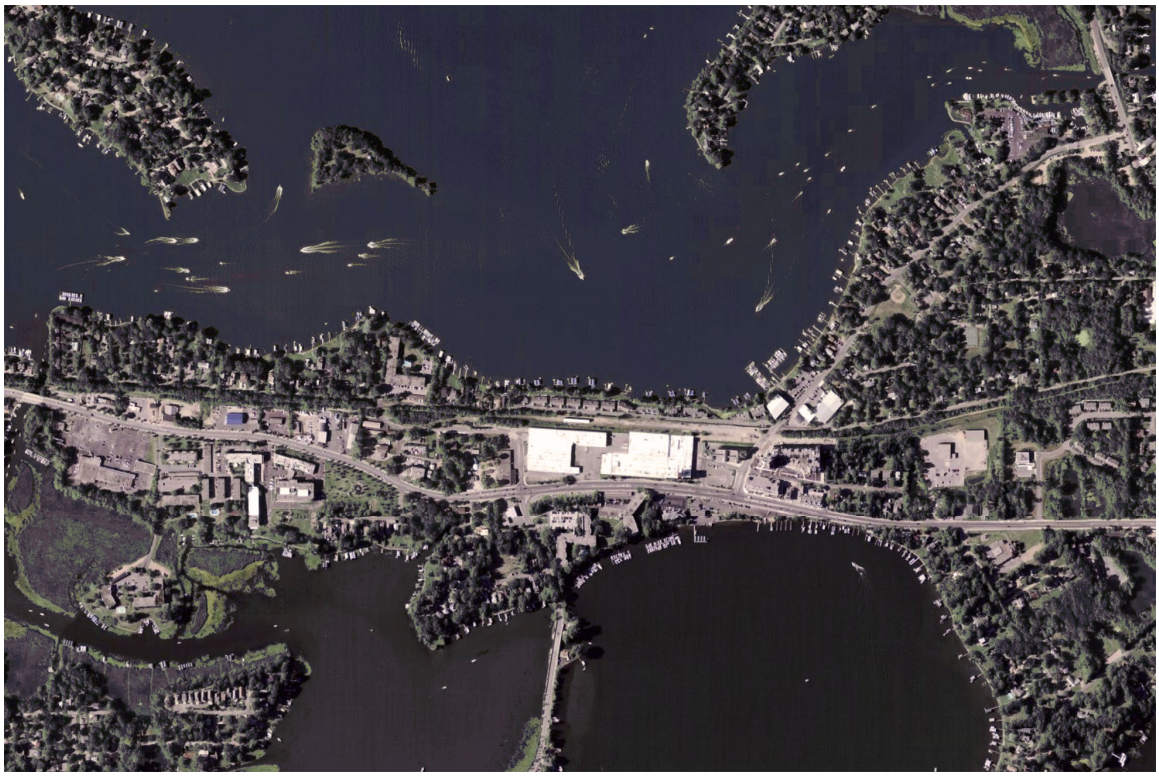
Local Water Management Plan
(LWMP)



2018
City of Spring Park, Minnesota

Local Water Management Plan

for

The City of Spring Park
4349 Warren Avenue
Spring Park, Minnesota 55384
2018

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CITY OF SPRING PARK
LOCAL WATER MANAGEMENT PLAN

TABLE OF CONTENTS

SECTION I – INTRODUCTION AND EXECUTIVE SUMMARY 1

A. Introduction 1
B. Purpose 2
C. Regulatory Requirements 3
D. Water Resource Management Related Agreements 4
E. Executive Summary of Local Water Management Plan Content 4
F. Recommendations 6

SECTION II – LAND AND WATER RESOURCE INVENTORY 8

A. Introduction 8
B. Physical Environment 8
C. Human Environment 13
D. Surface Water System 15

SECTION III – ESTABLISHMENT OF GOALS AND POLICIES 19

A. Introduction 19
B. Water Quantity and Flooding 19
C. Water Quality 21
D. Erosion and Sedimentation Control 22
E. Wetlands 23
F. Groundwater 24
G. Recreation, Fish and Wildlife 25
H. Lake Minnetonka Shoreline 26
I. Enhancement of Public Participation, Information, and Education 26

SECTION IV – ASSESSMENT OF PROBLEMS AND CORRECTIVE ACTIONS 28

A. Water Quantity and Flooding 28

B. Surface Water Quality....28
C. Impacts of Soil Erosion on Water Quality and Quantity....30
D. General Impact of Land Use Practices and Land Development on Wetlands....30
E. Adequacy of Existing Regulatory Controls to Manage or Mitigate Adverse Impacts on Public Waters and Wetlands....31
F. Maintain groundwater quality and protect the public health....31
G. Impacts of Stormwater Quality on Recreation, Fish and Wildlife Resources....31
H. Adequacy of Capital Improvements Program to Correct Problems Related to Water Quality, Water Quantity Management, Fish and Wildlife Habitat, Public Waters and Wetland Management, and Recreational Opportunities....32
I. Future Potential Problems Anticipated to Occur Within Next 10 Years Based on Growth Projections and Planned Urbanization....33

SECTION V – IMPLEMENTATION PROGRAM....35

A. City Regulatory Controls....35
B. Management Programs....36
C. Stormwater Design and Performance Standards....37
D. Phosphorus Reduction Strategies and Program....37
E. Future Public Projects....37

SECTION V1 – IMPLEMENTATION PRIORITIES AND FINANCIAL CONSIDERATIONS....38

A. Implementation Priorities....38
B. Financial Considerations....38
C. Funding Sources....40

SECTION VII – STORMWATER MANAGEMENT PLAN AND EROSION CONTROL STANDARDS FOR PERMITTING....41

A. Stormwater Management Plan Standards for Permitting:....41
B. Erosion Control Standards for Permitting....42

SECTION VIII – AMENDMENT PROCEDURES....45

TABLES

TABLE 1. AVERAGE CLIMATE DATA FOR MINNEAPOLIS 9

TABLE 2. STORM EVENT TABULATION 9

TABLE 3. MNDNR PROTECTED WATERS 15

TABLE 4. LWMP IMPLEMENTATION PROGRAM PRIORITIES 38

APPENDIX A

Map 1 – Regional Map* 1

Map 2 – Lake Minnetonka Subwatershed Location Map** 2

Map 3 – Water Resources Inventory 3

Map 4 – Existing Land Use 2017* 4

Map 5 – Zoning Map* 5

Map 6 – 2040 Future Land Use* 6

Map 7 – Storm Sewer System Map*** 7

Map 8 – Polluted Sites** 8

Map 9 – Drinking Water Supply Management Area Vulnerability 9

* Map reprinted from 2018 City of Spring Park Comprehensive Plan

** Map reprinted from 2017 Minnehaha Creek Watershed District Watershed Management Plan

***Map reprinted from the Spring Park Asset Management Plan

ACRONYM IDENTIFICATION

APPENDICES

Appendix A – 2003 MCWD Wetland Function and Values Study and Inventory

Appendix B – Storm Sewer Map and Inventory

SECTION I – INTRODUCTION AND EXECUTIVE SUMMARY

A. Introduction

The City of Spring Park has prepared this Local Water Management Plan (LWMP) in accordance with MN Statute 103B.235 for Local Water Management Plans. This LWMP provides the City and its residents with direction concerning the administration and implementation of water management activities within the community. The LWMP inventories City land and water resources and presents water management policies and goals, which address both known surface water-related problems and concerns about future development activities. The LWMP also presents the information needed to comply with the requirements of the federal, state and regional regulatory agencies involved in surface water management.

A.1 **Policy Statement:** The City of Spring Park is committed to a goal of no adverse impact or non-degradation for the area surface and ground waters. To accomplish this goal the City will demonstrate through the LWMP:

- Performance measures for all proposed stormwater treatment devices.
- Proposed plans and projects that will require stormwater management rate control, volume control and erosion control Best Management Practice (BMP protection) measures that will require City and Minnehaha Creek Watershed District (MCWD) permitting approval prior to construction.
- Performing proper maintenance for Public Works activities such as street sweeping, clean-up of City parkland, and manhole sump cleaning.
- Public education on water resource management.
- Construction site inspection and enforcement of stormwater BMPs.
- Providing necessary funds to implement the stormwater management plan.
- Implementation of a phosphorus loading reduction plan to help protect and preserve the Lake Minnetonka water resources.

A.2. To adopt by reference the Minnehaha Creek Watershed District's (MCWD) "Watershed Management Plan", Rules and Regulations as part of Spring Park's "Surface Water Management Plan" and to provide the localized information necessary to supplement the District's plan.

A.3 To authorize the MCWD to continue to apply all of its permitting rules and regulations in the City of Spring Park including but not limited to: Erosion Control, Floodplain Alteration, Wetland Protection, Dredging, Shoreline and Streambank Stabilization, Waterbody Crossings and Structures, Stormwater Management, Sandblanket Installation, Enforcement, Variances and Exceptions, Fees, and Financial Assurances.

A.4 To authorize the MCWD to be the "local unit of government" responsible for implementing the Minnesota Wetlands Conservation Act within the City of Spring Park.

A.5 To adopt by reference the 2018 City of Spring Park Comprehensive Plan.

B. Purpose

The general purpose and objectives of the City of Spring Park LWMP are as follows:

B.1 Promote infiltration of stormwater where feasible to improve water quality, reduce flow volumes, and increase ground water recharge.

B.2 Promote activities that maintain, support, and enhance the quantity and ecological integrity of aquatic and upland resources.

B.3 Preserve, maintain, and improve aesthetic, physical, chemical, and biological composition of the Lake Minnetonka resource.

B.4 Minimize the risks of threats to public health through the development of programs, plans, and policies that preserve the quality of surface and ground waters.

B.5 Preserve the natural appearance of shorelines and minimize degradation of shorelines and water quality resulting from dredging operations.

B.6 Promote Best Management Practices (BMPs) to improve water quality.

B.7 Enhance public participation and knowledge by providing informational and educational material to the residents, businesses, developers, and contractors.

B.8 Preserve, create, and enhance wetland resources to maximize benefits and functionality to the City and Lake Minnetonka.

B.9 Promote aquifer protection.

B.10 Protect and preserve the Lake Minnetonka floodplain.

B.11 Control temporary sources of sediment resulting from land disturbance, minimize and correct the effects of sedimentation from erosion prone and sediment source areas.

B.12 Promote effective planning to minimize the impact of development and land use change on Spring Park's water resources.

B.13 Solicit public input with the intent that water resource policies, projects and programs will address the local values and goals. Strive to manage and make water resource decisions based on an educated public.

C. Regulatory Requirements

In 1982, the Minnesota Legislature adopted The Metropolitan Surface Water Management Act requiring all watersheds within the Twin Cities seven county metropolitan area to be incorporated into Watershed Districts and Watershed Management Organizations and the preparation and adoption of watershed management plans by each. The Act also requires that Local Governmental Units prepare Local Water Management Plans which include the official controls and capital improvements necessary to bring each local surface water management into conformance with its respective Watershed District or WMO plan.

The City of Spring Park is located within the Minnehaha Creek Watershed District and also within the Lake Minnetonka sub-watershed basin. The City of Spring Park LWMP is intended to meet the requirements of the following regulatory documents:

C.1 Minnehaha Creek Watershed District (MCWD) "Watershed Management Plan" and "Permitting Rules and Regulations";

C.2 Metropolitan Surface Water Management Act - Minnesota Statutes Chapter 103B;

C.3 Metropolitan Area Local Water Management - Minnesota Rules Chapter 8410;

C.4 Minnesota Wetland Conservation Act of 1991 and subsequent rules and amendments;

C.5 State and Federal laws pertaining to National Pollution Discharge Elimination System (NPDES);

C.6 (NPDES) permitting for stormwater outfalls to designated drainage ways;

C.7 Erosion Control Guidelines and Best Management Practices prepared by the Minnesota Pollution Control Agency;

C.8 Regulations of the Lake Minnetonka Conservation District.

D. Water Resource Management Related Agreements

D.1 MCWD "Memorandum of Understanding": The City of Spring Park currently has a "Memorandum of Understanding" with the MCWD. The terms of the agreement is the understanding that the City of Spring Park agrees to authorize the MCWD permitting authority in all areas regulated by the District and all City stormwater management controls are as protective as the District's.

D.2 Lake Minnetonka Conservation District: The City of Spring Park is a participating City member of the Lake Minnetonka Conservation District. Spring Park has an appointed representative who reports monthly to the City Council.

E. Executive Summary of Local Water Management Plan Content

The City of Spring Park's LWMP has been developed to meet the needs of the community and address the management planning requirements of the Metropolitan Surface Water Management Act and MCWD Watershed Management Plan. The LWMP has been prepared in general accordance with Minnesota Rules Chapter 8410 and follows the plan outline identified in the rules.

The following summaries identify the major sections of the LWMP and where information can be located in the plan document:

E.1 Section I - Executive Summary:

This section presents an introduction for, and summary of, all of the sections of the Surface Water Management Plan. This section also summarizes strategic recommendations for consideration by the City in implementing the LWMP.

E.2 Section II - Land and Water Resource Inventory:

This section categorizes a wide range of information under the subsections entitled Physical Environment, Human Environment and Surface Water System. The sub-sections provide information and references regarding water

resources and physical factors within the City of Spring Park including the following:

- Location
- Precipitation data for hydrologic/hydraulic review and design
- Geologic and topographic information
- Surface soils and groundwater information
- Land Erosion (Runoff) Susceptibility
- Unique features and scenic areas
- Land use and public utility services
- Water-based recreational areas and land ownership
- Potential pollutant sources
- Public waters and wetlands
- Flood Insurance Studies and surface water drainage information
- City sub-watersheds and storm water modeling data, limitations and results
- Flood problem areas and surface water quality

E.3 Section III – Establishment of Policies and Goals:

This section outlines goals and policies addressing specific water resource management needs of the City and their relationship with the MCWD, Regional, State, and Federal goals and programs. Goals and policies relating to the following issues are presented:

- Water quantity
- Water quality
- Erosion and sedimentation
- Wetlands
- Groundwater
- Recreation, fish and wildlife
- Enhancement of public participation

E.4 Section IV - Assessment of Problems and Corrective Actions

This section provides an assessment of existing or potential water resource related problems within the City. This section also describes potential structural, nonstructural and programmatic solutions on corrective actions to the identified problems.

E.5 Section V – Implementation Program

This section identifies the regulatory controls, management programs, storm water design and performance standards, and capital improvements to be utilized by the City in implementing this LWMP.

E.6 Section VI – Implementation Priorities and Financial Considerations

This section presents improvement priorities and financial considerations that can be reasonably funded and implemented by the City in the near and longer-term future. This section also identifies the estimated costs and potential funding sources for implementing the proposed regulatory controls and programs.

E.7 Section VII – Stormwater Management and Erosion Control Standards

This section addresses stormwater management and erosion control standards the City should adopt and enforce when new development or re-development occurs. Implementation of these standards will help to minimize the impact of stormwater runoff from a site and to receiving downstream waters.

E.8 Section VIII – Amendment Procedures

This section presents the process for making amendments consistent with the future MCWD plan.

F. Recommendations

The following recommendations are presented for the City's consideration based upon the information compiled for this LWMP:

F.1 To complete an update of the City Ordinance, Codes and Guidelines to be in conformance with MCWD Rules and Regulations for stormwater .management, shoreland alterations, floodplain district and wetland district.

F.2 Confirm and execute all legal agreements determined necessary to assure the partnership between the MCWD and the City of Spring Park.

F.3 To review the Zoning Development Ordinance from a water resource perspective in order to determine opportunities to enhance water resource protection.

F.4 The LWMP should be used to guide future water resource management decisions and stormwater related issues in existing and projected urban growth areas.

F.5 The City should examine existing and potential funding sources available for implementing stormwater regulatory controls and improvements.

F.6 The City should consider the additional staff time and financial resources required to implement this LWMP and develop additional revenue sources and budget accordingly.

F.7 To continue water resource educational programs and partner with the MCWD, Lake Minnetonka Conservation District (LMCD), other lakeside communities and other agencies to provide educational opportunities for the community.

F.8 The LWMP provides a general framework for addressing existing and future surface water management issues within the City. Additional studies may be required when specific development proposals are prepared.

F.9 The City should consider preparation of a wellhead protection plan as a protection measure for the City's water supply and the regional ground water resource.

SECTION II – LAND AND WATER RESOURCE INVENTORY

A. Introduction

This section provides a localized description and summary of land and water resource factors affecting the water resources within the City of Spring Park to supplement the MCWD "Watershed Management Plan". The subsections include Physical Environment, Human Environment, Surface Water Systems, and Groundwater Resource Data. The Physical Environment subsection presents local information on precipitation, geology, topography, soils, fish and wildlife habitat and unique features and scenic areas. The Human Environment subsection identifies local land use, public utility services, water based recreational areas and known pollutant sources. The Surface Water Systems subsection presents information on the City's drainage patterns, hydrologic systems, public waters and wetlands, floodplain areas, flood studies, shoreland management and water quality.

Much of the information contained within this section was compiled from available governmental sources, 2018 MCWD Watershed Management Plan, and the City of Spring Park Comprehensive Plan. Whenever possible, the location of the information or additional resources have been identified or referenced.

B. Physical Environment

B.1 Location

The City of Spring Park occupies approximately 236 acres on Lake Minnetonka, in western Hennepin County (Map 1). Communities adjacent to Spring Park include Mound on the west border and Orono on the east border. Lake Minnetonka borders Spring Park on the north and south. The City of Spring Park is located entirely within the MCWD and the Lake Minnetonka watershed area (Map 2).

B.2 Precipitation

The climate of the Minneapolis/St. Paul metropolitan area is a humid continental climate with moderate precipitation, wide daily temperature variations, warm humid summers and cold winters. The total average annual precipitation is approximately 30 inches, of which approximately one third occurs during the months of June, July and August. The annual snowfall average is about 55 inches and is equivalent to approximately 5.3 inches of water. The average monthly temperatures, precipitations, and snowfalls are shown on Table 1.

TABLE 1. AVERAGE CLIMATE DATA FOR MINNEAPOLIS

Month	Temperature (°F)	Precipitation (Inches)	Snowfall (Inches)
January	13.1	1.04	13.5
February	20.1	0.79	8.2
March	32.1	1.86	10.4
April	46.6	2.31	3.1
May	59.3	3.24	0.1
June	68.4	4.34	0
July	73.2	4.04	0
August	70.6	4.05	0
September	61.0	2.69	0
October	49.7	2.11	0.6
November	32.5	1.94	10.0
December	18.7	1.00	10.0
Annual Average	45.40	29.41	55.90

Source: Minnesota State Climatology Office

For the purposes of this LWMP and for enforcement of citywide and individual stormwater management plans, the City will rely on synthetic storms based on a 24-hour duration. The 24-hour design storms are the 1-year, 10 -year and the 100-year events. Table 2 identifies the specific design storm events, probability of occurrence and design rationale typically used for each design storm event

TABLE 2. STORM EVENT TABULATION

Storm Event (Return Period)	Rainfall Amount (24-hour period)	Storm Event Use Criteria (Typical)
1 - Year	2.49”	Stormwater Rate Control, Volume Control
10 - Year	4.24”	Storm Sewer Design, Stormwater Rate Control
100 - Year	7.27”	Design of Ponding/ Flooding Structures, High Water Levels, Stormwater Rate Control

The use of synthetic storms and the cumulative rainfall amounts are consistent with MCWD standards. Rainfall amounts are based on the National Oceanic and

Atmospheric Administration (NOAA) Atlas 14 Point Precipitation Frequency Estimates.

B.3 Geology and Ground Water

The general geology of Hennepin County and the City of Spring Park has been compiled by the Minnesota Geological Survey in a document titled Geologic Atlas of Hennepin County Minnesota (H. Hobbs and G. Meyer, Editors, 1989).

The surficial geology of the city consists of Glacial Till deposits and Des Moines Lobe deposits. The 40-foot top layer of Glacial loamy till is underlain by a layer of Des Moines/Grantsburg Sub-lobe deposits up to 200 feet, with a 75-foot layer of Superior Lobe sediments to the top of bedrock.

The bedrock starts at approximately 280 feet below the City well surface elevation. The Minnesota Department of Health Well and Boring Records indicate the top bedrock is a thin layer of St. Peter Sandstone. The next formations are the Prairie Du Chien Group and Jordan Sandstone formation, the aquifer source for one of the City wells. Below the Jordan Sandstone are the St. Lawrence and Franconia Formations and the Ironton Galesville Sandstones. The City taps this aquifer for another well. The Eau Claire Formation separates the Mt. Simon Sandstone aquifer, the third well water source for the City.

The water table (soil consisting of saturated water located above the highest elevation of bedrock) in Spring Park varies with the lake level and local soil conditions. The clayey soils and granular lenses make for a variable water table condition. The estimated water table elevation is between 927 and 929.5. The water table elevation at a given location can vary from time to time depending on rainfall activity, soil water capacity, soil type and lake level.

