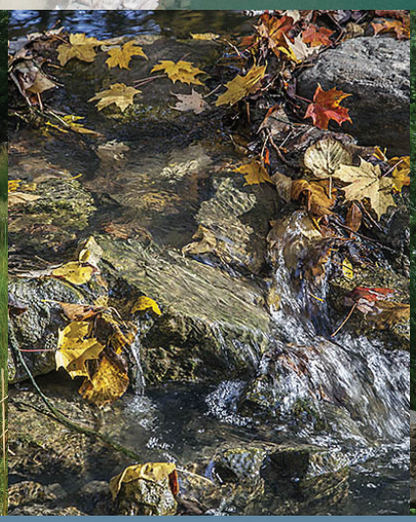
Lake Michigan Watershed-Based Plan



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Most of all we would like to recognize the project partners and watershed stakeholders whose interest in protecting, restoring, and enhancing the Lake Michigan watershed planning area has been critical to the success of this plan. The following individuals and organizations participated in watershed planning meetings from April 2019 – March 2021:

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ACRONYMS/ABBREVIATIONS USED IN CHAPTER 1

BMP – Best Management Practices
CMAP – Chicago Metropolitan Agency for Planning
CWA – Clean Water Act
HUC – Hydrologic Unit Code
IDNR – Illinois Department of Natural Resources
Illinois EPA – Illinois Environmental Protection Agency
LAMP – Lakewide Action and Management Plans
LCHD – Lake County Health Department
LM – Lake Michigan
SMC – Lake County Stormwater Management Commission
TMDL – Total Maximum Daily Load
USEPA – United States Environmental Protection Agency
USGS – United States Geological Survey

1 INTRODUCTION

1.1 WHAT IS A WATERSHED?

A **watershed** is the area of land drained by a river, stream, or other body of water (see Figure 1-1 for a diagram of a watershed system). Other common names given to watersheds include **drainage basins** and **catchments**.

As simple as the definition sounds, a watershed is actually a complex interaction between ground, climate, water, vegetation, and animals. In today's developed watersheds, other elements such as sewage, agricultural drainage, **impervious surfaces**, stormwater, and erosion can all be detrimental to the health of the watershed.

The health of a waterbody is a direct reflection of how the land in the watershed is used and managed. Some of the benefits of a healthy watershed are: improved water quality, fewer flooding problems, enhanced wildlife habitat, recreational opportunities, and better quality of life.

Figure 1-1: Diagram of a Watershed

WATERSHED: Land area that drains water to a given point, usually a river, stream or lake. The land area above a given point on a waterbody (river, stream, lake, wetland) that contributes runoff to that point is considered the watershed.

DRAINAGE BASIN: Synonymous with "watershed," though often used to describe the watersheds of larger rivers or hydrologic systems (e.g., the "Mississippi River drainage basin" or "Great Lakes drainage basin").

CATCHMENTS: Small unit of a watershed or subwatershed delineated and used in watershed planning efforts because the effects of impervious cover are easily measured, there is less chance for confounding pollutant sources, boundaries have fewer political jurisdictions, and monitoring/mapping assessments can be done in a relatively short amount of time. The 184 catchments in the LM planning area have an average size of 0.3 square miles, with a range of 0.02 – 2.0 square miles.

SUBWATERSHED: A smaller basin within a larger watershed that drains to a common point in the larger watershed. The 5 subwatersheds in the Lake Michigan planning area have an average size of 11.4 square miles, with a range of 5 – 16 square miles. See Chapter 3, section 3.4.1 for more information about the Lake Michigan planning area's 5 subwatersheds.

IMPERVIOUS SURFACES: A surface that does not allow water to infiltrate to the soil layer, including pavement, rooftops, and roads.

1.1.1 WHY A WATERSHED-BASED PLAN?

Water is elemental to our lives. Plants and animals, including humans, are largely composed of water, and generally require clean water to survive. Our communities, food systems, energy sources, and countless products that we consume everyday are dependent upon water. Despite this dependence, water is often taken for granted until it negatively affects us, usually due to short supply, inundation, or pollution.

This watershed-based plan is important because it specifically addresses water-related issues in communities within the Lake Michigan watershed planning area. Clean and abundant water, healthy streams and lakes, and safety from flooding are important to residents and business and therefore play a significant role in the quality of life, health and economic vitality of our communities. Lake Michigan is the source of drinking water for the majority of residents and businesses in the watershed planning area, and many more outside of the planning area in northeastern Illinois alone. Clean and healthy watersheds are assets that make communities more desirable for residents and businesses; however, flooding can damage property and result in local economic impacts. Lake Michigan and its tributary rivers and streams provide recreational destinations for watershed residents as well as tourists and are a highly visible indicator of watershed health. These waters support a diverse variety of water-dependent plants and animals and are critical to local and continental ecosystems as well as supporting important economic and population centers. Improvement and restoration of the Great Lakes is understood to have wide-ranging economic benefits for the surrounding communities. In 2007, it was estimated that a $26 billion investment in Great Lakes restoration would yield more than $50 billion in direct economic benefits (Austin et al., 2007). The benefit to the Chicago metropolitan area alone was estimated to be $7.4 billion-$13.3 billion (Austin, et al., 2008).

Water does not generally flow according to political boundaries. Consequently, we recognize the watershed as the appropriate scale to address most water resource issues, which often involves multiple political jurisdictions. The Lake Michigan watershed planning process brought together numerous watershed stakeholders to provide input towards the management and enhancement of water resources in the planning area. This watershed-based plan utilizes sources of up-to-date information such as data gathered during the record flood event of 2017 as well as historical data to provide a summary of existing watershed conditions and trends. It recommends actions stakeholders can take to protect resources that are in good condition and restore those that have been degraded. As a resident, landowner, business or community official, you make a difference.

Numerous best management practices and watershed projects have already been implemented by stakeholders throughout the planning area. Many of these projects were recommended in previous watershed studies and plans (see Table 1-3). While developing this plan report, the project team identified at least 60 watershed projects implemented in the preceding decades by watershed stakeholders. Put in other terms, these projects represent an investment of more than $20 million by local stakeholders for in-the-ground watershed improvements, and this does not include the Federal investment to remediate the Waukegan Harbor Area of Concern, nor does it include construction and maintenance of “typical” infrastructure improvements by local governments (e.g., stormsewers, roads, etc.). This level of investment indicates significant local support for continued work to manage and improve the Lake Michigan watershed.

1.2 LAKE MICHIGAN WATERSHED PLANNING AREA

1.2.1 LAKE MICHIGAN WATERSHED

The Lake Michigan watershed covers 45,600 square miles in Illinois, Indiana, Michigan and Wisconsin, not including the lake. The lake surface itself encompasses 22,300 square miles, almost one third of the entire watershed area (USEPA, 2000). The bulk of runoff in the basin is derived from tributary watersheds in Wisconsin and the lower peninsula of Michigan, with the Fox (WI), Menominee (MI/WI), Grand (MI) and St. Joseph (IN/MI) all respectively draining more than 4,000 square miles of tributary area. Illinois has, by far, the smallest tributary area of any state in the Lake Michigan basin, with less than 100 square miles. The present watershed area in Illinois is much reduced resulting from the diversion of 673 square miles of the Chicago and Calumet River watersheds through the Chicago Sanitary and Ship Canal and the Cal-Sag Channel in the first part of the 20th Century (Healy, 1979; Pescitelli, 2013). The diversion ultimately flows into the Des Plaines River in the Mississippi River watershed.

As of the year 2000, approximately 7.5 million people in four states inhabited the Lake Michigan watershed, a figure which does not include the nearly 3 million people in the Chicago region who use Lake Michigan water but are outside of the present, modified watershed boundary. More than 500,000 people in Illinois live in the Lake Michigan watershed (USEPA, 2000).

1.2.2 LAKE MICHIGAN WATERSHED PLANNING AREA

The Lake Michigan Watershed-Based Plan covers 57 square miles (36,488 acres), far less than 1% of the Lake Michigan watershed but nearly two-thirds of the Illinois portion of the Lake Michigan watershed. Hereinafter referred to as the Lake Michigan (LM) planning area, this area encompasses portions of eastern Lake County and northeastern Cook County, Illinois, a small area of southeastern Kenosha County, Wisconsin, portions of 12 municipalities, and 7 townships (see Figure 1-3). In Kenosha County, Wisconsin, a portion of the Village of Pleasant Prairie included in the Kellogg Creek Watershed Plan and is therefore included in this plan.

The planning area also includes the tributary area to 7 ravines in northeastern Cook County, Illinois, all within the incorporated limits of the Villages of Glencoe and Winnetka. The planning area contains 81 miles of stream of which about 50 miles are considered ravines and 3,600 acres of wetland. Aside from Lake Michigan, there are no natural "inland" lakes in the planning area and only 6 water bodies greater than 5 acres. Figure 1-4 depicts the size and location of the Lake Michigan Watershed planning area relative to the southwestern portion of the Lake Michigan Basin (Milwaukee, WI to Michigan City, IN).

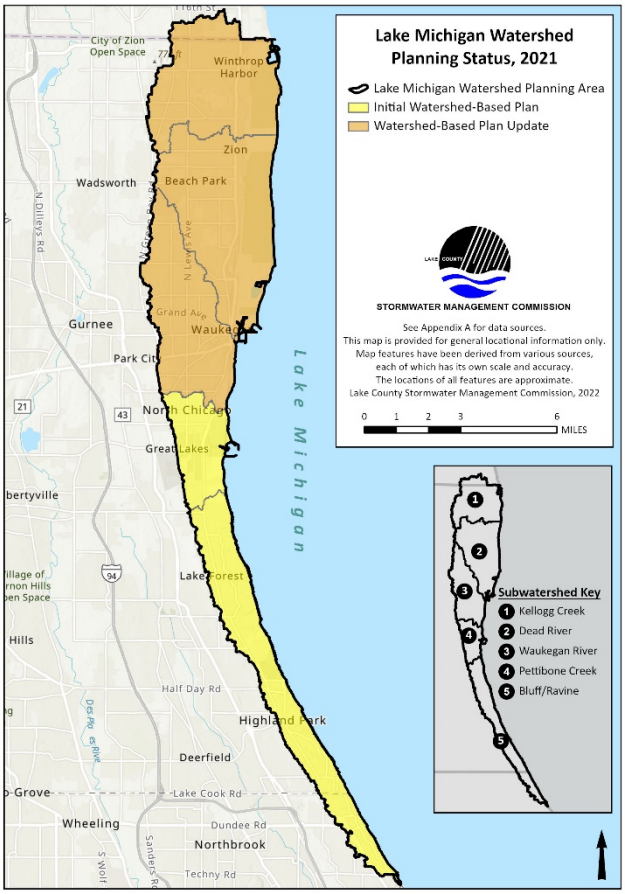

Figure 1-2: Lake Michigan Watershed Planning Status

The USGS has developed a coding system for hydrologic systems that is used throughout the United States by numerous federal, state, and local agencies and organizations. Each watershed unit is assigned a Hydrologic Unit Code (HUC), with the number of digits in each code dependent upon watershed size and its relationship to larger watersheds to which it belongs (if any). Table 1-1 includes the applicable HUCs for the LM planning area and Figure 1-5 shows all of the HUC 12 watersheds in the LM planning area. The Lake Michigan planning area is located within two 12-digit Hydrologic Unit Code (HUC) areas (see Table 1-2, for more detailed information on HUCs, see Chapter 3, section 3.1.5).

The Lake Michigan Watershed-Based Plan is an "umbrella" watershed-based plan because the 57 square-mile planning area includes 5 subwatersheds. The following 3 watershed-based plans have been completed for subwatersheds of the LM planning area in Lake County: the Dead River Watershed-Based Plan (2008), Kellogg Creek Watershed-Based Plan (2008), and Waukegan River Watershed Plan (2007). The Pettibone Creek and Bluff/Ravine subwatersheds do not have watershed-based plans completed. This "umbrella" plan updates or completes watershed-based planning for all five subwatersheds (see Figure 1-2 for the LM planning area subwatersheds planning status as of 2021). This umbrella plan also guides local stakeholders to implement

best management practices (BMPs) that provide cost and pollution effective solutions to surface water quality impairments.

Table 1-1: Hydrologic Unit Codes (HUCs) in the Lake Michigan Watershed Planning Area

HUC	HUC NAME	HUC LEVEL (NO. OF DIGITS)	CORRESPONDING PLANNING AREA SUBWATERSHED NAME(S)
04*	Great Lakes	HUC 2	All
0404*	Southwestern Lake Michigan	HUC 4	All
04040002*	Pike-Root	HUC 8	All
040400020501	Waukegan River-Frontal Lake Michigan	HUC 12	Kellogg Creek, Dead River, Waukegan River, Pettibone Creek, Bluff/Ravine
040400020502*	Diversey Harbor-Frontal Lake Michigan	HUC 12	Bluff/Ravine

*HUC boundary extends beyond planning boundary

Table 1-2: Lake Michigan Subwatersheds & 12-digit HUCS

SUBWATERSHED	12-DIGIT HUC	HUC NAME
Kellogg Creek	040400020501	Waukegan River – Frontal Lake Michigan
Dead River	040400020501	Waukegan River – Frontal Lake Michigan
Waukegan River	040400020501	Waukegan River – Frontal Lake Michigan
Pettibone Creek	040400020501	Waukegan River – Frontal Lake Michigan
Bluff/Ravine	040400020501 040400020502	Waukegan River – Frontal Lake Michigan *Diversey Harbor – Frontal Lake Michigan (only part of this HUC is in the planning area)*

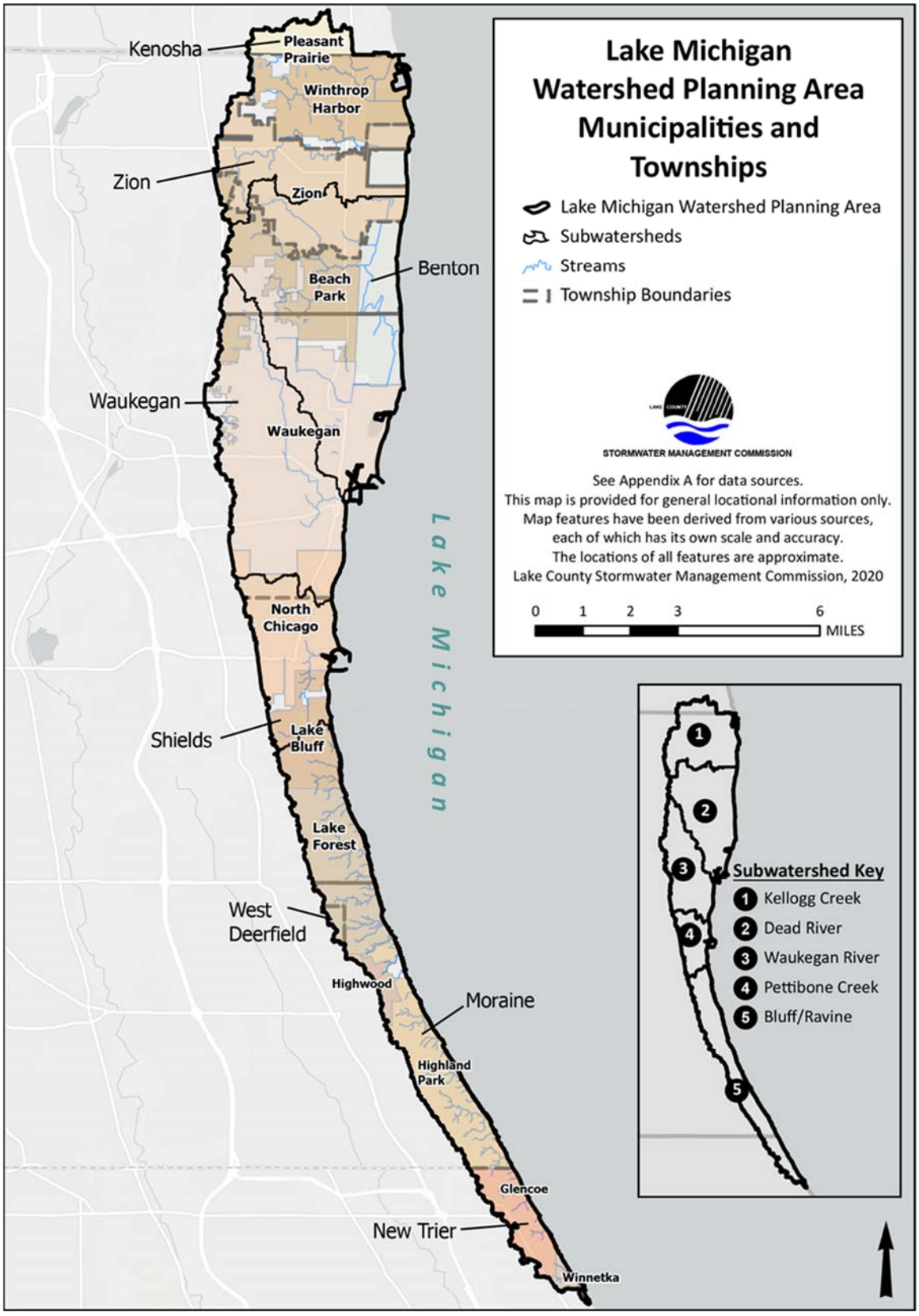

Figure 1-3: Lake Michigan Watershed & Planning Area

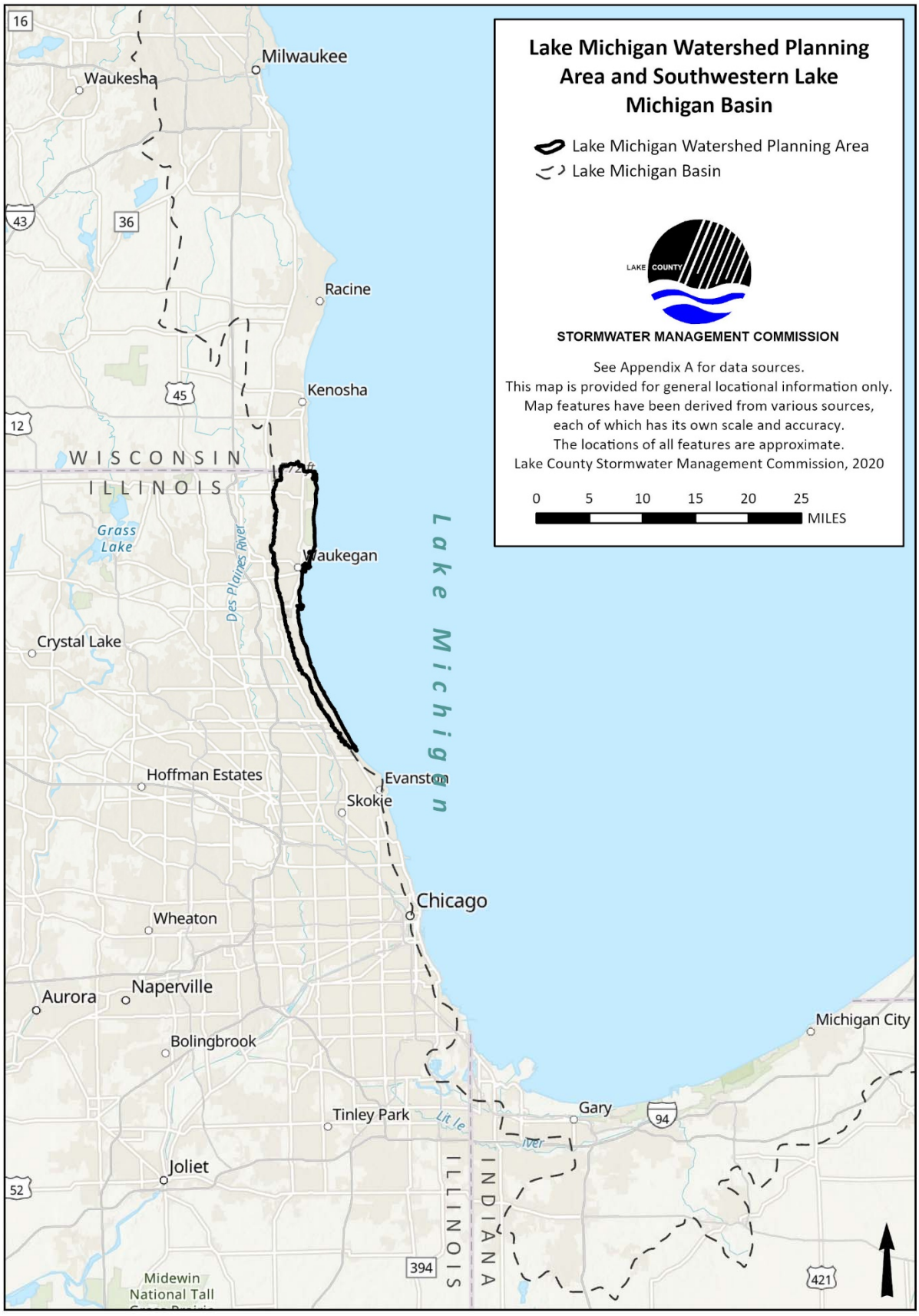

Figure 1-4: Lake Michigan Watershed Planning Area Location Map

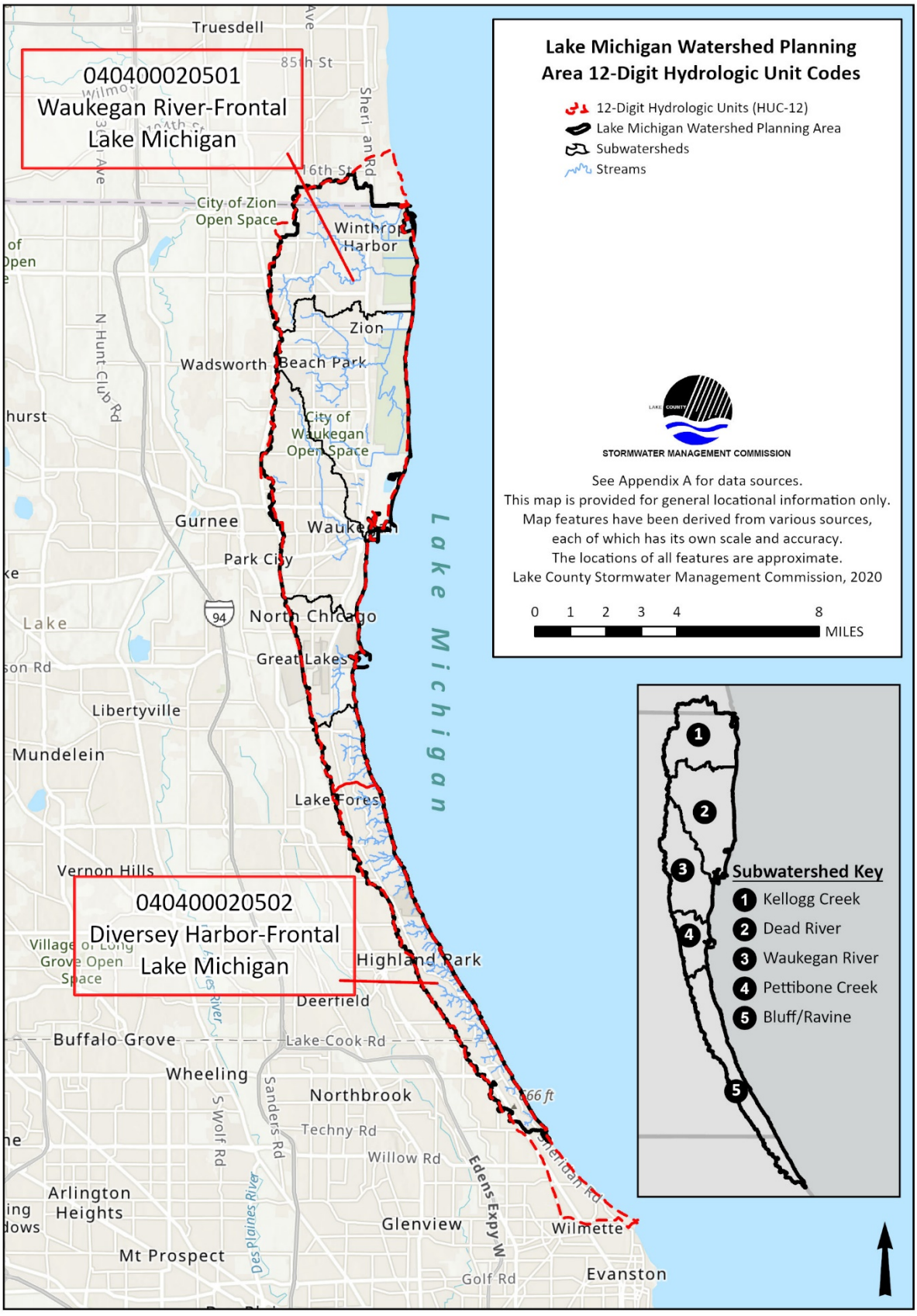

Figure 1-5: Lake Michigan Watershed Planning Area HUC 12 Watersheds

1.3 WATERSHED PLAN PURPOSE

Lake County Stormwater Management Commission (SMC) took the lead to develop a watershed-based plan for the Lake Michigan planning area after discussion with several key watershed stakeholders including the local municipalities, non-governmental organizations, and the Illinois Department of Natural Resources (IDNR) Coastal Management Program. The purpose of this effort was to develop a plan to reduce the impacts of water pollution and stormwater runoff; restore watershed streams, ravines and wetlands to a healthy condition; and provide opportunities for watershed stakeholders to have a significant role in the process. This watershed-based plan does not address groundwater quality issues, focusing instead on stormwater and surface water runoff. Likewise, this plan is focused primarily on the "inland" portions of the planning area, including beaches. Nearshore waters of Lake Michigan are addressed as is practical, however, "offshore" and lakewide issues are addressed in the Lake Michigan Lakewide Action and Management Plans (LAMPs) developed by USEPA.

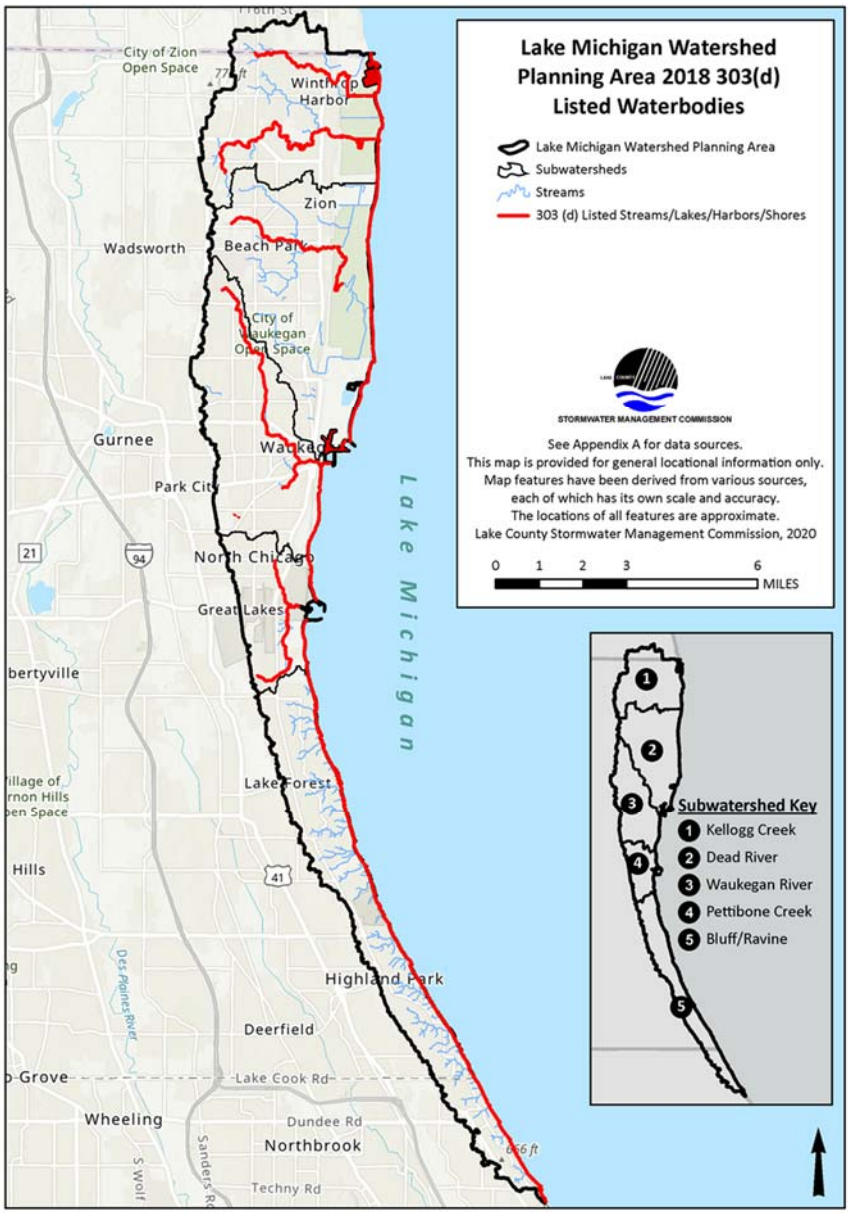

Figure 1-6: Lake Michigan Watershed 2018 303(d) Impaired Waters

A broad representation of watershed stakeholders participated in the planning process and developed and supported this plan. A significant objective of this planning effort and the implementation of the plan going forward is to return the 10 waterbodies and 12 beaches in the planning area that are listed as **impaired** on the 2018 Illinois 303(d) list of impaired waters to conditions that fully support their designated uses (Illinois EPA, 2018). Figure 1-6 depicts the waterbodies that are impaired in the Lake Michigan planning area. This plan identifies BMPs to remedy or mitigate water quality impairment, flood damages, and the loss or degradation of natural resources. The plan also recommends watershed stakeholders

IMPAIRED WATERS: The Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with current pollution control technologies alone.

implement actions to preserve, manage, and restore natural resources, as well as prevent actions that will cause or exacerbate unintended water quality and stormwater problems. Watersheds do not generally coincide with political boundaries, so watershed planning improves coordination and cooperation among communities and the land and water resources they share and impact.

