's stormwater utility is the primary source for the studies, programs, and improvements identified in this Plan.

8.4.1 MCWD COST SHARING PROGRAMS

The City of Minnetonka Beach will look for opportunities in developed areas to install retrofit water quality improvement BMPs to improve the overall water quality in the City. Cost share programs are identified in the MCWD implementation plan that could provide partnering opportunities to locate, design and install retrofit BMPs. District programs include the following:

- **MCWD Low Impact/Redevelopment Program:** Partnership with local communities and private developers to offset regulatory costs.
- **MCWD Shoreline/Streambank Stabilization Program:** Partnership with public entities and private property owners to promote green infrastructure and stabilize shoreline problem areas and open channel/stream conveyance systems. Create incentives/support for replacement of existing shoreline/streambank rip-rap, focusing on residential properties.
- **MCWD/MWMO Research Grant Program:** Provides grant funds to academic institutions and other organizations to conduct peer-reviewed research that advances water resources knowledge.
- **Stormwater BMP Cost-Share Program:** This program provides grants to private property owners to design and install or construct retrofit BMPs that will increase the water quality of stormwater runoff.

SECTION 9 – ADMINISTRATION

9.1 REVIEW AND ADOPTION PROCESS

Review and adoption of this Local Surface Water Management Plan will follow the procedure outlined in Minnesota Statutes 103B.235:

'After consideration but before adoption by the governing body, each local government unit shall submit its water management plan to the watershed management organization[s] for review for consistency with the watershed plan. The organization[s] shall have 60 days to complete its review.'

'Concurrently with its submission of its local water management plan to the watershed management organization, each local government unit shall submit its water management plan to the Metropolitan Council for review and comment. The council shall have 45 days to review and comment upon the local plan. The council's 45-day review period shall run concurrently with the 60-day review period by the watershed management organization. The Metropolitan Council shall submit its comments to the watershed management organization and shall send a copy of its comments to the local government unit.'

'After approval of the local plan by the watershed management organization[s], the local government unit shall adopt and implement its plan within 120 days, and shall amend its official controls accordingly within 180 days.'

9.2 AMENDMENTS TO PLAN AND FUTURE UPDATES

This Local Surface Water Management Plan will be incorporated into the City's 2040 Comprehensive Plan update and will be applicable until 2028, at which time an updated plan will be required. This timeline marks a change from previous updates; previously, Local Surface Water Management Plan updates were done when the water districts or water management organizations updated their Watershed Management Plans. Periodic amendments may be required to incorporate changes in local practices. Changes to the MCWD Watershed Management Plan may necessitate revisions to this plan. Plan amendments will be incorporated by following the review and adoption steps outlined above. Minnesota state statute requires municipalities to update local surface water management plans within two years following a watershed district update.

If amendments to the Local Surface Water Management Plan are minor, MCWD review is not required. The City will conduct a public hearing on proposed LSWMP amendments. Notice of the public hearing and a description of the proposed amendments shall be published in the local newspaper at least ten days prior to the date of the hearing. At the hearing, the City will hear all comments on the proposed LSWMP amendments.