The sensitivity of ground water pollution to the water table, the upper most ground water resource, is greater near the shoreline of Lake Minnetonka. The sensitivity lessens in the upland areas where there is greater separation between the surface and the ground water. The ground water table is connected directly to Lake Minnetonka which also makes the lake sensitive to pollution entering the ground water in upland areas.

The Geologic Atlas of Hennepin County identifies the Prairie Du Chien-Jordan Aquifer to have a low susceptibility to pollution. This condition is based on over 250 feet of loamy till, clay loam till and lake clay and silt overlaying the bedrock.

There are no known wells that need to be abandoned in accordance with Minnesota Department of Health requirements.

B.4 Topography

Terrain within the city can be classified as gently rolling to level. The highest land elevations are adjacent to County Road 15. County Road 15 runs east-west through the entire length of the city. The terrain gently slopes to the north and south and into Lake Minnetonka. Isolated areas contain steeper slopes. The majority of the steep slopes are associated with the old railway embankment, now the Dakota Rail Regional Trail, which runs east to west through the City.

B.5 Soils

The soils in areas of Spring Park that have not been developed and properties where re-development can be considered are to have moderate to questionable limitations in terms of building site suitability. The surface soils are made up primarily of loams and clay soil types.

The general classification and hydrologic classification of the soils in Spring Park is found in the "Soil Survey for Hennepin County" prepared by the USDA Natural Resource Conservation Service (NRCS). All NRCS soil findings can now be found online in the Web Soil Survey.

The information found online provides a good preliminary estimate of soil classification. Where land disturbing activities are proposed, the City requires verification via soil borings and will not rely on information presented by the NRCS alone, given the information presented by the NRCS is general in nature and the degree of sampling is too large of a scale for land disturbing activities. The NRCS information is a suitable tool for runoff estimation and land use planning.

B.6 Land Erosion Susceptibility

Land that is located on high sloping land, or has previously been developed has a greater likelihood of generating more runoff than in areas that have not been developed or are located on gently sloping areas. The loams and clay soil types and

gently sloping terrain in Spring Park represent a low to medium susceptibility to land erosion.

The close proximity to the shoreline of Lake Minnetonka makes land erosion an important issue from both an existing land use and new construction condition. The disturbed or exposed soils have a greater chance of flowing off site. Establishing or maintaining vegetation on exposed soil in these areas will keep silt and urban pollutants from washing into the receiving storm sewer lines and ultimately reaching the Lake Minnetonka.

B.7 Unique Features and Scenic Areas

According to Minnesota Department of National Resources (MnDNR) records, there are no occurrences of any rare plant or animal species within the city limits of Spring Park. The MnDNR does have regulatory jurisdiction within their Lake Minnetonka shoreline setbacks. The City of Spring Park is located within these setback limits. Before any land alteration, dredging, or grading is scheduled to occur, the MnDNR office will need to be notified.

The City does not contain the following Federal, State, or County managed areas:

- Minnesota Historic Districts
- State, National or local forests
- Scientific or Natural Areas or areas designated for Wildlife Protection
- Three Rivers Park District Parks

Hennepin County operates a Sheriff's Water Patrol facility, a public boat landing and the Southwest Hennepin LRT Trail in Spring Park. The Lake Minnetonka region is known as a "Scenic Area" and a premiere sport fishery with biodiversity significance and recreational features.

B.8 Biological Environment

- Vegetation: The City of Spring Park is predominantly developed with a scattering of vacant properties and parkland. Natural vegetation consists of shoreline, aquatic and wetland varieties.
- Lake Minnetonka: The city is surrounded by Lake Minnetonka. The MnDNR regularly stocks and surveys the fish populations in the lake. The fishery is

classified as a sport-walleye lake populated with blue gill, walleye, northern pike, yellow perch, bass and black crappie. The MnDNR stocks the lake with walleye and muskellunge.

Lake Minnetonka is under a Minnesota Pollution Control (MPCA) "Fish Consumption Advisory" due to elevated levels of mercury. Several Lake Bays including West Arm (Bay) have been added to the MPCA's impaired waters list for nutrient/eutrophication biological indicators.

- There is one upland wetland in the City of Spring Park, identified in the 2003 MCWD "Functional Assessment of Wetlands." The remaining wetlands are located along Seton Lake and Black Lake shoreline in the southwest part of the city (Map 3).

C. Human Environment

C.1 Land Use

The City's 2040 Comprehensive Plan contains descriptions of existing land use, current zoning, population and proposed land use projections. Maps of the Existing Land Use (Map 4), Current Zoning (Map 5) and 2040 Proposed Land Use Plan (Map 6) are provided on the following pages of this report. The majority of the city is considered "built-out", or fully developed. Most of the city consists of residential housing with multi-family, commercial and industrial land uses. There is potential for primarily commercial and multi-housing development and re-development. The 2010 population was 1,669 and is expected to grow to 1,860 in 2030.

The total land area is 236 acres. City boundaries extend out into Lake Minnetonka increasing the city area to 298.2 acres. The land use categories consist of 73 acres of single family housing, 42 acres of multi-family housing and 40 acres of commercial and light industrial. There are 5 acres of parks and public lands. Further discussion regarding existing and future land use can be found in the 2040 City Comprehensive Plan.

C.2 Public Utilities Services

- Sanitary Sewer: The City of Spring Park is served by a municipal, city-operated sanitary sewer system. All of the sewage flows are collected in the City system and pumped by 6 lift stations to a Metropolitan Council sewer

trunk line. Spring Park is located entirely within the Metropolitan Urban Service Area (MUSA).

- Storm Sewer: Most of the City's existing storm sewers were originally installed to alleviate specific drainage problems. The purpose of these storm sewers was to serve already developed areas as drainage problems occurred. These areas consisted of lake homes, cabins, streets, and small commercial sites. The earlier storm sewers were simple systems consisting of some type of catch basin or basins connected to pipes that outlet directly into Lake Minnetonka. Many of the earlier structures were old water heaters and steel drums. This manner of controlling stormwater runoff led to a citywide system of storm sewers operating long before comprehensive land use and stormwater management planning became municipal practice. As a result, drainage problems would occur in developing upstream and downstream areas and the City had an in-place drainage system that was not capable of providing runoff rate control and water quality treatment as required by today's standards.

  Since comprehensive planning and stormwater management have become an integral part of government, the City of Spring Park has taken steps to improve its stormwater drainage. New storm sewers have been constructed to eliminate many of the drainage problems, older systems have been upgraded with new detention basins constructed to provide water quality treatment and rate control. There are three detention basins in the city which provide phosphorus removal. New developments have incorporated smaller detention basin BMPs and proprietary manhole or concrete structures in their projects. Overland flow and swales are utilized by the City where it is feasible and appropriate.

  The current public storm sewer system in the City of Spring Park is comprised of county road and city street culverts, County Road 15 storm sewer, city storm sewer, and storm sewer for private sites (Map 7). Due to the close proximity of Lake Minnetonka, a large portion of stormwater runoff drains overland, directly into Lake Minnetonka.

  In order to assess the condition and operation of the existing storm sewer system, a storm survey was conducted in 1989, updated in 2002 and 2009 (Appendix B).

- Water System: The City of Spring Park is served by a municipal, city-operated domestic water system. Three wells supply the water, a water treatment plant

provides iron and manganese treatment, a 250,000 gallon elevated water tank provides storage and pressure to the distribution system.

C.3 Potential Pollutant Sources

Various land use practices have the potential to contaminate local surface waters and groundwater. There is significant contamination potential at open and closed landfills, dumps, hazardous waste sites, and underground and aboveground storage tanks. The City does not have operating private septic systems, operating landfills, superfund sites, permitted wastewater discharges, or animal feedlots.

The MPCA currently lists a total of fifteen (15) sites in Spring Park with aboveground and underground tanks. Six (6) sites are enrolled in the MPCA's "Voluntary Investigation and Cleanup" (VIC) program. One of those sites is active, the rest are inactive. These sites are shown on the Polluted Sites Map (Map 8). Refer to the MPCA website for additional information on the sites. None of the inactive or active sites are considered threats to surface or ground water resources.

D. Surface Water System

This section summarizes the available surface water data within the city. Additional information is included in the Appendices (as identified in this section) of the LWMP.

D.1 Public Waters and Wetlands

Lake Minnetonka is the primary water resource in Spring Park. The City is bordered on the northwest by Harrison's Bay, on the north by West Arm (Bay), on the west by Seton Channel and Seton Lake (Bay), on the south by Spring Park Bay and Black Lake (Bay).

The MnDNR currently lists two water bodies within the City of Spring Park as public water with a public water ID. Those public waters are shown in the table below. Minnesota Chapter 103G provides specific criteria for protected status and the MnDNR identifies the protected waters (Map 3).

TABLE 3. MNDNR PROTECTED WATERS

Water Body	DNR ID	Acreage
Lake Minnetonka	27-133-P	14,645
Wetland (unnamed)	27-915-W	8.74

An additional source of wetland identification are the "National Wetlands Inventory" (NWI) Maps prepared by the U.S. Fish and Wildlife Service. For wetland locations and classifications in Spring Park, refer to Appendix A for the MCWD "Functional Assessment of Wetlands" map (Map 3) and classification tabulation.

D.2 Ditches:

There are no jurisdictional or public drainage ditches established under MN State Statute in Spring Park.

D.3 Flood Insurance (Plain) Studies:

The City of Spring Park is nearly encircled by Lake Minnetonka floodplain. The basis for floodplain zoning and regulation is the Federal Insurance Rate Map (FIRM) developed by the Federal Emergency Management Agency (FEMA). The FIRM for the City of Spring Park identifies the areas that are subject to 100-year and 500-year floodplain elevations. The City of Spring Park administers the FEMA program and recognizes the Lake Minnetonka 100-year floodplain elevation as 931.5.

D.4 Surface Water Drainage Information and Modeling:

The surface water drainage system consists of catch basins that collect run-off from streets and parking lots and drain into storm sewer. The storm sewer lines either flow into stormwater treatment basins and outlet into Lake Minnetonka or outlet from storm sewers directly into Lake Minnetonka. Shoreline areas drain overland, mostly across residential yards directly into Lake Minnetonka.

When site specific stormwater management plans are required, the City will use a modeling software to estimate stormwater flows based on techniques and methods developed by the National Resource Conversation Service (NRCS). The results of the model can provide probability-statistical determinations of runoff rates, pond/basin storage volumes and water elevations.

Stormwater runoff generated in the city flows to Lake Minnetonka in a very short time period. The impact on the Lake Minnetonka water level is minimal. Runoff rates in the past were regulated based on water quality treatment criteria and storm sewer capacity.

Citywide runoff volumes have increased slightly over the years due to development and re-development adding to the existing impervious surfaces. With very limited land and resources for infiltration, runoff volumes are expected to remain the same.

D.6 Flood Problem Areas:

There are few isolated attenuation areas within the city with flooding problems associated with stormwater runoff. These are considered "nuisance" in nature and are associated with low spots. There are no current landlocked areas experiencing flooding problems. The City will continue to apply acceptable stormwater and surface water management practices for current properties and potential development areas. The City will adhere to a minimum building elevation of two feet above 100-year HWL elevations from adjacent ponds, basins, wetlands and the floodplain of Lake Minnetonka.

D.7 Surface Water Quality:

D.7.1 City Drainage:

The quality of stormwater runoff generated in the city is typical for a mixed land use community consisting of residential, commercial, multi-family, light industrial and public right- of-way. In the past, the City of Spring Park has required or constructed stormwater basins where applicable to provide sediment and phosphorus treatment. Basins and proprietary structures have been constructed to meet City of Spring Park and MCWD treatment requirements.

Based on comprehensive plan land use projections, the pollutants in the stormwater runoff and the overall quality of the generated runoff will remain unchanged.

There are no illicit discharge outlets into Lake Minnetonka or MPCA permits for discharge in the City of Spring Park.

D.7.2 Lake Minnetonka:

The entire lake is under a Fish Consumption Advisory for mercury and was added to the "impaired waters" list in 1998. The MnDNR, Minnesota Department of Health (MDH) and Minnesota Pollution Control Agency (MPCA) have collaborated to monitor mercury and PCB contamination in the

Lake and will continue to do so. More detailed fish consumption advisories have been prepared for Lake Minnetonka and are available from these agencies. Mercury contamination is being addressed by a region wide Total Maximum Daily Load (TMDL) process by the MPCA.

In 2008, the MPCA added several Lake Minnetonka Bays to their "impaired waters list" for Nutrient/Eutrophication Biological Indicators. These include Halsteads Bay, Stubbs Bay, Jennings Bay and West Arm. West Arm borders the north side of the city and receives about one-half of the stormwater generated in Spring Park. Even though the impaired water determination of West Arm can be contributed to water flowing into West Arm from Jennings Bay, the City is required to address the quality of runoff it is discharging into West Arm. The MCWD has established a phosphorus reduction program in their Water Resource Plan, based on watershed-wide pollutant load modeling. The MCWD plan identifies phosphorus as the primary nutrient pollutant. All of the communities in the Lake Minnetonka watershed have been given phosphorus reduction goals to help restore and protect the water quality of the Lake.

SECTION III – ESTABLISHMENT OF GOALS AND POLICIES

A. Introduction

The City of Spring Park has developed the goals and policies contained in this section to conform with the water resource purposes specified in Minnesota Statute Section 103B.201 and in the MCWD Watershed Management Plan. They have been developed to avoid conflict with existing State, Regional, and County goals and policies. The general purposes of the goals and policies are as follows:

- 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 uniform local policies and official 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;
- Secure the other benefits associated with the proper management of surface and groundwater.

The goals and policies developed by the City address water quality, water quantity, erosion and sediment control, wetlands, groundwater, recreation, fish and wildlife, and enhancement of public participation. Outlined below are the goals and policies developed for each of the above topics.

B. Water Quantity and Flooding

Goal: **To limit public capital expenditures necessary to control excessive volumes and rates of runoff.**

Policies:

1. The City will require that proposed stormwater discharges as a result of development be equal to or less than existing conditions. Increase in discharge rates in areas of development will be allowed provided the downstream facilities can handle the increases.

2. Where practical and feasible, stormwater facilities will be developed on a regional basis, rather than on an individual site basis. For land development projects, the City will determine whether regional stormwater facilities are required and the level of City participation in planning and construction.

3. The City will review downstream stormwater-related impacts (within the community) from development proposals and proactively address water resource-related concerns.

4. The design of new stormwater storage facilities will accommodate the 100-year storm event. Lateral storm sewer will be designed for the 10-year storm event. Additional information on stormwater design standards is contained in Sections V and VII.

5. Encourage surface elevations for new buildings to be a minimum of 2 feet above projected 100-year flood levels of basins and the 100-year flood level of Lake Minnetonka.

6. The City will encourage the minimization of the amount of direct impervious surface planned for any development. The City will also encourage the use of natural drainage ways for conveying stormwater, provided the drainage ways can properly channel the stormwater flows and volumes before ultimately reaching an existing or proposed storm sewer line.

7. Enhanced infiltration practices will be encouraged, where feasible.

8. Public stormwater facilities will be regularly inspected and maintained as necessary for adequate operations. For private stormwater facilities, the City will require a maintenance agreement which identifies adequate inspection and maintenance methods for stormwater facilities as a part of the development documents.

9. Wetlands within the city will be protected to ensure that the wetland's values for providing water quantity benefits will not be significantly impacted.

10. The City authorizes the MCWD to continue to apply its permitting rules and regulations in the City of Spring Park.

C. Water Quality

Goal: **To maintain or improve the stormwater runoff water quality to Lake Minnetonka and wetlands.**

Policies:

1. In the design and construction of new stormwater conveyance systems or modification of existing systems, pretreatment of stormwater runoff will be required prior to discharge to Lake Minnetonka or a City-owned wetland. Treatment methods shall include wet detention basins, proprietary structures and other Best Management Practices identified in the current Phase II MPCA NPDES General Permit for Stormwater Construction Discharge or equivalent performance standards. Additional information on design standards is contained in Sections V and VII.

2. Ponding areas constructed for water quality improvements shall include a skimmer at the pond outlet to remove oil and other floating materials in stormwater runoff.

3. The City will continue their maintenance program that regularly inspects and maintains public stormwater management facilities to ensure their effectiveness per NPDES Phase II Municipal Separate Storm Sewer System (MS4) Requirements. The City will continue to require the owner of private stormwater facilities to execute a maintenance agreement with the City for regular inspection and maintenance of private ponding systems.

4. The City will continue to sweep paved public streets within the community at least three times per year. For future purchase or rental of street sweeping equipment, the City will give consideration to utilizing street sweepers that are highly effective at removing nutrients from the street.

5. The City will continue to inspect for illegal connections and discharges to the City's Stormwater System per the NPDES Phase II Municipal Separate Storm Sewer System (MS4) permit.

6. The City will require the implementation of erosion and sediment control plans and Best Management Practices for construction and land development activities in accordance with the developer's Storm Water Pollution Prevention Plan (SWPPP) for construction activity requirements as required by the MPCA.

7. For proposed land development adjacent to Lake Minnetonka and associated wetlands, the City will follow City ordinance requirements for setbacks and buffers.

8. The City will protect wetlands within the community to ensure that the wetland functions are maintained and that the wetland's value in providing water quality benefits will not be impacted.

9. The City currently implements a public education program through the MS4 SWPPP permit to foster responsible water quality management practices by City residents and businesses. The public information addresses proper lawn fertilizing and other lawn chemical use, disposal of lawn waste, and disposal of solid, liquid, and household hazardous waste products. The City will work to accomplish these tasks through partnerships with other organizations such as MCWD, Lake Minnetonka Conservation District, state and regional agencies, adjacent municipalities, City businesses, and private citizen groups.

10. The City will coordinate with MCWD and Metropolitan Council on water quality monitoring programs proposed within the community and on Lake Minnetonka.

11. The goals and policies will be implemented and updated as necessary to meet MCWD and MPCA's TMDL phosphorus reduction requirements.

12. The City authorizes the MCWD to continue to apply its permitting rules and regulations in the City of Spring Park.

D. Erosion and Sedimentation Control

Goal: **To prevent erosion and sedimentation to the maximum reasonable extent.**

Policies:

1. The City will require the preparation and implementation of erosion and sediment control plans and Best Management Practices for construction and land development activities in accordance with the developer's approved Stormwater Pollution Prevention Plan (SWPPP) for construction activity requirements as required by the MPCA. The City may obtain financial surety from the proposed project to assure compliance.

2. The City will enforce the erosion and sediment control plan and best management practices on construction sites to control erosion, soil loss, and sedimentation. Areas adjacent to water bodies and wetlands, and areas known to have high erosion potential will receive highest priority.

3. The City will cooperate with the MCWD, State and Federal requirements for stormwater permits on land alteration activities.

4. The City may prohibit work in areas having steep slopes and/or high erosion potential when the impacts of significant erosion cannot be controlled or mitigated.

E. Wetlands

Goal: **To protect wetlands in conformance with the requirements of the Minnesota Wetlands Conservation Act and rules, and other State and Federal regulations.**

Policies:

1. The City will maintain the MCWD as the Local Governmental Unit (LGU) responsible for wetland management. The City and MCWD will manage wetlands in conformance with the Minnesota Wetlands Conservation Act (WCA) of 1991, its amendments and rules (i.e. MN Rules Chapter 8420).

2. The City will refer applicants to MnDNR, MPCA, U.S. Army Corps of Engineers (USCOE), and MCWD for permits required for land disturbing activities (e.g. altering, dredging, filling, and draining) in wetlands.

3. The City will cooperate with the permitting programs of the MnDNR, MPCA, US Corp of Engineers and MCWD for proposed activities within the jurisdictional wetlands.

4. The City will utilize available wetlands inventory information developed by the U.S. Fish and Wildlife Service, MCWD, the MnDNR, and the Metropolitan Mosquito Control District to preliminarily identify the location of wetlands on properties where land alteration is proposed.

5. The City will require a wetland delineation report identifying jurisdictional wetlands as part of the City approval process for land development. If wetland encroachments are proposed with the development, wetland values and impacts will be evaluated on a case-by-case basis in accordance with the requirements of the WCA and rules.

6. The City will require pretreatment of stormwater runoff prior to discharge to a City waterbody or wetland. Pretreatment methods shall include wet detention basins or other approved Best Management Practices identified in the current MPCA NPDES General Permit for Construction Stormwater Discharge or equivalent performance standards.

7. The City will require wetland impact mitigation take place within the city limits.

8. The City will require placement of native, unmaintained buffer strips adjacent to wetlands to limit erosion and nutrient transportation to the wetlands.

9. The City authorizes the MCWD to be the "local unit of government" responsible for implementing the Minnesota Wetlands Conservation Act within the City of Spring Park.

F. Groundwater

Goal: **To protect groundwater by prudent management of surface waters.**

Policies:

1. The City will cooperate with County and State agencies to inventory and seal abandoned wells and notify its residents of State standards on well abandonment. There are currently no known wells that need to be abandoned in the city.

2. The City will encourage the use of infiltration methods to promote groundwater recharge where groundwater will not be significantly impacted by the land use or stormwater runoff.