1.4 WATERSHED PLAN REQUIREMENTS, PROCESS, AND ORGANIZATION

The primary scope of this project is the development of a comprehensive watershed-based management plan for the 57-square mile Lake Michigan watershed planning area that identifies actions to improve water quality and reduce the impact of erosion and flood damage. The planning approach was designed to help stakeholders from multiple jurisdictions and with various interests to better understand and become engaged in the watershed. The desired planning outcome is to spur implementation of watershed improvement projects and programs that will accomplish the goals and objectives established in this plan. SMC worked with numerous stakeholders, including public agencies, local units of government, landowners, and private sector professionals with interests in the watershed.

This Lake Michigan Watershed-Based Plan updated and incorporated the action plan recommendations of the three subwatershed watershed-based plans already completed. The watershed-based plans for Kellogg Creek, Dead River, and Waukegan River have been incorporated into this plan and new action recommendations are included within those watersehds. Additionally, previous action recommendations for those watersehds have been reviewed and modified or left unchanged as each warranted. This watershed-based plan serves as a 10-year update to these three older watershed-based plans (Kellogg Creek, Dead River, and Waukegan River) and satisfies the recommendations for periodic updates included in those watershed-based plans. The executive summaries for the three existing plans and links to the watershed-based plans are included in the Appendices **(Appendix K**).

Development of the Lake Michigan Watershed-Based Plan was funded, in part, by the IDNR Coastal Management Program through the Coastal Management Grant Program and by Illinois EPA through Section 319 of the Clean Water Act (CWA). Section 319 grants are also awarded to projects to protect water quality in Illinois. Projects must address water quality issues relating directly to nonpoint source pollution. Funds can also be used for the implementation of watershed management plans including the development of information/education programs and for the installation of BMPS. Section 319 funds give higher priority to applications that are implementing a site-specific action plan recommendation (project) in an approved watershed-based plan or Total Maximum Daily Load (TMDL) implementation plan that meets the watershed-based plan requirements. A portion of the Section 319 funds is allocated to projects that are not recommendations in an approved watershed-based plan, but projects within watershed-based plans may be prioritized. The Lake Michigan Watershed-Based Plan follows Illinois EPA guidance and is designed to meet the nine elements required by the USEPA for a watershed-based plan.

Pursuant to its mission and authority for stormwater management and watershed planning (55 ILCS 5/5-1062), SMC develops watershed-based plans and follows the adoption process outlined below (for Lake County portions of the planning area):

1. *Draft version of the watershed-based plan is submitted to the Illinois EPA, IDNR-Office of Water Resources, and Chicago Metropolitan Agency for Planning (CMAP) for review*
2. *SMC Board approves a 30-day public comment through a public hearing and local publication*
3. *SMC revises the draft watershed-based plan based on comments received*
4. *Illinois EPA determines the plan meets the watershed-based planning guidance*
5. *The plan is brought before the Lake County Stormwater Management Commission & Lake County Board for adoption as an amendment to the Lake County Comprehensive Stormwater Management Plan.*
6. *SMC seeks community adoption of the watershed-based plan from the LM planning area entities.*

NOTEWORTHY – USEPA'S NINE ELEMENTS OF A WATERSHED –BASED PLAN

1. Identification of the causes and sources, or groups of similar sources, of pollution that will need to be controlled to achieve the pollutant load reductions estimated in the watershed-based plan;
2. Estimate of the pollutant load reductions expected following implementation of the management measures described under number 3 below;
3. Description of the nonpoint source management measures that will need to be implemented to achieve the load reductions estimated under number 2 above, and an identification of the critical areas in which those measures will be needed to implement the plan;
4. Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement the plan;
5. Public information/education component that is designed to change social behavior;
6. Plan implementation schedule;
7. Description of interim, measurable milestones;
8. Set of criteria that can be used to determine whether pollutant loading reductions are being achieved over time;
9. Monitoring component to evaluate the effectiveness of the implementation efforts over time.

1.5 PREVIOUS AND RELATED STUDIES AND PLANS

Floodplain, biological, habitat, water quality, and demographic/geographic data for this plan were compiled from several previous and concurrent studies of the watershed. This information was collected, analyzed, summarized, and supplemented with newly collected field data, and was then used to reach conclusions regarding the condition of the resources in the watershed. Field studies completed in association with this planning effort include detailed stream, ravine and detention basin inventories performed by SMC. References for previous reports and studies and summaries of field data collected and reports compiled specifically for this planning effort are listed below in

Table 1-3.

Table 1-3: Previous Studies and Plans

PREVIOUS & RELATED STUDIES/PLANS	YEAR COMPLETED	AUTHOR/OWNER
Lake Michigan LAMP and annual reports	2008-2019	USEPA
Illinois Integrated Water Quality Report and Section 303 (d) List, 2018	2021	Illinois EPA
Illinois Coastal Nonpoint Pollution Control Program	2014	IDNR & Illinois EPA
Floodplain Studies	Various	Illinois State Water Survey, FEMA
Illinois Lake Michigan Implementation Plan	2013	IDNR
Lake County Wetland Restoration and Preservation Plan	2020	SMC
Lake County All-Natural Hazards Mitigation Plan	2017	SMC
Lake County Green Infrastructure Model and Strategy	2016	LCPFD
Lake County Flood Problem Areas Inventory	2020	SMC
Lake Michigan Beaches TMDL (E. coli)	2013	Illinois EPA
Lake Michigan Nearshore TMDL (Mercury and Polychlorinated Biphenyls)	2019	Illinois EPA
Kellogg Creek Watershed-Based Plan	2008	SMC & CDF Inc.
Dead River Watershed-Based Plan	2008	SMC & CDF Inc.
Waukegan River Watershed Plan	2007	Waukegan Harbor Citizens Advisory Group, Kabbes Engineering, Inc., and Geosyntec
Lake County Lake Reports	2000	LCHD
Illinois Coastal Program Document	2011	IDNR
Illinois Coastal Management Program Section 309 Assessment and Strategy	2016-2020	Illinois Coastal Management Program
Lakefront/Beach/Shoreline/Ravine Master Plans	various	Park District of Highland Park, Lake Bluff Park District, City of Waukegan, Illinois Coastal Management, Waukegan Port District, Openlands, US EPA
Fifth Five-Year Review Report for Johns Manville Corp. Superfund Site Lake County, Illinois	2018	U.S. Environmental Protection Agency Region 5
Stormwater Management Plans	Various	Village of Beach Park, Lake Forest
Decision Document Review Plan Ravine 10 Great Lakes Fisheries and Ecosystem Restoration Section 506 Chicago District	2019	U.S. Army Corps of Engineers

PREVIOUS & RELATED STUDIES/PLANS	YEAR COMPLETED	AUTHOR/OWNER
Septic Identification Study with the Lake County Portion of the Lake Michigan Watershed	2019	LCHD

1.6 USING THE PLAN

1.6.1 WHO SHOULD USE THIS PLAN?

This plan will be of limited use without the commitment of watershed stakeholders to improve, restore, manage, and steward watershed resources. Municipal and county agencies and elected officials, as the primary land use, development, and infrastructure authorities in the watershed, will have a significant amount of influence and responsibility for implementing this plan. These public agencies represent the interests of their constituents and are strongly influenced by every community resident or landowner. Therefore, each community member has the potential to influence the actions that occur in the Lake Michigan watershed through active participation.

State and federal agencies, elected officials, and private organizations, such as homeowner associations and conservation organizations, will also play an important role. State and federal agencies can support the implementation of this plan by approving projects in a timely fashion, supporting projects with funding, and providing technical information, tools, and resources to assist local authorities and watershed organizations in their efforts. Private associations and organizations have the ear and influence of their members and can provide significant contributions to land and water protection. Individual watershed residents and landowners must also accept responsibility for managing their own land and water resources responsibly and for working with others to implement this plan.

All jurisdictions, organizations, businesses and institutions, private landowners, and residents will have to work together to successfully protect and restore the watershed. The power of water is immense, as anyone who has experienced flooding can attest. The flow of water also does not respect property lines or jurisdictional boundaries; therefore, everyone needs to share the long-term stewardship responsibility and the costs and benefits of watershed improvements.

The success of plan implementation will also be determined by the ability of stakeholders to organize to coordinate, communicate, and manage activities in the watershed. Watershed organizations are generally formed from the organizations and/or individuals who participated in the watershed planning process. Watershed organizations often become the drivers of implementing the watershed plan and provide educational outreach to the community. A watershed organization will be the primary mechanism to engage the general public in watershed activities, to support the implementation of the watershed plan, and to voice their concerns and celebrate their successes in restoring watershed resources.

1.6.2 HOW TO USE THIS PLAN

For those unfamiliar with watershed planning, this document may appear overwhelming. There are pages of information to navigate, numerous tables and maps and many recommendations whose implementation will

require the work and cooperation of numerous stakeholders. These recommendations are for agencies, institutions and organizaitons to consider. But there are also a number of straightforward actions that individuals can take to improve the watershed. Every action, no matter how small, when undertaken by many or key landowners can have a positive impact on improving the watershed. For a general understanding of what this plan is about, please read the Executive Summary, which also includes a list of top priority actions for the next ten years. For additional details, browse the table of contents and advance to the section you are interested in.

To find out…

- What this plan is intended to accomplish, read about the watershed issues, opportunities, goals, and objectives for improving watershed health and improving water quality in **Chapter 2**.
- Detailed information about watershed resources and conditions, read the section(s) of interest in **Chapter 3**.
- What the problems are facing the watershed, **Chapter 4** includes a summary and analysis of watershed problems that need to be addressed by the action plan.
- Detailed information about flooding, including the flood events, flood problem inventory, and strategies for flood damage reduction, turn to **Chapter 5**.
- What kind of actions can be taken to improve the watershed, the action plan in **Chapter 6 and Appendix N** includes a watershed-wide programmatic action plan that includes general recommendations; and a site-specific action plan directed to critical areas of the watershed that identifies actions that can improve water quality in specific areas. A web application has been created (https://lakecountyil.maps.arcgis.com/apps/webappviewer/index.html?id=eefd51423bdf444e9dcfc110302c4819) that allows watershed stakeholders to access the site-specific action plan recommendations in the LM planning area through a mapping tool.
- What kind of funding may be available to provide cost share for implementing watershed improvement projects, refer to the funding sources in **Chapter 7**.
- What sort of outreach and education is needed so that watershed stakeholders understand the watershed problems, their role in the watershed, and have the capability to implement the Action Plan, refer to **Chapter 8**. SMC will continue to coordinate the stormwater activities in the Lake County portion of the watershed planning area to improve water quality, reduce flood damage, and restore and enhance the natural drainage systems.

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CHAPTER TWO: WATERSHED ISSUES, OPPORTUNITIES, GOALS, AND OBJECTIVES

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ACRONYMS/ABBREVIATIONS USED IN CHAPTER 2

BMP – Best Management Practices

FEMA – Federal Emergency Management Agency

IBSP – Adeline Jay Geo-Karis Illinois Beach State Park

Illinois EPA – Illinois Environmental Protection Agency

SMC – Lake County Stormwater Management Commission

WQ – Water Quality

2 WATERSHED ISSUES, OPPORTUNITIES, GOALS, AND OBJECTIVES

2.1 ISSUES AND OPPORTUNITIES

One of the first tasks the Lake Michigan watershed committee (watershed planning committee) undertook was to identify issues that the Lake Michigan Watershed-Based Plan should address and opportunities or strategies to address those issues. Participants (watershed stakeholders) at the April 24, 2019 kick-off planning meetings identified issues and opportunities they felt were important to the watershed planning process.

WATERSHED PLANNING COMMITTEE: A committee comprised of SMC staff and watershed stakeholders with a goal of creating an umbrella watershed-based plan for the Lake Michigan Watershed planning area and reducing nonpoint source pollution.

Stakeholders identified more than 50 issues and opportunities during both kickoff meetings. Additionally, because this plan updates and incorporates the Dead River, Kellogg Creek and Waukegan River watershed-based plans, issues and opportunities identified for those plans were also considered. The Waukegan River plan did not specifically identify issues and opportunities while the Dead River and Kellogg Creek planning processes were combined and share the same set of issues and opportunities. More than 50 issues and opportunities were identified by stakeholders for the Dead River and Kellogg Creek watershed plans.

Table 2-1 summarizes the issues and opportunities identified by stakeholders for the Lake Michigan Watershed-Based Plan as well as for the Dead River and Kellogg Creek Watershed-Based Plans. Issues and Opportunities are summarized by Category and columns in the table indicate how each issue is addressed in the Goals and Objectives or elsewhere in the plan.

Issues and opportunities were most commonly related to ravines and streams, stormwater and flood risk/flood damage, water quality, and partnerships/coordination. The other categories include education and outreach, best management practices (BMPs), lake shoreline and bluffs, habitat and wildlife, climate, access, funding, wetlands, and infrastructure. Several of these issue categories translate directly to watershed planning goals identified in Section 2.2: Ravines and Streams, Stormwater and Flood Risk/Damage, Water Quality, Partnerships and Coordination, Education and Outreach and Habitat and Wildlife. The remaining categories and individual issues and opportunities are addressed by plan objectives or action recommendations elsewhere in the plan.

Table 2-1: Issues and Opportunities Identified by Stakeholders and in Previous Watershed-Based Plans

Italicized typeface indicates the issue was identified in the Dead River and Kellogg Creek Watershed-Based Plans; the asterisk (*) indicates the issue/opportunity applies to multiple categories or does not neatly fit in a single category. The "X" symbol indicates the issue/opportunity is directly addressed by the Goal Category; the carat (^) indicates goals that secondarily address the issue.

WATERSHED ISSUES AND OPPORTUNITIES	GOAL CATEGORIES					
	STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT	FLOOD RISK, FLOOD DAMAGE & STORM-WATER MANAGEMENT	NATURAL RESOURCES AND HABITAT	WATER QUALITY	WATERSHED EDUCATION & COMMUNICATION	WATERSHED COORDINATION & PARTNERSHIPS
ISSUE/OPPORTUNITY CATEGORY: RAVINES AND STREAMS	X					
Ravine erosion	X					
Stormwater management as it relates to ravines	X	^				
Need to address entire ravine, not just mouth at lake	X					
Encourage good stream bank protection measures and remove poor practices and debris including the removal of concrete rip rap/armoring	X		^			
Streambank erosion control and restoration in ravine areas	X		^			
Streambank vegetation / buffer restoration	^		X			
Streambank modification	X		^			
*Fish habitat restoration/sedimentation in IBSP**	X		X			
Encourage or restore fish passage from lake up into streams	^		X			
Protect streamside trees	^		X			
Stream obstruction /debris/enclosures/beaver dams	^	X				
Garbage/yard waste in streams	X					

WATERSHED ISSUES AND OPPORTUNITIES	GOAL CATEGORIES					
	STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT	FLOOD RISK, FLOOD DAMAGE & STORM-WATER MANAGEMENT	NATURAL RESOURCES AND HABITAT	WATER QUALITY	WATERSHED EDUCATION & COMMUNICATION	WATERSHED COORDINATION & PARTNERSHIPS
Hydrologic modification	X	X	X	X		
Restore hydrology for Glen Flora Tributary historic floodplain/wetland outfall location per Waukegan City Master Plan/Disconnection of channels from Lake Michigan (drain at state line)	X		X			
Identify historic water flow patterns (ground and surface)/Hydrology patterns in State Park						
Remove concrete and other debris from abandoned properties						
Low biological stream quality				X		
ISSUE/OPPORTUNITY CATEGORY: STORMWATER AND FLOOD RISK/FLOOD DAMAGE		X				
Storm/Sanitary illicit connections		^		^		
Runoff Mitigation (Volume)		X				
Changes in Runoff volume (new models needed)		^				
Reducing impervious surfaces		X				
Impervious surface assessment, ordinances, and reduction		X				
Stormwater runoff reductions		X				
Audit/assess/evaluate/update existing ordinances & assess need for municipalities without ordinances		^				

WATERSHED ISSUES AND OPPORTUNITIES	GOAL CATEGORIES					
	STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT	FLOOD RISK, FLOOD DAMAGE & STORM-WATER MANAGEMENT	NATURAL RESOURCES AND HABITAT	WATER QUALITY	WATERSHED EDUCATION & COMMUNICATION	WATERSHED COORDINATION & PARTNERSHIPS
Accountability for stormwater similar to stormwater pollution prevention plans during construction (refers to municipal and landowner)		^				
Increase of runoff from single family residences		X				
Streambank erosion from, and at, stormsewers, point discharges, and/or hydraulic structures	X	^				
Stormwater infiltration into sanitary sewers in streams and other areas		^		^		
Land use change/Impact of future development		^				
Update floodplain maps and adopt corrections (to remove properties or buildings from the flood insurance purchase requirement)		^				
Reduce/prevent flooding		X				
Floodplain protection		X				
Need detailed hydrologic study		^				
Investigate impact of changing land use on groundwater and surface water levels		X				
ISSUE/OPPORTUNITY CATEGORY: WATER QUALITY				X		

WATERSHED ISSUES AND OPPORTUNITIES	GOAL CATEGORIES					
	STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT	FLOOD RISK, FLOOD DAMAGE & STORM-WATER MANAGEMENT	NATURAL RESOURCES AND HABITAT	WATER QUALITY	WATERSHED EDUCATION & COMMUNICATION	WATERSHED COORDINATION & PARTNERSHIPS
More comprehensive assessment of watershed (missing Dead River WQ assessment in Illinois EPA Integrated Report)				^		
Increase the number/frequency/location of water quality assessments				^		
WQ impacts of detention (needs a study)				^		
Macroinvertebrate aquatic assessments (include wetlands, natural areas, IBI survey)				^		
Relict Pollution				X		
De-icing				X		
Sedimentation	X		X	X		
Pesticide use in watershed & homeowner education regarding pesticide use				^	^	
Algae in creeks				X		
Pollutants in stormwater runoff (includes road salt/chlorides, and fertilizers, pesticides, and herbicides from agricultural/lawn/playing field/golf course applications, sediment and nutrient loads, storm sewer systems)				X		
Contamination/ industrial point sources of pollution				X		
Impact from airport such as fuel spills				^		

WATERSHED ISSUES AND OPPORTUNITIES	GOAL CATEGORIES					
	STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT	FLOOD RISK, FLOOD DAMAGE & STORM-WATER MANAGEMENT	NATURAL RESOURCES AND HABITAT	WATER QUALITY	WATERSHED EDUCATION & COMMUNICATION	WATERSHED COORDINATION & PARTNERSHIPS
Burning leaves in ditches				^		
Beach closures				X		
Dewatering during construction						
Need water quality monitoring for metals and other pollutants				X		
ISSUE/OPPORTUNITY CATEGORY: PARTNERSHIPS AND COORDINATION						X
Building Stronger Partnerships						X
Interjurisdictional Support						X
Some level of municipal coordination across watershed						X
Environmental Justice – show that issues can apply throughout watershed based plan*	^	^	^	^	^	^
Create a group to maintain stream where homeowners are unable						X
Establish regular (annual/semi-annual) stream cleanup					^	X
If there is a dedicated drainage easement, whoever holds the easement needs to maintain the property						
Coordinate transportation projects with SMC		^				

WATERSHED ISSUES AND OPPORTUNITIES	GOAL CATEGORIES					
	STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT	FLOOD RISK, FLOOD DAMAGE & STORM-WATER MANAGEMENT	NATURAL RESOURCES AND HABITAT	WATER QUALITY	WATERSHED EDUCATION & COMMUNICATION	WATERSHED COORDINATION & PARTNERSHIPS
Better coordination among governments within the watershed (incl. WI) especially related to stormwater management goals & responsibilities (effort & financing)						X
Drainage District role and participation						
Identify responsibilities of each jurisdiction and homeowners (need to clarify lead for activities –should there be a local organization?)						
Need up-to-date data	^	^	^	X	^	^
Public involvement in watershed management					^	X
ISSUE/OPPORTUNITY CATEGORY: LAKE SHORELINE AND BLUFFS	X					
Lake Levels	X	^	^			
Beach/Sand Management	X	^	^			^
Lake Michigan stabilization/restoration	X	^	^	^		
Shoreline infrastructure and protection	X	^		^		
Lake shore stabilization/sand management/erosion (bluffs and beaches)	X	^	^			^
Bluff Erosion	X	^	^			
Bluff erosion / property damage in ravines	X	^	^			
Bluff / soil erosion and sediment control	X	^	^			

WATERSHED ISSUES AND OPPORTUNITIES	GOAL CATEGORIES					
	STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT	FLOOD RISK, FLOOD DAMAGE & STORM-WATER MANAGEMENT	NATURAL RESOURCES AND HABITAT	WATER QUALITY	WATERSHED EDUCATION & COMMUNICATION	WATERSHED COORDINATION & PARTNERSHIPS
Beach/Lake Michigan shoreline erosion	X	^	^			
ISSUE/OPPORTUNITY CATEGORY: HABITAT AND WILDLIFE			X			
Invasive species management			X			
Deer management			^			
Protect Natural Headwaters of ravines	X		X			
Information on control and identification of invasive and exotic species			X			
Instream and riparian/buffer habitat identification and management			X			
Threatened and endangered species and habitat			X			
Acquire and protect open space in watershed			^			
ISSUE/OPPORTUNITY CATEGORY: EDUCATION AND OUTREACH					X	
Education					X	
Public education/outreach					X	
Education of homeowners/municipal officials/contractors & landscape professionals (particularly related to shoreline/bluff erosion)					X	
Ravine education-all stakeholders					X	

WATERSHED ISSUES AND OPPORTUNITIES	GOAL CATEGORIES					
	STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT	FLOOD RISK, FLOOD DAMAGE & STORM-WATER MANAGEMENT	NATURAL RESOURCES AND HABITAT	WATER QUALITY	WATERSHED EDUCATION & COMMUNICATION	WATERSHED COORDINATION & PARTNERSHIPS
Periodic homeowner newsletter of BMPs					^	
ISSUE/OPPORTUNITY CATEGORY: FUNDING						
Funding for Joint Efforts						^
Identify funding sources (make available to municipalities/townships)						
Funding for MEANINGFUL improvements (making sure the right project or good projects are the ones funded)						
Need to get funding to homeowners to collectively address problems (e.g. ravines)						
Incorporating climate change—grants to implement these projects*						
Funding for projects (public and private)						
ISSUE/OPPORTUNITY CATEGORY: INFRASTRUCTURE	^	^		^		
Infrastructure inventory (aging)		X				
Maintenance of infrastructure		X				
Exposed utilities within stream corridor	^	^	^	^		
Maintenance of existing infrastructure including concrete "banks"/roadways affected by erosion	X	X				
Stormsewer infrastructure aging		X				

WATERSHED ISSUES AND OPPORTUNITIES	GOAL CATEGORIES					
	STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT	FLOOD RISK, FLOOD DAMAGE & STORM-WATER MANAGEMENT	NATURAL RESOURCES AND HABITAT	WATER QUALITY	WATERSHED EDUCATION & COMMUNICATION	WATERSHED COORDINATION & PARTNERSHIPS
ISSUE/OPPORTUNITY CATEGORY: BEST MANAGEMENT PRACTICES						
BMPs for landowners						
Monitoring/Maintenance of installed/older BMPs						
Nature-based solutions						
Incentivize landowners to participate					X	
ISSUE/OPPORTUNITY CATEGORY: ACCESS						
Public access to ravines/beaches/shoreline					^	
Access for restoration work						
Public access/awareness					X	
ISSUE/OPPORTUNITY CATEGORY: WETLANDS						
Wetlands (restoration/preservation)			X			
Protect and restore wetlands and seeps			X			
Lack of wetland maintenance			X			
ISSUE/OPPORTUNITY CATEGORY: CLIMATE						
Management for resilience		^				

2.2 WATERSHED GOALS AND OBJECTIVES

The watershed planning committee generated six (6) watershed goals to address watershed stakeholder issues/concerns. Establishing these watershed goals allowed the watershed planning committee to develop objectives and outcomes for each goal. The goals are central to the development of the watershed action plan (**Chapter 6**). The goals and objectives reflect watershed conditions, address watershed stakeholder priority issues, consider expected changes, and meet current and possible future funders' expectations.

Measurable indicators were assigned to each goal to help measure future progress toward meeting each goal as the watershed action plan is implemented. The action plan contains recommended:

- Programmatic actions that address streams, ravines and coastal systems; stormwater management and flooding; natural resources; water quality; education and information; and watershed coordination and partnerships; and
- Site-specific actions that recommend BMPs for specific problem locations identified during inventories and assessments.

Chapter 7 Plan Implementation and Evaluation and **Appendix M Milestone Evaluation Scorecards** examine the watershed plan goals by looking at their performance and progress. These sections evaluate milestones related to measurable indicators for the watershed goals and objectives.

2.2.1 GOALS AND OBJECTIVES FROM PREVIOUS WATERSHED PLANS

Goals from the Waukegan River, Dead River and Kellogg Creek Watershed-Based Plans were reviewed prior to the development of Goals and Objectives for the Lake Michigan Watershed-Based Plans.
Chapter 1 of the Waukegan River plan identified 17 specific goals:

- Develop education and volunteer programs and increase watershed and river awareness.
- Reduce the flashiness (the tendency for the river to rapidly surge during and after rain events) of the river in order to improve river safety and habitat.
- Acquire, protect and restore open space.
- Implement stream bank erosion prevention and repair measures to prevent dangerous drop-offs and property and habitat damage.
- Promote green infrastructure.
- Provide guidance on obtaining financial assistance for measures.
- Develop and implement a Waukegan River water quality monitoring program.
- Address contaminated sediments and other water quality impairments.
- Institutionalize river clean-up and monitoring programs.
- Provide safe river access and a green trail system.
- Improve habitat for native species.
- Take necessary methods to stop illegal dumping and littering in the riparian corridor.

- Remove invasive species and restore riparian corridor.
- Develop and enforce necessary laws and ordinances to address current illegal dumping and discharges.
- Implement annual illicit discharge detection program.
- Daylight enclosed reaches.
- Remove blockages in the river to reduce flooding and improve habitat for fish and other wildlife.

These goals are specific and were summarized into 5 more general goals in Chapters 7 and 8 of the Waukegan River Watershed Plan:

1. Improve Water Quality
2. Improve Natural Resources
3. Reduce Flood Damages
4. Educate Watershed Users and Residents
5. Maintain and Monitor Watershed Improvements

The first four of the Waukegan River Watershed Plan goals are similar to Issue/Opportunity Categories identified in Section 2.1 and goals from the Dead River and Kellogg Creek watershed plans. The goal "Maintain and Monitor Watershed Improvements" is consistent with action recommendations identified in Chapter 6 and the Implementation Plan outlined in Chapter 7 of this plan. The Dead River and Kellogg Creek watershed plans were developed during a combined planning process and a single set of issues, opportunities, goals and objectives was developed for both plans. Table 2-2 contains seven goals that were developed for the Dead River and Kellogg Creek watershed plans to address seven issue categories.

Table 2-2: Issues and Goals in the Dead River and Kellogg Creek Watershed Plans

ISSUE	GOAL
1: STREAM RESTORATION AND MANAGEMENT	A) Restore and manage the stream system to preserve and enhance stream and riparian health, function, and conveyance as part of a watershed green infrastructure system.
2: FLOOD RISK AND FLOOD DAMAGE	B: Reduce flood damage and prevent increased flooding to protect public health & safety, and public and private property and infrastructure investments.
3: NATURAL RESOURCES AND HABITAT	C: Preserve, restore, and enhance a green infrastructure network of terrestrial and aquatic natural resources including streams, riparian corridors, wetlands, and upland resources.
4: WATERSHED EDUCATION AND COMMUNICATION	D: Watershed residents, students, and communities have adequate knowledge, skills, resources, motivation, and stewardship opportunities to take action on implementing the watershed plan.
5: WATER QUALITY	E: Improve water quality in streams, lakes, and wetlands by reducing pollutants in stormwater runoff and addressing modified hydrology.
6: WATERSHED COORDINATION	F: Improve coordination and decision-making between public, private, and non-profit stakeholders to implement the watershed plan.
7: WATERSHED HYDROLOGY	G: Restore and enhance watershed hydrology and stabilize the stream systems by reducing surface runoff.

Because four of the Dead River and Kellogg Creek planning goals are similar to Waukegan River watershed planning goals and are also similar to several of the issue and opportunity categories identified in Section 2.1, the Dead River and Kellogg Creek goals were chosen as the initial template for development of goals for the Lake Michigan Watershed-Based Plan. The goals were numbered (rather than lettered) and Goal G was deleted, as the issue was addressed by at least three other goals. The stakeholder group and project team refined the goals to reflect current Lake Michigan watershed issues and priorities.

NOTEWORTHY: WHAT ARE GOALS VERSUS OBJECTIVES?

GOALS:

- Targets for the watershed plan.
- The desired change or outcome to achieve.
- Driven by stakeholder issues and problems identified by the watershed assessment.
- Ideally are clear, concise, and measurable.

OBJECTIVES:

- Specific, more precise steps needed to attain goals.
- Position reached or purpose achieved by an activity by a specific time.
- Objective outcomes should be measurable, attainable, relevant, and time-based.
- There may be multiple objectives to achieve a goal(s).

2.2.2 Watershed Goal #1: Stream, Ravine and Coastal Restoration and Management

GOAL: Restore and manage stream, ravine, shoreline and bluff systems to preserve and enhance stability, hydrology, beneficial functions and conveyance as part of a resilient and natural watershed system.

OUTCOME: *Streams, ravines, shoreline and bluff systems are restored and managed to reduce erosion and provide enhanced functions as part of the watershed green infrastructure and drainage system.*

OBJECTIVES:

a) Stabilize eroding stream, ravine, bluff, and shoreline segments and address localized erosion related to infrastructure.

   Indicator: Feet of stabilization projects implemented.

b) Reduce sedimentation and channelization, naturalize stream channels and ravines, and re-establish or improve stream connectivity to Lake Michigan where possible to enhance the beneficial functions of the drainage system.

   Indicator: Feet of stream and ravine restoration/naturalization projects implemented.

c) Develop and implement a stream management and maintenance plan/program with a dedicated funding source.

   Indicator: Feet of stream addressed by management/maintenance program.

d) Restore and manage riparian areas, ravines, bluffs, and beaches (including vegetation and buffers) to enhance beneficial functions and protect property and infrastructure.

   Indicator: Acreage of ravine, bluff and beach restoration and management.

e) Implement projects to restore or mimic natural hydrology and improve climate resilience, including resilience to fluctuations in Lake Michigan water levels.

Indicator: Miles of Lake Michigan shoreline protected from variable water levels

Indicator: Number and cost of projects implemented to restore natural hydrology and improve climate resilience as a targeted outcome.

2.2.3 Watershed Goal #2: Flood Risk, Flood Damage and Stormwater Management

GOAL: Mitigate the effects of increased runoff volumes, reduce ravine erosion and flood damage, and prevent flooding from worsening.

OUTCOME: *To the extent achievable, flood damages and stormwater runoff volumes are managed and/or their effects are abated or mitigated.*

OBJECTIVES:

a) Reduce existing flood damage and number of flood problem areas through the implementation of flood mitigation projects, including areas affected by urban flooding.

Indicator: Number of flood problem areas positively affected by flood mitigation projects implemented.

Indicator: Number/value of claims filed each year per community in the watershed.

b) Reduce or mitigate runoff volumes through installation of green infrastructure, including trees and bioretention, and other best management practices to lessen flooding and ravine erosion.

Indicator: Runoff volume reduction and mitigation measures implemented.

c) Expand, maintain and manage constructed and natural drainage systems to mitigate flood damage and improve resilience for changing precipitation patterns.

Indicator: Number of local drainage system improvement projects implemented.

d) Support updating of outdated floodplain maps and stormwater ordinances to reflect current flood risk and precipitation data.

Indicator: Number of updated Federal Emergency Management Agency (FEMA) floodplain maps and local stormwater ordinances (less than 10 years old) and area impacted by them.

e) Purchase and remove structures that are repetitively flooded or in danger of catastrophic damage from flooding or ravine/bluff erosion through the voluntary buyout program.

Indicator: Number of Voluntary Floodplain/Hazard Mitigation Buyouts.

2.2.4 Watershed Goal #3: Natural Resources and Habitat

GOAL: Preserve, restore and enhance a green infrastructure network and system of terrestrial and aquatic natural resources and ecosystems including riparian corridors, wetlands, beaches, bluffs and upland resources to provide for natural hydrology, native plant and wildlife communities and buffers for aquatic and high-quality natural resources.

OUTCOME: *Natural resources are identified, managed, restored and protected, including a series of hubs and connections, to enhance beneficial functions, native plants and wildlife, and high quality and/or locally endemic or distinctive natural areas of the watershed.*

OBJECTIVES:

a) Protect and enhance ecological quality of aquatic and terrestrial resources by improving water quality and managing invasive species, while preserving and protecting threatened and endangered species and ecosystems.

   Indicator: Number of waters from which Illinois EPA removes the aquatic life use impairment.
   Indicator: Acres of invasive species removal/management projects.

b) Preserve, restore, and create wetlands and wetland buffers wherever possible.

   Indicator: Acres of wetlands enhanced and/or restored.

c) Identify and connect environmental corridors across community, county and state lines.

   Indicator: Number of regional green infrastructure projects.

d) Preserve, manage, and restore rare or unique habitat and natural communities in the Chiwaukee Prairie Illinois Beach Lake Plain and Ramsar Wetland of International Importance.

   Indicator: Acres of coastal lake plain preserved, managed and/or restored.

e) Preserve, manage, and restore rare or unique habitat and natural communities in other protected natural areas within the watershed.

   Indicator: Acres of protected natural areas (outside the coastal plain) preserved, managed and/or restored.

f) Protect existing healthy trees, and plant and maintain a diversity of native trees in appropriate locations within natural and developed areas.

   Indicator: Area of tree canopy.

2.2.5 Watershed Goal #4: Watershed Education and Communication

GOAL: Watershed stakeholders (residents, property owners, students, non-profit organizations and public agencies) have adequate knowledge, skills, resources, motivation and stewardship opportunities to implement the watershed plan and associated programs.

OUTCOME: *Stakeholders have adequate information, knowledge and opportunity to implement the watershed plan.*

OBJECTIVES:

a) Conduct a watershed outreach campaign to inform and engage the public about watershed issues and solutions, landowner responsibilities and opportunities, available resources and the benefits of implementing the watershed plan recommendations.

   Indicator: Number of people reached by watershed outreach campaign.

b) Educate local government officials and agencies, consultants and contractors working in the watershed, landscapers and nurseries, property managers and landowners on road salt alternatives and application BMPs to minimize the use or impact of road salt by public and private snow removal providers.

Indicator: Number of public agencies and local private contractors attending the annual Lake County De-icing Workshop.

Indicator: Number of public agencies with winter maintenance responsibilities that use alternative de-icing products.

c) Educate local government officials and agencies, consultants and contractors working in the watershed, landscapers and nurseries, and landowners on best practices related to Lake Michigan shoreline and bluff maintenance/management and ravine management.

Indicator: Number of people that receive information about shoreline, bluff, and ravine management.

d) Educate property owners and caretakers through outreach programs such as Conservation@Home or Rain Ready on ways to improve the quality and quantity of water leaving their property, protect their property from flooding, protect rare or high-quality natural resources that might exist on their property, and contribute to resilient ecosystems.

Indicator: Number of property owners implementing recommendations made through such programs and/or number certified by the program(s).

e) Utilize trainings, workshops, public meetings, personal site visits, newsletters, websites, media, campaigns, and stakeholder word of mouth to provide watershed stakeholders opportunities to participate in watershed programs and projects.

Indicator: Number of landowners that receive information about watershed programs and projects.
Indicator: Number of workshops.

f) Facilitate and engage the public, schools and youth groups (students), and homeowner associations to volunteer for stream, beach and natural area stewardship and maintenance.

Indicator: Number of volunteers for stream, beach and natural area stewardship and maintenance.

2.2.6 Watershed Goal #5: Water Quality

GOAL: Improve water quality and address modified hydrology.

OUTCOME: *Water quality improves and water bodies support their designated uses (are not impaired).*

OBJECTIVES:

a) Watershed streams, beaches and lakes meet applicable water quality standards, including those within the Waukegan Harbor Area of Concern.

Indicator: Number of water bodies meeting applicable standards.

b) Reduce the potential for legacy contaminants/pollutants to migrate beyond their current extent.

Indicator: Site remediation projects completed.

c) Develop and implement a watershed monitoring program to collect and assess and report physical, chemical, and biological water quality data on streams and applicable areas of Lake Michigan on a regular basis.

Indicator: Implementation and support of watershed monitoring program.

Indicator: Regular reports on water quality monitoring to community and stakeholders

d) Reduce nonpoint source pollution loading and erosion from existing development, re-development and construction sites by controlling inputs, installing green infrastructure and implementing BMPs.

Indicator: Monitoring data trends for common nonpoint source pollutants.

e) Reduce the quantity of road salt needed for safe and cost-effective winter maintenance to reverse the current trend of rising chloride levels in water bodies.

Indicator: Winter Maintenance Program establishment including: policy and manual development, de-icing workshop attendance and certification.

f) Reduce fecal contamination impacting Lake Michigan beaches by controlling contributing sources and performing appropriate beach management activities.

Indicator: Number of beach closures.

g) Mitigate modified hydrology by implementing BMPs and restoring the natural drainage system, including (where appropriate) removal, restoration or retrofitting of impoundments and piped or channelized segments in streams and reductions in impervious surfaces.

Indicator: Number of projects implemented to mitigate modified hydrology.

2.2.7 Watershed Goal #6: Watershed Coordination and Partnerships

GOAL: Improve coordination, engagement and decision-making between public, private and non-profit stakeholders to implement the watershed plan.

OUTCOME: *Stakeholders coordinate and utilize available resources to implement watershed improvement projects.*

OBJECTIVES:

a) Watershed communities and stakeholder organizations adopt the Lake Michigan Watershed-Based Plan.

Indicator: Number of municipalities, counties, agencies and organizations that adopt the Lake Michigan Watershed-Based Plan.

b) Establish a watershed committee to guide watershed plan implementation, provide technical assistance and information to watershed stakeholders, help secure funding, update the plan or plan priorities and coordinate multi-partner projects.

Indicator: Establishment of watershed planning committee with budget and executive committee.

Indicator: Number of projects advanced/undertaken with the support of the watershed planning committee.

c) Communities and organizations will designate a representative and participate in the watershed committee.

Indicator: Number of communities and organizations that have designated a representative to participate on the watershed planning committee.

d) Provide stakeholders (including property owners) with information on funding sources and mechanisms for implementing projects and pursue cost-sharing arrangements between stakeholders for watershed projects that have broad, meaningful benefits and impacts.

Indicator: Number of projects with alternative or multiple sources of sufficient funding.

e) Watershed committee annually assesses progress on plan implementation and provides updates to the watershed-based plan every 10 years.

Indicator: Number of watershed stakeholders providing feedback for the watershed report cards.
Indicator: Number of action recommendations completed.

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ACRONYMS/ABBREVIATIONS USED IN CHAPTER 3

ADID – Advance Identification
BMP – Best Management Practices
BOD – Biological Oxygen Demand
CFU- Colony Forming Units
Cl^- Chloride
CMAP – Chicago Metropolitan Agency for Planning
CWA – Clean Water Act
DEM – Digital Elevation Models
DTM - Digital Terrain Models
E. coli- Escherichia coli
fIBI- Fish Index of Biotic Integrity
FLU – Future Land Use
FQI – Floristic Quality Index
GIMS- Green Infrastructure Model and Strategy
GIS – Geological Information System
GPS – Global Positioning System
HOA - Homeowner Associations
HQAR- High Quality Aquatic Resources
HSG – Hydrologic Soil Groups
HUC - Hydrologic Unit Code
IDNR – Illinois Department of Natural Resources
IDOT – Illinois Department of Transportation
Illinois EPA – Illinois Environmental Protection Agency
INAI – Illinois Natural Areas Inventory
IWLC- Isolated Waters of Lake County
LCDOT – Lake County Department of Transportation
LCFPD – Lake County Forest Preserve District
LCHD – Lake County Health Department
LCHD-ES – Lake County Health Department – Ecological Services
LCWI- Lake County Wetland Inventory
LiDAR - Light Detection and Ranging
LM – Lake Michigan
LRR- Lateral Recession Rate
MGD – Millions of Gallons Per Day
mIBI- Macroinvertebrate Index of Biotic Integrity
MS4 - Municipal Separate Storm Sewer System
MWRD- Metropolitan Water Reclamation District
NAVD88 – North American Vertical Datum of 1988
NLCD – National Land Cover Database
NO_{2-} - Nitrite
NO_{3-} - Nitrate
NPDES - National Pollutant Discharge Elimination System
NPS – Nonpoint Source
NRCS – Natural Resources Conservation Service
NSWRD – North Shore Water Reclamation District
NWI- National Wetlands Inventory
PCB - Polychlorinated biphenyl
PRW- Potentially Restorable Wetlands
RAP-M - Rapid Assessment Point Method
s.u. – Standard Unit
SCS- United States Department of Agriculture Soil Conservation Service
SEWRPC - Southeastern Wisconsin Regional Planning Commission
SMC – Lake County Stormwater Management Commission
SWPPP – Stormwater Pollution Prevention Plan
TKN – Total Kjeldahl Nitrogen
TMDL – Total Maximum Daily Load
TN – Total Nitrogen
TP – Total Phosphorus
TS - Total Solids
TSS - Total Suspended Solids
USDA – United States Department of Agriculture
USEPA – United States Environmental Protection Agency
USFWS- U.S. Fish and Wildlife Service
USGS – United States Geological Survey
WDO – Lake County Watershed Development Ordinance
WI DNR - Wisconsin Department of Natural Resources
WISDOT - Wisconsin Department of Transportation
WOUS - Waters of the United States
WRAPP- Lake County Wetland Restoration and Preservation Plan
WWTP- Wastewater Treatment Plant

3 WATERSHED CHARACTERISTICS ASSESSMENT

3.1 WATERSHED SETTING

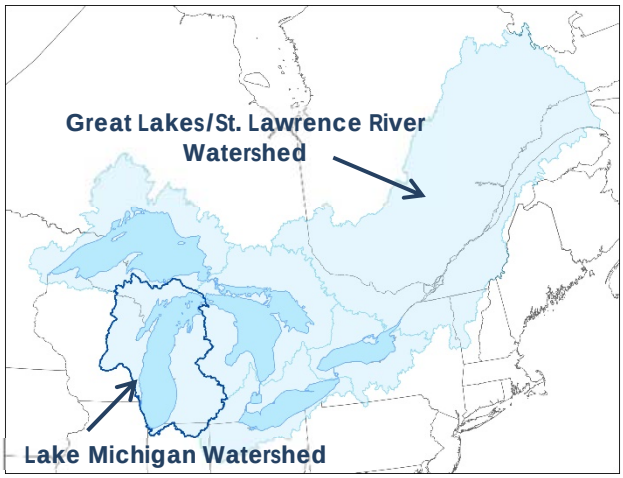


Figure 3-1: Tributary Drainage Area to the Great Lakes and St. Lawrence River Basin

The Lake Michigan watershed is a component of the larger Great Lakes/St. Lawrence River drainage basin (Figure 3-1). Lake Michigan covers approximately 22,300 square miles with a surrounding tributary area of 45,600 square miles (not including the lake). The surface elevation of Lakes Michigan and Huron are equal, and the combined lake basins are fed by flow from Lake Superior through the St. Mary's River. Flow from Lakes Michigan-Huron empties via the St. Clair River into Lake St. Clair, which in turn empties into the Detroit River into Lake Erie. The Niagara River flows from Lake Erie over Niagara Falls (although presently most flow is diverted for hydropower production) and into Lake Ontario. The St. Lawrence River flows from Lake Ontario to the North Atlantic Ocean at the Gulf of St. Lawrence. Lake Michigan is part of a historic water route linking the Great Lakes to the Mississippi River for travel and commercial trade.

This report focuses on the Lake Michigan Watershed-Based Plan planning area within Lake County and extreme northeastern Cook County in Illinois. The planning area includes the entire Lake Michigan watershed in Lake County and the watersheds of 7 ravines draining to Lake Michigan in Cook County, generally north of Tower Rd. All figures and tables focus only on this planning area within the Lake Michigan Watershed in Illinois, hereinafter referred to as the "LM planning area". The LM planning area is approximately 57 square miles (36,488 acres) and comprises about two-thirds of the 85-square miles of Illinois that presently drain to Lake Michigan. About 54 square miles (34,296 acres) of the LM planning area are in Lake County and 2 square miles (1,336 acres) are in Cook County, Illinois. The boundary also includes over 1 square mile (856 acres) of Kenosha County, Wisconsin, which was included in the 2008 Kellogg Creek Watershed-Based Plan. This area is tributary to Dead Dog Creek and the Illinois portion of the coastal plain, but there are no planning updates for the Wisconsin drainage area.

3.1.1 GEOLOGY- THE WATERSHED STAGE

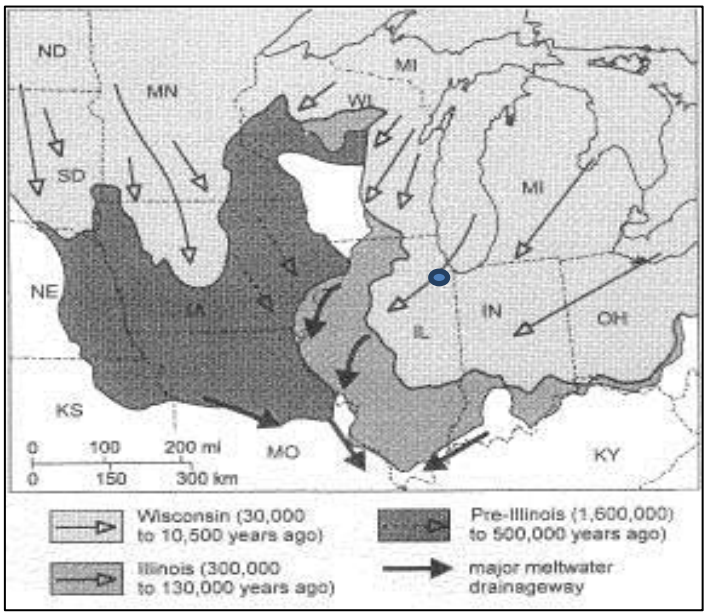


Figure 3-2: Geology of the Midwest
The blue circle represents the approximate location of the planning area. This area has been affected by all three phases of glaciation; most recently the Wisconsin Period (Fryxell 1927).

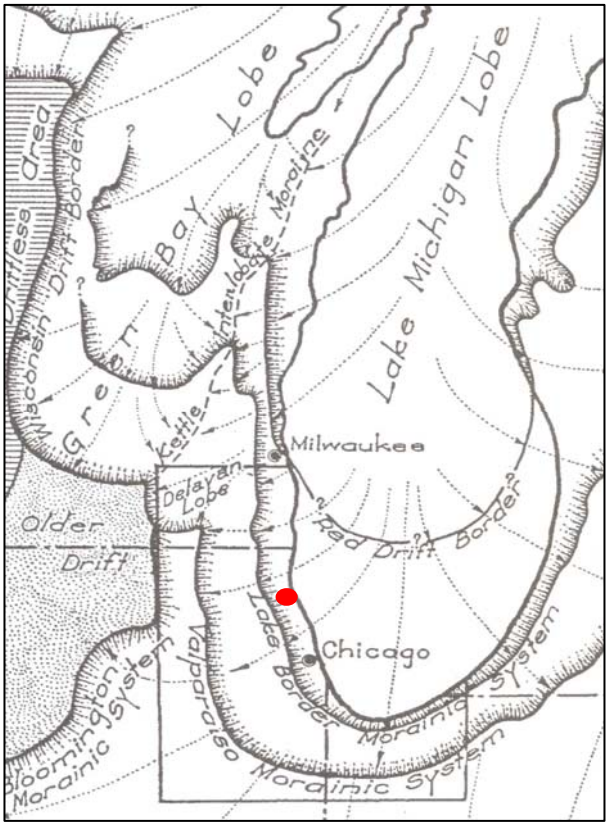


Figure 3-3: Moraine Deposits Developed from Advancing and Retreating Glaciers
The latest deposit is the Wisconsin glacier (Fryxell 1927). The red circle represents the approximate location of the planning area.

The Lake Michigan planning area and the larger watershed are shaped by surficial geology formed during the most recent glacial period known as the Wisconsin stage of the Pleistocene Era or "Ice Age" that began approximately 85,000 years ago and ended 10,000-14,000 years ago. During this time, 80% of Illinois was covered with one or more sheets of glacial ice (Neely and Heister 1987). Although the LM planning area was most likely glaciated repeatedly during the Ice Age, the retreat and re-advance of the Lake Michigan lobe of the North American ice sheet during the Wisconsin glaciation resulted in many of the underlying surficial geologic features present today (Figure 3-2) (Barnhardt et al., 2015). These features are composed of materials deposited less than 30,000 years ago and include **outwash valley deposits, post- and proglacial lake deposits** and **till**. Glacial till deposits range from about 75 feet in thickness in areas near the modern Lake Michigan shoreline to more than 200 feet in the vicinity of the crest of the Highland Park Moraine at the western margin of the planning area (Leetaru et al., 2003). Topographic features in the Lake Michigan Watershed are largely a result of the movement of the Lake Michigan lobe of the ice sheet, which extended as far south as Shelbyville, Illinois. Its retreat resulted

POST- AND PROGLACIAL LAKE DEPOSITS: Layers of silt and clay deposited on the beds of lakes that formed along the retreating face of the ice sheet or within landforms left by its retreat.

OUTWASH: Deposits of sand and gravel carried by running water from the melting ice of a glacier and laid down in stratified deposits.

TILL: Unsorted glacial sediment.

MORAINE: Low ridge formed by till deposited at the margin of a stagnant or retreating glacier.

HUMMOCKY: Extremely irregular surface.

MARL: A loose or crumbling earthy deposit that contains a substantial amount of calcium carbonate.

in the deposition of moraines and till plains. The recessional **moraines** that formed at the ice margin following stages of retreat and re-advance presently appear as concentric belts of low topographic ridges around southern Lake Michigan and the Chicago region and generally parallel to the modern Lake Michigan shoreline (Figure 3-3). Recessional moraines in the LM planning area are oriented along north-south axes, are generally parallel and are known as the Lake Border morainic system. The most prominent of these within the planning area is named the Highland Park Moraine and forms the ridge along which Green Bay Road (Illinois Route 131) runs much of its course. The unsorted till deposited by the glacier between the moraines ranges from relatively flat to **hummocky** and is pock-marked with depressions containing younger peat, muck, **marl**, and organic materials. Meltwater from the retreating glacier was trapped between the recessional moraine and the ice sheet, creating a proglacial lake. This meltwater also carried silt and clay and deposited on the bed of this lake. The relatively flat areas east of Lewis Avenue in Winthrop Harbor, Zion, Beach Park and Waukegan are indicative of the proglacial lakebed.

The geologically-youngest natural landforms in the LM planning area are the among the most prominent and renowned topographic features in the planning area and include the ravine systems, shoreline bluff and the coastal dune and swale plain. Ravine systems of the LM planning area are the result of stream erosion into the Highland Park Moraine and other glacial and post-glacial deposits to its east. Much of this erosion occurred 10,000 – 5,500 years ago during a low-water period of Lake Michigan known as the "Chippewa Phase" during which water levels were as much as 260 feet lower than they are today (Chrzastowski and Frankie, 2000). The erosion of ravines occurred as streams adjusted their gradients to meet the lower lake level.

The shoreline bluffs south of Waukegan reach 90 feet in elevation above Lake Michigan in Highland Park. The bluffs are composed of glacial till and are the result of coastal erosion of the Highland Park Moraine. North of Waukegan, a similar eroded bluff face is located as much as a mile from the present shoreline of Lake Michigan. This bluff line east of Sheridan Road and west of the Union Pacific Railroad is essentially a continuation of the shoreline bluff south of Waukegan and was formed by the same erosive coastal processes, however the formation of the coastal plain from Waukegan north has arrested those processes. Similarly, the shoreline bluff to the south has been largely stabilized in modern times using various techniques.

The coastal plain that extends from Racine, Wisconsin to Waukegan is the youngest natural landform in the planning area. The topography is marked by a field of nearly linear dunes, oriented north by northeast to south by southwest. The dunes formed successively from north to south and west to east over the last 5,500 years as Lake Michigan approached and entered its present lake level phase. Between the dune ridges are linear depressions called swales, which often contain wetlands. The dunes are formed primarily by littoral drift, the net transport of material along the shoreline due to wave action and longshore current. In the region of the coastal plain, most waves (nearly half) approach from a southerly direction. However, the majority of waves greater than about 3 feet (1 meter) in height generally approach from a northerly direction. These taller waves have greater energy and therefore are responsible for the net-southward transport of the materials comprising the coastal plain (Chrzastowski and Frankie, 2000). In Illinois, this landform is referred to as the Zion Beach-Ridge Plain.

The bedrock of the LM planning area is composed primarily of dolomite, sandstone, and shale. The upper layers of bedrock were formed during the Silurian Period that began approximately 440 million years ago. Rock formed during this period is found at the surface only in the northern third of the state. Silurian dolomite

forms the entire bedrock surface of the planning area and can be more than 300 feet thick. This bedrock aquifer provides moderate yields of groundwater, however higher yields can be obtained from the sandstone layers that lie beneath (Leetaru et al., 2003).

3.1.2 The Watershed Over Time

Following the most recent glacial retreat, the Lake Michigan watershed was colonized by a succession of flora, fauna, and human cultures. There is paleontological evidence of Pleistocene megafauna and archaeological evidence of prehistoric human occupation in the vicinity of the planning area shortly after deglaciation, supported by the discoveries of mammoth remains near Kenosha, Wisconsin and Wadsworth, Illinois. Marks on the bones, which date are more than 13,000 years old, indicate butchering and provide an estimate of the temporal extent of human presence in the area (Milwaukee Public Museum, No date).

Prior to European settlement of the area, Native American cultures including the Potawatomi, Sauk, Fox, Ojibwe, and Ottawa occupied the region. Lake Michigan gets its name from the Algonquian "michi-gami", meaning "great water" (McCafferty, 2008). Lake Michigan and the relatively short and low portage between the Chicago and Des Plaines Rivers have been important transportation links for centuries. Following the Native American peoples who used this route, Marquette and Jolliet utilized the Chicago portage and apparently visited the area that would become Waukegan in 1673 (Best, 2005). Waukegan and Winnetka, while native American place names, were ascribed by European settlers. Waukegan was initially called Little Fort, but the name was changed by residents in 1849 to Waukegan, the Potawatomi equivalent to "fort" or "trading post" (Best, 2005). Winnetka was named when it was platted by land speculators and is thought to mean "beautiful place" (Fraterrigo, 2005).

Green Bay Road (Illinois Route 131) is aligned along and replaced an ancient Native American trail that ran from the Chicago River in what is now downtown Chicago, along what is now Clark Street (on a beach ridge formed during higher lake levels), and eventually north along the ridge of the Highland Park moraine to what is now Milwaukee and ultimately, to Green Bay (Sulski, 1997). In 1832, the Federal government created the predecessor to the modern Green Bay Road, the Green Bay Military Road or Green Bay Post Road, which enabled communication between Fort Dearborn (Chicago) and Fort Howard (Green Bay) using this route.

NATURAL COMMUNITY: An assemblage of plants and animals interacting with one another and their physical environment.

PRAIRIE: An extensive flat or rolling area dominated by grasses. Prairie grasslands once covered much of central North America.

SAVANNA: A type of woodland characterized by open spacing between trees and intervening grassland.

WETLAND: Low-lying land that is saturated or inundated with water to an extent that plants that are adapted to living in wet conditions grow there. Marshes, swamps, bogs, sloughs, wet prairie, rivers, streams, ponds and the edges of lakes are typically classified as wetlands.

MARSH: Low-lying land area that is usually saturated or inundated with surface or ground water that is dominated by herbaceous plants.

WOODLANDS: Land that is mostly covered with trees and shrubs.

BEACH RIDGE: Wave-deposited or wave swept ridge running parallel to the shoreline.

The landscape of the Lake Michigan planning area prior to European settlement included numerous **natural communities** (e.g., beach ridge, oak **woodlands and prairies)**, some of which were adapted to periodic disturbance by fire. There is large body of literature on the fire ecology of some of these natural communities and it is likely that fires resulted from both natural causes (lightning) as well as ignition by Native American peoples (Fahey et al., 2015). Vegetation maps of the Lake Michigan Watershed Planning Area at the time of European settlement indicate there were natural communities such as oak woodlands, **savannas**, upland forest, **wetlands/marsh,** prairie and **beach ridge** as shown in Figure 3-4.

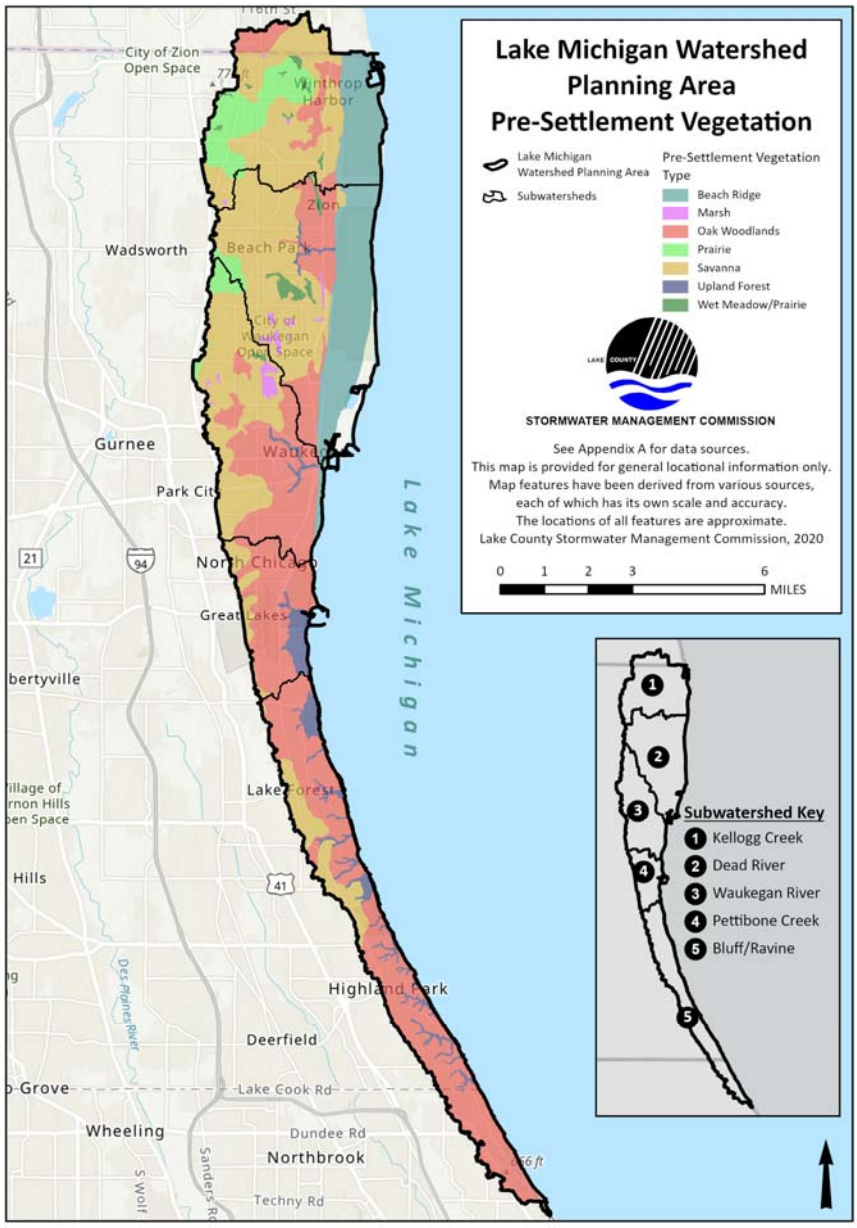


Figure 3-4: Pre-European Settlement Plant Communities

Most of the planning area at that time was a landscape of predominantly savanna and oak woodlands, in contrast with other watersheds to the west, which exhibited a combination of savanna and prairie. Savanna dominated the northern half of the watershed while oak woodlands dominated the southern half. Prairie was found along the watershed divide in the northern end of the planning area while upland forest was found along the ravine systems. Marshes and other wetlands were interspersed throughout, though not as commonly as in adjacent watersheds to the west. The exception to this pattern was along the lake plain in the northern end of the planning area where the beach ridge community was (and still is) located. These natural communities likely worked in unison to infiltrate and treat precipitation, which minimized surface runoff leaving the watershed. The natural drainage system was largely composed of marsh/prairie and ravines, whose stream **channels** have enlarged as urban development has expanded in the planning area. Examples of Pre-European settlement landscapes in the LM planning area are shown in Figure 3-5.