3. The City will adhere to policies established by the City's Wellhead Protection Plan.

4. The City will continue MS4 inspections of the City's Stormwater System for illicit discharge connections.

5. The City will cooperate with the MPCA as they administer their pollution control programs.

G. Recreation, Fish and Wildlife

Goal: **To protect and enhance recreational facilities, along with fish and wildlife habitat.**

Policies:

1. The City will support the efforts of the MCWD, Local, State, and Federal agencies promoting the public enjoyment, protection of fish and wildlife of the Lake Minnetonka resource.

2. The City will protect wetlands in accordance with the goals and policies of this plan.

3. The City will require native, unmaintained buffer zones around wetlands and ponding areas in new developments were feasible and practical and in conformance with MCWD requirements with restrictive easements for these buffers.

4. The City will encourage its residents to retain vegetation buffers and open spaces for the benefit of wildlife habitat and protection of the Lake Minnetonka shoreline.

5. The City will guide future land planning activities and encourage community development actions to include shoreline buffers.

H. Lake Minnetonka Shoreline

Goal: **To preserve the natural appearance of existing shoreline areas, promote natural buffers along the shoreline, and minimize degradation resulting from shoreline alterations and dredging.**

Policies:

1. To promote natural shoreline buffer creation and shoreline restoration.
2. To enforce ordinances establishing shoreline setbacks and buffer requirements on development projects.
3. To authorize the MCWD to continue to apply its shoreline alteration permitting rules and regulations in the City of Spring Park.

I. Enhancement of Public Participation, Information, and Education

Goal: **To educate and inform the public on water resource management issues and to increase public participation in water management activities.**

Policies:

1. The City will continue the MS4 permit public education program to foster public participation in responsible water quality management practices by residents and businesses. The public education topics will include: fertilizer use and the limited need for phosphorus in fertilizer; lawn care and lawn chemical use; solid, liquid and household hazardous waste disposal; and natural water resource systems and protection methods.
2. The City will coordinate public information and education programs with information and activities from the MCWD, Local, State and Federal agencies.
3. The City will prepare and distribute water resource and water quality related information to residents at least once annually. The City will also provide water resource protection information at City Hall for review by its residents.
4. The City will maintain a Water Resources Library available for public review at City Hall. The library will contain resources referenced in this LWMP, public information on water quality practices and activities, including the City of Spring Park's MS4 Storm Water Pollution Prevention Plan (SWPPP).

5. The City will utilize Best Management Practices with regard to the management of City lands, recreational areas, open space areas, and public works facilities.

6. The City will require lawn care companies operating in the community to have phosphorus-free fertilizer available for lawn applications and prohibit phosphorus to be used as fertilizer unless allowed under Minnesota Statute 18C.60.

SECTION IV – ASSESSMENT OF PROBLEMS AND CORRECTIVE ACTIONS

This section contains an assessment of existing and potential water resource related problems presently known within the City and a description of structural, non-structural, or programmatic solutions that could be used to address or correct the problems. The problems and concerns have been identified as part of the land and water resource data collected in the preparation of this LWMP. Additional problems and concerns may be included in this LWMP by City Staff at a later date. Some of the topics discussed herein are repetitive because they are presented according to the State rules and outline for local management plan preparation.

A. Water Quantity and Flooding

A.1 Assessment:

A.1.1 There are no problem erosion areas created by excessive runoff rates or flood prone areas in Spring Park., except for "nuisance ponding" from high intensity rain events.

A.1.2 The City of Spring Park is completely developed except for a few acres of vacant land. New development and redevelopment projects are not expected to increase the runoff rates or volume of stormwater runoff to Lake Minnetonka. To meet phosphorus reductions, the volumes of stormwater must be reduced and/or the stormwater treated to remove higher percentages of phosphorus.

A.2 Corrective Action:

A.2.1 Promote infiltration Best Management Practices (BMPs) for new development and redevelopment to maintain runoff rates and reduce volumes of stormwater runoff flowing to Lake Minnetonka.

B. Surface Water Quality

B.1 Assessment:

B.1.1 West Arm (Bay) of Lake Minnetonka is listed as "Impaired" based on Nutrient/Eutrophication Biological Indicators to MPCA's 2008 Total Maximum Daily Limit (TMDL) Report.

B.1.2 The MCWD has set a phosphorus load reduction of 4 pounds for the City of Spring Park in their 2007 Comprehensive Water Resources Management Plan.

B.1.2 The MPCA completed their Upper Minnehaha Creek Watershed Nutrient and Bacteria TMDL Study in 2014. This study includes TMDLs for phosphorus reduction in the City of Spring Park and other communities in the Lake Minnetonka Watershed. The study identifies a waste load reduction of 40 lbs for the Spring Park City MS4.

B.2 Corrective Action:

B.2.1 Promote stormwater management design that utilizes BMPs, rain water gardens and open space site design that reduces runoff volumes by increasing infiltration.

B.2.2 The City will continue the MS4 stormwater facility inspection and maintenance program which includes street sweeping (two times annually) and resident education program on measures to protect the water quality of Lake Minnetonka.

B.2.3 The City shall stringently uphold erosion control standards for land development and home building activities. Incorporate stormwater treatment in system upgrade projects that reduce phosphorus loadings where feasible; regularly maintain and clean storm sewer, ponding, water quality manhole structures and piping facilities.

B.2.4 Continue to reference to MCWD permitting rules and regulations.

B.2.5 Prepare annual reports of the activities undertaken in the previous year in implementing the plan and progress toward meeting phosphorus reductions.

B.2.6 Develop a partnership of cooperation with the MCWD to jointly work toward the goal of protecting and preserving the water quality of the Lake Minnetonka resource.

B.2.7 In 2015, the City of Spring Park installed a filtration basin at Kings Road & Warren Avenue in conjunction with roadway improvements. This BMP provides flood mitigation and stormwater treatment in an already developed area with no existing treatment facilities. Due to the water quality provided,

the project was approved for grant funding from MCWD. The City will continue to focus on retrofitting the existing systems during redevelopment and infrastructure investments to provide phosphorus removal in already highly developed areas of the city.

B.2.8 Develop a strategy and program to construct phosphorus reduction facilities and BMPs.

C. Impacts of Soil Erosion on Water Quality and Quantity

C.1 Assessment:

C.1.1 Construction-related soil erosion can occur on small and large-scale construction projects. Sediment can be discharged off-site or into the City storm sewer system and into Lake Minnetonka.

C.1.2 Erosion of existing slopes and shorelines due to natural causes or landscape activities can adversely impact Lake Minnetonka.

C.2 Corrective Actions:

C.2.1 Erosion and sediment control plans will be prepared, implemented, and enforced on construction projects to prevent erosion, sedimentation and adverse water quality impacts.

C.2.2 Existing eroded slopes and shoreline will be addressed and corrected, when feasible, or as part of permitted projects.

C.2.3 The City will promote natural vegetated shoreline buffers.

D. General Impact of Land Use Practices and Land Development on Wetlands

D.1 Assessment:

D.1.1 Land use practices and land development can have a significant impact on water quality and water quantity entering wetlands.

D.2 Corrective Actions:

D.2.1 Implementation of the stormwater management practices within this LWMP will address potential negative impacts of land development. The City will work with new development proposals to remedy existing drainage

problems, where feasible. Implementation and enforcement of erosion control Best Management Practices will protect the quality of surface waters. In addition, the City will also continue to monitor lot coverage amounts for newly developing areas.

E. Adequacy of Existing Regulatory Controls to Manage or Mitigate Adverse Impacts on Public Waters and Wetlands

E.1 Assessment:

E.1.1 Public waters and wetlands are currently regulated by programs administered by the USCOE, MnDNR and by Minnesota's Wetland Conservation Act (WCA). The City of Spring Park has designated the MCWD as the Local Government Unit (LGU) to administer the WCA requirements.

E.2 Corrective Action:

E.2.1 It is the City's position that the MCWD's regulatory programs along with the City Ordinances, Codes and Guidelines will adequately manage or mitigate adverse impacts on public waters and wetlands.

F. Maintain groundwater quality and protect the public health

F.1 Assessment:

F.1.1 The City has prepared a wellhead protection plan.

F.1.2 The MCWD 2018 Watershed Management Plan identifies portions of Spring Park as having a very highly sensitive aquifer and a moderately vulnerable DWSMA (Map 9).

F.2 Corrective Action:

F.2.1 Work with MCWD to consider DWSMA vulnerability when permitting development projects and siting stormwater BMPs.

G. Impacts of Stormwater Quality on Recreation, Fish and Wildlife Resources

G.1 Assessment:

G.1.1 Sediment, nutrients, and urban pollutants in untreated stormwater discharges adversely impact water quality, recreation, fish and wildlife resources.

G.1.2 Existing land use activities and land development within the city may adversely impact recreational activities, fish and wildlife resources.

G.1.3 Manicured lawns immediately adjacent to lakes and wetlands allow lawn chemicals to discharge directly into waterbodies and also encourage habitation of lawns by Canadian geese, resulting in increased deposition of waterfowl waste.

G.2 Corrective Action:

G.2.1 Water-related recreational activities and impacts to the fish and wildlife resource will be considered in land use decisions and in reviewing land development proposals.

G.2.2 A natural, unmaintained buffer zone will be required around natural or constructed waterbodies as part of future development proposals and buffer zones will be encouraged around all waterbodies, wetlands and watercourses.

G.2.3 City stormwater management practices and implementation of erosion sediment control measures will maintain and improve the Lake Minnetonka water quality increasing the recreational, fishery and wildlife value.

H. Adequacy of Capital Improvements Program to Correct Problems Related to Water Quality, Water Quantity Management, Fish and Wildlife Habitat, Public Waters and Wetland Management, and Recreational Opportunities.

H.1 Assessment:

H.1.1 In the near future, the City will be updating its Capital Improvements Plan (CIP) to further identify and prioritize capital improvements needed within the community. The CIP will also identify funding sources for the improvements.

H.1.2 The City is considering a stormwater utility fund, which generates revenues to fund stormwater management projects and programs deemed by the City to be in the public's best interest.

H.2 Corrective Action:

H.2.1 The City will need to identify and prioritize stormwater-related improvements in the CIP and additional methods of project financing. In addition, the City will need to address a variety of water quality and quantity issues in conjunction with land development proposals or City street improvement projects, when feasible.

I. Future Potential Problems Anticipated to Occur Within Next 10 Years Based on Growth Projections and Planned Urbanization

I.1 Assessment:

The 2018 Draft Comprehensive Plan identifies land use areas within the city to the year 2040. Projected development is mainly along County Road 15 as development in vacant lots or re-development. The potential stormwater related problems and issues are anticipated to occur from urbanization.

I.1.1 General – Development and re-development projects add areas of impervious surfaces which have the potential to decrease water quality and increase the volume of runoff during construction and after development is complete. During construction, erosion and sedimentation can degrade water quality and increase phosphorus and other pollutant loads to waterbodies.

I.1.2 Roadways – New or reconstructed public or private roads in the city have the potential to degrade water quality by roadway erosion and runoff.

I.1.3 Pond and Stormwater Maintenance (Public and Private) - For the facilities to adequately and effectively function, routine inspection and maintenance will be required.

I.2. Corrective Action:

I.2.1 General – To maintain water quality and protect against erosion during and after development. Projects will need to follow an orderly process of site evaluation, design, and project construction. Decreasing impervious surfaces and incorporating infiltration BMPs will be a site design requirement. Construction activities will need to include erosion control practices.

I.2.2 Roadways – Public or private road maintenance and improvement projects will need to address stormwater quantity and quality issues such as wetland protection, erosion prevention and pretreatment of stormwater.

I.2.3 Pond and Storm Sewer Maintenance –For private stormwater treatment systems, maintenance agreements will be established identifying maintenance programs, responsible parties, and consequences for non-compliance.

SECTION V – IMPLEMENTATION PROGRAM

This section identifies the various methods, programs and official controls available to the City for the implementation of this LWMP. Many of these items are already in place and currently utilized by the City. Some of them will require updating to be consistent with MCWD requirements.

A. City Regulatory Controls

The City has various regulatory controls to manage and protect water resources and reduce stormwater-related impacts in the community. The following presents each of the official controls that will be implemented as regulatory controls:

A.1 General City Code of Ordinances.

The City has adopted a "Code of Ordinances." The City will utilize the Ordinances, Codes and Guidelines to regulate new development, re-development and public projects.

- Stormwater Management and Erosion Control Plan Ordinance.
- Stormwater Utility Ordinance.
- Floodplain Management Ordinance.
- Shoreland Ordinance.
- Wetland Ordinance.
- Subdivision Ordinance.

The City has adopted a Subdivision Ordinance controlling the land use and development of property within the community. In addition to other items, the ordinance addresses City project review and approvals, development of steep slopes, the necessity of erosion prevention and sediment control plans, design standards for stormwater facilities and required flowage and drainage easements.

A.2 Wetland Regulation

The City authorizes the MCWD to act as the local Governmental Unit (LGU) under the Minnesota Wetlands Conservation Act to review wetland impacts in accordance with the State wetland law and rules.

A.3 Wetland Protection

The City will cooperate with the MCWD as the permitting authority for wetlands protection in conformance with the State WCA law and rules.

A.4 Dredging

The City authorizes the MCWD with the responsibility for permitting dredging activities in the waters of Lake Minnetonka. The City will coordinate permitting with the MCWD and other agencies having jurisdiction for dredging activities.

A.5 Shoreland Improvements

The City and MCWD will assume responsibility for this activity though its Shoreland Management Area ordinance. The City authorizes the MCWD to permit shoreland activity according to their permitting authority.

A.6 MPCA MS4 Permit

The City will continue to implement and work within the framework of the MS4 Permit.

B. Management Programs

The City will implement or encourage the following water resource-related management protection programs and ordinance updates.

B.1 Buffer and Setback Requirements

Update City ordinances with wetland and Lake Minnetonka buffers, easements and setbacks. Coordinate with MCWD and MnDNR requirements. City will encourage the placement of natural buffers around all City waterbodies.

B.2 Public Best Management Practices

Continue maintenance and inspection programs established under the MS4 permit. Implement phosphorus reduction BMPs into Public projects.

B.3 Public Education

The City will continue the current MS4 permit public education program that provides water resource protection information to the community and to

develop additional strategies necessary to protect the City's water-related amenities.

C. Stormwater Design and Performance Standards

The City adopts the MCWD "Rules and Regulations." The City will forward preliminary plats for future development/redevelopment projects to the MCWD for review.

D. Phosphorus Reduction Strategies and Program

The City will be establishing and implementing a phosphorus reduction strategy and programs that identify voluntary actions, maintenance activities, public improvements and re-development drainage requirements that are needed to meet the MCWD's phosphorus loading reduction requirements. The plan will be based on phosphorus reduction strategies including City maintenance program BMPs, voluntary BMP programs such as natural shoreline buffer strips, phosphorous removal BMPs for re-development projects and BMPs for City public improvement projects. The strategy will include phosphorus reduction BMPs to be incorporated into roadway, utility and other public improvement projects as they occur. Privately installed improvements will be consistent with the management strategies identified in the LWMP.

The MPCA completed their Upper Minnehaha Creek Watershed Nutrient and Bacteria TMDL Study in 2014. This study includes TMDLs for the City of Spring Park and other communities in the Lake Minnetonka Watershed. The City of Spring Park has been given an annual phosphorus reduction requirement of 40 lbs for West Arm Bay. The cost of the reduction program will depend on the phosphorus reducing BMPs the City needs to implement to meet the reduction goals. The MCWD had previously being proactive with requiring a 4 lb phosphorus reduction for Spring Park's MS4. Meeting this requirement and implementing the phosphorus reduction program will have offset some of the impacts of the new MPCA phosphorus reduction requirements.

E. Future Public Projects

The City is investigating projects to improve the water quality of Lake Minnetonka. The City would like to partner with the MCWD to assist in financing these projects. There are several storm sewers and areas in the City of Spring Park that could be treated to help improve the water quality of Lake Minnetonka. These are potential future projects with no definite schedules or current funding sources.

SECTION V1 – IMPLEMENTATION PRIORITIES AND FINANCIAL CONSIDERATIONS

A. Implementation Priorities

This LWMP has presented an implementation program identifying those various regulatory controls, management programs and potential capital improvements that are necessary to address City surface water resource-related needs and funding capabilities. Table 4 below prioritizes the implementation program. Capital improvements will need to be implemented and funded by private parties or the City based upon city growth, demand and available resources.

TABLE 4. LWMP IMPLEMENTATION PROGRAM PRIORITIES

Ranking	Implementation Program Description
1	Obtain MCWD and Metropolitan Council approval of the Local Water Management Plan and City Comprehensive Plan
2	Update City Ordinance and Regulatory Agreements to be consistent with MCWD policies, rules and regulations, including shoreline setbacks and buffers, memorandum of understanding, stormwater management ordinance
3	Evaluate and prepare a Phosphorus Reduction Strategy and Plan to address the reduction of phosphorus flowing to Lake Minnetonka as identified in the Upper Minnehaha Creek Watershed Nutrient and Bacteria TMDL Study. Coordinate with MCWD.
4	Evaluate developing a Stormwater Utility Fee to provide a funding source for stormwater management facilities that reduce phosphorus loadings to Lake Minnetonka and provide for general stormwater improvements.
5	Continue evaluation and updating of the City's MPCA MS4 permit to best provide measures that protect and preserve the Lake Minnetonka resource.
6	Acquire easements for existing ponding areas, stormwater facilities and for access to outlet control structures if they do not exist.

B. Financial Considerations

Implementing this LWMP will have financial implications on the City. The paragraphs below describe the implementation item and the anticipated cost of the associated

regulatory control or management program. These are not necessarily new costs to be budgeted by the City since many of these costs are already being charged back to developments or included within the current City budget. The anticipated costs of capital improvements are not included in this LWMP but can be determined for future city Capital Improvement Plans. The subsection to follow identifies various methods available to the City for funding these programs and future capital improvements.

B.1 The City will review site plans and other proposed projects for conformance with this LWMP. These costs can be recouped from new developments.

B.2 The City will inspect and enforce erosion control measures identified in this LWMP. Permit fees associated with building activities will recover portions of these costs.

B.3 The City will inspect, at a minimum, municipal stormwater basins, ponds and outfalls every other year. The City will also inspect all structural pollution control devices every year. Structural Devices include trap manholes, sump manholes, floatable skimmers and traps, and hydrodynamic separators. These costs are associated with the MS4 permit. Costs for construction of new stormwater facilities will require additional financial resources based on specific needs.

B.4 Acquisition of easements around new ponding areas, stormwater facilities or for access to outlet control structures will be identified during the City project review process. Easements can be obtained during the project review process, at no cost, as a requirement for City and MCWD approvals. Acquiring easements on existing structures will incur acquisition costs. The additional cost for this item will vary greatly based on the value and use of property within the easement areas.

B.5 The City will develop and implement a public information and education plan. The plan is part of NPDES Phase II requirements. The City will work to share educational resources with other concerned parties such as the MCWD, Lake Minnetonka Conservation District, County and State Agencies. Costs for library and educational materials will vary with type of materials and sources.

B.6 Construction of capital improvement plan projects addressing known surface water resource problems or phosphorus reduction projects require engineering

design, construction documents and property easements. For phosphorus reduction facilities, the phosphorus reduction removal by the facility needs to be calculated and reported to the MCWD as a deduction against the phosphorus load limit requirement. Specific improvements will need to be determined based on need, cost, and availability of funds.

Funding for storm sewer projects can come from the City's General fund or a stormwater utility fund (if established).

C. Funding Sources

The City currently has two funding sources available to pay for the regulatory controls, management program and capital improvements identified in this LWMP. They include general tax revenues and special assessments. While general tax revenues typically fund the regulatory and management programs, the special assessments will be required to fund the larger capital improvement projects.

Several other revenue sources available to the City are the establishment of a stormwater utility fee and a stormwater area charge. A stormwater utility fee has been considered but not adopted. Stormwater area charges are often assessed to development projects to fund necessary stormwater facilities on the property or necessary improvements downstream to facilitate the development. The City will need to review each of these potential funding sources and determine the most appropriate and acceptable course of action for each program or project.

The MCWD operates a stormwater improvement funding program. Funds for City stormwater projects or portions of projects may be available if the project meets MCWD criteria and is selected for funding.

SECTION VII – STORMWATER MANAGEMENT PLAN AND EROSION CONTROL STANDARDS FOR PERMITTING

All new construction or re-development projects with land disturbance will require review by the City and the MCWD. The permitting requirements for projects vary depending on size, impacts to the environment, and complexity. A determination for MCWD permitting will be made by the District's staff. A determination for City permitting will made by City staff. The requirements for stormwater management plans and erosion control plans must meet the following standards: all construction sites, regardless of size, will be required to provide and maintain minimum erosion control measures during construction.