CHANNEL: Any river, stream, creek, brook, ditch, gully, ravine, swale or wash, into which surface or groundwater flows, either perennially or intermittently.

Following European settlement in the early 1800's, much of the LM planning area was altered. After initial conversion for agriculture, much of the southern portion of the watershed was developed into purpose-built suburbs. Industrial growth spurred development of Waukegan and North Chicago, while Zion was incorporated in the early 20th Century as a utopian community. Winthrop Harbor was incorporated around the same time as Zion, while Beach Park was incorporated in 1989. Both Beach Park and Winthrop Harbor developed largely as residential communities.

Figure 3-5: Pre-European Settlement Landscape

A portion of the northern part of the LM planning area remains agricultural, but much of the landscape has been converted to urban (primarily residential) land use. As noted above, several of the communities in the southern half of the watershed were developed as early commuter suburbs along Sheridan and Green Bay Roads and the railroads. Industrial land uses are still prevalent in Waukegan and North Chicago, particularly from Waukegan Harbor south. North of Waukegan Harbor, Illinois Beach State Park, Lake County Forest Preserves at Lyons Woods and Spring Bluff, and numerous local public parks create a significant network of open space lands. Suburban development steadily increased after World War II, peaking in the 1990s and carried through much of the 2000 decade, resulting in newer communities mixing with the older established areas of the watershed.

The LM planning area includes several high quality and remnant natural areas and a significant portion centered on the coastal beach ridge plan is identified as a "Conservation Opportunity Area" in the Illinois Wildlife Action Plan. Many ravine systems harbor locally rare plant communities and there are numerous sites (such as the Openlands Lakeshore Preserve) where non-governmental landowners and/or stewards have preserved or restored natural communities within the watershed. For more information on the LM planning area natural communities see Section 3.10.

3.1.3 Watershed Size

The Lake Michigan watershed, in its entirety, covers 45,600 square miles in Illinois, Indiana, Michigan and Wisconsin, while the lake surface itself encompasses an additional 22,300 square miles, almost one third of the entire watershed area (USEPA, 2000). Illinois has, by far, the smallest tributary area of any State in the Lake Michigan basin, with less than 100 square miles. The present watershed area in Illinois is much reduced resulting from the diversion of 673 square miles of the watersheds of the Chicago and Calumet Rivers through the Chicago Sanitary and Ship Canal and the Cal-Sag Channel in the first part of the 20th Century (Healy, 1979;

Pescitelli, 2013). The diversion ultimately flows into the Des Plaines River in the Mississippi River watershed. The area included in this watershed plan ("planning area") covers approximately 57 square miles (36,488 acres), in Lake and northern Cook Counties in Illinois (Figure 3-6). About 1 square mile of Kenosha County, Wisconsin is tributary to Illinois waters and is included in the mapped planning area. The planning area accounts for nearly two-thirds of the Illinois portion of the Lake Michigan watershed, but is less than 1% of the total Lake Michigan watershed land area.

3.1.4 Watershed Location

The LM planning area generally drains from west to east from the crest of the Highland Park moraine through more than 50 stream and ravine systems to Lake Michigan. As mentioned above, much of the landscape can be characterized as suburban or urban, particularly south of Waukegan. The watershed planning area includes 5 subwatersheds (as defined by the Lake County SMC) in eastern Lake County, Illinois, and extends southward into extreme northeastern Cook County, Illinois to the end of the ravine drainages at approximately Tower Road in Winnetka.

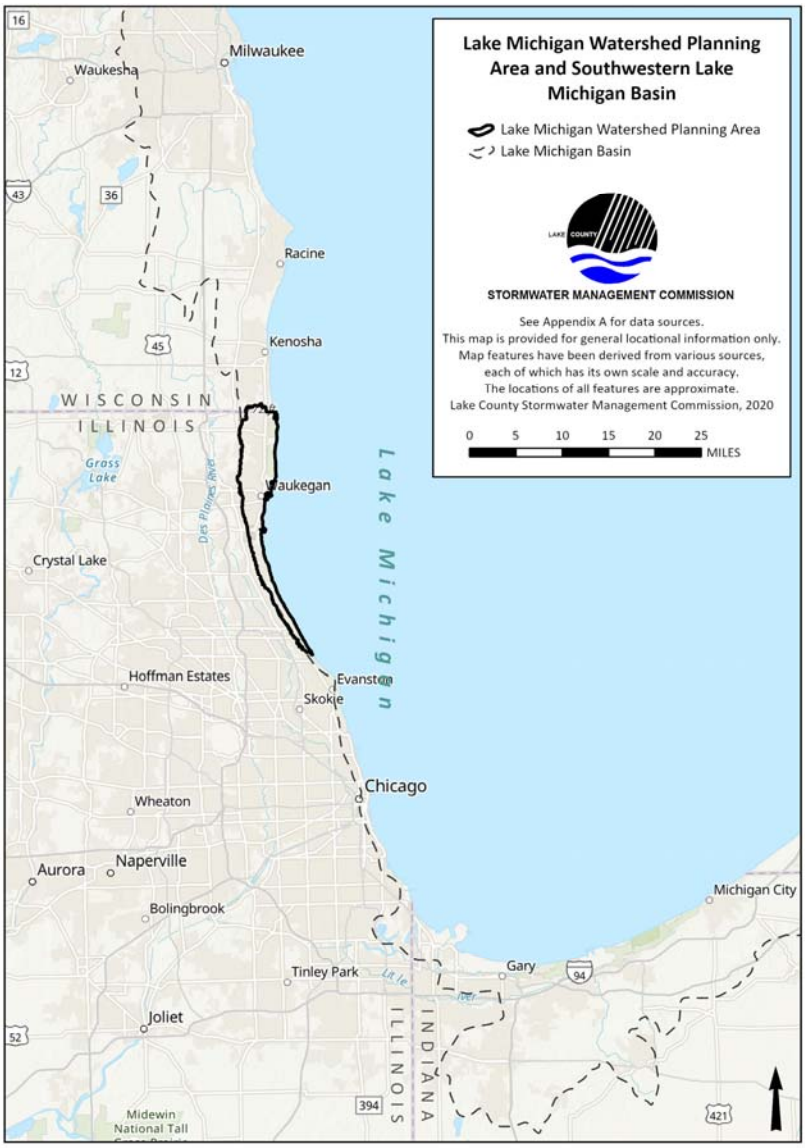


Figure 3-6: Lake Michigan Watershed Planning Area Location

3.1.5 Geographic Boundaries

The boundaries of the LM planning area are primarily defined by topographic features formed by the retreat of the continental ice sheet during the Wisconsin glaciation and subsequent geologic processes, however constructed physical features as well as political boundaries also affect the delineation of the planning area. The total area of the Lake Michigan watershed in Illinois has decreased due to drainage and diversion of runoff and streamflow from the Chicago and Calumet River watersheds, however, because these diversions are located outside of the planning area, they are not discussed further. The remainder of this section discusses the boundaries of the 57-square mile LM planning area located in Lake County and northeastern Cook County, Illinois.

Generally, the LM planning area and subwatershed boundaries used in this report are similar to those used for previous watershed-based plans, however they are modified from the Lake County subwatershed boundaries delineated by the SMC in the early 1990s. This modification is the result of the availability of higher-resolution topographic data as well as additional stormsewer data, both of which yield more accurate hydrologic mapping. This data has resulted in some changes to watershed and sub-watershed boundaries relative to earlier mapping produced by SMC. The western boundary of the LM planning area was derived from a GIS-based flow direction model as well as stormsewer data and therefore diverges from the eastern boundaries of the Des Plaines and North Branch Chicago River watersheds used in plans for those respective watersheds. The eastern boundary is based on the mapped shoreline of Lake Michigan, which is constantly in flux and therefore represents an approximation. The southern boundary of the planning area is based on the GIS-derived southern limits of the southernmost ravine drainage (Ravine 1C) and the southern limit of the adjacent catchment draining directly to Lake Michigan.

There are three evident landscape features associated with the LM planning area and subwatershed boundaries: Lake Michigan, the Highland Park moraine and the numerous ravine systems. The eastern boundary of the LM planning area is defined as the shoreline of Lake Michigan. The crest of the Highland Park moraine defines nearly the entire western boundary of the planning area. North of Illinois Route 132 (Grand Avenue), the Highland Park moraine forms the boundary between the Des Plaines River watershed and the Lake Michigan watershed. Illinois Route 131 (Green Bay Road) generally marks the watershed divide, which is also a sub-continental watershed divide between the drainages of the St. Lawrence and Mississippi Rivers. South of Illinois 132, the Highland Park moraine is the boundary between the North Branch Chicago River and Lake Michigan watersheds. Prior to the diversion of the Chicago River away from Lake Michigan, the Highland Park moraine was a subwatershed divide south of Illinois 132, since water on either side would eventually flow into Lake Michigan. However, since the diversion of the Chicago River into the Mississippi River basin, the Highland Park moraine forms the boundary of the Lake Michigan watershed and is a sub-continental divide along the entire boundary of the planning area. There are five subwatersheds identified in the planning area that have been used as the basis for previous studies and local project work. From north to south, they are Kellogg Creek, Dead River, Waukegan River, Pettibone Creek, and Bluff/Ravine. The more than 50 stream and ravine networks in the planning area have traditionally been aggregated into these 5 subwatersheds for efficiency. Individual catchments for each ravine and stream segment, as well as direct drainage to Lake Michigan, has been mapped for this document, but these 5 subwatershed designations will continue to be used for general discussion in this document. Figure 3-7 depicts the LM planning area landscape features and subwatershed boundaries.

NOTEWORTHY: HYDROLOGIC UNIT CODE (HUC)

A hydrologic unit can accept surface water directly from upstream drainage areas, and indirectly from associated surface areas such as remnant, noncontributing, and diversions to form a drainage area with single or multiple outlet points. Hydrologic units are only synonymous with classic watersheds when their boundaries include all the source area contributing surface water to a single defined outlet point. Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to twelve digits based on the six levels of classification:

- 2-digit HUC first-level (region)
- 4-digit HUC second-level (subregion)
- 6-digit HUC third-level (accounting unit)
- 8-digit HUC fourth-level (cataloguing unit)
- 10-digit HUC fifth-level (watershed)
- 12-digit HUC sixth-level (subwatershed)

The USGS has developed a coding system for hydrologic systems that is used throughout the United States by numerous federal, state, and local agencies and organizations. Each watershed unit is assigned a Hydrologic Unit Code (HUC), with the number of digits in each code dependent upon watershed size and its relationship to larger watersheds to which it belongs (if any). Table 3-1 includes the applicable HUCs for the LM planning area and Figure 3-8 shows all of the HUC 12 watersheds in the LM planning area.

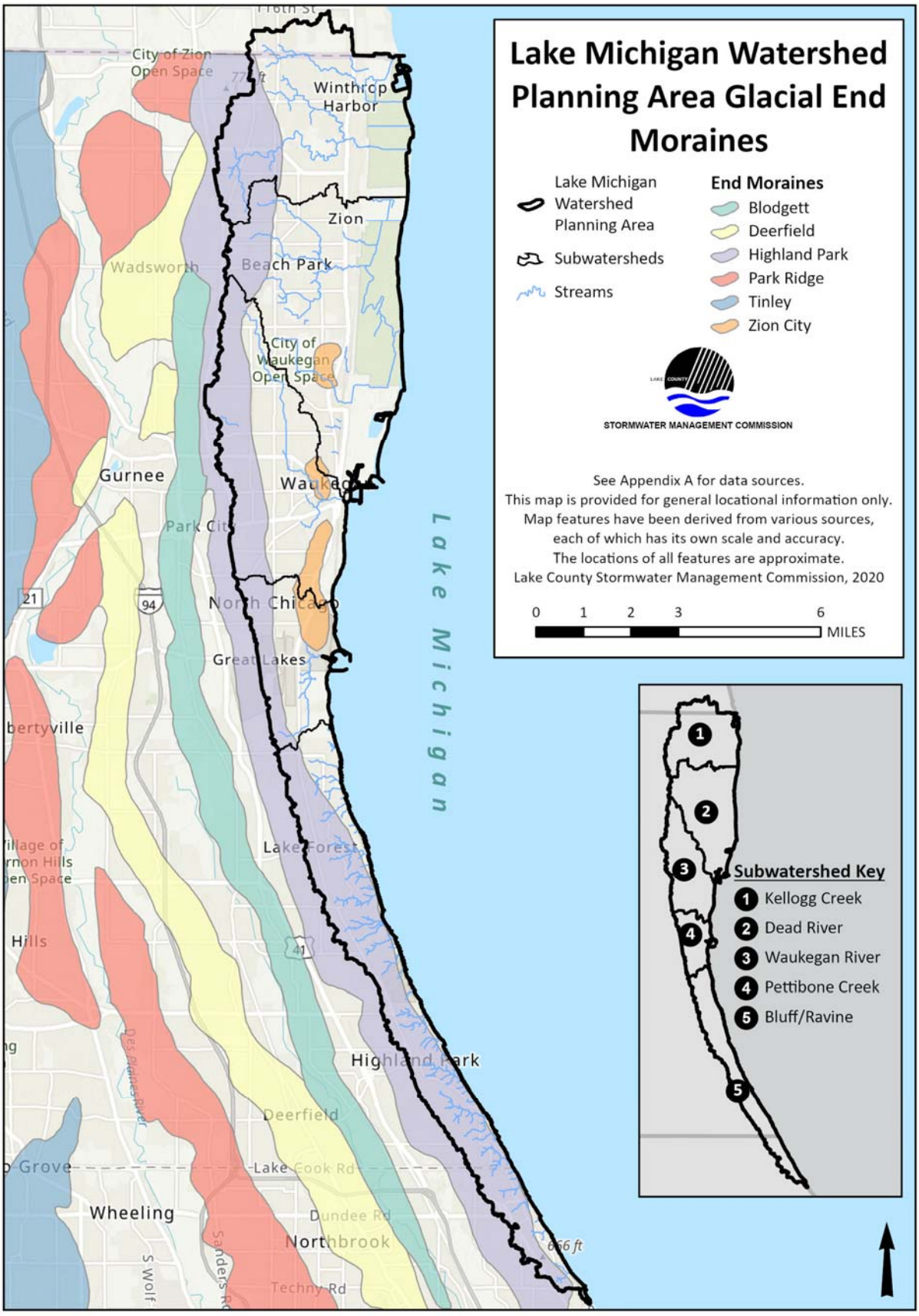


Figure 3-7: Lake Michigan Watershed Planning Area Glacial Moraines

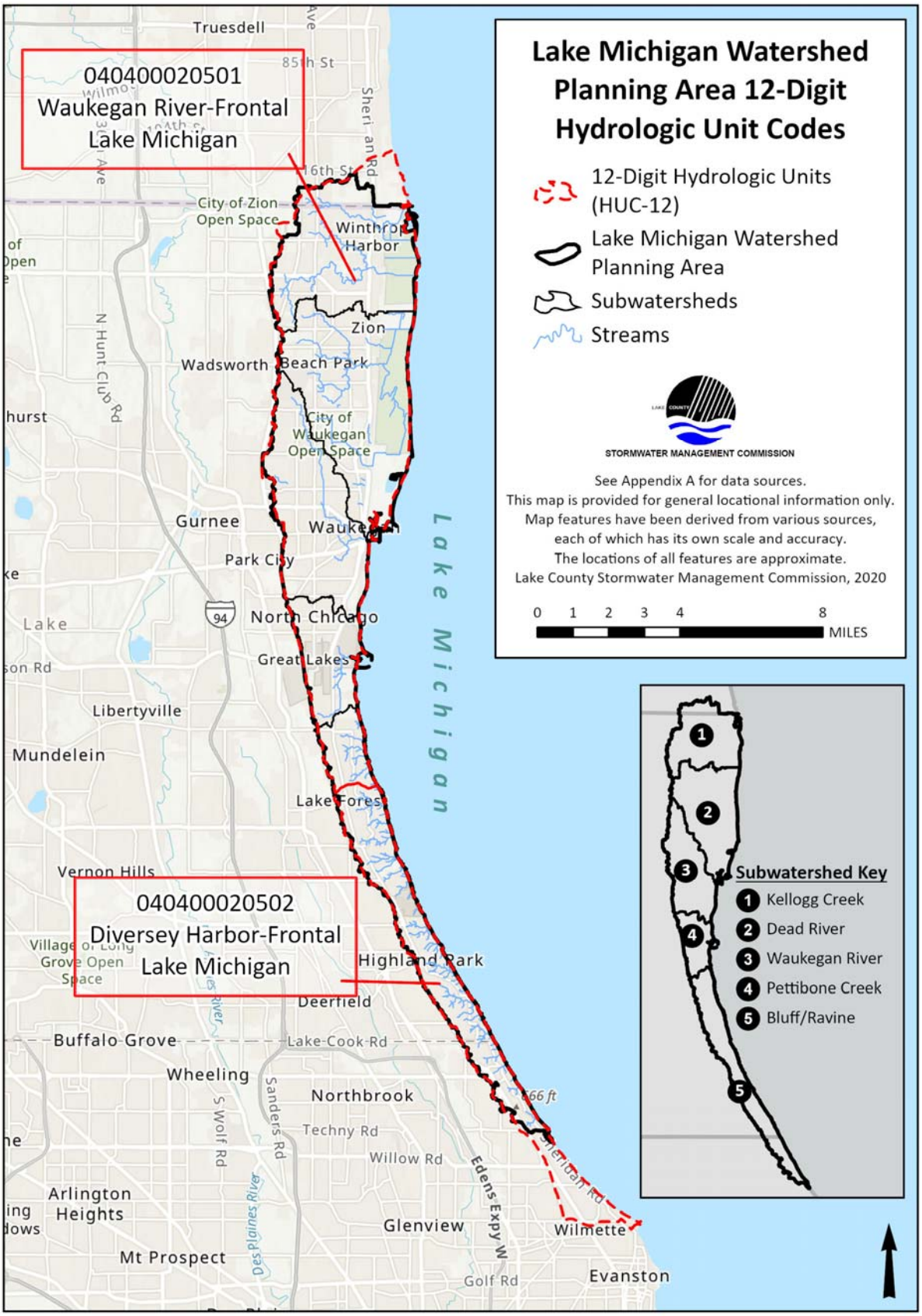


Figure 3-8: Lake Michigan Watershed Planning Area HUC 12 Watersheds

Table 3-1: Hydrologic Units and HUC Designations for the Planning Area

HUC	HUC NAME	HUC LEVEL (NUMBER OF DIGITS)	CORRESPONDING PLANNING AREA SUBWATERSHED NAME(S)
04*	Great Lakes	HUC 2	All
0404*	Southwestern Lake Michigan	HUC 4	All
04040002*	Pike-Root	HUC 8	All
040400020501	Waukegan River-Frontal Lake Michigan	HUC 12	Kellogg Creek, Dead River, Waukegan River, Pettibone Creek, Bluff/Ravine
040400020502*	Diversey Harbor-Frontal Lake Michigan	HUC 12	Bluff/Ravine

*The LM planning area includes portion(s) of these hydrologic units

3.1.6 CLIMATE AND PRECIPITATION

The LM planning area is situated midway between the western Continental Divide and the Atlantic Ocean, and it is often underneath the polar jet-stream, which creates low pressure systems that bring clouds, wind and precipitation to the region. The LM planning area's mid-latitude position results in seasonal variations in the regional solar energy input causing warm summers and cold winters. The LM planning area is classified as a humid continental climate, meaning the coldest month has an average temperature below freezing, the warmest month has an average temperature above 71.6 degrees Fahrenheit, and there is not a pronounced wet or dry season. The presence and density of buildings, roads, parking lots and industrial activities also influence the climate in comparison to surrounding rural areas, often increasing the temperature (National Climatic Data Center, 2009).

Lake Michigan influences the climate of the planning area. Lake Michigan's large thermal mass moderates both the heat of the summer and the cold of the winter. While weather conditions in the LM planning area on the western shore of Lake Michigan area are not affected to the same degree as areas on the eastern shore (e.g., increased winter cloudiness and significantly higher snowfall) data suggests that winter temperatures are slightly warmer and summer temperatures slightly cooler than areas located further inland to the west. Lake effect snowfall occurs within the watershed, though not as frequently as it occurs in western Michigan and northern Indiana due to the prevailing westerly wind patterns.

CLIMATE NORMALS: 30-year averages of climatological variables including temperature and precipitation.

The Illinois State Climatologist Office and the National Climatic Data Center track **climate normals** for numerous sites in Illinois. Only one reporting site, Waukegan Regional Airport, is within the LM Planning area. Additional sites located along the perimeter of the planning area at Kenosha, Wisconsin, Waukegan (IL 120) and the Chicago Botanic Garden are included here as they "frame" the watershed and provide some additional context. The Kenosha station has the additional benefit of proximity to Lake Michigan, within 0.5 miles, while the other stations are at least one mile from the shore and may indicate how Lake Michigan influences recent climatic trends. The monthly mean temperature and precipitation normals from 1981-2010 for these four sites are summarized in Table 3-2 and Table 3-3, respectively.

Table 3-2: Mean Monthly Temperature Normals (Degrees Fahrenheit), 1981-2010

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN.
Kenosha (WI)	23.4	27.0	35.5	45.1	54.5	64.9	71.4	70.7	63.2	51.8	40	27.5	48.0
Waukegan (IL 120 W of IL 131)	22.5	26.5	35.9	46.9	56.8	67.0	72.3	71.3	63.4	51.6	39.8	27.3	48.5
Waukegan Regional Airport	23.0	25.9	35.2	46.1	55.7	65.7	71.3	69.9	62.2	51.0	39.1	27.5	47.8
Chicago Botanic Garden	23.7	27.4	36.8	47.3	57.3	67.3	72.8	71.8	64.1	52.1	40.8	28	49.2

(Illinois State Climatologist's Office & National Climatic Data Center, 2010) Data provided by the Illinois State Climatologist's Office, a part of the Illinois State Water Survey (ISWS) located in Champaign and Peoria, Illinois, and on the web at www.isws.illinois.edu/atmos/statecli.

Table 3-3: Mean Monthly Precipitation Normals (Inches), 1981-2010

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN.
Kenosha (WI)	1.76	1.39	2.57	3.77	3.94	3.63	3.63	4.05	3.47	2.99	2.82	2.12	36.14
Waukegan Regional Airport	1.39	1.66	2.32	3.48	4.01	3.88	3.88	3.83	3.46	2.92	2.76	2.00	35.59
Chicago Botanic Garden	1.81	1.73	2.37	3.58	4.01	3.67	3.63	4.77	3.48	3.24	3.06	2.40	37.75

(Illinois State Climatologist's Office & National Climatic Data Center, 2010) Data provided by the Illinois State Climatologist's Office, a part of the Illinois State Water Survey (ISWS) located in Champaign and Peoria, Illinois, and on the web at www.isws.illinois.edu/atmos/statecli.
Note: Monthly precipitation normal data not available for Waukegan (IL 120 W of IL 131)

As indicated by the climate classification for the region, winters are cold, with average temperatures below freezing while summers are relatively warm or hot. The influence of Lake Michigan on local temperature is evident at Kenosha. Compared to the other stations in Table 3-2, Kenosha, despite being the northernmost site, has the warmest mean temperatures in January and February. It also has the coolest mean temperatures from April through June, as the sites further from the lake warm more quickly during Spring. The warmest site year-round appears to be Chicago Botanic Garden.

Illinois exhibits wide variability in annual precipitation. Average annual precipitation varies by more than 2 inches among sites in or near the LM planning area (the mean of the 30-year normals shown in Table 3-3 is 36.5 inches). Despite the spatial variability of annual precipitation, seasonal variations in precipitation are similar between sites within or near the planning area, with relatively wetter summers and drier winters. Annual snowfall totals are typically higher than annual precipitation, due to the low density of snow compared to liquid water. The wetter summer months are the result of thunderstorm-derived precipitation. These storm events tend to distribute rainfall variably and it is not uncommon for heavy rainfall to occur in some parts of the LM planning area while other parts receive little to no precipitation. The spatial variability of this precipitation source may account for some of the overall variation in the normal rainfall amounts across the sites in Table 3-3.

The variety of climate and weather conditions creates diverse watershed conditions. For example, during winter months the watershed experiences precipitation in the form of snow, this precipitation may affect flooding if there is a sustained warm period following heavy snow accumulation. Likewise, rain on frozen ground or snow melt in spring combined with rain may also result in stream and localized flooding.

During spring, the planning area will usually experience warming temperatures and wet weather conditions. In contrast, during fall, the watershed experiences cooling temperatures and precipitation frequency decreases. There have been prolonged "wet" periods of above-average annual precipitation, most recently during the 1970s and 1980s and the late 2010s. There have also been major multi-year droughts in the 1930s and 1950s. Illinois has rainstorms which cause 40 or more flash-floods annually, each with several inches of rainfall in a few hours, in localized areas. In July 2017, this type of rainstorm delivered up to 8 inches of rainfall in less than 24 hours in some portions of the watershed planning area, resulting in localized flash flooding. Longer-term weather patterns across the Great Lakes watershed resulted in record high water levels during the mid-1980s and Lake Michigan approached or exceeded those levels again in 2019 and 2020. Record low water levels occurred in 1964 and in 2012 and 2013.

3.1.7 Spatial Relationship of Water Resources

Water resources (streams, lakes, and wetlands) in the LM planning area tend to be spatially distributed by the underlying surface topography and later anthropogenic influences (ditching, mining, filling, tile drainage, storm sewer networks, etc.). In general, the tributary stream systems of Kellogg, Bull and Pettibone Creeks and the Waukegan River tend to be longer and **dendritic** (Figure 3-9). Ravine stream systems south of Pettibone Creek tend to be shorter although several have numerous tributary branches. The north-south trending Highland Park Moraine causes all stream systems to flow eastward and have short overall lengths relative to streams in adjacent watersheds (e.g., Des Plaines and Chicago Rivers). Wetlands were and are most common in the dune and wetland swale systems along the coastal lake plain north of Waukegan Harbor. Above the Lake Michigan bluff line, many wetlands

Dendritic Stream Systems: In a dendritic system, there are many contributing streams (similar appearance to the branches of a tree), which are then joined together into the tributaries of the main river. They develop where the river channel follows the slope of the terrain.

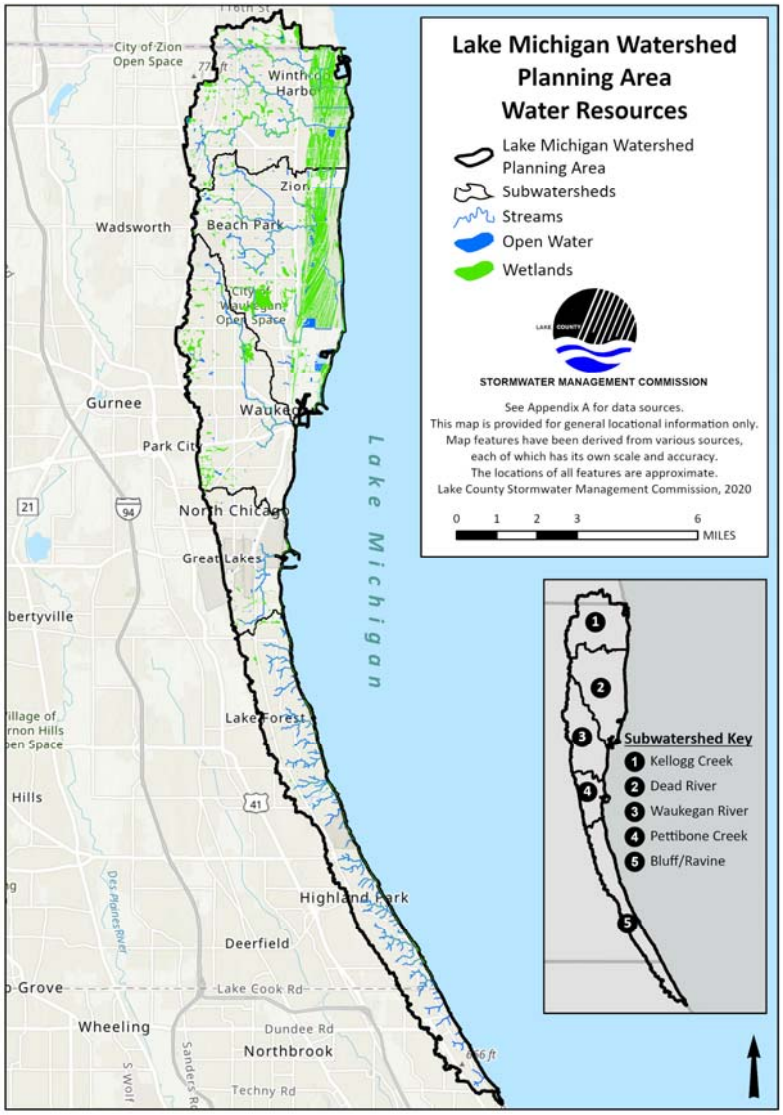


Figure 3-9: Water Resources in the Lake Michigan Watershed Planning Area

have been drained or filled to allow for land development. Sizeable remnant wetlands still exist at and adjacent to Lyons Woods, along the Waukegan River (Yeoman Creek) north of Glen Flora Avenue, and along the upper branches of Kellogg Creek. Ditching and channelization to facilitate drainage has occurred throughout the coastal lake plain and in the headwaters of Kellogg and Bull Creeks and the Glen Flora Tributary.