A. Stormwater Management Plan Standards for Permitting:

A.1 Minnehaha Creek Watershed District (MCWD): The standards for permitting include:

- Erosion Control;
- Floodplain Alteration;
- Wetland Protection;
- Dredging;
- Shoreline and Streambank Stabilization Rule;
- Waterbody Crossings & Structures; and
- Stormwater Management.

Refer to the MCWD for latest revisions to the Rules and Regulations.

A.2 City of Spring Park: The Standards for permitting and guidelines to land use and site design include reference the City of Spring Park Stormwater Management Ordinance, Zoning Ordinance and Spring Park Comprehensive Plan.

A.2.1 The City of Spring Park has adopted performance goals consistent with those outlined by the MPCA Minimal Impact Design Standards (MIDS). For new, nonlinear development, these standards require retention of 1.1 inches of runoff from proposed impervious surfaces. Nonlinear, redevelopment projects are required to retain 1.1 inches of runoff from all new and/or fully reconstructed surfaces on site. Linear projects are required to retain the greater of either 0.55 inches of runoff from fully reconstruct

A.2.2 The 'MIDS Design Sequence Flow Chart' outlines flexible treatment options should the site contain any design restrictions such as, but not limited to, poor quality soils, shallow bedrock, or groundwater contamination. However, where applicable, these flexible treatment options must still meet the stormwater management requirements of the MCWD.

A.2.3 The rate of runoff from a developed site shall not exceed peak direct runoff discharges that existed prior to development. The rate of runoff from a redeveloped site shall not exceed peak direct runoff discharges that exist at the time of redevelopment. In cases where peak direct discharge rates are not identified, the developed peak rates shall not exceed existing conditions for the 2-,10-, and 100-year storm events.

A.2.4 In the design of new stormwater treatment facilities, all runoff must be pretreated prior to entering the facility. Pretreatment methods may include wet detention basins or other BMPs as identified in the current MPCA NPDES General Permit for Construction Stormwater Discharge.

A.2.5 Ponding outlets on wet detention basins shall include skimmer devices to remove oils and other pollutants. Skimmer device inlets must be placed such that the top of the opening is at least one foot below the treatment pond's established normal water level (NWL).

A.2.6 Offsite run-on must be accommodated in the analysis and design of new stormwater management facilities.

A.2.7 Stormwater design analysis shall utilize an industry standard hydrograph, routing method, and time of concentration determination. Storm sewer lateral systems for individual sites shall be analyzed utilizing the rational method.

A.2.8 For private stormwater facilities, the City will require a maintenance agreement, which identifies adequate inspection and maintenance methods for stormwater facilities as a part of the development documents.

B. Erosion Control Standards for Permitting

B.1 Minnehaha Creek Watershed District (MCWD): The standards for permitting include:

- Erosion Control.

Refer to the MCWD for latest revisions to the Rules and Regulations.

B.2 City of Spring Park Standards: The Standards for permitting and guidelines to land use and site design include: refer to the City of Spring Park Stormwater Management Ordinance, Zoning Ordinance, and Spring Park Comprehensive Plan.

B.3 General Standards for Erosion Control during construction:

B.3.1 The plan shall show proposed methods of retaining waterborne sediments on-site during the construction period and proposed restoration, covering, or re-vegetation after construction.

B.3.2 The plan shall show locations of any temporary sediment basin(s). Temporary Sedimentation Basins shall be designed in accordance with Part III.B of the MPCA NPDES General Permit (MN R100001).

B.3.4 Sites with high erosion potential characterized by steep slopes or erodible soil will be required to provide site-specific construction recommendations by a Soils Engineer for City review. Steep slopes shall be defined as areas of 12 percent or steeper. In addition, a financial surety may be required to ensure performance.

B.3.5 If infiltration/filtration basins are proposed for the construction site, a note must appear on the plan stating that "the infiltration basin area(s) cannot be used to treat construction site runoff, and shall not be constructed to final grade until the contributing drainage area has been fully stabilized to the satisfaction of the engineer." In addition, the following statement shall also appear, " the proposed infiltration basins shall be roped off as not to allow heavy construction site traffic to enter any basin and the basins shall be staked off before any construction can begin".

B.3.6 If any disturbed soil is located within 200 lineal feet of Lake Minnetonka shoreline, wetland or stormwater management facility and the area has a continual positive slope to the water body, the exposed area must provide temporary erosion protection, or permanent cover according the MPCA NPDES General Permit for Construction Stormwater Discharge. Those

areas requiring temporary erosion protection or permanent cover shall be identified on the plans.

B.3.7 All sediment control practices shall be installed according the MPCA NPDES General Permit for Construction Stormwater Discharge.

B.3.8 The erosion control plan shall provide rock construction entrances for all entrances where heavy construction traffic will enter. Those entrances must be clearly identified on the plan.

B.3.9 Proposed design, suggested location, and phased implementation of effective, practicable erosion control measures for plans shall be designed, engineered, and implemented to achieve the following results:

a. Prevent gully and bank erosion: and,

b. Limit total off-site permissible annual aggregate soil loss for exposed areas resulting from sheet and rill erosion to an annual, cumulative soil loss rate not to exceed 7.5 tons per acre annually.

B3.10 The City shall receive documentation that the NPDES General Permit for Construction Stormwater Discharge application has been approved from the MPCA, as well as any other approved applications as required for the construction site, such as the Subdivision Registration form, Permit Transfer/Modification form, and the Notice of Termination form.

SECTION VIII – AMENDMENT PROCEDURES

It is the City's intention to have this LWMP reviewed and approved by the Minnehaha Creek Watershed District (MCWD) and Metropolitan Council in accordance with Minnesota Statutes. After approval, it will be adopted by the City Council and incorporated into the City's Water Resource Library.

This LWMP has been prepared to extend through the year 2028, in accordance with the MCWD 10-year Watershed Management Plan approved in January of 2018. The LWMP may need to be updated with amendments, in the interim to conform to changes in the MPCA determined TMDLs for Lake Minnetonka, updates to the MS4 permit, or any MCWD issued updates to their comprehensive plan. Amendments will also be required within two years of the adoption of a watershed plan by a Watershed District or Watershed Management Organization, consistent with State Rules part 8410.0160.

If the City proposes changes to this LWMP before year 2017, the changes and their impacts will be determined by the City. The general descriptions of the changes and the associated review and approval requirements are presented as follows:

Changes would include small adjustments to sub-watershed district or sub-district boundaries or other minor changes that would not significantly affect the rate or quality of stormwater runoff discharged across the municipal boundary or significantly affect high water levels (HWLs) within the City. Minor changes also include revisions made to the stormwater related Capital Improvements Program to best meet the City's phosphorus loading reduction requirements, water resource needs and financial considerations. For proposed changes, the City will prepare a document, which defines the change and includes information on the scope and impacts of the change. The document will be forwarded to the MCWD for their records. The minor change will be implemented after the document is adopted by the City Council.

ACRONYM IDENTIFICATION

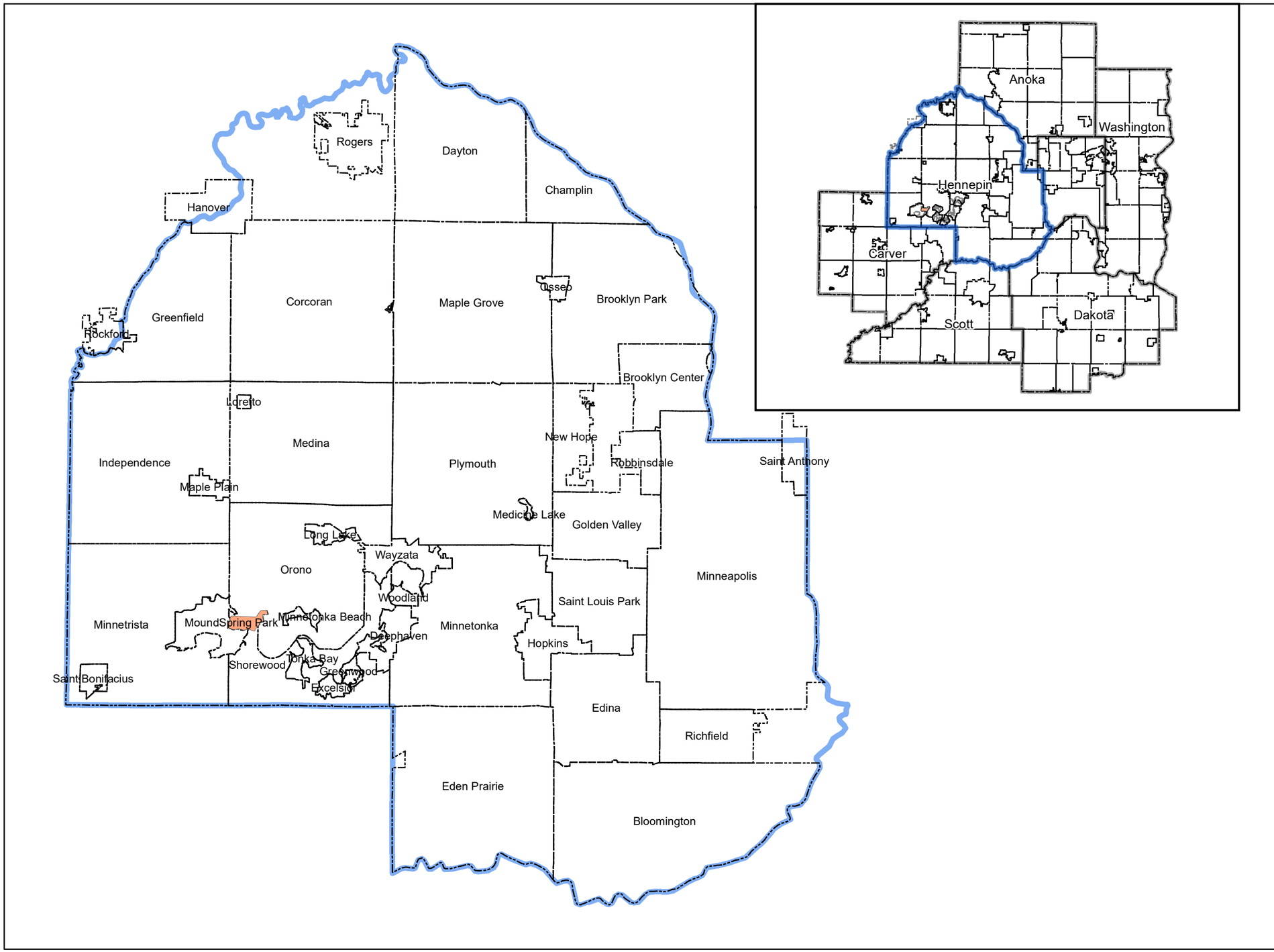
BMP-Best Management Practice
BWSR-Minnesota Board of Water and Soil Resources
CIP-Capital Improvements Plan
CN-Curve Number
DWSMA-Drinking Water Supply Management Area
FEMA-Federal Emergency Management Agency
FIRM-Flood Insurance Rate Map
FIS-Flood Insurance Study
HSG-Hydrologic Soil Group
HWL-High Water Level
IDF-Intensity Duration Frequency
ISTS-Individual Sewage Treatment Systems
LGU-Local Government Unit
LMCD-Lake Minnetonka Conservation District
LWMP-Local Water Management Plan
MCWD-Minnehaha Creek Watershed District
MDH-Minnesota Department of Health
MnDNR-Minnesota Department of Natural Resources
MNRRA-Mississippi National River and Recreation Area
MPCA-Minnesota Pollution Control Agency
NPDES-National Pollution Discharge Elimination System
NRCS-National Resource Conservation Services
NWI-National Wetland Inventory
NWL-Normal Water Level
OHWL-Ordinary High Water Level
PWI-Protected Waters Inventory
RD-River Development
SCS-Soil Conservation Service
LWMP-Surface Water Management Plan
SWPPP-Storm Water Pollution Prevention Plan
SWWD-South Washington Watershed District
TMDL-Total Maximum Daily Load
USCOE-United States Corps of Engineers
USDA-United States Department of Agriculture
WCA-Wetland Conservation Act

WMO-Watershed Management Organization(s)

APPENDIX A

MAPS

Regional Map



City of Spring Park

SPRING PARK
On Lake Winnetonka

Legend

- Spring Park
- Municipalities
- Hennepin County
- Metro Counties

Miles

0 2.5 5 10

Source:
Hennepin County, City of Spring Park
Minnesota Department of Natural Resources, &
Northwest Associated Consultants, Inc.
Prepared: April 2017

NORTHWEST ASSOCIATED CONSULTANTS, INC.
4150 Olson Memorial Highway, Ste. 320, Golden Valley, MN 55422
Telephone: 763.231.2555 Website: www.nacplanning.com

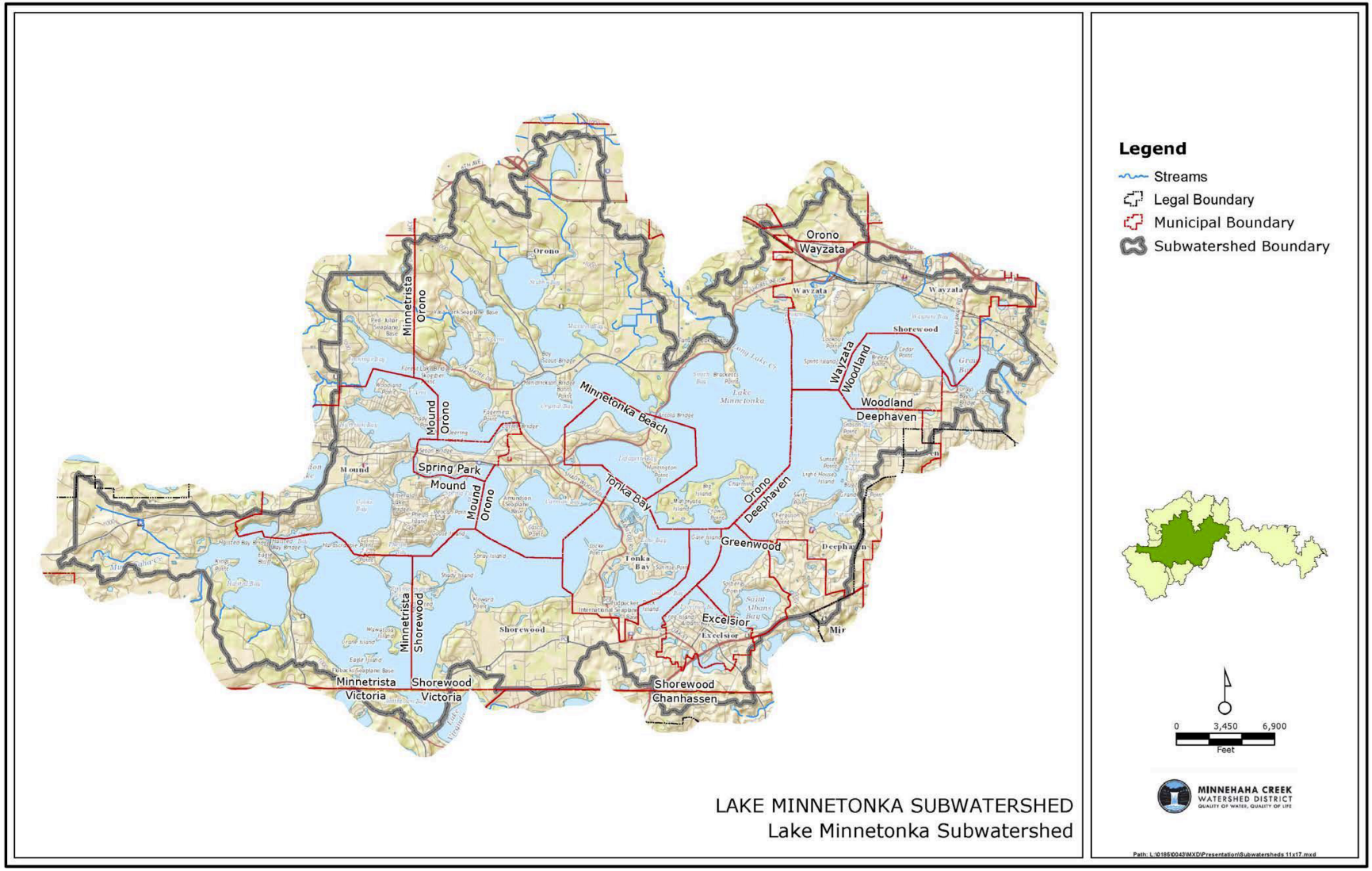
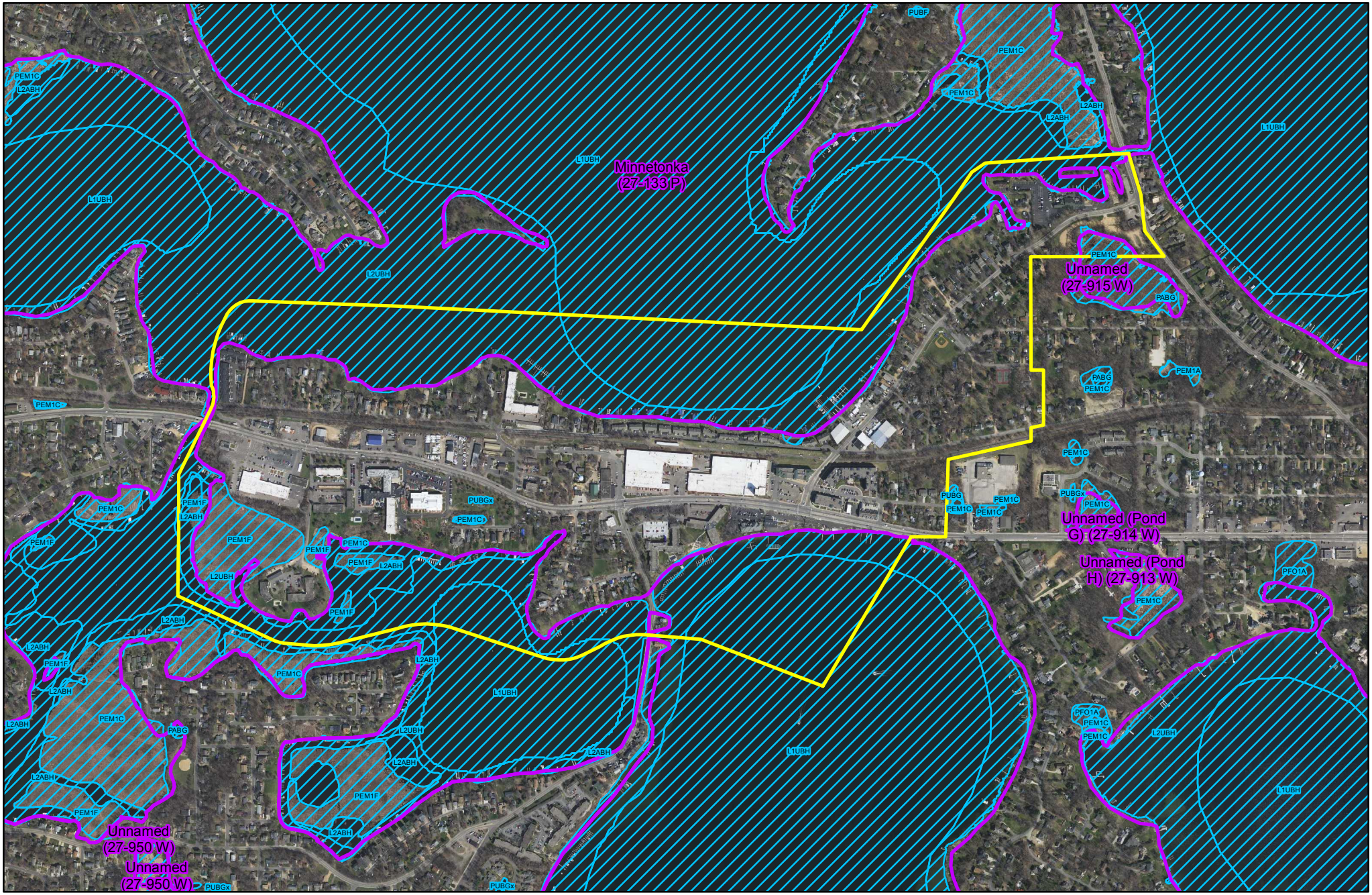


Figure 2. 33. The Lake Minnetonka subwatershed.



Sambatek

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N
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Scale In Feet

Water Resources Inventory

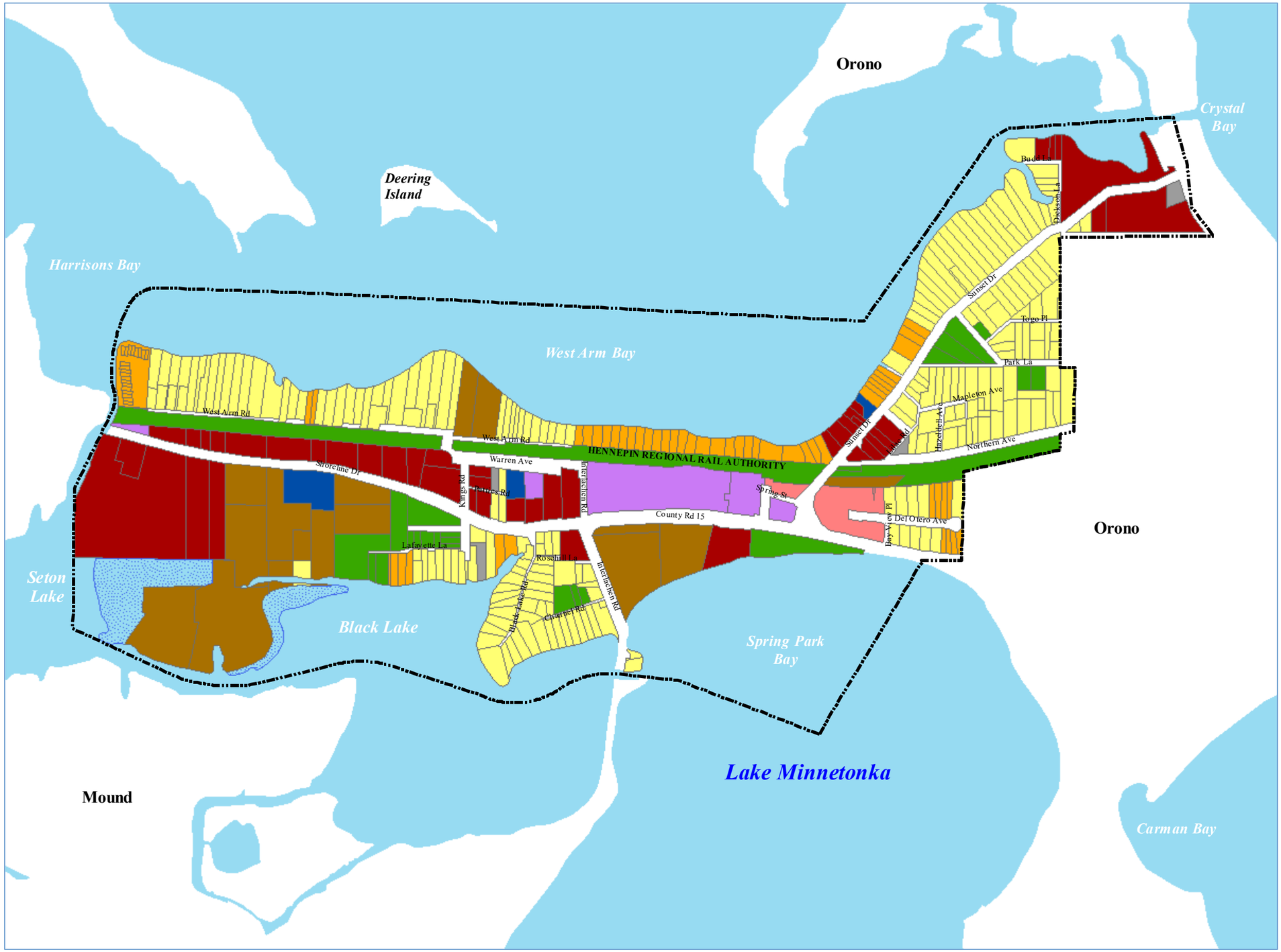
Spring Park, Minnesota

Legend

- City Limits
- NWI Mapped Wetland
- MN DNR Protected Water

Sources: MetroGIS, NRCS, LMIC, MNDNR

Existing Land Use 2017



City of Spring Park

SPRING PARK
On Lake Minnetonka

Legend

- Low Density
- Medium Density
- High Density
- Mixed Use Residential
- Commercial
- Industrial and Utility
- Institutional
- Parks and Open Space
- Vacant
- Wetlands
- Lakes
- Boundary

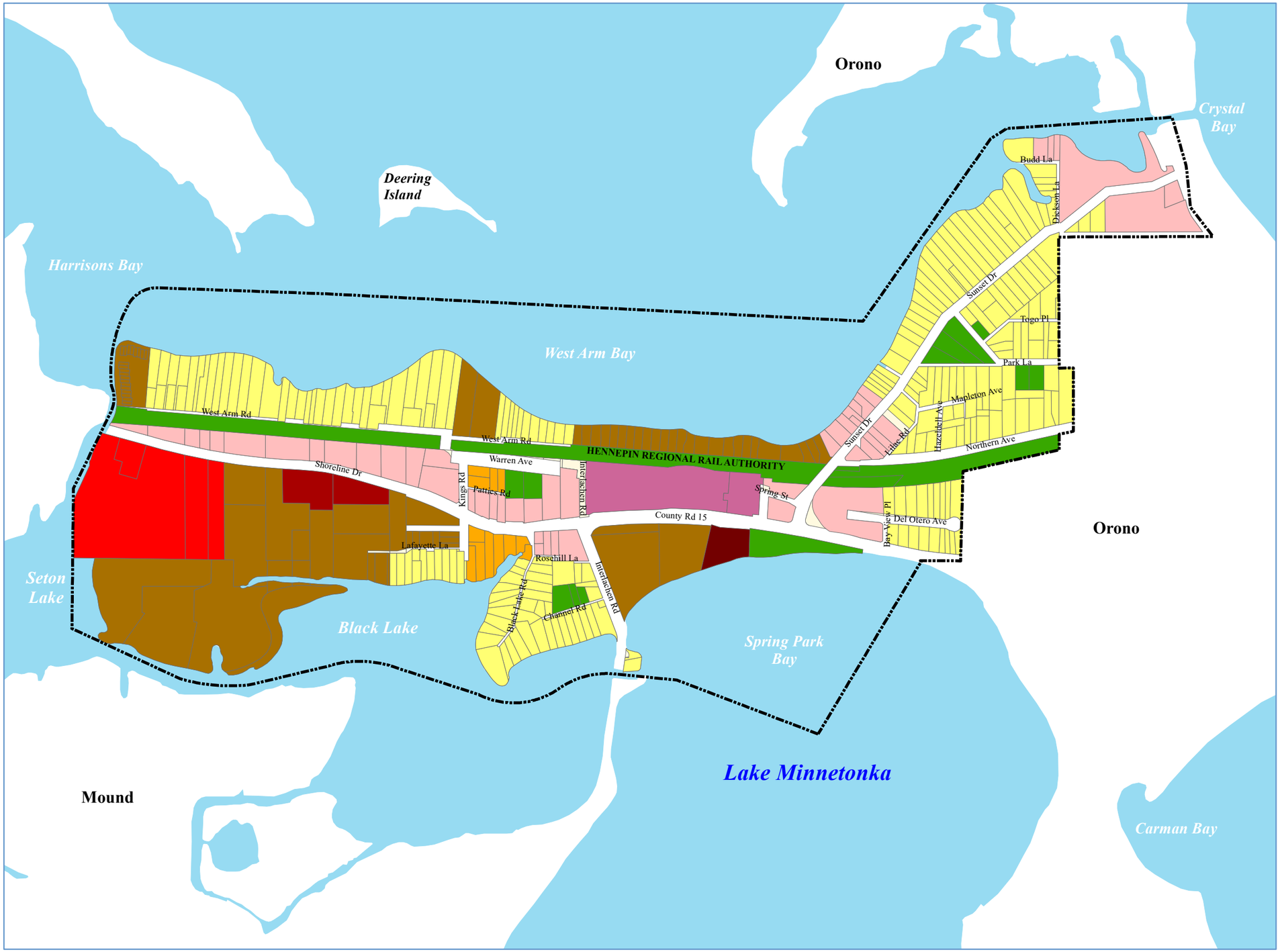
Miles

0 0.05 0.1 0.2 0.3

Source:
Hennepin County, City of Spring Park
Minnesota Department of Natural Resources, &
Northwest Associated Consultants, Inc.
Prepared: January 2017

NORTHWEST ASSOCIATED CONSULTANTS, INC.
4850 Olson Memorial Highway, Ste. 320, Golden Valley, MN 55422
Telephone: 763 231.2535 Website: www.nacplanning.com

Zoning Map



City of Spring Park

SPRING PARK
On Lake Minnetonka

Legend

- Boundary
- Commercial, C-1
- Commercial, C-2
- Commercial, C-3
- Commercial, C-4
- Mixed Use, M
- Parks and Recreation, P
- Residential, R-1
- Residential, R-2
- Residential, R-3
- Lakes

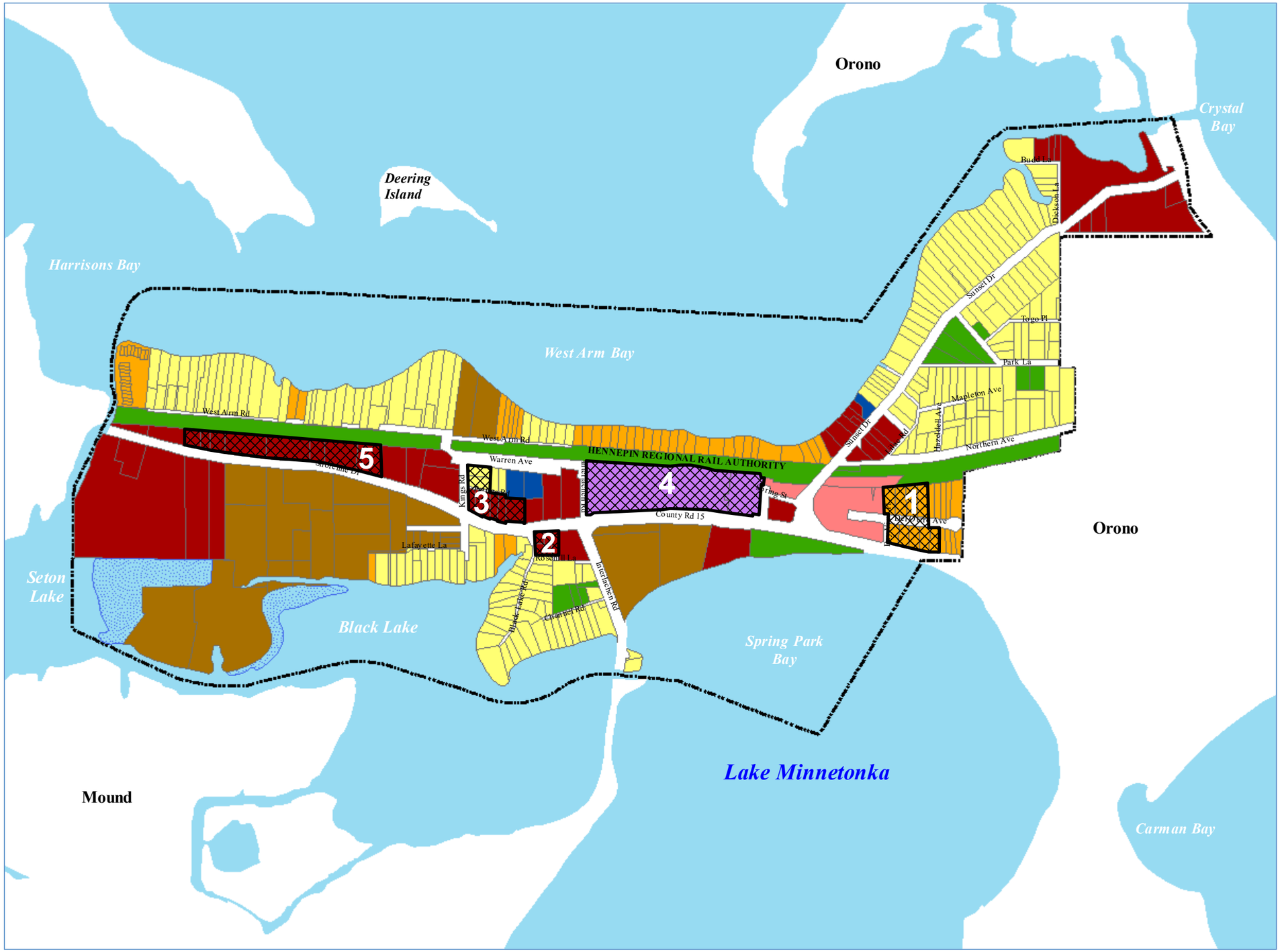
Miles

0 0.05 0.1 0.2 0.3

Source:
Hennepin County, City of Spring Park
Minnesota Department of Natural Resources, &
Northwest Associated Consultants, Inc.
Prepared: January 2017

NORTHWEST ASSOCIATED CONSULTANTS, INC.
4150 Olson Memorial Highway, Ste. 320, Golden Valley, MN 55422
Telephone: 763.231.2555 Website: www.nacplanning.com

2040 Future Land Use



City of Spring Park

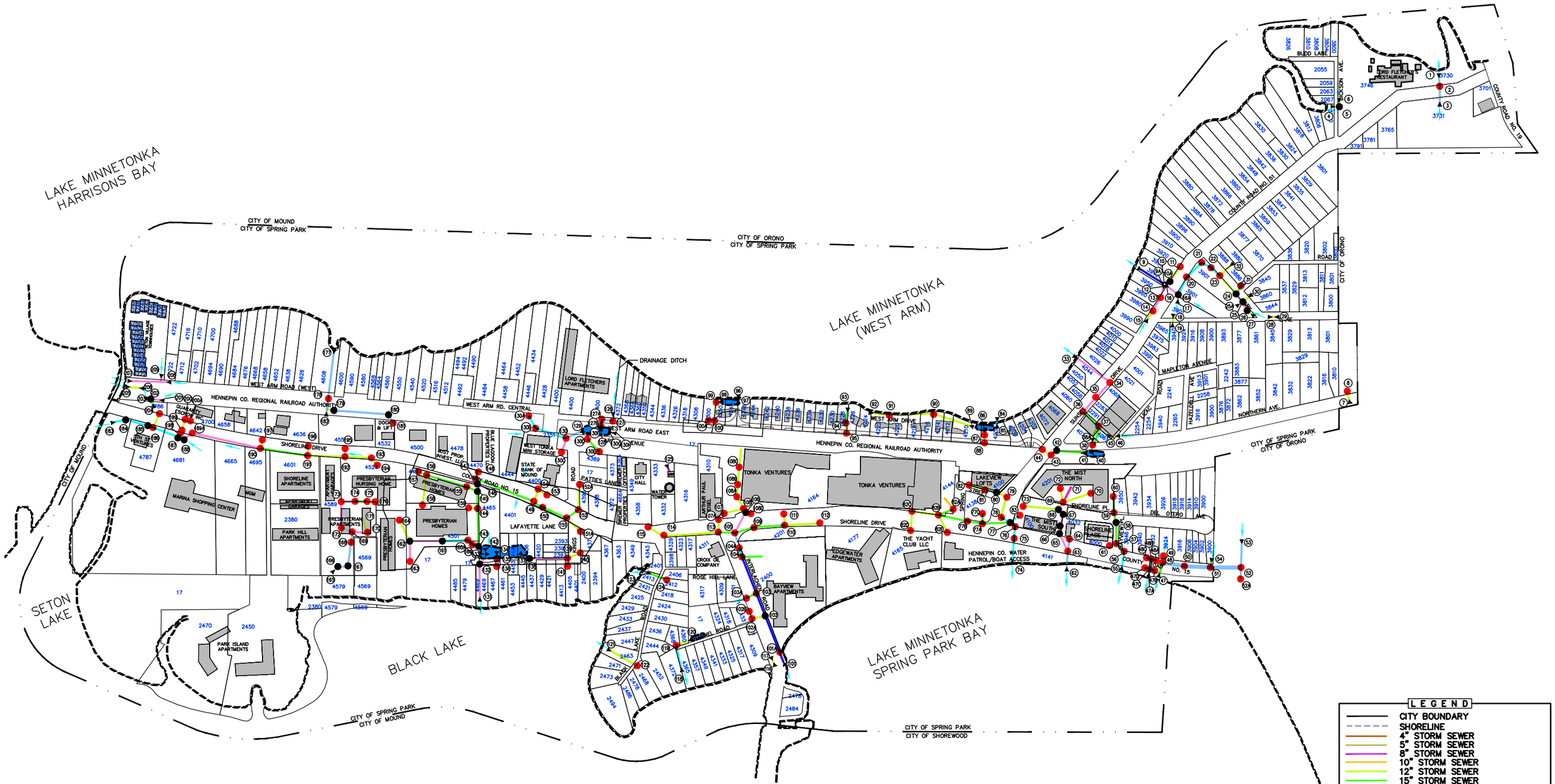
Legend

- Low Density
- Medium Density
- High Density
- Mixed Use Residential
- Commercial
- Industrial and Utility
- Institutional
- Parks and Open Space
- Wetlands
- Potential Redevelopment
- Boundary
- Lakes

Feet

0 250 500 1,000 1,500

Source:,
Hennepin County, City of Spring Park
Minnesota Department of Natural Resources, &
Northwest Associated Consultants, Inc.
Prepared: January 2018.



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Note: Utilities are shown larger for Display purposes only.

LEGEND

- CITY BOUNDARY
- SHORELINE
- 4" STORM SEWER
- 5" STORM SEWER
- 8" STORM SEWER
- 10" STORM SEWER
- 12" STORM SEWER
- 15" STORM SEWER
- 18" STORM SEWER
- 21" STORM SEWER
- 24" STORM SEWER
- 30" STORM SEWER
- UNKNOWN SIZE STORM SEWER
- PRIVATE STORM SEWER
- STORM SEWER CATCH BASINS
- STORM SEWER MANHOLES
- STRUCTURE NUMBERS
- STORM SEWER DIRECTION ARROWS
- UTILITY EASEMENTS

0 250 500 1000
SCALE IN FEET

Sambatek

Client:
CITY OF SPRING PARK
4349 Warren Ave.
Spring Park, MN 55384-9711
(952) 471-9051