Aside from Lake Michigan, there are no natural lakes in the LM planning area. The few "lakes" that exist in the planning area are constructed, either as excavated quarries and borrow pits (e.g. Sand Pond) or as impounded depressions (e.g. Dugdale Lake).

Wetlands cover approximately 3,584 acres of the LM planning area. Wetlands are not uniformly distributed throughout the planning area, owing to watershed topography and the density and age of development relative to nearby watersheds. In many locations' wetlands have been drained, filled, or converted to another land cover type. While wetlands are typically lower in elevation than the immediately surrounding lands, they are found in a variety of topographic positions, ranging from isolated depressions on the crests of moraines to gently sloping drainageways across the landscape, to interdunal swales along the Lake Michigan coastal plain. Similarly, wetlands can be found throughout the hydrologic network of the watershed. Geographically isolated wetlands are located in depressions surrounded by uplands and do not have regular surface connections to other water bodies or wetlands. Headwater wetlands are located along the upper-most stream reaches, while larger wetland complexes (such as the coastal plain) often have larger tributary areas and may have more regular hydrologic connections to other water features. Streams and Lake Michigan typically have wetlands of some form associated with them. Descriptions of more common wetland types can be found in Section 3.11.

Ponds and detention basins are the most numerous constructed water features in the LM planning area and can be found throughout the landscape. Ponds have historically been constructed by excavation or impoundment for a variety of purposes including agriculture, borrow pits, wastewater treatment, wildlife management, fish/fishing, golf course features, and residential aesthetics. Constructed ponds are often associated with a natural source of hydrology such as a wetland or stream but may also be located in upland areas that would otherwise be dry. Detention basins, a specific type of pond, are associated with urban and suburban development beginning in the second half of the twentieth century. Detention basins can be wet (ponds), wetland-bottom, or dry and are specifically designed to reduce peak runoff discharges from developed sites. Prior to watershed development regulations, detention ponds were constructed in both upland and wetland locations. Regulations now discourage or prohibit the construction of stormwater detention facilities in wetlands, which are typically constructed in upland areas in more recent developments. Detention basins are a component of the designed drainage system and stormwater infrastructure, and typically have a direct or eventual hydrologic connection to rivers, streams, lakes, and wetlands through stormsewers, drainage ditches, and other detention basins. The stormsewer network and detention basin inventory are further described in sections 3.14 and 3.15, respectively.

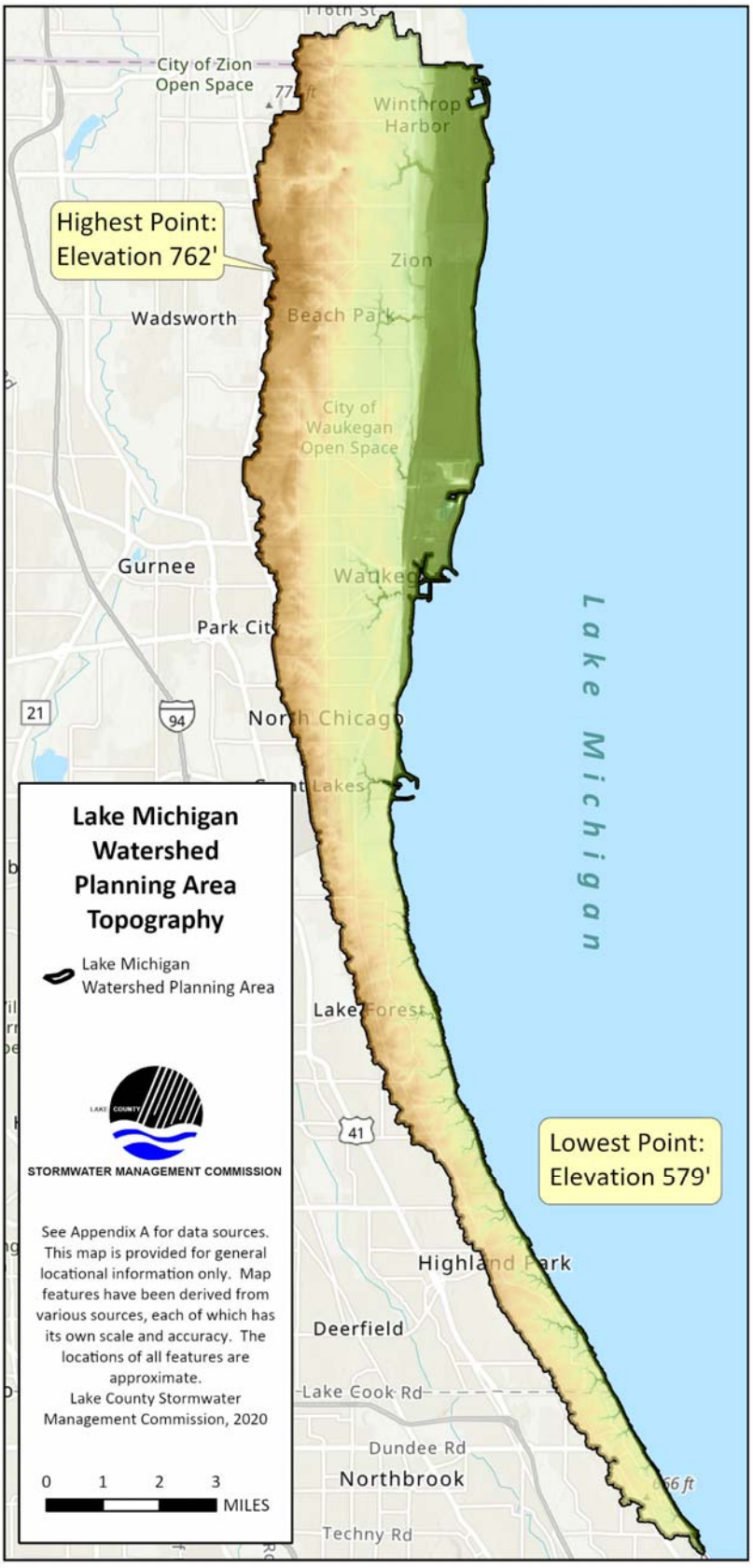


Figure 3-10: Lake Michigan Watershed Planning Area Topography

3.2 TOPOGRAPHY

Topographic data is used in the planning process to develop floodplain maps, water quality models, flood mitigation recommendations, catchments, **DEMs** and regionally significant depressional storage areas.

Figure 3-10 represents the LM planning area boundary and topography from a compilation of three data sets: the 2010 Kenosha County DTM, 2017 Lake County DTM, and 2008 Cook County DTM. All tributary streams drain into Lake Michigan from the west. The Waukegan River has a lengthy stretch of north-south flow as the stream circumvents the Zion City moraine.

The lowest elevation in the LM planning area is 579 feet (NAVD88) above mean sea level at the shoreline of Lake Michigan (long-term average). The highest elevation in the LM planning area is 762 feet (NAVD88) above mean sea level within Thunderhawk Golf Course in Beach Park on the western edge of the planning boundary.

DIGITAL ELEVATION MODELS (DEMS): A digital cartographic/geographic dataset of elevations in x, y, z coordinates. DEMs are derived from hypsographic data (contour lines) and/or photogrammetric methods using USGS 7.5-minute, 15-minute, 2-arc-second (30- by 60-minute), and 1-degree (1:250,000-scale) topographic quadrangle maps.

3.3 SOIL

Deposits left during and after the last glacial period are the raw materials of present soil types in the LM planning area. A combination of physical, biological and chemical variables, such as topography, drainage patterns, climate, erosion and vegetation, have interacted over centuries to form the variety of soils found in the watershed. These soils were formed under wetland, forest and prairie plant communities, and they are identified by a name associated with each series or class of soils with similar characteristics. A soil series name generally is derived from a town or landmark in or near the area where the soil series was first recognized, although naming conventions vary by county.

Soils affect water-holding capacity, erosion potential and **infiltration** capabilities of the land. Soil characteristics indicate the way soils in an area will interact with water in the environment, and therefore are useful in watershed planning. These soil characteristics can help guide where restoration or certain BMPs may be successful and where there may be constraints to project implementation.

The USDA NRCS has produced detailed (current) soil surveys for Lake, Kenosha and Cook Counties. These soil surveys contain information regarding the physical and chemical properties, as well as, information regarding human use for each soil series and **soil phase** in the watershed. The soil surveys were utilized to extract detailed soil data for the LM planning area. Table 3-4 includes the major soil series (more than 3% of the planning area) present in the LM planning area and the area occupied by each.

INFILTRATION: That portion of rainfall or surface runoff that moves downward into the subsurface soil.

SOIL PHASE: A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Table 3-4: Major Soil Types in the LM Planning Area

SOIL SERIES	SOIL SERIES NAME	ACRES	HYDROLOGIC SOIL GROUP	HYDRIC RATING (Y/N/Partial)	% OF WATERSHED
530	Ozaukee	12,585	C	N	34.5%
698	Grays	3,203	C	N	8.8%
802/805	Orthents	2,774	C/D	N	7.6%
298	Beecher	1,991	C/D	Partial*	5.5%
232	Ashkum	1,987	C/D	N	5.5%
4777	Adrian	1,761	A/D	Y	4.8%
531	Markham	1,481	C	N	4.1%
697	Wauconda	1,340	B/D	N	3.7%
839	Udipsamments	1,270	A	N	3.5%
706	Boyer	1,169	A	N	3.2%
153	Pella	1,133	B/D	Y	3.1%
Total, Major Soil Types		*30,694*	--	--	*84.1%*
All Other Soil Types		*5,794*	--	--	*15.9%*
	TOTAL:	**36,488**			**100%**

***Partial Hydric: At least some components of the soil are hydric.**

3.3.1 HYDRIC SOILS

Hydric soils form in areas of the landscape that are seasonally or permanently saturated with water. These conditions are conducive to the growth of **hydrophytic vegetation**; therefore, the presence of hydric soils is indicative of present or historical wetland conditions or may indicate areas of depression. Areas with hydric soils and drained hydric soils that do not presently contain wetlands may be utilized for wetland restoration.

HYDRIC SOILS: A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. These conditions alter the physical, biological and chemical characteristics of the soil, thereby influencing the species composition or growth, or both, of plants on those soils.

HYDROPHYTIC VEGETATION: Plants that tolerate or require saturated soil or standing water.

Figure 3-11 maps hydric soils in the LM planning area. Hydric soils cover approximately 6,214 acres (17%), while non-hydric soils cover about 30,274 acres (83%) of the watershed. Hydric soils are concentrated on the coastal lake plain within the dune-swale complex north of Waukegan Harbor. Hydric soils are also well-distributed in the northern end of the planning area. In the Bluff-Ravine subwatershed, hydric soils are not as common, but where they exist are generally upstream of ravine systems on the crest of the Highland Park moraine. Unmapped pockets of hydric soils likely occur in ravines, particularly where groundwater flow creates saturated soil conditions ("seeps").

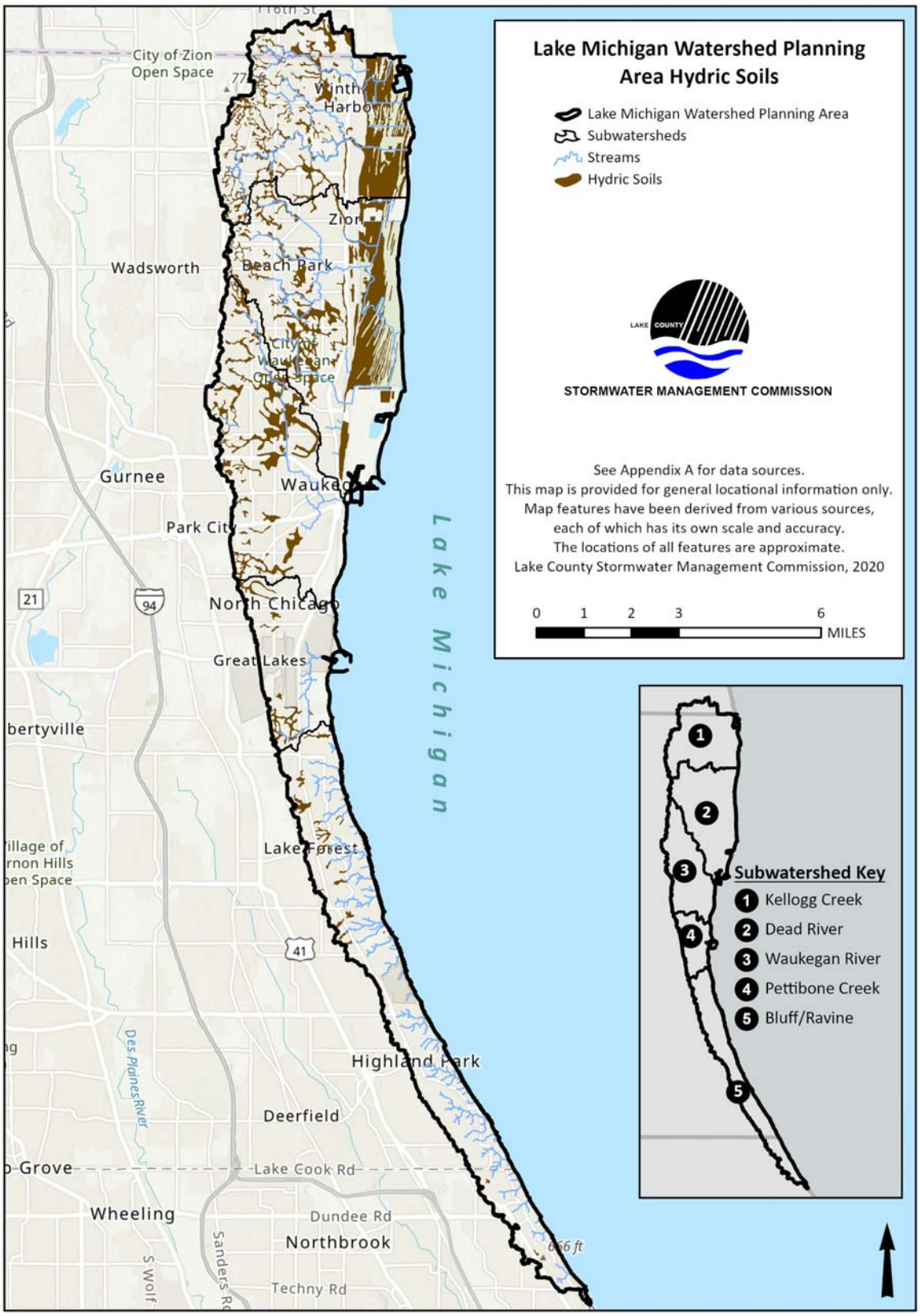


Figure 3-11: Hydric Soils in the Lake Michigan Watershed Planning Area

3.3.2 Soil Erodibility

Soil erodibility is largely determined by the tendency of soil particles to become detached and mobilized by water and the ground slope. Highly erodible soils in the watershed are highly susceptible to erosion by water due to a combination of slope, particle size, and cohesion, but they are not prone to erosion by wind. Highly erodible soils are considered in the watershed-based plan because erosion from these soils can potentially end up in surface waters, contributing to high amounts of total suspended solids and sediment accumulation in streams and lakes.

The movement or loss of soil resulting from erosion may also cause damage to property as buildings and infrastructure are undermined. The removal and disposal of sediment accumulated in lakes, ponds, detention ponds and the storm drainage system can be an expensive maintenance activity.

NOTEWORTHY: Soil Erodibility and Pollution

Soil characteristics, especially the tendency of soil particles to become detached and mobilized by water runoff, have considerable impact on water quality. For instance, sandy soils are more prone to erosion than clayey soils, although pollutants are more likely to be attached to clay particles.

It is important to map highly erodible soils because they represent areas that may contribute large amounts of total suspended solids (TSS) to streams and lakes. High TSS levels can result in stream degradation as a result of silt deposition and pollution. Some pollutants frequently attach to TSS particles and wash into lakes and streams, polluting the water and sediments and decreasing water clarity.

In the LM planning area, 2,706 acres (7%) are classified by NRCS as highly erodible soil. These soils are largely associated with ravine slopes and the bluff line along Lake Michigan. Although highly erodible soils do not cover a significant proportion of the watershed area, their association with ravines and the Lake Michigan bluff suggests that they have the potential to negatively impact water quality. Highly erodible soils do not include hydric soils. Erodible soils along lakeshores, stream channels, and disturbed land surfaces (e.g. active croplands and construction sites) are most susceptible to erosion (Figure 3-12). Stabilization practices near shorelines and stream channels could substantially reduce erosion. Additionally, land developers are required to follow the NPDES and the Lake County WDO regulations regarding soil erosion and sediment control measures during construction.

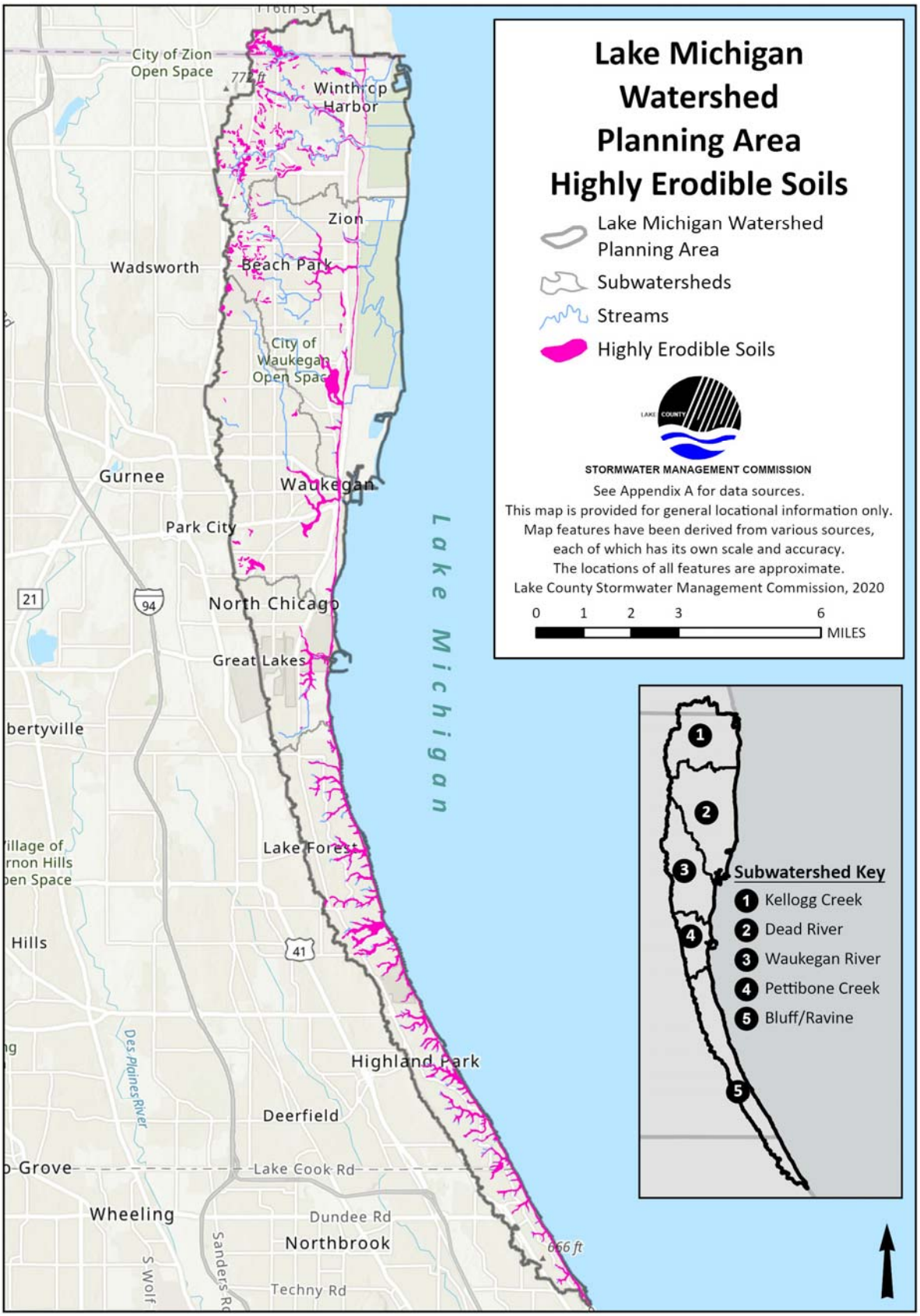


Figure 3-12: Highly Erodible Soils – Lake Michigan Watershed Planning Area

3.3.3 Hydrologic Soil Groups

The NRCS broadly classifies soils based on their drainage characteristics into four different hydrologic soil groups (HSGs). The classification considers soil texture, drainage description, runoff potential, infiltration rate and transmission rate (permeability). Group A is comprised of the most permeable soil types (i.e., sandy soils) and has the least runoff potential while group D includes the most impermeable soil types (i.e. clay) and has the greatest runoff potential. HSGs should be considered when identifying potential stormwater best management practice and retrofit opportunities. The main HSGs are separated into four categories: A, B, C, and D; see Table 3-5 for HSG permeability and surface runoff characteristics and Figure 3-13.

Table 3-5: Hydrologic Soil Groups and Corresponding Attributes

HSG	SOIL TEXTURE	DRAINAGE DESCRIPTION	RUNOFF POTENTIAL	INFILTRATION RATE	TRANSMISSION RATE	SPATIAL PATTERN IN WATERSHED	ACRES (% OF WATERSHED)
A	Sands (and Gravels), Loamy Sand, or Sandy Loam	Well to Excessively Drained	Low	High	High (greater than 0.30 in/hour)	Post-glacial beach deposits near Lake Michigan	2.5 (<1%)
B	Silt Loam or Loam	Moderately Well to Well Drained	Moderate	Moderate	Moderate	Coastal plain, tableland above Lake Michigan bluff line	11,817 (32%)
C	Sandy Clay Loam	Somewhat Poorly Drained	High	Low	Low	Ravines, Lake Michigan bluff line, Upland areas	17,809 (49%)
D	Clay Loam, Silty Clay Loam, Sandy Clay Loam, Silty Clay, or Clay	Poorly Drained	High	Very Low	Very Low	Coastal plain and lake plain	2,307 (6%)
						TOTAL:	**31,936**

There are also areas of the watershed with combined soil groups such as: HSG-A/D, HSG-B/D and HSG-C/D and N/A – water, landfills, urban areas, etc. (totaling 12.5% of the watershed). These combined soil groups are a combination of soil types and exhibit a combination of permeability and surface runoff characteristics. The soil characteristics can change depending on saturation, slope and time of year. If these soils can be adequately drained (with underground drain tiles or other techniques), then they are assigned to dual hydrologic soil groups based on their saturated hydraulic conductivity and the water table depth when drained. The first letter applies to the drained condition and the second to the undrained condition.

Runoff curve numbers classify the runoff potential of different soil types with different types of land cover. The curve numbers are a function of HSGs, land cover or usage and antecedent soil moisture conditions. The curve number value ranges from 0 - 100. Lower runoff curve numbers indicate low runoff potential, while larger runoff curve numbers indicate increased runoff potential. Overall, soils in the LM planning area are somewhat poorly-drained to well-drained.

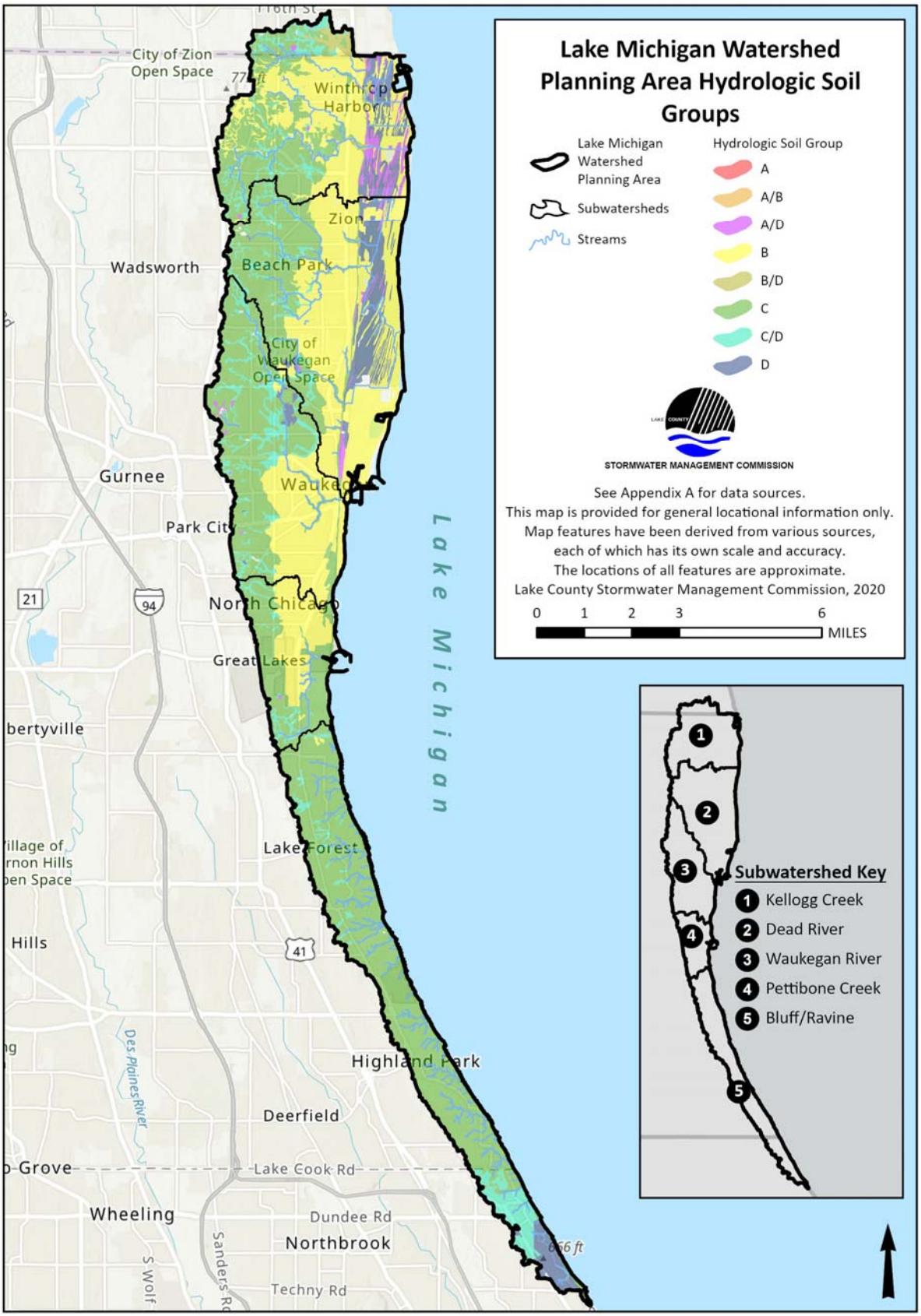


Figure 3-13: Hydrologic Soil Groups – Lake Michigan Watershed Planning Area

3.4 WATERSHED HYDROLOGY

Hydrology is the study of the occurrence, circulation, distribution, and properties (e.g., quality) of water. Earth's water is constantly being cycled between oceans, the atmosphere, and land through different pathways at different rates. The movement of the earth's water through these various pathways is called the hydrologic cycle. Although the hydrologic cycle is inherently complex, one can gain a general understanding of how it works by envisioning the following process. Clouds form over the ocean due to the evaporation of water. Wind carries the clouds ashore where they produce rain. Excess rainfall (i.e., stormwater runoff) flows into lakes, rivers, wetlands, and groundwater. Over time, water stored in the lakes, rivers, and wetlands, either evaporates back into the atmosphere or flows back into the ocean, beginning the cycle anew.

Primarily, hydrology involves studying the flow of water through the various pathways that can be found within a geographical area. These pathways connect every component of the landscape and can generally be divided into surface and ground water hydrology. Surface water includes all hydrologic pathways at or above the earth's surface, including precipitation, evapotranspiration and surface water flow. Ground water includes all hydrologic pathways below the earth's surface including infiltration, interflow, and groundwater flow. Primary areas of study within the science of hydrology include developing methods for directly measuring flows through the various hydrologic pathways and developing and/or applying models for estimating flows through the various hydrologic pathways. When applied to a watershed, hydrology typically involves studying the flow of water between the surface water hydrologic pathways that connect the air, land, lakes, rivers, and wetlands found within the watershed.

Hydrology and hydraulics are terms used to describe the effects of precipitation including infiltration, runoff, and evaporation on land surfaces that drain to streams and lakes. Hydrologic studies of watersheds usually typically determine how topography and human modifications affect water volumes in watersheds, subwatersheds and smaller catchments. Hydraulics is the branch of science that deals with practical application of liquid in motion.

NOTEWORTHY: HYDROLOGIC CYCLE

The hydrologic cycle describes the continuous movement of water on, above, and below the surface of the earth. The total mass of water on earth remains relatively constant over time, but the amount of water in each of its three primary states, solid (ice), liquid (water), and gas (water vapor), is variable depending on a wide range of climate-related variables. Water moves from one state to another through various hydrologic pathways, such as evaporation, transpiration, condensation, precipitation, infiltration, surface water flow, and interflow (shallow groundwater flow). As water moves between states, energy is exchanged, which affects temperatures on the surface of the earth. For example, when water evaporates, energy is absorbed, and the surface of the earth is cooled through the process of evaporative cooling. When water condenses, energy is released, and the surface of the earth is warmed. These energy exchanges occur on a global scale, are powered by solar energy and have a significant influence on the earth's climate, as does water in its three primary states. For example, water vapor absorbs and emits energy back toward the surface of the earth; however, when water vapor forms into clouds, it reflects a significant amount of solar radiation back into space. Water and the hydrologic cycle are responsible for earth's mild climate and makes life possible on earth.