Project Name: ASSET MANAGEMENT PLAN

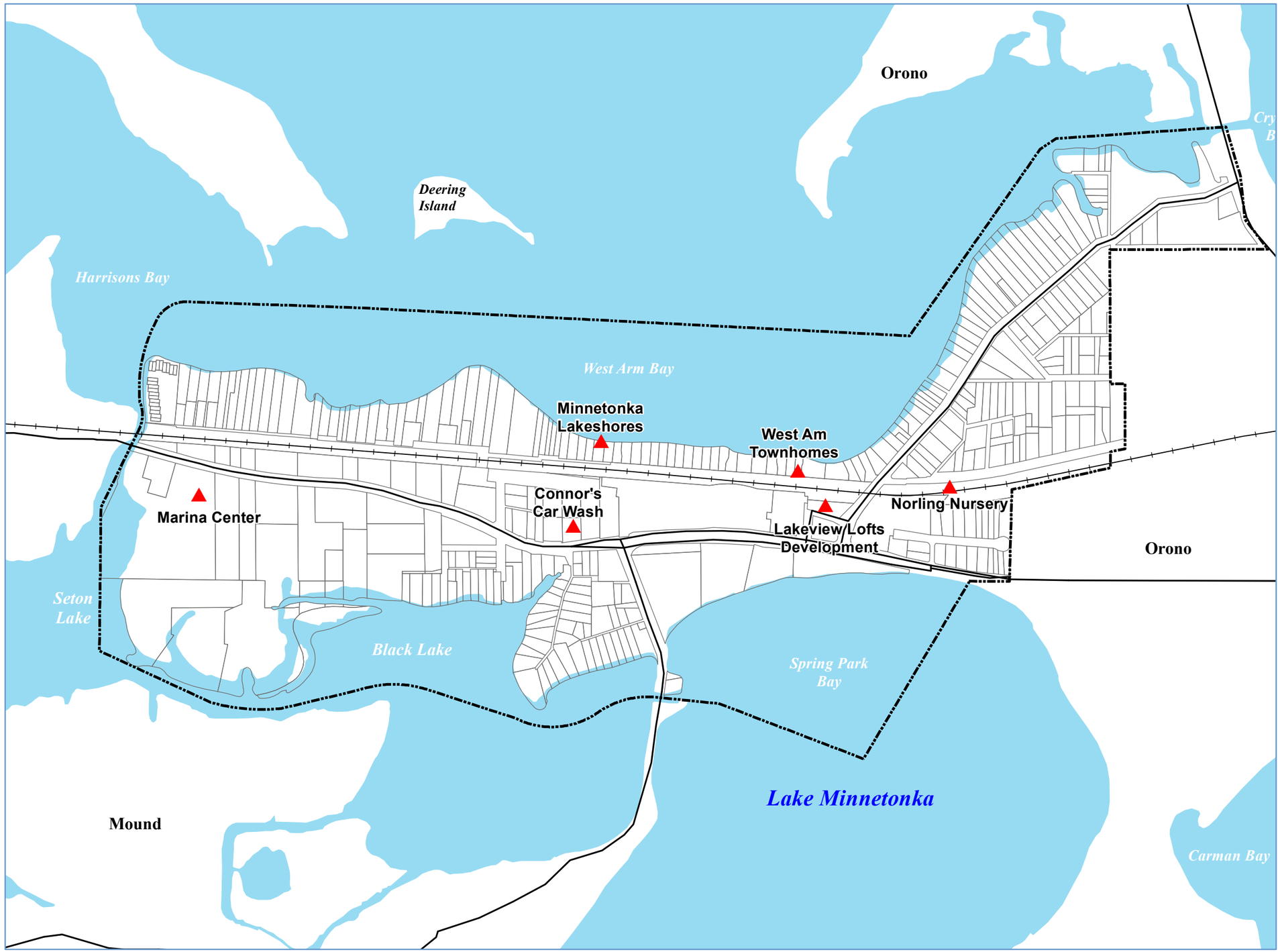
Date: 10/13/17

Sheet Title: STORM SEWER SYSTEM MAP

Sheet: FIGURE-12

Oct, 16 2017 11:52 am L:\PROJECTS\20531\CAD\Xrefs\03-StormSewerMap.dwg By: bhare

Polluted Sites



City of Spring Park

SP SPRING PARK
On Lake Minnetonka

Legend

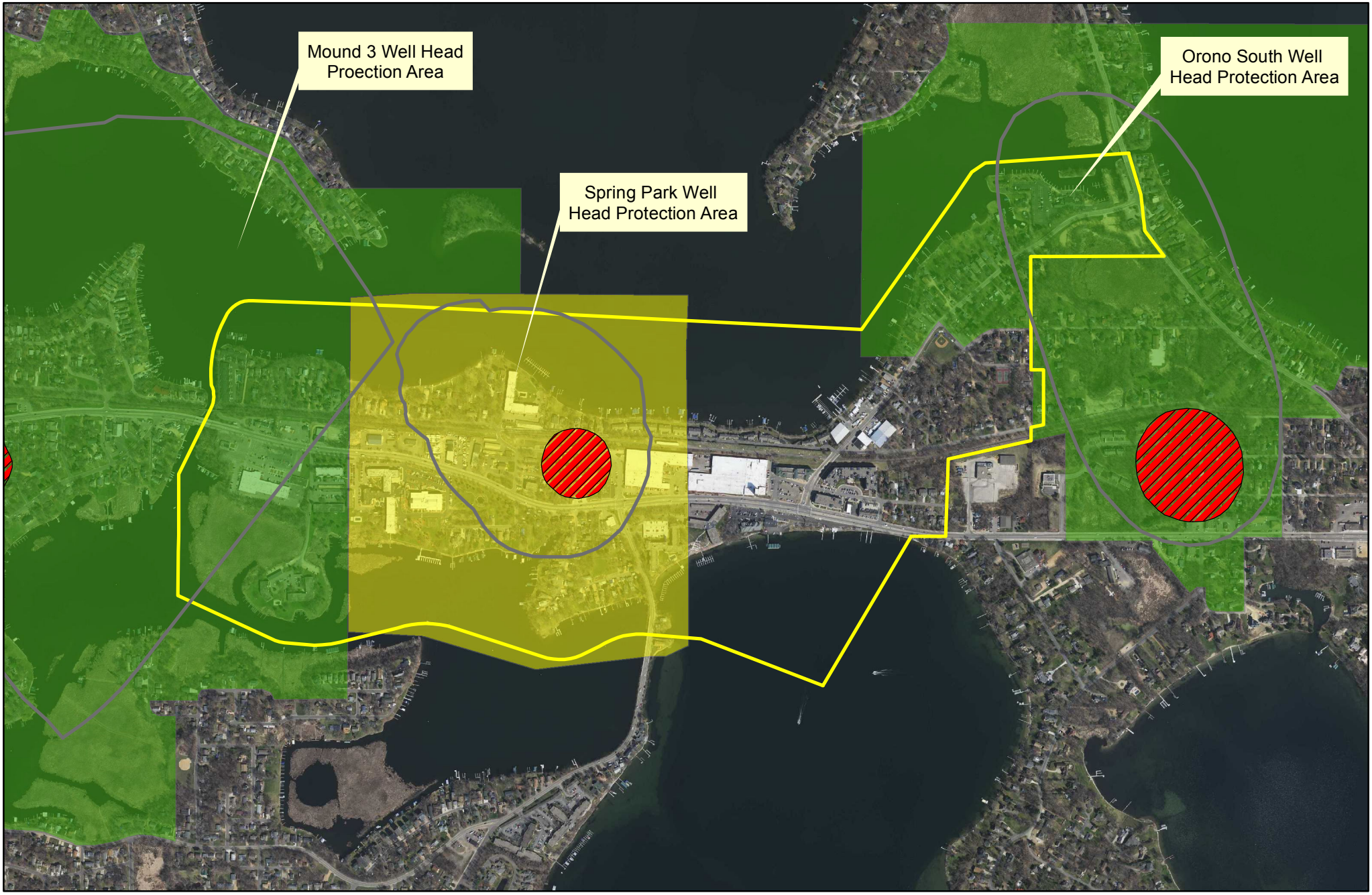
- Voluntary Investigation & Cleanup Program
- Lakes
- Roads
- Railroad
- Boundary

Feet

0 250 500 1,000 1,500

Source:,
Hennepin County, City of Spring Park
Minnesota Department of Natural Resources, &
Northwest Associated Consultants, Inc.
Prepared: January 2017.

NAC NORTHWEST ASSOCIATED CONSULTANTS, INC.
4800 Olson Memorial Highway, Suite 202, Golden Valley, MN 55422
Telephone: 763.231.2555 Facsimile: 763.231.2561 planners@nacplanning.com



Sambatek

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N
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0 250 500 1,000
Scale In Feet

Drinking Water Supply Management Area Vulnerability

Spring Park, Minnesota

Legend

- City Limits
- Emergency Response Areas
- Well Head Protection Areas

DWSMA Vulnerability Rating

- Very High
- High
- Moderate
- Low
- Very Low

Sources: MetroGIS, NRCS, LMIC, MNDNR

APPENDIX B

STORM SEWER INVENTORY

SPRING PARK
STORM SEWER INVENTORY
PAGE 1

STRUCTURE NO.	LOCATION	SIZE-TYPE	LENGTH	MAINTENANCE BY	TYPE OF DRAINAGE SYSTEM	EXISTING EASEMENT STATUS	CONDITION /REMARKS
1	County Road. 51	24" CMP	61' – 58'	County	Road Culvert	None	Good condition. Inlet – restricted by snow fence and leaves. Outlet – under water or behind wall shoring boards.
2	Dickson Lane	12" CMP	25'	City	Road Culvert	R.O.W.	Fair condition. Inlet – rework blacktop. Outlet – restricted by brush, weeds and silt.
3	County Road 51	Unknown-CMP		City	Road Culvert	R.O.W.	Fair condition. Flat grade to lake with standing water. ½ filled with dirt at inlet.
4	County Road 51	12" CMP	24'	City	Driveway Culvert	R.O.W.	Fair condition. Ditch to north needs excavation – pipe is ¾ filled with dirt and silt.
5	County Road 51	18" RCP	48'	City	Storm Sewer System	R.O.W.	Good condition.
6	County Road 51	18" RCP	64'	City	Storm Sewer System	R.O.W.	Good condition. Pipe is half-filled with silt.
7	County Road 51	18" RCP	11'	City	Storm Sewer System	R.O.W.	Fair condition. Pipe is half-filled with silt
8	County Road 51	12" CMP	108'	City	Storm Sewer System	R.O.W.	Unknown condition. Pipe is full of water.
9	County Road 51	30-1/2" CMP	160'	City	CMP Swale Pipe to Lake	None	Poor condition. Pipe swale is full of water.
10	Lift Station 2	15" CMP	36'	City	Drainage Culvert	City	Fair condition. Pipe is pulling apart.
11*	Park Lane	12" CMP	--	City	Driveway Culvert	R.O.W.	Poor condition. Pipe nearly plugged with silt.
12*	Park Lane	12" CMP	--	City	Driveway Culvert	R.O.W.	Poor condition. Pipe nearly plugged with dirt.
12A	Park Lane	12" CMP	35'	City	Road Culvert	R.O.W.	Fair condition.
13*	Park Lane	15" CMP	40'	City	Road Culvert	R.O.W.	Fair condition. Inlet catch basin plugged, outlet (trees).
14	Park Lane	12" CMP	36'	City	Road Culvert	R.O.W.	Fair condition. Should have inlet basin, outlet deformed.
15	Park Lane	12" CMP	120'	City	Drainage Culvert	R.O.W.	Fair condition.
16	Northern Avenue	Unknown-CMP	29'	City	Road Culvert	R.O.W.	Unknown condition. Pipe filled with water.

SPRING PARK
STORM SEWER INVENTORY
PAGE 2

STRUCTURE NO.	LOCATION	SIZE-TYPE	LENGTH	MAINTENANCE BY	TYPE OF DRAINAGE SYSTEM	EXISTING EASEMENT STATUS	CONDITION /REMARKS
17	Sunset	18" RCP	189'	City	Storm Sewer System	City	Unknown condition. Outlet – restricted by willow tree and roots.
18	Sunset	24" RCP	110'	City	Storm Sewer System	R.O.W.	Good condition.
19	Sunset	18" RCP	94'	City	Storm Sewer System	R.O.W.	Good condition.
20	Boat Works	15" RCP	116'	Cit	Storm Sewer System	None	Good condition. Catch basin inlet restricted by debris. Storm sewer pipe run under corner of building.
21	Boat Works	15" RCP	69'	City	Storm Sewer System	None	Unknown condition. Catch basin inlet restricted by shrubs and filled with debris. Retaining wall leaning over catch basin.
22	Northern Avenue	12" CMP	50'	City	Storm Sewer System	R.O.W.	Poor condition. Inlet restricted by brush and trees. Horizontal/vertical bends in pipe.
23	Northern Avenue	12" CMP	46'	City	Driveway Pipe	R.O.W.	Good condition. Inlet is bent, debris restricting flow pipe.
24	Omit**						
25	Omit**						
26	Omit**						
27	Omit**						
28	Omit**						
29	Omit**						
30	Omit**						
31	Omit**						
32	Omit**						
33	County Road 15	8" Conc. Tile	64'	Private	Storm Sewer System	None	Fair condition. Catch basin west side of Warren is abandoned.
34	County Road 15	24" CMP	212'	County	Storm Sewer System	R.O.W.	Good condition.
35	Interlachen Road	30" RCP	550'	County	Storm Sewer System	R.O.W.	Good condition. Outlet area needs some grading maintenance.
36	Interlachen Road	15" CMP	47'	City	Storm Sewer System	R.O.W.	Fair condition. Inlet is restricted by rock and trees.
37	Channel Road	Unknown-CMP	28'	City	Storm Sewer System	R.O.W.	Poor condition. Catch basins need new inlet grates, full of water.

SPRING PARK
STORM SEWER INVENTORY
PAGE 3

STRUCTURE NO.	LOCATION	SIZE-TYPE	LENGTH	MAINTENANCE BY	TYPE OF DRAINAGE SYSTEM	EXISTING EASEMENT STATUS	CONDITION /REMARKS
38	Channel Road	Unknown-CMP	180'	City	Storm Sewer System	None	Very poor condition. Pipe is separated in 2 places. Outlet submerged – 10' in lake.
39	Channel Road	21" RCP	90'	City	Storm Sewer System	City	Unknown condition. 125' open ditch to lake.
39A	Channel Road	12" CMP	70'	City	Storm Sewer System	City	Constructed, 1990.
40	Black Lake Road	12" CMP	166' ±	City	Storm Sewer System	City	Repaired, 1988.
41	Black lake Road	15" CMP	90' ±	City	Storm Sewer System	None	Good Condition.
42	Omit***						
43	City Hall	--	55' ±	City	Storm Sewer System	City	Very poor condition. Outlet restricted. Catch basin filled with silt and water. Overflow is sanitary sewer inside City hall.
44	Burlington Northern Railroad	24"	--	City	Railroad Culvert	R.R. Permit	Poor condition. Inlet and outlet badly restricted with silt 12" under railroad tracks; 30' outlet. Open ditch to lake to flat grade that restricts outlet flow to lake.
44A	Burlington Northern Railroad	--	300' ±	City	Drainage Ditch	None	Very poor condition. Open ditch to lake to flat grade that restricts outlet flow to lake.
45	Warren Road	18" RCP	--	City	Street Culvert	R.O.W.	Poor condition.
46	Burlington Northern Railroad	24" RCP		Private	Detention Storage System	R.R. Permit R.O.W.	Good condition.
47	Burlington Northern R.R., West Arm Road	24" CMP	30' ±	City	Storm Sewer System	R.R. Permit	Fair Condition.
47A	Burlington Northern	24" CMP/RCP	100' ±	City	Storm Sewer System	City	Poor condition. Outlet apron displaced b lake erosion. First 50' of RCP displaced by frost heave.

SPRING PARK
STORM SEWER INVENTORY
PAGE 4

STRUCTURE NO.	LOCATION	SIZE-TYPE	LENGTH	MAINTENANCE BY	TYPE OF DRAINAGE SYSTEM	EXISTING EASEMENT STATUS	CONDITION /REMARKS
48	West Arm Road	18" CMPA	250' ±	City/Private	Drainage Culvert	City	Good condition.
49	West Arm Road	12" CMP	41'	City	Street Culvert	R.O.W.	Very poor condition. Outlet restricted with silt.
50	West Arm Road	15" RCP	66'	City	Street culvert	City	Good condition.
51	West Arm Road	18" RCP	42'	City	Street Culvert	City	Good condition.
52	West Arm Road	--	--	City	Detention Pond	City	Good condition.
53	County Road 15	21" RCP	360'	City	Storm Sewer System	City	Good condition.
54	Lake Shore Village	18" RCP	290' ±	City	Storm Sewer System	City	Constructed 1988.
55	Lake Shore Village	18" RCP	200'	City	Storm Sewer System	City	Constructed 1988.
56	Lafayette Lane	Detention Basin		City	Storm Water Detention	City	Constructed 1988.
57		Detention Basins		Association	Storm Water Detention	City	Constructed 1996.
58		Storm Sewer 12" RCP		City	Storm Sewer System	City	Constructed 1996.

R.O.W.= Right of Way
R.R. = Railroad

*The outlet and inlet inverts to these pipes and culverts are below the ground elevation of the existing ditch, restricting the drainage through these structures.
**Replaced by County Road 15 Storm Sewer Improvements.
***Replaced by Lafayette Lane Detention Basin.

Table 5: Storm Sewer Pipe Condition Summary
Asset Management Plan
City of Spring Park
October 13, 2017
Sambatek # 20531

Structure		Structure		Street		Length	Diameter	Pipe Material	Last Year of Improvement	I&I	G.W. Ele Above/Below 930'	Surface
From	Type	To	Type	Name	Side	[ft]	[in]					
									(1-5, 5 = None)			
178	CB	177	FES	4608 W.Arm. R. W	East	251	24		1968		Above	Turf
179	MH	179/182	Pipe on Pipe	HCRRA	South	48	24	RCP	1981		Below	Bit
180	MH	179	MH	HCRRA	South	276	24	RCP	1981		Below	Bit
181	CB	180	MH	HCRRA	South	50	24	RCP	1981		Below	Bit
182	FES	179/182	Pipe on Pipe	HCRRA	South	30	24		1968		Below	Turf
184	MH	183	FES	Shoreline Dr	South	74	21	RCP	1979		Below	Turf
185	MH	184	MH	Shoreline Dr	South	108	21	RCP	1979		Below	Conc
186	CB	185	MH	Shoreline Dr	South	30	21	RCP	1979		Below	Conc
187	MH	186	CB	Shoreline Dr	South	157	21	RCP	1979		Below	Conc
188	MH	187	MH	Shoreline Dr	South	36	18	RCP	1979		Below	Conc
189	CB	188	MH	Shoreline Dr	South	54	18		1964		Below	Conc
190	CB	189	CB	Shoreline Dr	South	364	18		1964			Bit
191	CB	190	CB	Shoreline Dr	South	247	15		1964			Bit
192	CB	191	CB	Shoreline Dr	South	200	12		1964			Bit
193	CB	192	CB	Shoreline Dr	South	136	12		1964			Bit
194	CB	193	CB	Shoreline Dr	South	44	12		1964			Bit
195	CB	192	CB	Shoreline Dr	South	34	12		1964			Bit
196	CB	191	CB	Shoreline Dr	South	43	12		1964			Bit
197	CB	190	CB	Shoreline Dr	South	42	12		1964			Bit
198	CB	187	MH	Shoreline Dr	South	41	12		1964		Below	Conc
199	CB	198	CB	Shoreline Dr	South	10	12		1964		Below	Bit
200	CB	199	CB	Shoreline Dr	South	31	12		1964		Below	Bit
202	FES	201	FES	HCRRA	South	40	18	CMP	1983		Below	Turf/Bit
204	FES	203	FES	HCRRA	South	53	15	CMP	1983		Below	Turf/Bit
206	FES	205	FES	HCRRA	South	86	12				Below	Turf/Bit
208	FES	208/209	Pipe on Pipe	HCRRA	North	45	18	RCP	2005		Below	Turf/Bit
209	FES	208/209	Pipe on Pipe	HCRRA	North	28	18	RCP	2005		Below	Turf/Bit
179/182	Pipe on Pipe	178	CB	HCRRA	North	58	24		1968		Below	Turf
208/209	Pipe on Pipe	207	FES	HCRRA	North	168	18	RCP	2005		Below	Turf/Bit
166	MH	165	FES	4579 Shoreline Dr	North	27	24	RCP	2012		Above	Turf
167	MH	166	MH	4579 Shoreline Dr	North	51	24	HDPE	2012		Above	Turf
168	CB	167	MH	4569 Shoreline Dr	West	130	24	HDPE	2012			Turf
169	CB	168	CB	4569 Shoreline Dr	West	53	24	HDPE	2012			Bit
170	CB	169	CB	4559 Shoreline Dr	South	78	18	HDPE	2012			Bit
171	CB	170	CB	4559 Shoreline Dr	South	75	10	PVC	2012			Bit
172	CB	169	CB	4559 Shoreline Dr	South	65	24	HDPE	2012			Bit
173	CB	172	CB	4559 Shoreline Dr	West	135	18	HDPE	2012			Bit
174	CB	173	CB	4559 Shoreline Dr	North	68	18	HDPE	2012			Bit
175	CB	174	CB	4559 Shoreline Dr	North	63	15	HDPE	2012			Turf/Bit
176	CB	175	CB	4559 Shoreline Dr	North	46	12	HDPE	2012			Turf/Bit
127	CB	126	FES	4400 W. Arm Road. W	South	36	24	CMP	1964			Turf/Bit
128	FES	127A	CB	to W.A.R. BMP		55	24	STL	2015			Turf
130	CB	129	FES	2351 Kings Rd	East	75	24	RCP	1990			Turf/Bit
127A	CB	127	CB	from W.A.R. BMP		57	24	CMP	1964			Bit
130A	CB	130	CB	2351 Kings Rd	East	70	21	RCP	1990			Bit
132	MH	131	FES	Lake Minnetonka		179	18	RCP	1987		Above	Turf/Bit
133	FES	132	MH	From L.L. BMP	Southwest	74	18	RCP	1987		Above	Turf/Bit
135	CB	134	FES	Lafayette Ln BMP	South	23	12	RCP	1992		Above	Turf
136	CB	135	CB	4467 Lafayette Ln	East	42	12	RCP	1992		Above	Bit
138	MH	137	FES	Lafayette Ln BMP	East	49	18	RCP	1992		Below	Turf
139	CB	138	MH	Lafayette Ln	North	200	18	RCP	1992		Below	Bit
140	CB	139	CB	Kings Rd	East	70	12	RCP	1992		Below	Bit

Table 5: Storm Sewer Pipe Condition Summary
Asset Management Plan
City of Spring Park
October 13, 2017
Sambatek # 20531