3.4.1 SUBWATERSHEDS

Table 3-6 and Figure 3-14 display the major **subwatersheds** in the LM planning area. There are 5 subwatersheds ranging in size from approximately 5 square miles (Pettibone Creek) to 16 square miles (Dead River) with an average size of 11.4 square miles.

SUBWATERSHED: The area within a larger watershed that drains to a single point, such as a tributary stream or lake. Large watersheds are comprised of smaller subwatersheds.

The subwatersheds in the LM planning area are smaller than the corresponding USGS HUC 12 boundaries in size and therefore do not correspond with the USGS HUC boundaries. The subwatersheds in the LM planning area were originally derived from subwatershed boundaries delineated by Lake County in the late 1980s. These boundaries have been altered as more detailed data, such as remapping from floodplain studies and higher resolution topographic data, has become available. The Cook County portion of the planning area was delineated to include all tributary areas to ravines, ending at approximately Tower Road in the Village of Winnetka.

Table 3-6: Lake Michigan Planning Area Subwatersheds

SUBWATERSHEDS (Inset Map #)	SQUARE MILES	ACRES	% OF WATERSHED
Bluff/Ravine (5)	12.1	7,755	21%
Dead River (2)	16	10,231	28%
Kellogg Creek (1)	12.5	8,023	22%
Pettibone Creek (4)	5	3,211	9%
Waukegan River (3)	11.4	7,268	21%
TOTALS:	**57**	**36,488**	**100%**

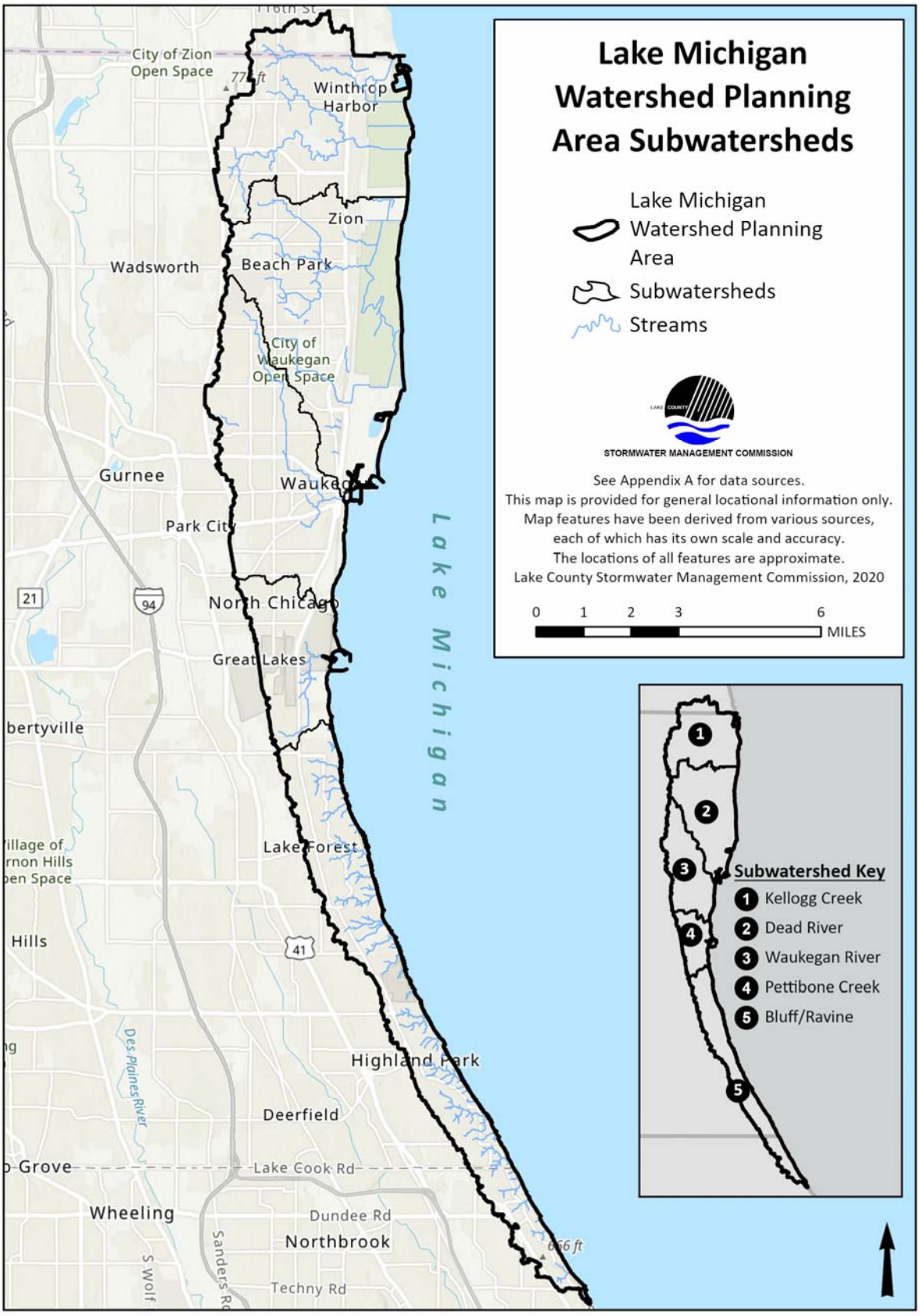


Figure 3-14: Lake Michigan Watershed Planning Area Subwatershed Map

3.4.2 CATCHMENT

The LM planning area consists of 184 catchments ranging in size from 11 to 1,286 acres, with the average (mean) size of 198 acres. As part of the watershed delineation discussed in Section 3.4.1, the LM planning area was divided into catchments using 2011 LiDAR data from Kenosha County, WI, 2017 LiDAR data from Lake County, IL, and 2008 LiDAR data from Cook County, IL. The LiDAR datasets were used to produce a seamless raster and basins were developed using models in ArcGIS. The boundaries developed in GIS were further augmented and refined using the latest aerial photography as well as other datasets such as water, roads, and culverts. The catchments represent surface drainage but account for storm sewers where possible. Table 3-7 and Figure 3-16 summarize the delineated catchments by subwatershed.

Table 3-7: Subwatershed Catchment Compilation Data

SUB-WATERSHEDS (Inset Map #)	NUMBER OF CATCHMENTS	TOTAL ACRES	AVERAGE (MEAN) ACREAGE OF CATCHMENTS
Bluff/Ravine (5)	60	7,755	129
Dead River (2)	54	10,231	189
Kellogg Creek (1)	25	8,023	321
Pettibone Creek (4)	16	3,211	201
Waukegan River (3)	29	7,268	251
TOTAL:	**184**	**36,488**	**198**

CATCHMENTS: Small unit of a watershed or subwatershed that is delineated and used in watershed planning efforts because the effects of impervious cover are easily measured, there is less chance for confounding pollutant sources, boundaries have fewer political jurisdictions, and monitoring/mapping assessments can be done in a relatively short amount of time. See Figure 3-15.

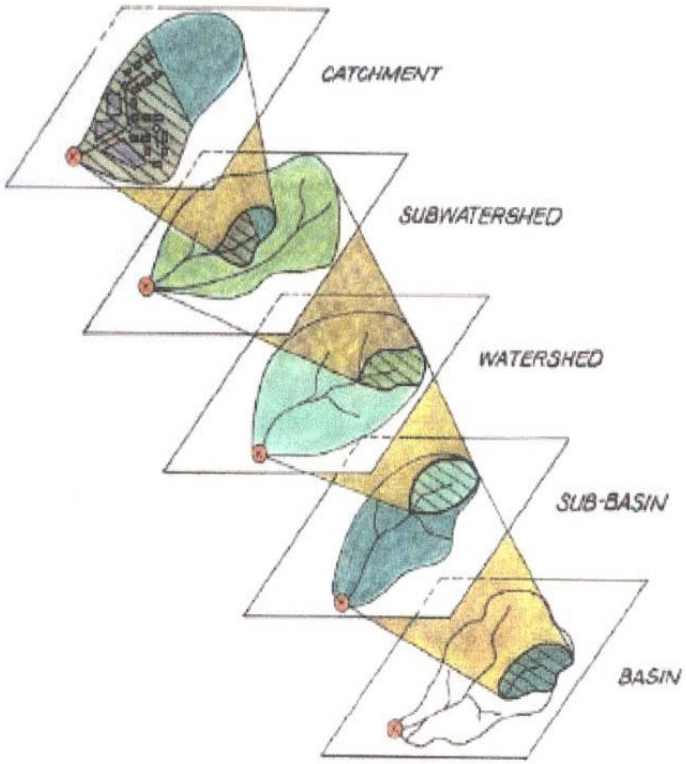


Figure 3-15: Defining Watershed, Subwatershed, and Catchment/Subwatershed Management Unit Boundaries

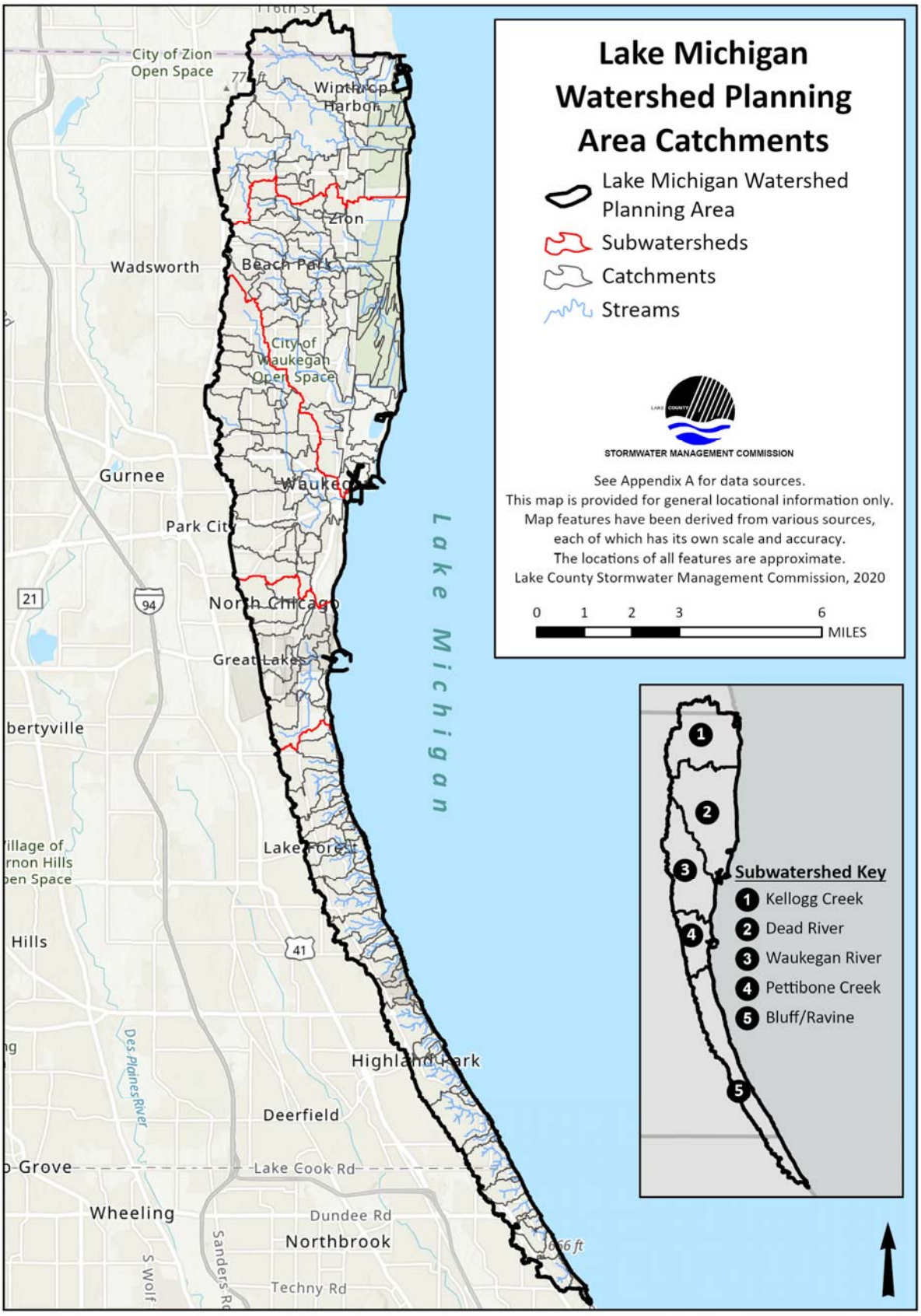


Figure 3-16: Lake Michigan Watershed Planning Area and Catchment Map

3.4.3 STREAM HYDROLOGY

Discharge (volume of flowing water) in the LM planning area is derived from three general sources of flow:

- baseflow and interflow, the discharge of groundwater and shallow subsurface flow to streams, wetlands and waterbodies;
- overland flow and surface runoff, discharge of water flowing over the ground surface as a result of direct precipitation, snowmelt, ground saturation, or other sources of water. Flow in streams, surface waters and wetlands is included in this category; and
- treated effluent and return flow, discharge of water that has been used for some human activity such as treated wastewater from public water supplies or industrial uses, cooling and process water, and irrigation. Treated effluent and return flow from industrial processes and irrigation are not significant sources of overall streamflow in the planning area. Return flows from cooling do occur directly to Lake Michigan at the Midwest Generation/NRG plant in Waukegan.

Under pre-settlement landscape conditions, discharge during much of the year in all streams within the watershed was driven by baseflow, interflow, and tributary flow (runoff) from smaller streams and wetlands. Runoff from precipitation had a less pronounced effect on stream discharge compared to present conditions, though it probably accounted for a significant component of discharge in the Bluff/Ravine subwatershed and the shorter ravines in the Kellogg Creek and Dead River subwatersheds. As the LM planning area has developed, baseflow and interflow has almost certainly been reduced with surface runoff contributing a greater proportion of the volume of annual discharge (see Section 4.1). Tiling, channelization of streams, and ditching of wetlands and low-lying areas lowered shallow groundwater levels in some areas. Consequently, stream hydrology in the LM planning area has been extensively altered since European settlement.

Streams in the LM planning area have small tributary watersheds relative to the stream systems in adjacent watersheds (e.g., Chicago River, Des Plaines River). The topography of the planning area also dictates that these stream systems are steeper relative to those in adjacent watersheds. These factors result in streams that respond quickly to precipitation runoff. Stream response in urbanized areas of the watershed is augmented by efficient surface drainage from impervious surfaces, curb and gutter systems on roadways and stormsewer systems. Figure 3-17 depicts the hydrographs for Bull, Kellogg, and Dead Dog Creeks in comparison to the hydrograph of the Des Plaines River at Russell Road in response to a precipitation event in June 2007. The Lake Michigan tributary streams respond quickly to runoff relative to the Des Plaines River, which drains more than 10 times the area of any of the Lake Michigan streams. Bull Creek, in particular, has very pronounced rising and falling limbs of the hydrograph as discharge related to the runoff event increases and then decreases rather quickly. This type of "flashy" hydrology is a common characteristic of the streams in the Lake Michigan watershed planning area.

There are numerous **stream classification systems and characterization terms** in use by the community of engineers, watershed and natural resource managers, and researchers engaged in watershed planning. This plan recognizes the utility of these systems and terms but does not specify or apply them to streams in the planning area. In particular, the concepts of stream order and headwater streams are recognized as potentially significant to determining the feasibility of attaining certain water quality thresholds (such as indices of biotic integrity). The LM planning area likely includes many streams that meet one or more definitions of "headwater", specifically as "headwater"-sized tributaries Lake Michigan. The spatial position of

streams, permanence of flow, and the effect of anthropogenic changes to watershed and stream hydrology will require additional scrutiny and agreement among watershed managers, policy-makers, and regulators if these types of classifications are intended to define future watershed goals.

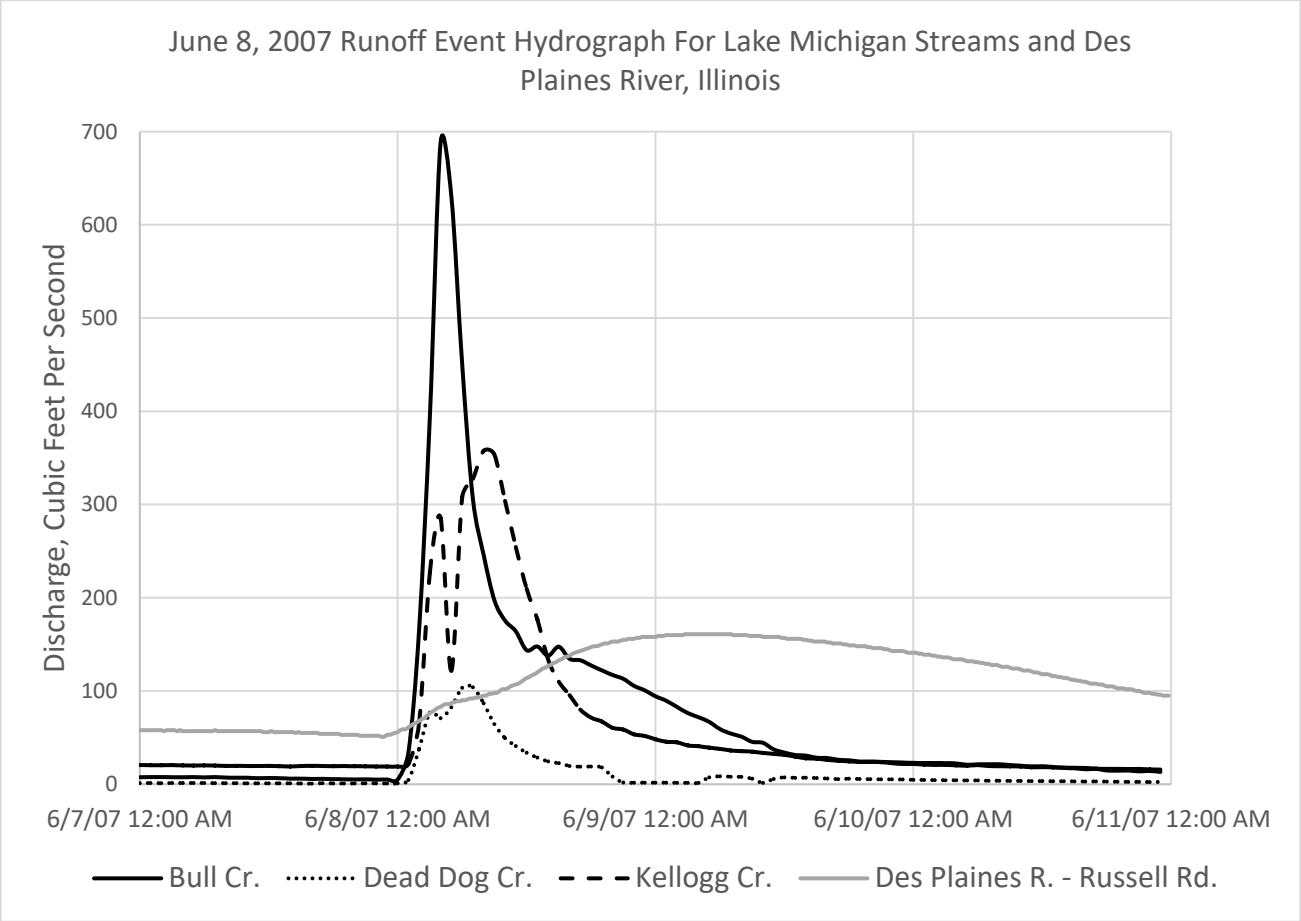


Figure 3-17: Hydrographs for Lake Michigan tributary streams and Des Plaines River for June 8, 2007 runoff event

NOTEWORTHY: STREAM CLASSIFICATION

Numerous classification systems and characterizations for streams exist and are generally based on drainage area size, stream network pattern, stream channel morphology, spatial relationship to other streams, and discharge characteristics.

Stream order is a common method used to classify streams (usually hierarchically) within a drainage network but is dependent on underlying cartography. Similarly, it is generally agreed by hydrologists, ecologists, and watershed managers that "headwater" streams are of significance, though there is not a universal definition. Fritz, Johnson, and Walters (2006) have summarized the issue of stream order and headwater characterization well:

> "Stream order is a measure of stream position within a drainage network system (Horton 1932, Strahler 1945, Shreve 1966). Headwater streams are typically considered to be first- and second-order streams (Gomi et al. 2002, Meyer and Wallace 2001), meaning streams that have no upstream tributaries (i.e., "branches") and those that have only first-order tributaries, respectively. Use of stream order to define headwater streams is problematic because stream-order designations vary depending upon the accuracy and resolution of the stream delineation (Mark 1983, Hanson 2001). Lack of agreement among maps with different mapping resolution is common when identifying headwater stream[s], determining stream order, and determining total stream [length]... The smallest headwater streams are not designated as channels on topographic maps and may be difficult to discern in aerial photographs. Thus, stream order designations based on maps are typically underestimated (Hughes and Omernik 1983), prompting some investigators to characterize such streams as zero-order streams (e.g., Brown et al. 1997). Most "blue line" designations on topographic maps are not based on field studies, but are "drawn to fit a rather personalized aesthetic" of the cartographer (Leopold 1994) or drawn with standards that exclude a proportion of headwater channels (Drummond 1974)."

3.5 WATERSHED JURISDICTIONS AND DEMOGRAPHICS

3.5.1 UNITS OF GOVERNMENT

The Lake Michigan watershed has numerous political jurisdictions, including municipal, township, and other local, state, and federal elective and agency jurisdictions. The boundaries of these jurisdictions are seldom drawn to coincide with watershed boundaries. Ninety percent of the Lake Michigan watershed is incorporated, within 12 municipalities (totaling 32,879 acres). The City of Waukegan is the largest municipality by area with 9,650 acres, or about 26.4% watershed coverage. The next largest municipality is City of Zion which occupies 4,803 acres, or about 13.2% of the watershed. Ten percent of the Lake Michigan watershed is unincorporated, made up of 7 townships (totaling 3,608 acres). Benton Township is the largest township by area with 2,084 acres, or about 5.7% watershed coverage. The next largest township is Waukegan Township with 1,277 acres, or about 3.5% of the watershed. Municipalities and townships in the Lake Michigan watershed are shown in Figure 3-18 and Table 3-8.

Table 3-8: Municipalities and Townships in the Lake Michigan watershed

NAME	ACRES	% OF THE WATERSHED
Beach Park	3,151	8.6%
Benton Township	2,084	5.71%
Glencoe	1,145	3.1%
Highland Park	2,464	6.8%
Highwood	299	0.8%
Lake Bluff	1,636	4.5%
Lake Forest	2,685	7.4%
Moraine Township	86	0.24%

NAME	ACRES	% OF THE WATERSHED
North Chicago	3,016	8.3%
Pleasant Prairie	856	2.3%
Shields Township	162	0.44%
Waukegan	9,650	26.4%
Waukegan Township	1,277	3.50%
Winnetka	191	0.5%
Winthrop Harbor	2,984	8.2%
Zion	4,803	13.2%
TOTAL:	**36,488**	**100%**

Note: Kenosha, Wisconsin (1) and Cook County, Illinois (2) towns/townships are not accounted for on the table because unincorporated areas of these towns/townships do not occupy any land within the Lake Michigan watershed planning area.

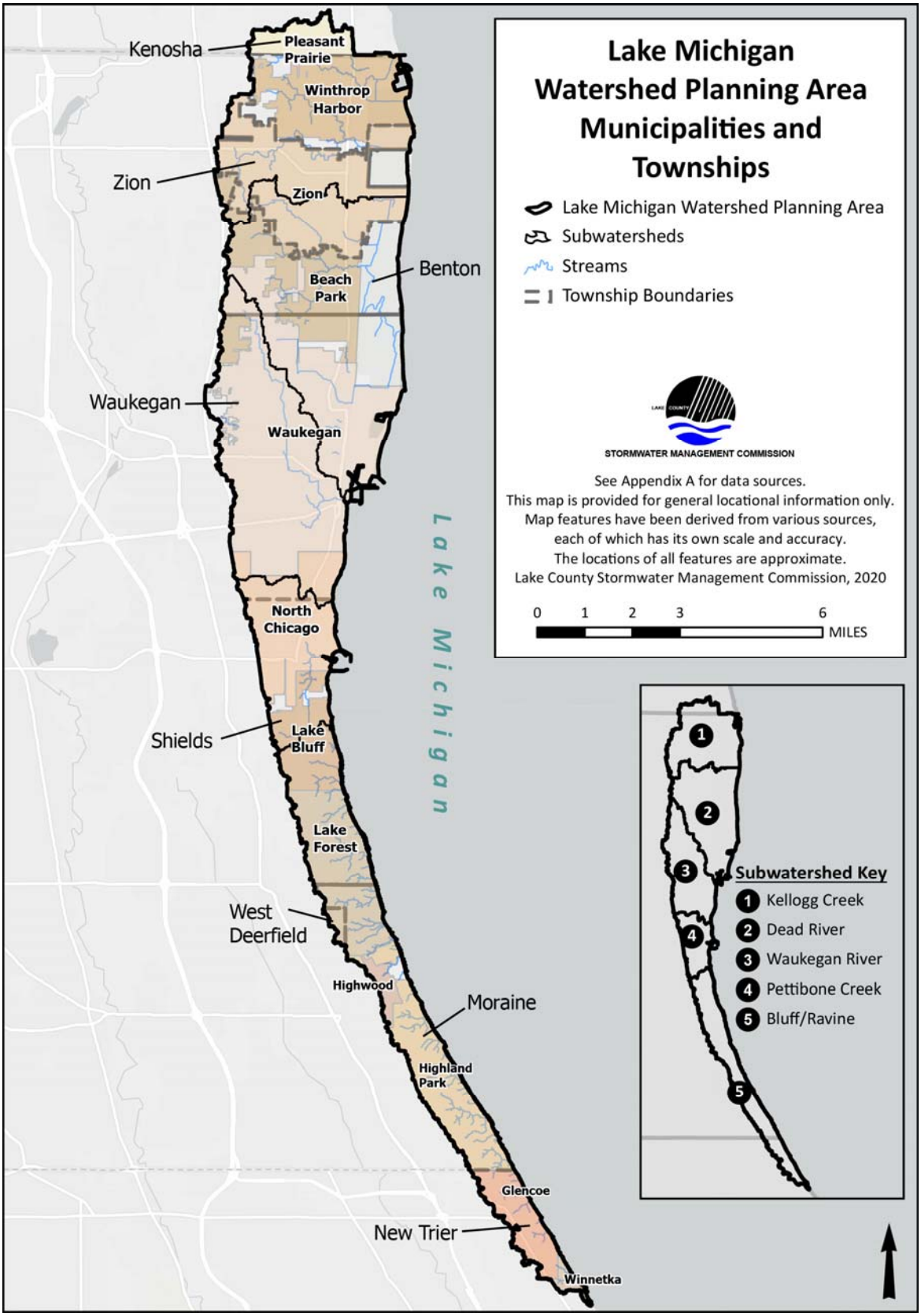


Figure 3-18: Lake Michigan Municipalities and Townships

3.5.2 Roles and Responsibilities of Each Unit of Government

One of the challenges of creating and implementing watershed-based plans is that a watershed usually includes multiple jurisdictions that have varying interests, resources, and responsibilities. This variability can be beneficial if the jurisdictions actively work together to collaborate on policies, projects, and practices, but frequently it presents watershed coordination challenges for efficiently implementing BMP projects and for providing program, policy, and regulatory consistency. In some cases, independent actions by one community or jurisdiction can have a detrimental impact on watershed neighbors, or a good project may not be as effective as it could have been if resources had been pooled to expand the scope of the project to cover a broader area of the watershed, thereby providing economies of scale.

Watershed planning brings communities together to protect and improve the land and water resources that they share and impact. Watershed activities and projects offer many opportunities for communities and other government agencies to operate outside of their traditional "silos." When communities meet regularly as a watershed group, it provides opportunities to share information and coordinate activities. For instance, when a community or agency develops or updates a comprehensive plan, disagreement and costly competition among agencies/jurisdictions can be averted if the watershed-based plan and the plans of neighboring communities and sister agencies (such as parks departments or districts) are considered. This level of coordination benefits the watershed. As an example, a municipality may receive a development proposal for a land parcel that the local parks department has identified as environmentally sensitive and has included in their long-term conservation plan. Although the underlying zoning for the land may allow the proposed development, both the community and the developer are likely going to face challenges from competing interests, and with land development standards so that it does not negatively impact the features that made it environmentally sensitive. Sharing information about the land during the comprehensive planning process can prevent these kinds of problems. See Table 3-9 for more jurisdiction roles and responsibilities.

Table 3-9: Jurisdiction Roles and Responsibilities

TYPE OF JURISDICTIONS	ROLES & RESPONSIBLITIES						
	LAND USE PLANNING & REGULATION	SW ORDINANCE ADMIN.	SW INFRAST. MGMT.	BMP MGMT.	NPS MGMT.	ROADWAY MGMT.	WASTEWATER TREATMENT & SANITARY SEWER MGMT.
*County	X	X	X	X	X	X	X
*Municipalities	X	X	X	X	X	X	X
*State	X	X	X	X	X	X	
*Townships			X	X	X	X	
Drainage District			X	X	X		
Forest Preserve District			X	X	X		
Park Districts			X	X	X		
Water Reclamation & Sanitary Districts		X	X	X			X

**Street, Highway and Transportation Departments are included in these jurisdiction categories*

3.5.3 POPULATION

Based on the 2015 U.S. census estimate, the total population within the Lake Michigan watershed is approximately 176,256 as shown in Figure 3-19.