Structure		Structure		Street		Length	Diameter	Pipe Material	Last Year of Improvement	I&I	G.W. Ele Above/Below 930'	Surface
From	Type	To	Type	Name	Side	[ft]	[in]					
141	CB	139	CB	Kings Rd	West	45	12	RCP	1992		Below	Bit
143	MH	142	FES	Lafayette Ln BMP	Northwest	38	24		2012			Turf
144	CB	143	MH	Pres. Homes	East	198	15		2012			Bit
145	MH	144	CB	Pres. Homes	East	90	15		2012			Bit
146	MH	145	MH	Shoreline Dr	South	38	15		2012			Bit
147	CB	146	MH	Shoreline Dr	South	26	15		2012			Bit
148	CB	147	CB	Shoreline Dr	South	37	15		2012			Bit
149	CB	147	CB	Shoreline Dr	South	324	15		2012			Bit
150	CB	149	CB	Shoreline Dr	South	50	15		2012			Bit
151	CB	150	CB	Shoreline Dr	South	139	15		2012			Bit
152	CB	151	CB	Shoreline Dr	South	76	15		2012			Bit
153	CB	150	CB	Shoreline Dr	South	62	12		2012			Bit
154	CB	149	CB	Shoreline Dr	South	68	12		2012			Bit
155	CB	145	MH	Pres. Homes	North	60	15	HDPE	2012			Bit
156	CB	155	CB	Pres. Homes	North	220	15	HDPE	2012			Bit
157	CB	156	CB	Shoreline Dr	South	39	12	HDPE	2012			Bit
158	CB	156	CB	Pres. Homes	North	152	12	HDPE	2012			Bit
159	CB	144	CB	Pres. Homes	East	41	12		2012			Bit
160	CB	143	MH	Pres. Homes	South	30	21		2012			Bit
161	MH	160A	CB	Pres. Homes	South	134	21		2012			Bit
162	MH	161	MH	Pres. Homes	South	170	18		1966			Bit
163	CB	162	MH	Pres. Homes	South	106	18		1966			Bit
164	CB	162	MH	Pres. Homes	South	123	12	HDPE	2012			Bit
160A	CB	160	CB	Pres. Homes	South	35	21		2012			Bit
WTP		125	FES	Water Treatment Plant	North	38	8		1964			Bit
87	CB	86	FES	4210 W. Arm Dr. BMP	East	24	12	RCP	1996			Turf
88	CB	87	CB	4210 W. Arm Dr.	East	42	12	RCP	1996			Turf
90	CB	89	FES	4216 W. Arm Dr.	North	220	12	RCP	1996			Turf
91	CB	90	CB	4220 W. Arm Dr.	North	230	12	RCP	1996			Turf
92	FES	91	CB	4222 W. Arm Dr.	North	103	12	RCP	1996			Turf
94	CB	93	FES	4226 W. Arm Dr.	West	76	15	RCP	1996			Turf
95	CB	94	CB	4226 W. Arm Dr.	West	54	12	RCP	1996			Turf
97	FES	96	FES	Discharge to Lake		26	15	RCP	1996			Turf
99	CB	98	FES	4248 W. Arm Dr. BMP	West	30	12	RCP	1996			Turf
100	CB	99	CB	4250 W. Arm Dr.	West	97	12	RCP	1996			Turf
106	MH	105	MH	Shoreline Dr	South	74	18		1964			Bit
107	CB	106	MH	Shoreline Dr	North	56	12		1964			Bit
108	CB	106	MH	Shoreline Dr	North	60	12		1964			Bit
109	CB	105	MH	Shoreline Dr	South	93	15		1964			Bit
110	CB	109	CB	Shoreline Dr	South	161	15		1964			Bit
111	CB	110	CB	Shoreline Dr	South	51	12		1964			Bit
112	CB	110	CB	Shoreline Dr	South	174	12		1964			Bit
113	CB	105	MH	Shoreline Dr	South	93	15		1964			Bit
114	CB	113	CB	Shoreline Dr	South	290	12		1964			Bit
115	CB	114	CB	Shoreline Dr	South	89	12		1964			Bit
102	MH	101	FES	Discharge to S.P. Bay		261	30		1964		Above	Bit
103	MH	102	MH	Interlachen Rd	West	127	30		1964		Above	Bit
104	MH	103	MH	Interlachen Rd	East	205	30		1964		Below	Bit
105	MH	104	MH	Interachen/Shoreview		145	24		1964			Bit
109	FES	103	MH	Interlachen Rd	West	58	15		1964		Below	Bit
110	CB	102	MH	2433 Interlachen Rd	South	70	12		1992		Above	Bit
111	CB	110	CB	2433 Interlachen Rd	West	41	12		1992		Above	Bit
117	FES	116	FES	Discharge to S.P. Bay		41	12		1964		Above	Bit

Table 5: Storm Sewer Pipe Condition Summary
Asset Management Plan
City of Spring Park
October 13, 2017
Sambatek # 20531

Structure		Structure		Street		Length	Diameter	Pipe Material	Last Year of Improvement	I&I	G.W. Ele Above/Below 930'	Surface
From	Type	To	Type	Name	Side	[ft]	[in]					
119	CB	118	FES	Discharge to Lake		134	21	RCP	2009			Turf
120	FES	119	CB	From Channel Road BMP	North	84	12	RCP	2009			Turf/Bit
122	CB	121	FES	Discharge to Lake		174	12		1964			Turf/Bit
124	CB	123	FES	Discharge to Lake		91	15	CMP	1979			Turf/Bit
34	CB	33	FES	4044 Sunset Dr	North	230	18		1964		Above	Turf/Bit
35	CB	34	CB	Sunset Dr	East	103	18		1964		Above	Bit
36	CB	35	CB	Sunset Dr	East	105	18		1964		Above	Bit
37	CB	36	CB	2291 Sunset Dr	South	110	15		1964			Bit
38	CB	39	CB	4071 Sunset Dr	East	50	12	RCP	1990		Below	Bit
39	CB	40	CB	From Northern Ave BMP		45	12	RCP	1990		Below	Bit
42	CB	41	FES	To Northern Ave BMP		148	15	RCP	2006		Below	Turf
43	CB	42	CB	Sunset/Northern	East	36	12	RCP	2006		Below	Turf/Bit
44	CB	43	CB	Sunset/Northern	West	56	12	RCP	2006		Below	Bit
46	FES	45	FES	Northern Ave	North	55	12		1964			Bit
85	FES	84	FES	4208 W. Arm Dr.	North	41	21	RCP	1996			Turf
48	CB	47	FES	Discharge to S.P. Bay		72	15		1964			Bit/Conc
49	FES	48	CB	3924 Shoreline Dr	South	38	12		1964			Bit/Conc
50	CB	48	CB	Shoreline Dr	North	116	15		1964			Bit/Conc
51	CB	50	CB	Shoreline Dr	North	135	15		1964			Bit/Conc
52	CB	51	CB	Shoreline Dr	North	161	15		1964			Bit/Conc
53	FES	52	CB	3890 Shoreline Dr	South	137	15		1964			Turf
54	FES	51	CB	3900 Shoreline Dr	South	40	15		1964			Turf
56	CB	55	FES	Discharge to S.P. Bay		96	21		1964		Above	Bit
57	CB	56	CB	Del Otero Ave	West	58	15	RCP	1990		Above	Bit
58	CB	57	CB	Del Otero Ave	South	107	15	RCP	1990			Bit
59	CB	58	CB	3950 Del Otero Ave	West	55	15	RCP	1990			Bit
60	CB	59	CB	3950 Del Otero Ave	West	84	15	RCP	1990			Turf
61	CB	56	CB	Del Otero Ave	East	82	12	RCP	1990		Above	Bit
63	CB	62	FES	Discharge to S.P. Bay		95	24		1964		Above	Bit/Conc
64	CB	63	CB	Shoreline Dr	South	67	24		1964		Above	Bit/Conc
65	MH	63	CB	The Black Oar	South	104	18		1964		Above	Bit/Conc
66	MH	65	MH	The Black Oar	West	45	18		1964			Conc
67	MH	66	MH	The Black Oar	West	65	18		1964			Conc
68	MH	67	MH	Shoreline Pl	South	35	12		1964			Bit/Conc
69	CB	68	MH	Shoreline Pl	North	45	12		1964			Bit/Conc
70	CB	69	CB	From The Mist North	South	154	12		1964			Bit/Conc
71	Drain	69	CB	From The Mist North	South	90	12		1964			Bit/Conc
72	CB	69	CB	From The Mist North	South	74	12		1964			Bit/Conc
73	CB	68	MH	Shoreline Pl	South	187	12		1964			Bit/Conc
75	CB	74	FES	Discharge to S.P. Bay		129	21		1964		Above	Bit
76	CB	75	CB	Sunset Dr	East	62	21		1964		Above	Bit
77	MH	76	CB	Sunset Dr	East	35	21		1964		Above	Bit
78	CB	77	MH	Sunset Dr	West	53	21		1964		Above	Bit
79	CB	78	CB	Sunset Dr	West	116	12		1964			Bit
80	MH	79	CB	Spring St	North	59	15	RCP	2004			Bit
81	CB	80	MH	Spring St	North	56	15	RCP	2004			Bit/Conc
82	CB	81	CB	Spring St	North	99	15	RCP	2004			Bit/Conc
83	CB	77	MH	Sunset Dr	East	63	21		1964			Bit/Conc
Lakeview Lofts	Drain	81	CB	Spring St	North	31	15	RCP	2004			Bit/Conc
8	CB	7	FES	3810 Northern Ave	Southeast	55	12		1964		Below	Turf/Bit
14	CB	13	CB	3901 Sunset Dr	West	84	18		1964		Above	Turf/Bit
15	FES	14	CB	3901 Sunset Dr	West	61	12		1964		Above	Turf/Bit

Table 5: Storm Sewer Pipe Condition Summary
Asset Management Plan
City of Spring Park
October 13, 2017
Sambatek # 20531

Structure		Structure		Street		Length	Diameter	Pipe Material	Last Year of Improvement	I&I	G.W. Ele Above/Below 930'	Surface
From	Type	To	Type	Name	Side	[ft]	[in]					
17	FES	16A	MH	3901 Sunset Dr	East	33	18	RCP	2010		Above	Turf
19	FES	18	FES	3965 Sunset Dr	North	57	12		1964		Above	Bit
25	MH	24	MH	3901 Sunset Dr	North	48	18	RCP	2010		Below	Turf
26	MH	25	MH	3901 Sunset Dr	North	49	18	RCP	2010		Below	Turf
27	FES	26	MH	3901 Sunset Dr	North	44	12	RCP	2010		Below	Turf
29	FES	28	FES	3845 Park Ln	North	43	12	RCP	2010		Above	Turf
30	FES	25	MH	3901 Sunset Dr	North	63	12	RCP	2010		Below	Bit
25A	MH	25	MH	3901 Sunset Dr	North	40	12	RCP	2010		Below	Turf
11	CB	10A	MH	3901 Sunset Dr	West	89	12		1964		Above	Turf/Bit
13	CB	12	FES	3901 Sunset Dr	West	66	18		1964		Above	Turf/Bit
20	CB	16A	MH	3901 Sunset Dr	East	97	21		1964		Above	Turf
21	CB	20	CB	3901 Sunset Dr	East	115	21	RCP	2010		Above	Turf
22	CB	21	CB	3901 Sunset Dr	North	55	21	RCP	2010		Above	Turf
23	CB	22	CB	3901 Sunset Dr	North	61	21	RCP	2010		Above	Turf
24	MH	23	CB	3901 Sunset Dr	North	133	12	RCP	2010		Below	Turf
31	CB	24	MH	3901 Sunset Dr	North	52	15	RCP	2010		Above	Bit
32	FES	23	CB	3901 Sunset Dr	North	89	12	RCP	2010			Bit
10A	MH	10	FES	3901 Sunset Dr	West	28	12		1964		Above	Turf
16A	MH	16	FES	3901 Sunset Dr	East	84	18		1964		Above	Bit
9A	FES	9	FES	Discharge to Lake		151	30		1964		Above	Turf
2	CB	1	FES	Discharge to Lake		70	24		1964		Above	Turf/Bit
3	FES	2	CB	Sunset Dr	South	100	24		1964		Above	Turf/Bit
5	MH	4	FES	Discharge to Lake		33	12		1964		Above	Bit
6	FES	5	MH	Dickson Ln	East	31	15		1964		Above	Turf/Bit
Totals						**15,973**						

Table 6: Storm Sewer Structure Condition Summary
Asset Management Plan
City of Spring Park
October 13, 2017
Sambatek # 20531

Structure		Street	Surface	Inspection Date	Structure Material	Grate Type	Structure Assess. (1-5, 5 = Worst)	Recommendation		General Notes
From	Type									
1	FES	Discharge to Lake	Lake	5/20/2016			1.0			FES submerged under Fletcher's dock
2	CB	Discharge to Lake	Grass	5/20/2016	Conc		3.5	Casting		Broken beehive, south pipe deterioration, no grout, no steps, 4.75 T.O.G
3	FES	Sunset Dr	Turf	5/20/2016			1.0			Pipe, no FES
4	FES	Discharge to Lake	Lake	5/20/2016			1.0			Good
5	MH	Discharge to Lake	Grass	5/20/2016	Conc		1.0			New, casting good, structure good, 0.2' silt, 3.4' to 8" wide v-notch weir (Stormceptor)
6	FES	Dickson Ln	Turf/Bit	5/20/2016			1.0			Remove silt fence
7	FES	3810 Northern Ave	Turf	5/20/2016			1.0			Daylights in hillside, S-side of road
8	CB	3810 Northern Ave	Turf/Bit	5/20/2016	Conc	R-3235	2.0			Casting good, no steps, broken doghouse, 2.94' bottom
9	FES	Discharge to Lake	Turf	6/15/2017			2.0			Channel good, sand bag wall
9A	FES	Discharge to Lake	Turf	5/20/2016			3.0			Poor condition
10	FES	3901 Sunset Dr	Turf	5/20/2016			3.0			Poor condition
10A	MH	3901 Sunset Dr	Turf				3.0			Casting sealed, 4' rings, bottom 1/2 doghouse gone, 1'x1' section broken, 0.8' of debris
11	CB	3901 Sunset Dr	Turf/Bit	5/20/2016	Conc		1.0			Casting good, CB in bit swale
12	FES	3901 Sunset Dr	Turf/Bit	5/20/2016			3.0			Poor condition
13	CB	3901 Sunset Dr	Turf	5/20/2016	Conc		2.2			All M.D.s to top of beehive casting, beehive (0.5' from TOC to T.O.Structure)
14	CB	3901 Sunset Dr	Turf/Bit							
15	FES	3901 Sunset Dr	Turf/Bit	5/20/2016			3.0			Poor condition
16	FES	3901 Sunset Dr	Bit	6/15/2017			1.0			Tree growing adjacent, overall ok
16A	MH	3901 Sunset Dr	Turf	5/20/2016	Conc		1.5			Broken dog house north, cable showing n-side, 10.5 bottom of structure, 7.8 top of silt, 3.05 bottom of v-notch, 2.25 top inv. STORMCEPTOR
17	FES	3901 Sunset Dr	Turf	5/20/2016	Conc		1.0			FES good condition
18	FES	3965 Sunset Dr	Bit	5/20/2016	Conc		1.0			FES good condition
19	FES	3965 Sunset Dr	Bit	5/20/2016			1.0			Ok
20	CB	West side of baseball field	Turf	5/20/2016	Conc	R-2535	1.0			Standing water at 2.75, casting good, plastic steps w-side
21	CB	NW corner of baseball field	Turf	5/20/2016	Conc	R-2535	1.0			Slab on barrel, plastic steps, casting good
22	CB	North side of baseball field	Turf	5/20/2016	Conc	R-2535	1.0			Slab on barrel, 3.89' to silt, sump 1.3'
23	CB	NE side of baseball field	Turf	5/20/2016	Conc	R-2588	3.0	Patch/Replace	Clean	1'x1' - 2' deep hole on w-side of structure, 3.4' of mud (0.6' silt), 1'x1' - 2' deep on e-side of structure
24	MH	NE side of baseball field	Turf	5/20/2016	Conc	R-1760	1.5			CMP north rusted, 0.8' silt, no steps, casting offset, casting good
25	MH	NE side of baseball field	Turf	5/20/2016	Conc	R-1760	2.2	Grout		Conc bottom, I&I seen, ring is bricks, entire MH needs grouting
25A	FES	SE baseball field	Turf	5/20/2016	Conce		1.0			FES good, w/trash guard
26	MH	East side of baseball field	Turf	5/20/2016	Conc	R-2535	3.0	Casting	Grout	Wrong casting, CB at high point, I&I seen, grouting required, slab over barrel
27	FES	3901 Sunset Dr	Turf	5/20/2016	HDPE		3.5	Correct FES		Disconnected FES
28	FES	3845 Park Ln	Turf	5/20/2016	CMP		1.0			No FES
29	FES	3845 Park Ln	Turf	5/20/2016	CMP		3.5	Clean inlet		Blocked, outlet covered with bricks
30	FES	3901 Sunset Dr	Turf	5/20/2016	CMP		4.5	R&R		Pipe inlet collapsed
31	CB	3901 Sunset Dr	Bit	5/20/2016	Conc	R-2501	4.0	R&R		Cracked casting, missing structure bottom, degraded pipe, exposed soil
32	FES	3901 Sunset Dr	Bit/Rock	6/5/2017			2.5			Bent edges, broken bit
33	FES	4044 Sunset Dr	Turf	5/20/2016			3.0			1/2 cut HDPE to lake discharge, holding water from lake
34	CB	4044 Sunset Dr	Turf/Bit	5/20/2016	Conc	R-2504	1.5			Plastic steps, cracked rings, 8.30' to bottom
35	CB	2283 Sunset Dr	Bit	5/20/2016	Conc	R-2504	2.0			Casting good, plastic steps, deteriorated mud and rings (1.8')
36	CB	Sunset Dr	Bit	6/15/2017			3.0			Remove inlet protection
37	CB	4071 Sunset Dr	Turf	5/20/2016	Block	R-2561	3.5	Casting	Grout	Broken beehive, no steps, broken doghouse west, I&I noted, bottom 2' block gaps, block w/slab bottom CB, 0.9 height of casting
38	CB	4071 Sunset Dr	Gravel	5/20/2016	Block	R-2501	2.0			Block CB, 7.55' to bottom, 1.5' sediment, not able to strike bottom, no steps
38A	FES	4071 Sunset Dr	Turf	5/20/2016	CMP		1.0			Good
39	CB	4071 Sunset Dr	Bit							
40	FES	From Northern Ave BMP	Turf	5/20/2016			1.0			Discharge to wier box
41	FES	To Northern Ave BMP	Turf	5/20/2016	Conc		1.0			Ok
42	MH	To Northern Ave BMP	Turf	5/20/2016	Conc		1.0			Casting good, rings good, plastic steps
43	CB	SW Sunset/Northern	Conc	5/20/2016	Conc	R-3250-CL	1.5			Casting good, deteriorated rings, plastic steps
44	CB	SE Sunset/Northern	Conc	5/20/2016	Conc	R-3250-CL	1.0			Casting good, no steps
45	FES	Northern Ave	Bit							
46	FES	Northern Ave	Bit	5/20/2016			1.0			Ok
47	FES	Discharge to S.P. Bay	Rip Rap	6/15/2017	Conc		2.0			Chipped end, exposed rebar
47A	FES	Discharge to S.P. Bay	Conc	6/15/2017	Conc					Not located
47B	CB	Discharge to S.P. Bay	Conc	6/15/2017	Conc	R-3250-CL	3.0			Casting good, 0.25 rings, no steps, cracked grout at rings/casting, 0.25' silt, standing water, exposed rebar
47C	CB	Discharge to S.P. Bay	Conc	6/15/2017	Conc	R-3250-CL	3.0			Casting good, no steps, 0.25' rings, 0.25 silt/standing water
47D	CB	Discharge to S.P. Bay	Conc	6/15/2017	Conc	R-3250-CL	1.0			Casting good, 0.25' rings, no steps, 0.08' silt, standing water
48	CB	3932 Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	4.0	R&R	Clean	Casting good, no steps, 4.8 top of sludge, 6.80 to bottom, severe exposed rebar, baffle holding back water, 2x4 lodged in structure
48A	CB	3932 Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	1.5			Casting good, 1 ring, no steps, block MH
48B	CB	3932 Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	4.0	R&R	Clean	Casting good, severe concrete/rebar deterioration, 0.8' debris, low flow
48C	CB	3932 Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	1.3			Casting/doghouse good, 0.6' debris
49	FES	3924 Shoreline Dr	Grass	5/20/2016	Conc	R-2561	1.0			Casting good, plastic steps, board in invert, draintile to NE, 5' to bottom
50	CB	Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	4.0	R&R	Clean	Casting good, no rings, top slab rebar exposed, low flow, dediment/debris, concrete debris in 15" invert
51	CB	Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	1.3			Casting good, plastic steps, 6' structure, bottom 6.18',0.6' debris
52	CB	Shoreline Dr	Conc	5/20/2016	Conc	R-3250-CL	1.3			Casting good, rings ok, no steps, 6' structure
53	FES	3890 Shoreline Dr	Turf							
54	FES	3900 Shoreline Dr	Turf							
55	FES	Discharge to S.P. Bay	Rip Rap	6/15/2017	Conc		3.0		Clean	Structure good, FES plugged

Table 6: Storm Sewer Structure Condition Summary
Asset Management Plan
City of Spring Park
October 13, 2017
Sambatek # 20531

Structure		Street	Surface	Inspection Date	Structure Material	Grate Type	Structure Assess. (1-5, 5 = Worst)	Recommendation		General Notes
From	Type									
56	CB	NE corner of Shoreline/Bayview	Conc	5/20/2016	Conc	R-3250-CV	4.5	R&R	Clean	Exposed rebar, deteriorated concrete, casting unsupported on east side, casting good condition
57	CB	Del Otero Ave	Bit	5/20/2016	Conc	R-3250-1	2.5	Clean		Casting good, 0 rings, broken DH laying invert, sediment build-up
58	CB	3950 Del Otero Ave	Conc	5/20/2016	Conc	R-3250-CV	1.0			Casting good, 3 rings, no steps
59	CB	3950 Del Otero Ave	Conc	5/20/2016	Conc	R-2534	2.0			1 plastic step, broken doghouse W & S, 6.27 to bottom, 2.5 to water, casting good, 2.55 to top of 2x6 baffle.
60	CB	3950 Del Otero Ave	Conc	5/20/2016	Conc		1.5			Casting good, no steps, broken doghouse W & S
61	CB	Del Otero Ave	Bit/Conc	5/20/2016	Conc	R-3250-CV	1.0			Casting good
62	FES	Discharge to S.P. Bay	Bit/Conc	6/15/2017			1.0			Good condition, 1/2 silted
63	CB	Shoreline Dr	Bit/Conc	6/15/2017			3.0		Clean	Casting good, 1.75' rings, exposed rebar, cracked grout, 1' silt
64	CB	4032 Shoreline Dr	Bit/Conc	5/20/2016	Block	R-3250-CL	4.0	Casting	R&R	Grate broken, deteriorated concrete, exposed rebar, block CB, I and I seen, concrete debris in sump
65	MH	4032 Shoreline Dr	Conc	5/20/2016			1.0			Cast bottom, casting good, 1 plastic step, 3 rings
66	MH	The Black Oar	Conc				1.0			Not accessible
67	MH	Shoreline Pl	Bit/Conc	6/15/2017			1.0			Grit rem/separator, good condition
68	MH	Shoreline Pl	Bit/Conc	6/15/2017			1.0			0.75' rings, part of grit rem/separator
69	CB	Shoreline Pl	Bit/Conc	6/15/2017			1.0			Casting good, 0.25 silt, minimal I&I, 0.25' rings
70	CB	From The Mist North	Mulch	6/15/2017			2.0			Casting good, 01.25' rings, structure cracked around pipe, no doghouse
71	Drain	From The Mist North	Bit/Conc	6/15/2017						
72	CB	From The Mist North	Turf	6/15/2017			1.0			Casting good, 0.25' rings, plastic steps
73	CB	Shoreline Pl	Bit	6/15/2017			1.0			Casting good, 0.25' debris, 0.75' rings, no steps,
74	FES	Discharge to S.P. Bay	Bit	6/15/2017			1.0			Good
75	CB	Sunset Dr	Conc	6/2/2016	Conc	R-3250-CL	5.0	R&R	Clean	Casting good, no D.H., exposed rebar/aggregate, no bottom, full of sand, severely deteriorated rings
76	CB	Sunset Dr	Bit							
77	MH	4032 Sunset	Bit	5/24/2016						
77A	CB	4032 Sunset	Conc	5/24/2016		R-3250-CL	2.5			I&I west side, poor doghouse, 2 brick courses for rings, casting good
77B	CB	4032 Sunset	Conc	5/24/2016		R-3250-CL	1.3			I&I fast, casting good
77C	CB	4032 Sunset								
78	CB	Sunset Dr	Bit							
79	CB	Spring St	Sdwk	5/20/2016	Conc	R-1760-1	1.0			Casting good, 0.4' rings good
80	MH	Spring St	Sdwk	6/15/2017	Conc	R-3360-A	1.0			Casting good, 3.3' rings, 1" silt
81	CB	Spring St	Bit/Conc	5/24/2016	Conc	R-3251	1.0			Casting good, 1 ring good, no steps
82	CB	4100 Spring St - W Parking Garage	Bit	5/24/2016	Conc	R-2535	1.0			Casting good, 1 ring good, 1 plastic step, bottom 3.95'
82A	CB	4165 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	4.3	Grout	Replace soil	Casting good, 1 plastic step, broken rings, I&I around PVC w/no DH, exposed rebar, rings gone on east side, no soil (2' deep behind casting
82B	CB	4165 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	2.5			Casting good, W-side I&I under rings, brick ring
82C	CB	4165 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	4.0	Rings	Grout	Casting good, broken rings, missing ring pieces, grout in invert
82D	CB	4165 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	2.5	Rings	Grout	Casting good, 1.7' deteriorated rings and grout, no steps
82E	CB	4165 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	1.0			Casting good, rings good, no steps
83	CB	Sunset Dr	Bit/Conc							
84	FES	4208 W. Arm Dr.	Turf	5/20/2016			1.0			Ok, trash guard
85	FES	4208 W. Arm Dr.	Turf	5/20/2016			1.0			Ok
86	FES	4210 W. Arm Dr. BMP	Turf	5/20/2016	Conc		1.0			No FES, 80% submerged
87	CB	4210 W. Arm Dr. BMP	Bit/Conc	5/20/2016	Conc	R-3530	1.0			Casting good, plastic steps
88	CB	4210 W. Arm Dr.	Bit/Conc	5/20/2016	Conc	R-3530	1.5	Rings		Casting good, deteriorated rings, no steps
89	FES	4216 W. Arm Dr.	Turf	5/20/2016	Conc		1.0			No FES
90	CB	4220 W. Arm Dr.	Turf	5/20/2016	Conc		1.0			Casting good, plastic steps, 2 rings
91	CB	4222 W. Arm Dr.	Turf	5/20/2016	Conc		3.0	Remove wood		Casting good, doghouse cracked, 2x12 in invert
92	FES	4222 W. Arm Dr.	Turf	5/20/2016	Conc		1.0			Ok
93	FES	4226 W. Arm Dr.	Turf	5/20/2016	Conc		1.0			Ok
94	CB	4226 W. Arm Dr.	Conc	5/20/2016	Conc	R-2501	1.5			Cracked doghouse, 3 rings, no steps
95	CB	4226 W. Arm Dr.	Conc	5/20/2016	Conc	R-2501	1.0			Casting good, 2 rings, no steps
96	FES	Discharge to Lake	Turf	5/20/2016	Conc		1.0			Ok
97	FES	Discharge to Lake	Turf	5/20/2016	Conc		1.0			Ok
98	FES	4248 W. Arm Dr. BMP	Turf	5/20/2016	Conc		1.0			Ok
99	CB	4250 W. Arm Dr.	Turf	5/20/2016	Conc		2.0	Grout		Casting good, downstream doghouse cracked, I&I noted, casting offset 4 inches
100	CB	4250 W. Arm Dr.	Turf	5/20/2016	Conc		2.0	Grout		Doghouse poor condition, bricks and mud, I&I noted, 1 ring
100A	CB	4300 W. Arm. Rd. E.	Bit	5/20/2016	Conc		1.0			Casting/rings good, no steps, 2x3 CB
101	FES	Discharge to S.P. Bay	Water	6/2/2016	CMP		1.0			
101A	CB	4309 Interlachen Rd		6/2/2016	Conc		2.0	Grout		Block structure, doghouse not mudded, stool grate
102	MH	2433 Interlachen Rd	Bit	6/2/2016	Conc		1.0			Casting good
102A	CB	2433 Interlachen Rd	Bit	6/2/2016	Conc	R-3067	1.0			Casting good, rings good
102B	CB	2433 Interlachen Rd	Bit	6/2/2016	Conc	R-3067	2.3	Rings	Grout	Casting good, broken rings grout
103	CB	Interlachen Rd	Bit	6/2/2016			2.0	Grout	Clean	Casting good, grate stool, bit bump-out, block MH, broken, loose/missing conc
103A	CB	2401 Interlachen Rd		6/2/2016			1.5			Casting good, grate stool, bit bump-out/swale
104	CB	East side of 4311 Shoreline	Bit	6/2/2016	Conc	R-3250-CL	2.0	Clean		Casting good, 3 rings, 1 plastic step, debris in bottom
104A	CB	East side of 4311 Shoreline	Conc	6/2/2016	Conc	R-2535	2.0	Rings		Casting good, no steps, deteriorating rings
105	CB	Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	5.0	R&R		Casting good, rings severe deterioration, exposed rebar, top structure severe deterioration
106	MH	Shoreline Dr	Bit	6/15/2017			1.5			Casting good, 0.75' rings, crack in structure
107	CB	4310 Shoreline Dr	Conc	6/2/2016		R-3250-CL	4.0	R&R		Casting good, deteriorated concrete, exposed rebar, exposed aggregate
107A	CB	4310 Shoreline Dr	Conc	5/24/2016		R-3250-CL	1.0			Casting good, 1 step

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October 13, 2017
Sambatek # 20531

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From	Type									
108	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	4.5	R&R	Curb	Casting good, no steps, rings ok, deteriorated concrete, exposed rehar, exposed aggregate, broken curb
108A	CB	W-side Tonka Ventures	Conc/Bit	6/2/2016		2'x3' grate	3.0	Rings	Grout	Casting good, rings broken/fallen, debris/aggregate at bottom
108B	CB	W-side Tonka Ventures	Conc/Bit	6/2/2016		2'x3' grate	1.5			Casting good, no dog house, I&I at rings, curb broken
108C	CB	W-side Tonka Ventures	Conc/Bit	6/2/2016		2'x3' grate	1.0			Casting good, rings ok, no steps
108D	CB	W-side Tonka Ventures	Conc	5/24/2016	Conc	R-3250-CL	3.0	Grout	Clean	Casting good, block top good, no steps, debris in bottom, I&I seen
109	CB	4201 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	4.5	Rings		Casting good, rings poor, plastic step (1),
110	CB	2433 Interlachen Rd	Conc	6/2/2016	Conc	R-3250-CL	5.0	R&R	Grout	Casting good, plastic steps, rings deteriorated, rebar exposed, dirt entering through structure, I&I note
111	CB	4164 Shoreline	Bit	5/24/2016	Conc	R-3250-CL	5.0	R&R		Casting good, exposed rebar/det conc, full of debris/silt, block top, w-side casting unsupported, curb elevated holding water, rings broken
112	CB	4201 Shoreline Dr	Bit	6/2/2016	Conc	R-3250-CL	4.0	R&R		Casting good, exposed rebar, deteriorated concrete, rings deteriorated
113	CB	Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	1.0			Casting good, plastic steps, rings (3) good
114	CB	4329 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	1.0			Casting good, 1 plastic step
115	CB	4358 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	1.0			Casting good, plastic steps
116	FES	Discharge to S.P. Bay	Bit							Could not locate
117	FES	Discharge to S.P. Bay	Bit							Could not locate
118	FES	Discharge to Lake	Turf	6/2/2016	Conc		1.0			Structure good, 1/2 submerged
119	CB	From Channel Rd BMP - W of LS4	Turf	6/2/2016	Conc		1.5			Casting good, stool gratel type casting,full of water
120	FES	From Channel Road BMP	Reeds	6/2/2016	CMP		1.0			3/4 Full of Water
121	FES	Discharge to Lake	Lake	6/2/2016	CMP		1.0			3/4 Full of Water, no FES
122	CB	Discharge to Lake	Bit	6/2/2016	Conc	R-2535	1.0			Casting/rings good, no steps
123	FES	2412 Black Lake Road	Lake	6/2/2016	Conc		2.0	Connect FES		FES not connected
124	CB	2412 Black Lake Road	Bit	6/2/2016	Conc	R-3250-1	1.5			Casting/rings good, no steps, no doghouse, broken missing bit curb
125	FES	Water Treatment Plant	Bit	6/15/2017						
126	FES	4400 W. Arm Road. W	Turf/Bit							
127	CB	4400 W. Arm Road. W	Turf/Bit				1.0			Good
127A	CB	from W.A.R. BMP	Bit							
127B	OCS									
128	FES	to W.A.R. BMP	Turf							
129	FES	2351 Kings Rd	Turf/Bit							
130	CB	2351 Kings Rd	Bit				1.0			Good overall
130A	CB	2351 Kings Rd	Bit				1.0			Good overall
130B	CB						1.0			
130C	CB						3.0	Casting		Cracked grate
130D	MH						1.0			Good
130E	CB						1.0			6.47' Sump
130F	FES									Could not locate
130G	FES									Could not locate
130H	FES									
131	FES	Lake Minnetonka	Turf/Bit				1.0			Trash guard, good overall
132	MH	From L.L. BMP	Turf/Bit				1.5			1' deep in mulch area, W-side of dwy
133	FES	From L.L. BMP	Turf/Bit							Could not locate
134	FES	Lafayette Ln BMP	Turf							Could not locate
135	CB	4467 Lafayette Ln	Conc/Bit	6/2/2016		R-3250-1	1.0			Casting good, 9 rings, I&I weeper
136	CB	4467 Lafayette Ln	Conc/Bit	6/2/2016		R-3237	2.0	Grout		Casting good,6 rings, no steps, broken invert/bottom
137	FES	Lafayette Ln BMP	Turf							Could not locate
138	MH	Lafayette Ln BMP	Conc/Bit	6/2/2016		R-1760-1	2.5	Grout		Casting good, bit/curb broken/settled, plastic steps, no dog house
139	CB	Kings Rd	Conc/Bit	6/2/2016		R-3250-1	1.5			Casting good, rings good (3), no steps, I&I under rings block MH w/top slab
140	CB	Kings Rd	Conc	6/2/2016		R-3250-1	1.3			Casting good, no rings/steps, 1' leaves
141	CB	Kings Rd	Conc/Bit	6/2/2016		R-3250-1	3.0	R&R		Casting good, no rings/steps, rebar exposed, bituminous in poor condition
142	FES	Lafayette Ln BMP	Turf							
143	MH	Pres. Homes	Bit	6/15/2017						Casting good, bring rings cracked, poor doghouse, structure good
144	CB	Pres. Homes	Bit							
145	MH	Pres. Homes	Bit	6/2/2016			1.0			Casting/rings good
146	MH	4465 Shoreline Dr	Turf	6/2/2016			1.3			Casting/rings good, mass of concrete left in bast of structure
147	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.0			Casting/rings good, plastic steps
148	CB	4470 Shoreline Dr	Conc	5/24/2016		R-3250-CL	5.0	R&R		Casting good, rings deteriorated, extreme rebar deterioration
149	CB	4401 Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.5			Casting good, rings ok
150	CB	4401 Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.5			Casting good, rings ok, structure cracked
151	CB	4401 Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.5			Casting good, 3 rings, 1 plastic step, cracked around dog houses
151A	CB	SE Corner Kings/Shoreline	Conc	6/2/2016		R-3250-CL	4.5	R&R		Casting good, severe deteriorated concrete, exposed/rusted rebar, clean-out 2-3' of debris
152	CB	4396 Shoreline Dr	Conc	5/24/2016		R-3250-CL	1.5			Casting good, block structure
152A	CB	4396 Shoreline Dr	Conc	5/24/2016						
153	CB	4400 Shoreline Dr	Conc	5/24/2016		R-3250-CL	2.0			Casting good, rings good, bit depressed, new curb
154	CB	4400 Shoreline Dr	Conc	5/24/2016		R-3250-CL	1.0			Casting/rings good
155	CB	Pres. Homes	Conc/Bit	6/2/2016			1.0			Casting/rings good
156	CB	Pres. Homes	Bit	6/2/2016			1.0			Casting/rings good
157	CB	Shoreline Dr	Bit				1.0			Casting/rings good
158	CB	Pres. Homes	Bit	6/2/2016		R-3250-CL	1.0			Casting good

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Asset Management Plan
City of Spring Park
October 13, 2017
Sambatek # 20531

Structure		Street	Surface	Inspection Date	Structure Material	Grate Type	Structure Assess. (1-5, 5 = Worst)	Recommendation		General Notes
From	Type									
159	CB	Pres. Homes	Bit	6/2/2016			1.0			Casting good, slight weeping under rings
160	CB	Pres. Homes	Turf	6/2/2016		R-2534	1.0			Casting good, plastic rings
160A	CB	Pres. Homes	Bit	6/2/2016		R-2534	1.3			Casting good, rings poor, plastic steps, no/poor dog houses, large brick gaps, 1' of brick ring, 12.21' to bottom
161	MH	Pres. Homes	Turf	6/2/2016		R-1760-1	1.3			Casting good, rings ok, plastic steps, E-side I&I under bottom ring
162	MH	Pres. Homes	Bit	6/2/2016		R-1760-1	1.0			Casting good, 6" plastic rings, 6" slab, plastic steps
163	CB	Pres. Homes	Bit	6/2/2016		R-2534	2.0			Casting good, invert poor
164	CB	Pres. Homes	Bit	6/2/2016		10' X 1' Trench	1.0			Ok
165	FES	4579 Shoreline Dr	Turf	6/2/2016			1.0			Trash guard, structure good
166	MH	4579 Shoreline Dr	Turf	6/2/2016		R-1760-1	1.0			Casting good, 1 ring, plastic steps
167	MH	4569 Shoreline Dr	Turf	6/2/2016		R-1760-1	1.0			Casting good, 2' sump, 7' to bottom
168	CB	4569 Shoreline Dr	Turf							14.01' sump
169	CB	4559 Shoreline Dr	Bit							
170	CB	4559 Shoreline Dr	Bit							
171	Stub	4559 Shoreline Dr	Bit							
172	CB	4559 Shoreline Dr	Conc/Bit	6/2/2016		R-3250-CL	1.0			Casting good, rings good, plastic steps
173	CB	4559 Shoreline Dr	Conc/Bit	6/2/2016		R-3250-CL	1.0			Casting good, rings good, plastic steps
174	CB	4559 Shoreline Dr	Bit							
175	CB	4559 Shoreline Dr	Turf/Bit							
176	CB	4559 Shoreline Dr	Turf/Bit							
177	FES	4608 W.Arm. R. W	Turf	5/24/2016			1.0			Good condition
178	CB	4608 W.Arm. R. W	Bit	5/24/2016	Conc		2.0	Grout		Casting good, block structure with gaps, I&I seen, N doghouse broken, illegal connection?, top of baffle 1.33'
179	MH	HCRRA	Bit							
180	MH	HCRRA	Bit							
181	CB	HCRRA	Bit							
182	FES	HCRRA	Turf							
183	FES	Shoreline Dr	Turf							Could not locate
184	MH	Shoreline Dr	Turf							Could not locate
185	MH	Shoreline Dr	Conc	6/2/2016			1.5			Standing water in structure
186	CB	Shoreline Dr	Conc	6/2/2016			1.0			Ok
187	MH	Shoreline Dr	Conc/Bit	6/15/2017			2.0			I&I at rings, casting good, 48" 1/3 w/silt
188	MH	Shoreline Dr	Rocks	6/2/2016			1.0			Casting good, 2.4' rings good, plastic steps
189	CB	Shoreline Dr	Bit	6/2/2016		R-3250-CL	1.0			Casting good. 2.2' rings good
189A	CB	Shoreline Dr	Bit	6/2/2016		R-3250-CL	1.0			Casting good. 2.2' rings good
190	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	3.0	Replace casting		Cracked casting, 0.9' rings, plastic steps, I&I E-side under ring,
191	CB	Shoreline Dr	Bit							
192	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.0			Block rings, casting good, plastic steps
193	CB	Shoreline Dr	Conc	6/2/2016		R-3250-CL	1.0			
194	CB	Shoreline Dr	Bit	6/2/2016						
195	CB	4550 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	1.0			Casting good, structure new, 1 ring, no steps
196	CB	4636 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	2.0	Grout Rings		Casting good, ring missing grout
197	CB	4642 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	1.3	Clean/Remove Sed/Debris		Casting good, rings (2) good, 0.3' debris
198	CB	4681 Shoreline Dr	Conc	6/2/2016	Conc	R-3250-CL	1.0			Casting good, no rings/steps
199	CB	4681 Shoreline Dr	Bit	5/24/2016	Conc	R-3250-CL				
200	CB	4700 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	1.0			Casting good, rings good
200A	CB	4700 Shoreline Dr	Conc	5/24/2016	Conc	R-3250-CL	3.5	R&R		Casting good, rings deteriorated, exposed rebar, deteriorated concrete, block MH
201	FES	4786 Shoreline Dr	Turf/Bit	5/24/2016						Upstream from 202
202	MH	4786 Shoreline Dr	Turf/Bit	5/24/2016			1.0	Exchange san lid with storm lid		Rings good, casting buried 4", sanitary lid used, no steps, 70' from PP, 21' from west FES, 28' from W curb, 6' from N curb
203	FES	4786 Shoreline Dr	Turf/Bit	5/24/2016			1.0			None
204	FES	4786 Shoreline Dr	Turf	5/24/2016			1.0			FES surrounded by wood baffle
205	FES	HCRRA	Turf	5/24/2016			1.0			Pipe drains to bowl, doesn't drain to lake, approx 9' from lake
206	FES	HCRRA	Turf/Bit	5/24/2016			1.0			None
207	FES	HCRRA	Turf	5/24/2016			1.0			No FES, buried outlet, homeowner established flowline to water edge
208	FES	HCRRA	Turf/Rock	6/15/2017			2.0			2/3 full
209	FES	HCRRA	Turf/Bit	5/24/2016	CMP		2.5	R&R N pipe		Pipe ellipsoidal, crack in top pipe, possibly plugged outlet, 8.4' from outlet to tee
210	CB	4786 Shoreline Dr (on Shoreline)	Conc	5/24/2016		R-3250-CL	1.0			Casting/rings (3) good, steps good
Lofts	Drain	Spring St	Bit/Conc							
WTP		Water Treatment Plant	Bit							