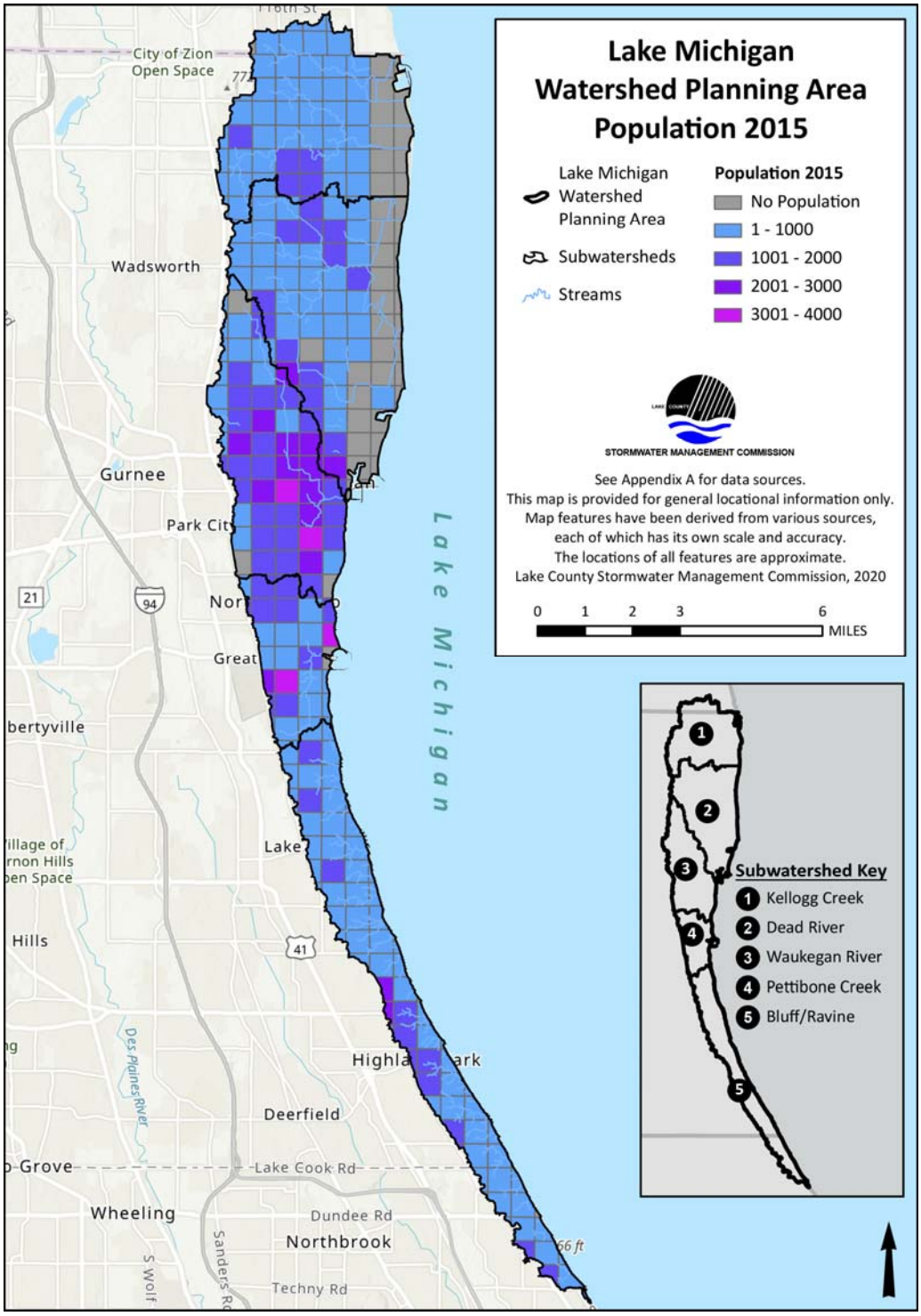


Figure 3-19: Population

Note: Each "square" on the map represents a quarter section of the Public Land Survey System, or a 160-acre square, 0.5 miles per side.

3.5.4 Population Change

Population is forecasted to increase from 176,256 to 223,557 (27%) by 2050 (Figure 3-20).

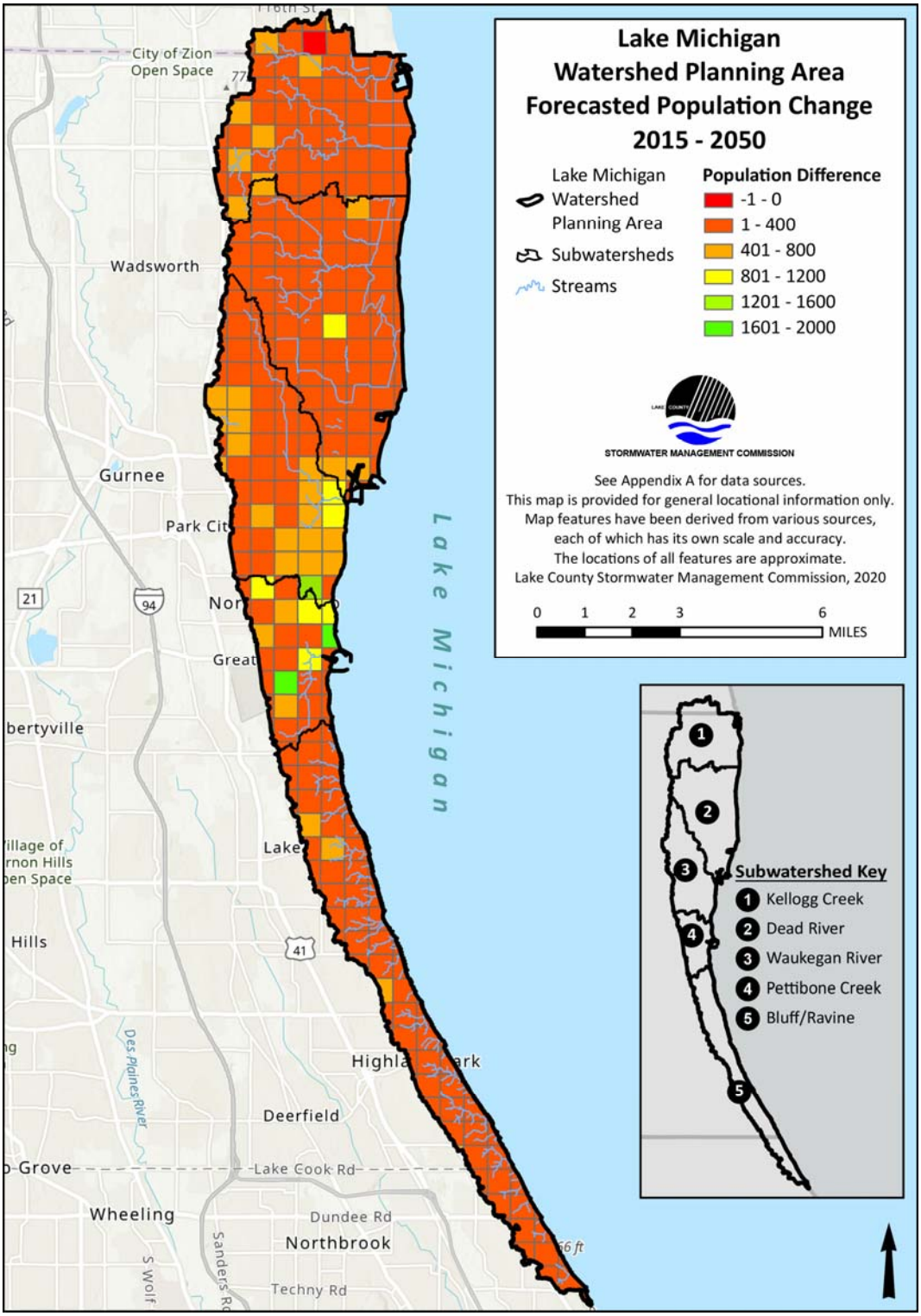


Figure 3-20: Population Change (2015-2050)
Note: Each "square" on the map represents a quarter section of the Public Land Survey System, or a 160-acre square, 0.5 miles per side.

3.5.5 GROWTH FORECASTS

The population change that is described in Section Population Change3.5.4 is expected to increase the number of homes in the watershed, especially in those areas where population growth is expected to increase the most (see Figure 3-21Figure 3-20: Population Change (2015-2050) and Figure 3-22). There is a 17,190 (32%) increase in the number of households predicted within the watershed. As of 2010, there were approximately 63,805 jobs in the Lake Michigan watershed, but CMAP forecasts employment to increase by 21% by the year 2050 (Figure 3-22). The CMAP population and employment forecast is based on a model that accounts for local future development and land use plans, as well as other land use, demographic, and economic variables and trends. Due to the Lake Michigan watershed incorporating only a small portion of the entire CMAP population forecast area, the results should be considered as an example or indicator of how the watershed could develop over the next few decades. This plan does not draw conclusions or recommendations from any single evaluation unit (square) in the forecast map.

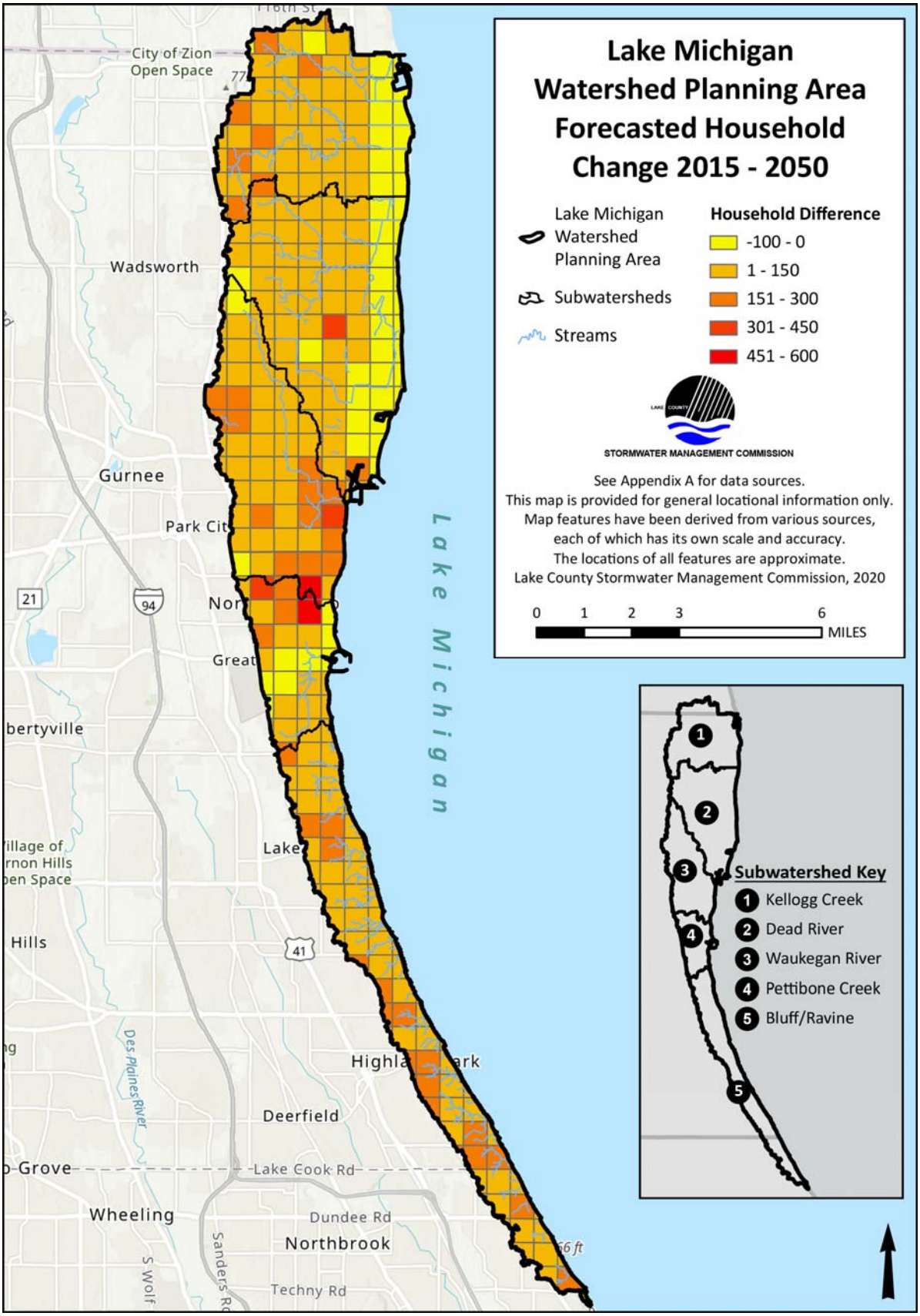


Figure 3-21: Forecasted Household Change (2015 – 2050)

N Note: Each "square" on the map represents a quarter section of the Public Land Survey System, or a 160-acre square, 0.5 miles per side

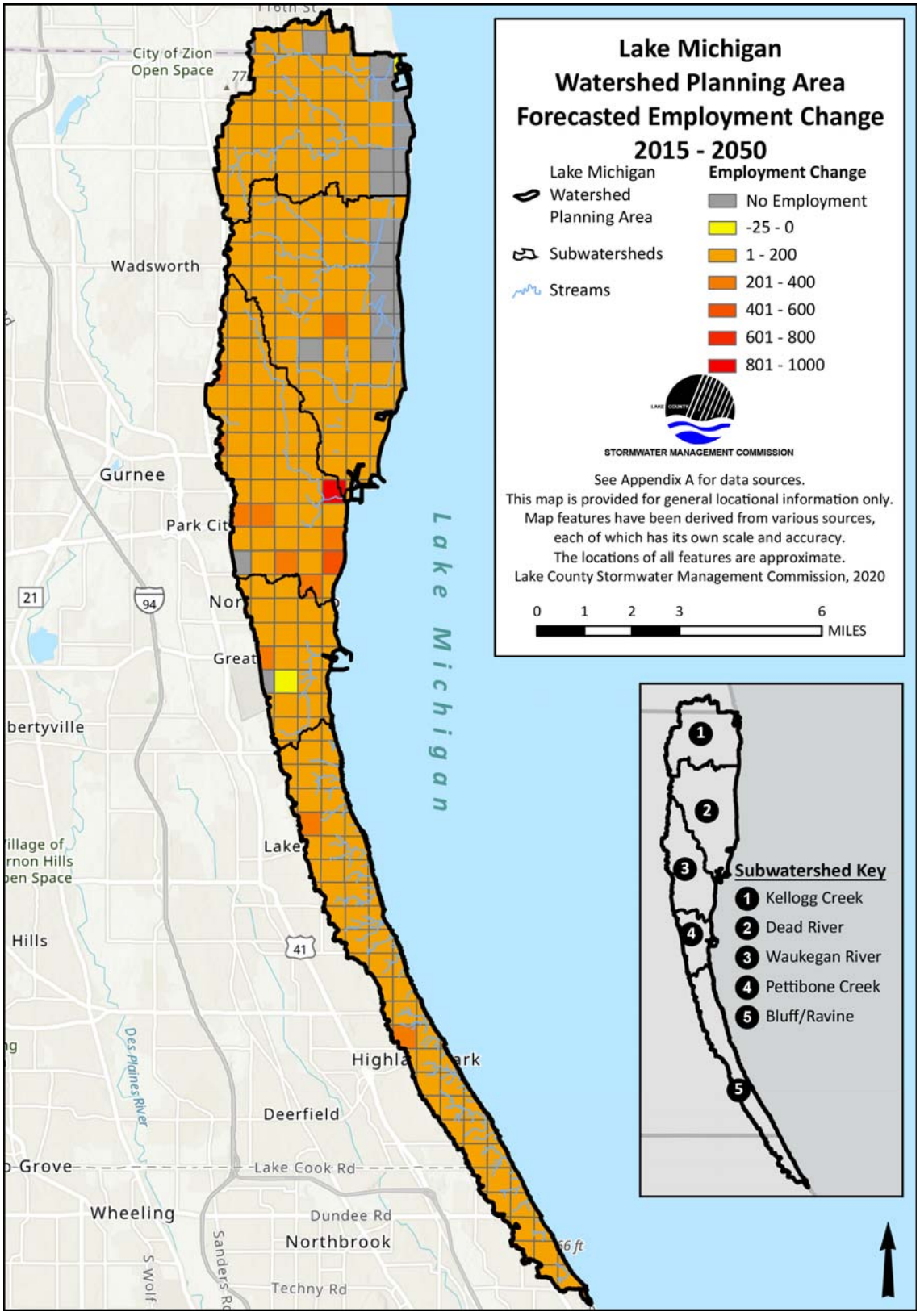


Figure 3-22: Forecasted Employment Change (2015 -2050)

Note: Each "square" on the map represents a quarter section of the Public Land Survey System, or a 160-acre square, 0.5 miles per side

3.5.6 MEDIAN AGE

Median age is a statistic that provides information on the age distribution of a population. When considered with other factors this information can inform estimates of future consumption, mobility, and development patterns, which impact water resources. The median age in the Lake Michigan watershed in 2010 was 31.0, compared to the median age of 37. 7 from the 2017 census data for the State of Illinois (2013-2017 American Community Survey 5-year estimates). Median census block age ranged from 0.0 (no population) to 95.5 in the watershed. The 2010 median age by census block is displayed in Figure 3-23.

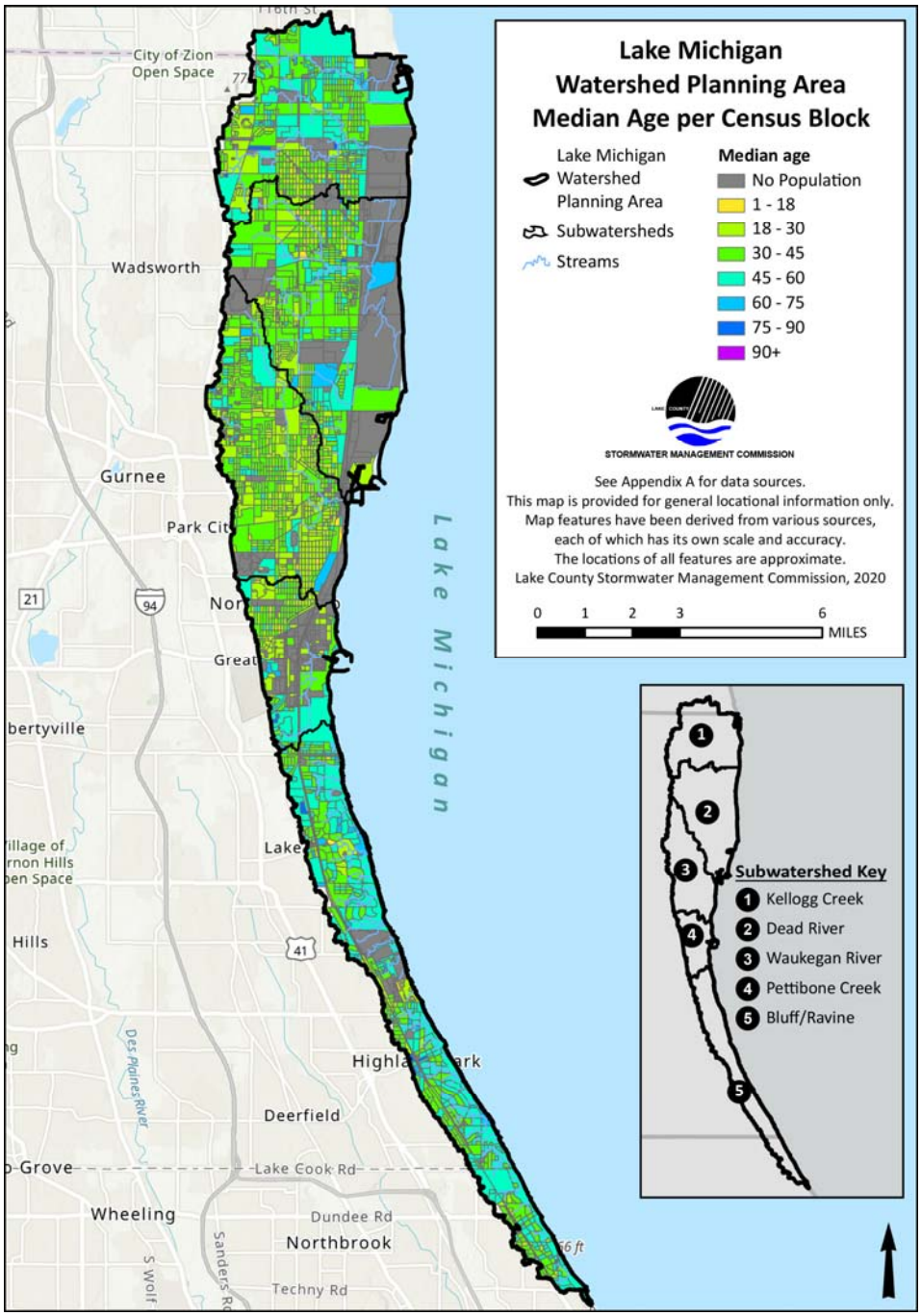


Figure 3-23: Median Age in 2010

3.5.7 Median Income

The median household income for the Lake Michigan watershed is $71,730 (Figure 3-24) compared to $61,229 which was the median household income for the State of Illinois in 2017 (U.S. Census Bureau, 2017). The U.S. Census Bureau includes incomes of people 15 or older in income calulations. Median incomes are used as measures because the values are less skewed by extremely high or low outliers.

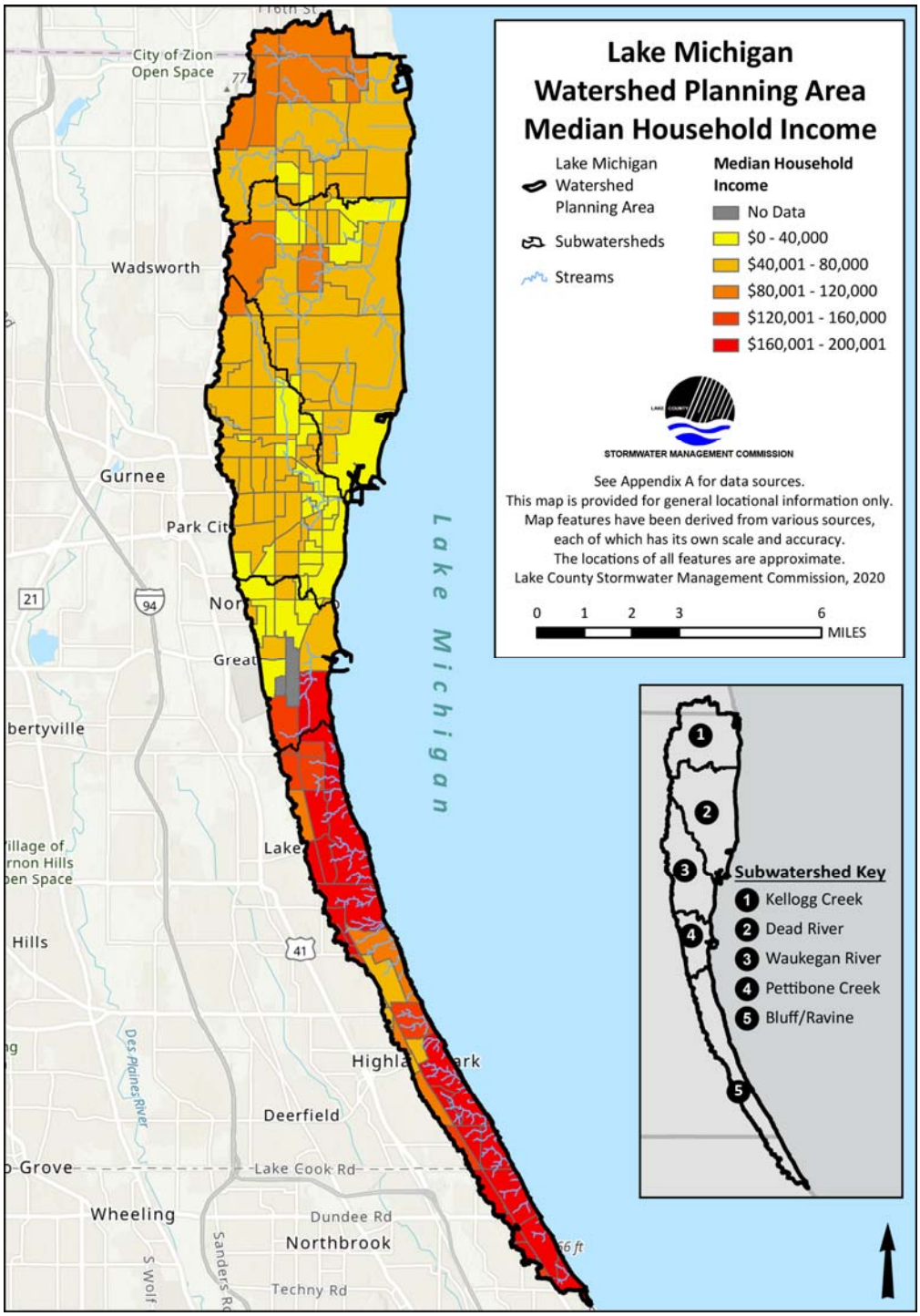


Figure 3-24: Median Household Income

3.5.8 EMPLOYMENT

The number of employed people per census block is closely related to the population. The number of employed people per block in the Lake Michigan watershed ranges from 0 to 7,002 with an average of 243. The distribution of employed people in the Lake Michigan watershed is shown in Figure 3-25.

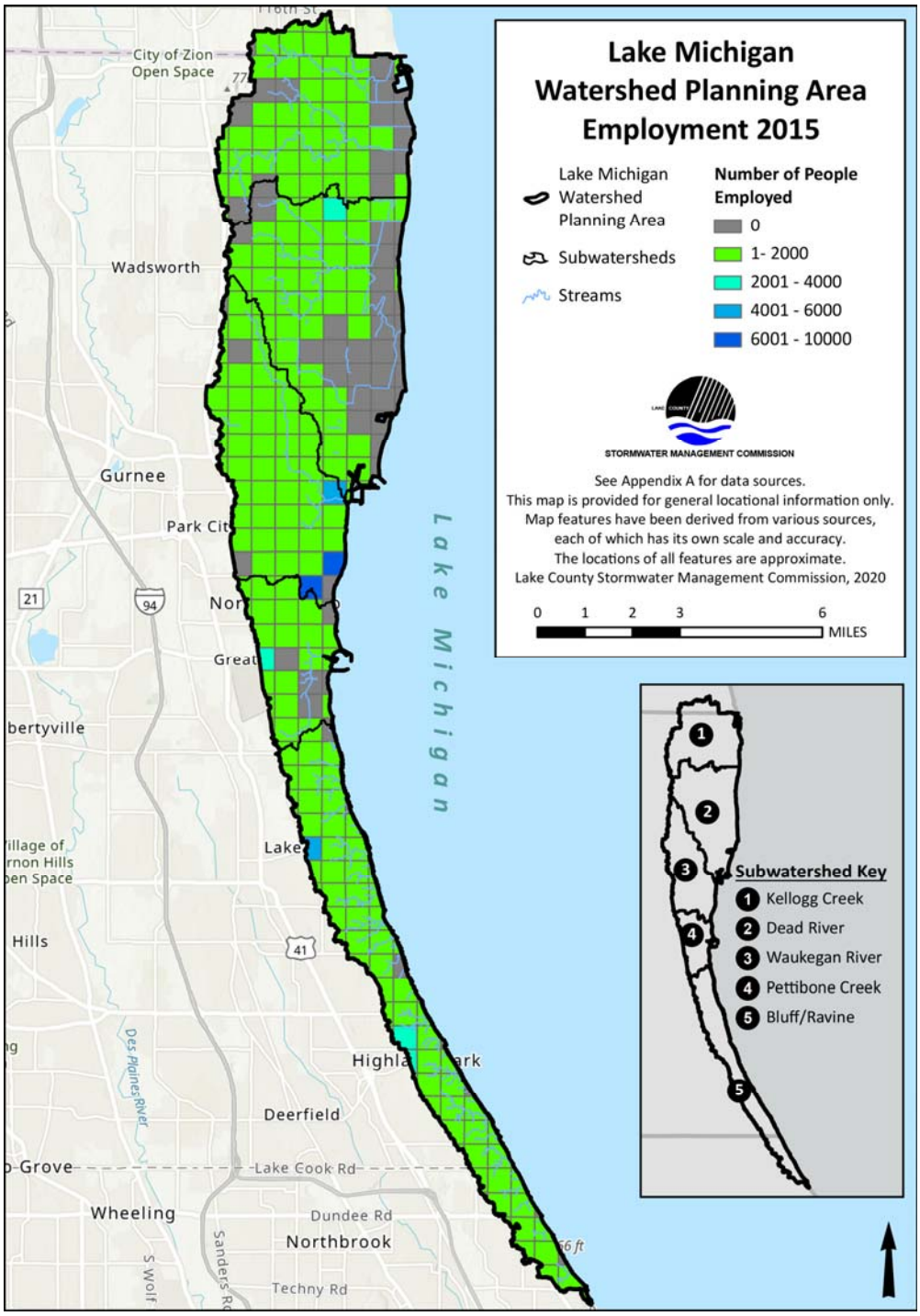


Figure 3-25: Employment in 2015
Note: Each "square" on the map represents a quarter section of the Public Land Survey System, or a 160-acre square, 0.5 miles per side

3.6 LAND USE

3.6.1 EXISTING LAND USE IN THE LAKE MICHIGAN WATERSHED PLANNING AREA

Existing land use of the LM planning area was determined using land use data from CMAP (Cook County), Lake County GIS (Lake County), and SEWRPC (Kenosha County). To ensure land use and land cover represented the most recent watershed conditions, this layer was updated for lands classified as "vacant" by interpreting aerial imagery. Additionally, land use categories were simplified by grouping and re-naming similar land use codes and by extracting land cover designations from land use (i.e., woodlands, wetlands, grasslands, etc. are included in "open space"). Table 3-10 includes land use/cover categories, including acreage and overall percentage, and Figure 3-26 illustrates land use in map format.

Open space (including all public parks and preserves, private undeveloped land, forest, grassland, beach, wetland and lands classified as "vacant" with vegetated land cover) comprises 12,553 acres or 34.8% of the watershed. Residential (single-family and multi-family) lands comprise 12,085 acres (33.5% of the watershed). Agriculture accounts for only 2.6% of land use in the planning area. The prevalence of residential and open space land uses is similar to neighboring watersheds (e.g., Des Plaines and North Branch Chicago Rivers). Percent of agricultural land is similar to the North Branch Chicago River watershed and low relative to the Des Plaines and Fox River watersheds. Agricultural land use concentrated in the northern end of the planning area, the rest of the planning area (excluding the coastal plain) is dominated by development that occurred more than 25 years ago. Total developed land, including residential, commercial/retail/mixed use, government/institutional, industrial, transportation, and utilities accounts for 22,588 acres or 63% of the watershed. The developed land uses in the watershed contain varying degrees of impervious cover. The percentage of developed land is similar to that found in the North Branch Chicago River watershed but higher than that of regional watersheds to the west.

Table 3-10: Land Use Type

LAND USE TYPE	TOTAL AREA (ACRES)	PERCENT OF WATERSHED
Agriculture	951	2.6%
Government/Institutional	2,333	6.5%
Industrial	473	1.3%
Open Space	12,553	34.8%
Residential	12,085	33.5%
Retail/Commercial/Mixed Use	976	2.7%
Transportation/Utility/Waste Facility	6,721	18.6%
TOTAL:	**36,092***	**100.0%**

***Total watershed acres differ from previously stated values because open water was excluded in this analysis.**

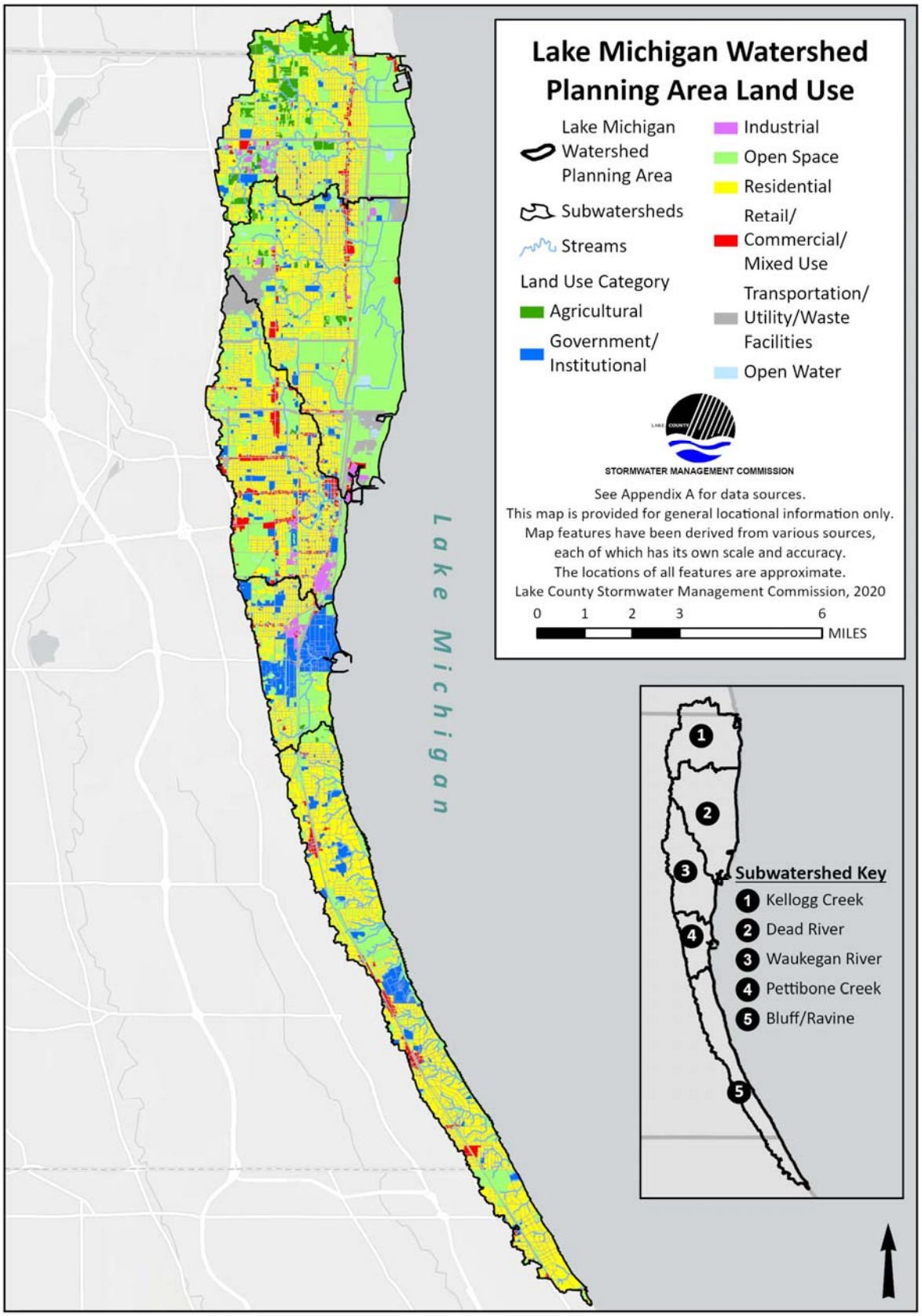


Figure 3-26: Current Land Use

3.6.2 IMPERVIOUS COVER

3.6.2.1 Existing Imperviousness

Impervious cover is the direct result of altering a native soil's permeability by replacing natural surfaces with impermeable/impervious surfaces. Impervious surfaces such as buildings, roads, parking lots, sidewalks, and compacted open space, which are common in urban areas, prevent precipitation from infiltrating into the ground. This increases direct storm water runoff and **nonpoint source pollution** stressors into wetlands, ponds, streams, and rivers, thereby impacting local water quality and Lake Michigan (USEPA Impervious Surface Growth Model, 2017).

NONPOINT SOURCE POLLUTION: The cumulative effect of rainfall runoff that flows over or through the land and collects pollutants and nutrients prior to entering waterways. The cumulative effect of this pollution throughout the watershed represents the contribution of nonpoint source pollution.

Analysis of impervious surface impacts in the LM planning area was conducted using planimetric GIS datasets that were derived and interpreted from LiDAR acquired data. These datasets delineated the measured area or constructed footprint of major contributors to impervious surfaces including buildings, roads, and parking lots. Impacts of construction and development that were not included in the planimetric datasets include driveways, private roads, sidewalks, gravel surfaces (trails, parking lots, road shoulders), railroad right of ways and embankments, constructed features that are not buildings or paved surfaces, and compaction of soils. Planimetric data used in this analysis was developed by Lake County GIS, Cook County GIS, Kenosha County GIS and SMC. The results of the planimetric impervious cover analysis are summarized in Table 3-11 and Table 3-12 and displayed in Figure 3-27.

Table 3-11: Planimetric impervious area (building footprints and pavement) by subwatershed

SUBWATERSHED (Inset Map #)	SUBWATERSHED ACRES	BUILDING FOOTPRINT ACRES (% of SUBWATERSHED)	PAVEMENT ACRES (% of SUBWATERSHED)	TOTAL PLANIMETRIC IMPERVIOUS ACRES (% of SUBWATERSHED)
Kellogg Creek (1)	8,023	443 (5.5%)	628 (7.8%)	1,071 (13.3%)
Dead River (2)	10,231	586 (5.7%)	862 (8.4%)	1,448 (14.2%)
Waukegan River (3)	7,268	867 (11.9%)	1,240 (17.1%)	2,107 (29.0%)
Pettibone Creek (4)	3,211	323 (10.1%)	511 (15.9%)	834 (26.0%)
Bluff/Ravine (5)	7,755	775 (10.0%)	690 (8.9%)	1,465 (18.9%)
TOTAL (% of Planning Area):	**36,488 (100%)**	**2,995 (8.2%)**	**3,931 (10.8%)**	**6,926 (19.0%)**

Impervious surface coverage was also determined from the 2016 NLCD impervious cover model (https://www.mrlc.gov/data/type/urban-imperviousness). The data used to develop the NLCD impervious cover model was derived from Landsat Enhanced Thematic Mapper+ and classified land use data. The percentage of impervious cover was calculated in 30 meter 2-pixel units of geography. This is measured by multiplying the watershed area classified as: urban (i.e. low, medium, and high density residential; commercial; industrial; etc.) by the appropriate impervious surface coefficient for each land use type, then averaging the value of imperviousness within a 30 meter 2-pixel unit of geography, ranging from 0-100% impervious cover. The NLCD impervious surface data set is an aggregated total impervious area value for each pixel rather than

individual impervious features. Results of the NCLD impervious cover model in the LM watershed planning area are shown in Figure 3-28.

Research conducted in many geographic areas, concentrating on many different variables, and employing widely different methods, has yielded a similar conclusion: stream degradation occurs at relatively low levels of imperviousness, with 10% imperviousness impacting water quality and greater than 30% imperviousness severely degrading water quality (Schueler, 1994). The impervious cover data is presented as a percentage of impervious surfaces within the Lake Michigan planning area in three categories (Table 3-12):

- 0-9 % (Open Space with little to no development)
- 10-29% (Residential and small-scale development) and
- 30-100% (medium to large scale development).

Impervious area analysis using both planimetric data and the NLCD indicate what the existing land use map suggests: the most intense urban development and greatest percentage of impervious cover is located in the Waukegan River and Pettibone Creek watersheds while the Kellogg Creek and Dead River watersheds have the lowest rates of impervious cover resulting from the presence of the Illinois Beach State Park, Spring Bluff Forest Preserve, and Lyons Woods Forest Preserve as well as agricultural and open space lands in the west portions of these subwatersheds. The Bluff/Ravine subwatershed is characterized by residential uses with older "downtown" nodes and falls in the middle of the range of impervious cover, an attribute that is also evident in both data sets.

Table 3-12: Breakdown of NLCD Percent Impervious Cover within each Subwatershed

SUBWATERSHED (Inset Map #)	NLCD PERCENTAGE (0-9%)		NLCD PERCENTAGE (10-29%)		NLCD PERCENTAGE (30-100%)	
	ACRES	% of Subwatershed	ACRES	% of Subwatershed	ACRES	% of Subwatershed
Kellogg Creek (1)	4,127	51%	1,371	17%	2,517	31%
Dead River (2)	4,673	46%	1,715	17%	3,839	38%
Waukegan River (3)	1,376	19%	1,140	16%	4,747	65%
Pettibone Creek (4)	520	16%	738	23%	1,948	61%
Bluff/Ravine (5)	1,205	16%	3,954	51%	2,589	33%
Total	**11,901**	**33 % of LM Planning Area**	**8,918**	**24 % of LM Planning Area**	**15,640**	**43% of LM Planning Area**

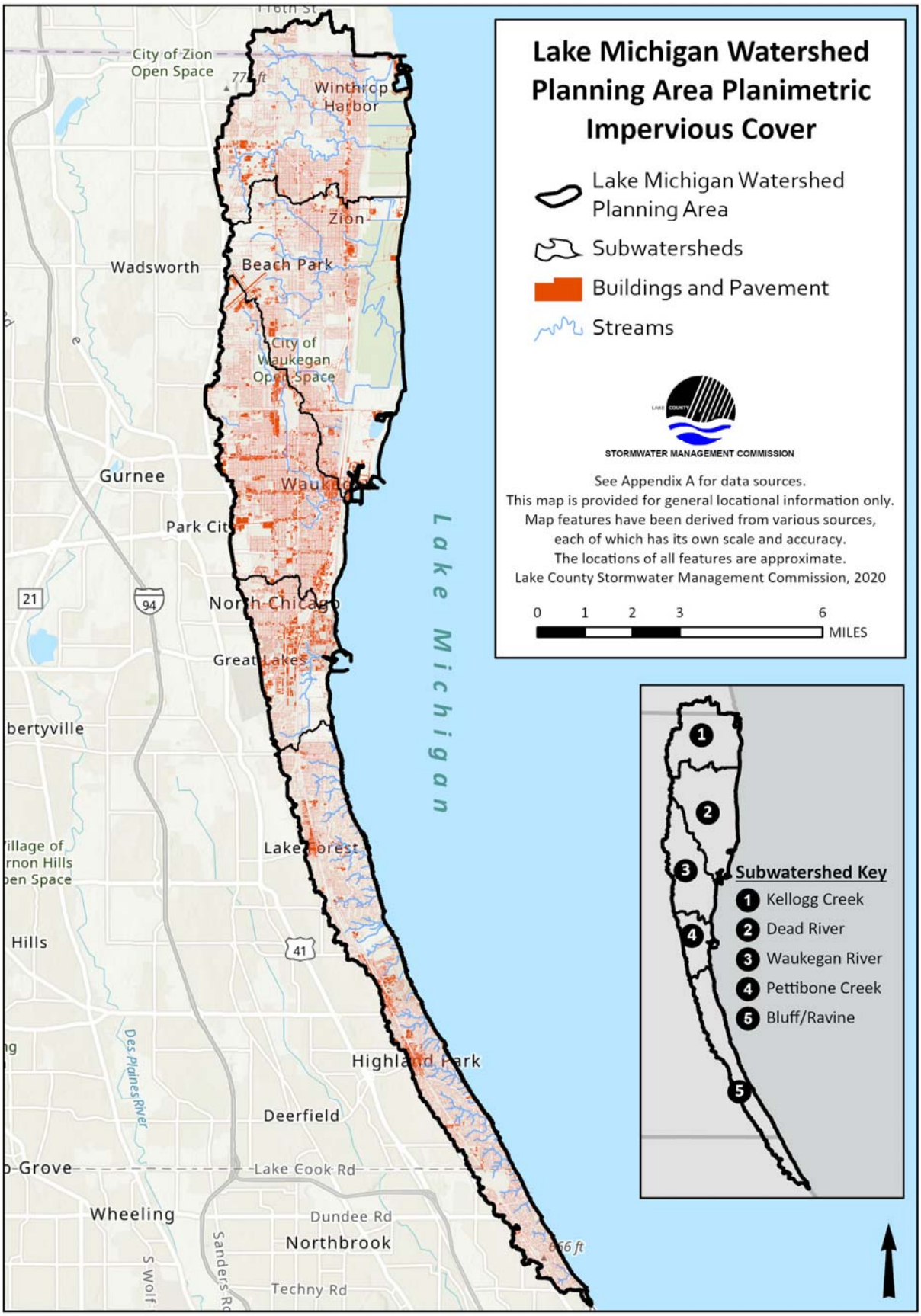


Figure 3-27: Planimetric Imperviousness of Table 3-11

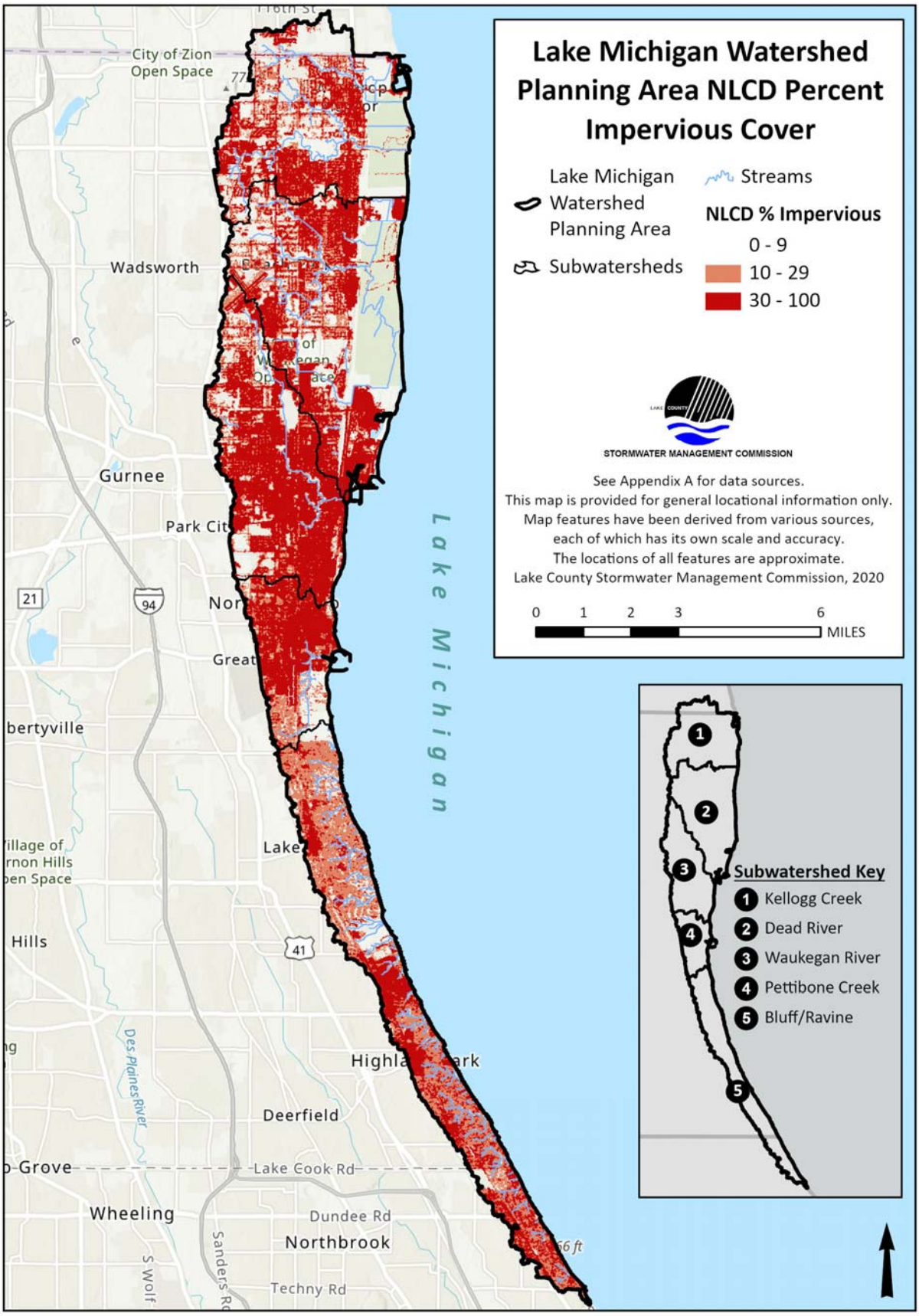


Figure 3-28: NLCD 2016 Imperviousness of Table 3-12 Data

3.6.3 FUTURE LAND USE PROJECTIONS

Future land use (FLU) projections were based on a review of municipal and county FLU maps. FLU is of interest in watershed planning because changes in land use may result in additional impervious acres or may otherwise affect water resources. The FLU datasets consulted in this plan do not necessarily have a "date", i.e., there may not be an estimated year at which the planned use will be present. Land use plans from which the data are gleaned, however, may have dates or planning "windows" sometime into the future (typically around 20 years from the time of publication/adoption). FLU data for Lake County is compiled by the Lake County Department of Planning, Building and Development from municipal County comprehensive land use plans and is not assigned a projected date. The FLU data for Kenosha County is compiled by SEWRPC under a land use plan for 2035. A comparable countywide FLU dataset has not been compiled for Cook County, so the project team consulted available comprehensive land use plans for the Villages of Glencoe and Winnetka within the LM planning area. Because of this difference in the nature of available data, further discussion of FLU in this section is divided by county.

3.6.3.1 LAKE AND KENOSHA COUNTIES

The southern portion of the LM planning area in Lake County is largely built-out or preserved as dedicated open space (e.g., parks and forest preserves). Larger areas of developable land (e.g., agricultural land and non-dedicated or privately-owned open space) remain in the Dead River and Kellogg Creek subwatersheds in northern Lake County and Kenosha County. Table 3-13 shows projected changes in land use by land use type and Figure 3-29 maps future land use predicted for build-out conditions in the watershed. The data indicate decreases in the area of Agriculture, Government/Institutional and Public/Private Open Space while Residential, Industrial, and Retail/Commercial/Mixed Use are expected to increase in area. Agriculture within the LM planning area is largely located north of Wadsworth Road in the Dead River and Kellogg Creek subwatersheds. This land is forecast to be converted to Residential (primarily) and Retail/Commercial/Mixed Use (secondarily) at some point in the future. Decreases in Open Space are primarily accounted for by increases in Residential use and to a lesser extent, Retail/Commercial/Mixed Use and Industrial. Retail/Commercial/Mixed Use is forecast to increase, primarily along major roadways such as Sheridan Road, Lewis Avenue and Green Bay Road, and around Waukegan Harbor.

Some caveats are warranted in discussion of future land use data and mapping, specifically related to mapping scale. Existing land use is mapped at the parcel or sub-parcel scale. Future land use is mapped at a coarser scale and therefore results in shifts in land use types that are unlikely to occur. For example, the existing land use data identifies most ravine areas as Open Space, however in the future land use data, the ravine areas are subsumed into the surrounding dominant land use class (often Residential). The same phenomenon holds for Government/Institutional, particularly where schools are located within more dense residential areas. This aggregation in the future land use categories accounts for some of the substantial forecast gains and losses in categories such as Government/Institutional, Open Space, and Residential.

3.6.3.2 COOK COUNTY

The Cook County portion of the Lake Michigan planning area is also almost entirely built-out and Open Space is either publicly-owned (parks and beaches) or in recreational use such as golf courses. As such, potential future impacts to the watershed related to land use changes are predicted to be highly localized or minimal in Cook

County. Due to the lack of a countywide future land use dataset for Cook County, the comprehensive land use plans for Glencoe and Winnetka were consulted to determine if significant changes are envisioned in the future. These community land use plans focus on redevelopment of existing sites or areas rather than large-scale new development. Vacant land is minimal and mainly comprised of smaller infill parcels.

Table 3-13: Projected Land Use Change by Type in the Lake and Kenosha County Portions of the LM Planning Area

LAND USE TYPE	CURRENT ACRES (LAKE & KENOSHA COUNTIES)*	PROJECTED FUTURE ACRES (LAKE & KENOSHA COUNTIES)*	CHANGE FROM CURRENT TO FUTURE ACRES (%)
Agriculture	951	29	-922 (-97%)
Government/Institutional	2,300	1,757	-543 (-24%)
Industrial	473	566	+93 (20%)
Open Space	12,273	8,077	-4,196 (-34%)
Residential	11,311	15,513	+4,202 (37%)
Retail/Commercial/Mixed Use	968	2,267	+1,299 (134%)
Transportation/Utility/Waste Facility	6,493	6,526	+33 (0.5%)

*Total acreage not equal due to ~200-acre difference in mapping extent along Lake Michigan shoreline

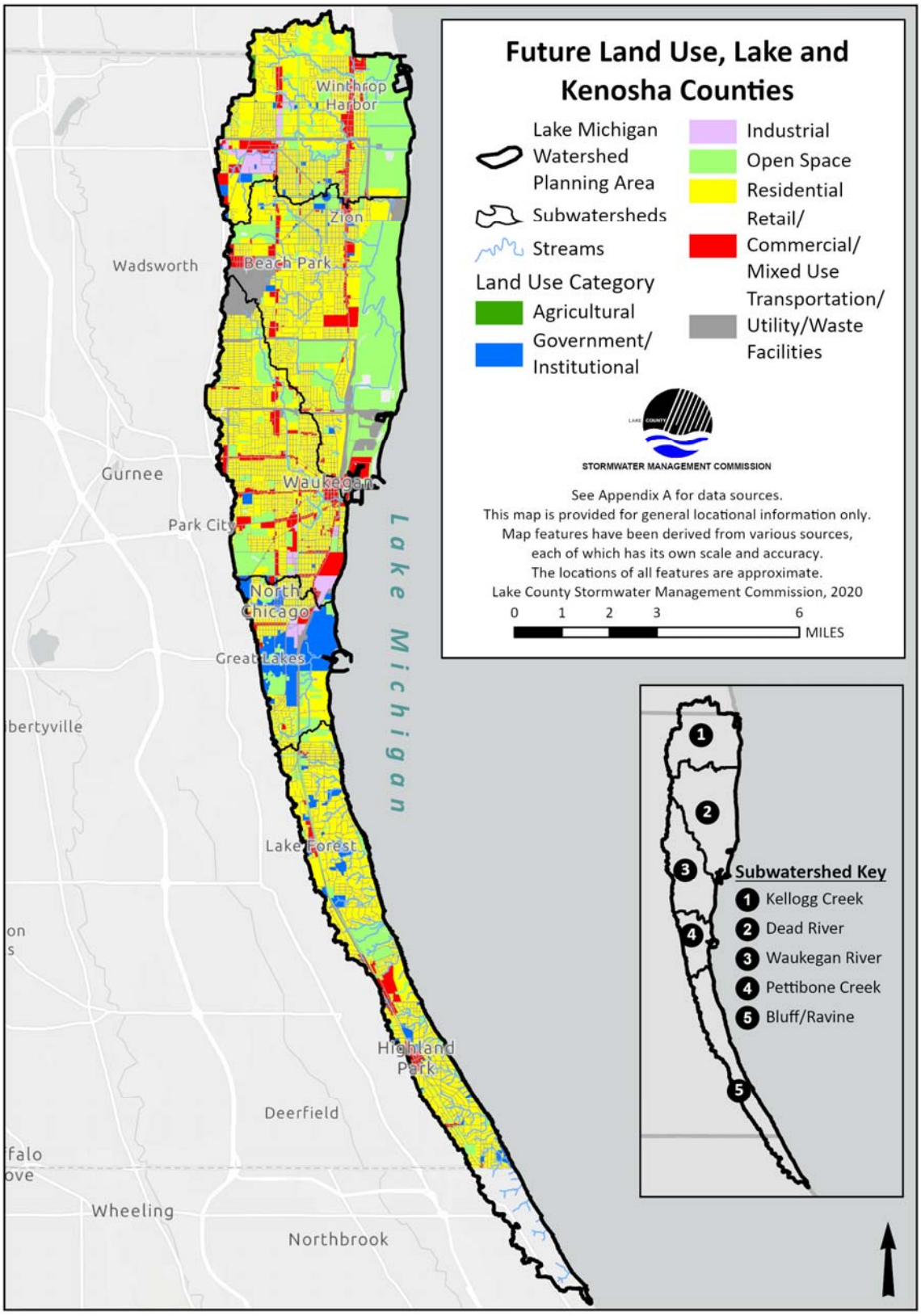


Figure 3-29: Future Land Use Projections in the LM Planning Area, Lake and Kenosha Counties

3.7 TRANSPORTATION

The Lake Michigan watershed includes approximately 2,155.41 miles of roads, 55.3 miles of trails and 44.7 miles of railroads that make up the existing network of transportation corridors. Although not analyzed in detail in this section, other important components of the transportation network include the public bus transit system, parking lots, harbors, rail stations, and the public works and transportation maintenance yards that support the roads, trails and railroads.

3.7.1 TRANSPORTATION AND NONPOINT SOURCE POLLUTION

Transportation corridors in the Lake Michigan watershed connect residents to points within and outside of the watershed. “Car habitat”; the combined area of roads, parking lots, driveways and garages is significant in the Lake Michigan watershed. Parking lots and roads are the largest components of car habitat and can have a significant influence on stormwater runoff and water quality. Studies have shown that streets are a major source of NPS pollution in urban settings. Several factors contribute to high pollutant loading from streets. Streets are most often connected to the drainage system and tend to be the collector of stormwater runoff and pollution from sidewalks, driveways, lawns and rooftops as well as from emissions and leaks from vehicles, atmospheric deposition and winter road maintenance practices. The design, construction, and maintenance of transportation facilities and corridors can have substantial beneficial and detrimental impacts on human and watershed health.

3.7.2 TRANSPORTATION INFRASTRUCTURE

3.7.2.1 Roads

Multiple local, county and state entities manage approximately transportation network, including 2,155.41 miles of roadway, within the Lake Michigan watershed, as shown in Figure 3-30. The roadway network includes local roads, township roads, county roads, and state highways. U.S. State Highways 137 and 131 run north-south within the Lake Michigan watershed and several major highways, such as State Highways 173, 120 and 132, run roughly east-west within the Lake Michigan watershed boundaries. The largest stretch of existing major roadway in the Lake Michigan watershed is Sheridan Road, which is 54.65 miles long.

Roadway Jurisdictions:

- *Lake County: roads and roadway planning are the responsibility of multiple entities including IDOT, the Lake County Division of Transportation (LCDOT), Illinois Department of Transportation (IDOT), and individual townships and municipalities.*
- *Cook County: roads and roadway planning are the responsibility of IDOT and the Villages of Glencoe and Winnetka.*
- *Kenosha County, Wisconsin: Roads and roadway planning are the responsibility of multiples entities including Wisconsin Department of Transportation (WISDOT), Kenosha County Division of Highways and Village of Pleasant Prairie.*

For more information on roadway classifications see Table 3-14.

Table 3-14: Roadway Classifications

ROADWAYS	LAKE COUNTY ROADWAY CLASSIFICATION			COOK COUNTY ROADWAY CLASSIFICATION			KENOSHA COUNTY ROADWAY CLASSIFICATION			TOTAL MILES
	1-LANE OR SPECIAL SERVICE MILES	2-LANE MILES	4+ LANES MILES	1-LANE MILES	2-LANE MILES	4+ LANES MILES	1-LANE MILES	2-LANE MILES	4+ LANES MILES	
Interstate /Expressway	--	4.56	0.84	--	--	--	--	--	--	5.41
State Highway	--	14.58	17.83	--	--	--	--	2.34	--	34.75
County Highway	--	19.47	10.35	--	--	--	--	--	--	29.82
Township Road	--	9.15	--	--	--	--	--	--	--	9.15
Local/Private Road	10.74	544.24	5.06	1.49	27.43	0.51	0.25	27.57	--	617.29
Other	--	3.75	0.30	--	--	--	--	--	--	4.05
TOTAL MILES	**10.74**	**595.76**	**34.39**	**1.49**	**27.43**	**0.51**	**0.25**	**29.91**	**0.00**	**700.47**

*Lake County "Other" roadway classification is a mixture of secondary (State Highway) and local roadway.

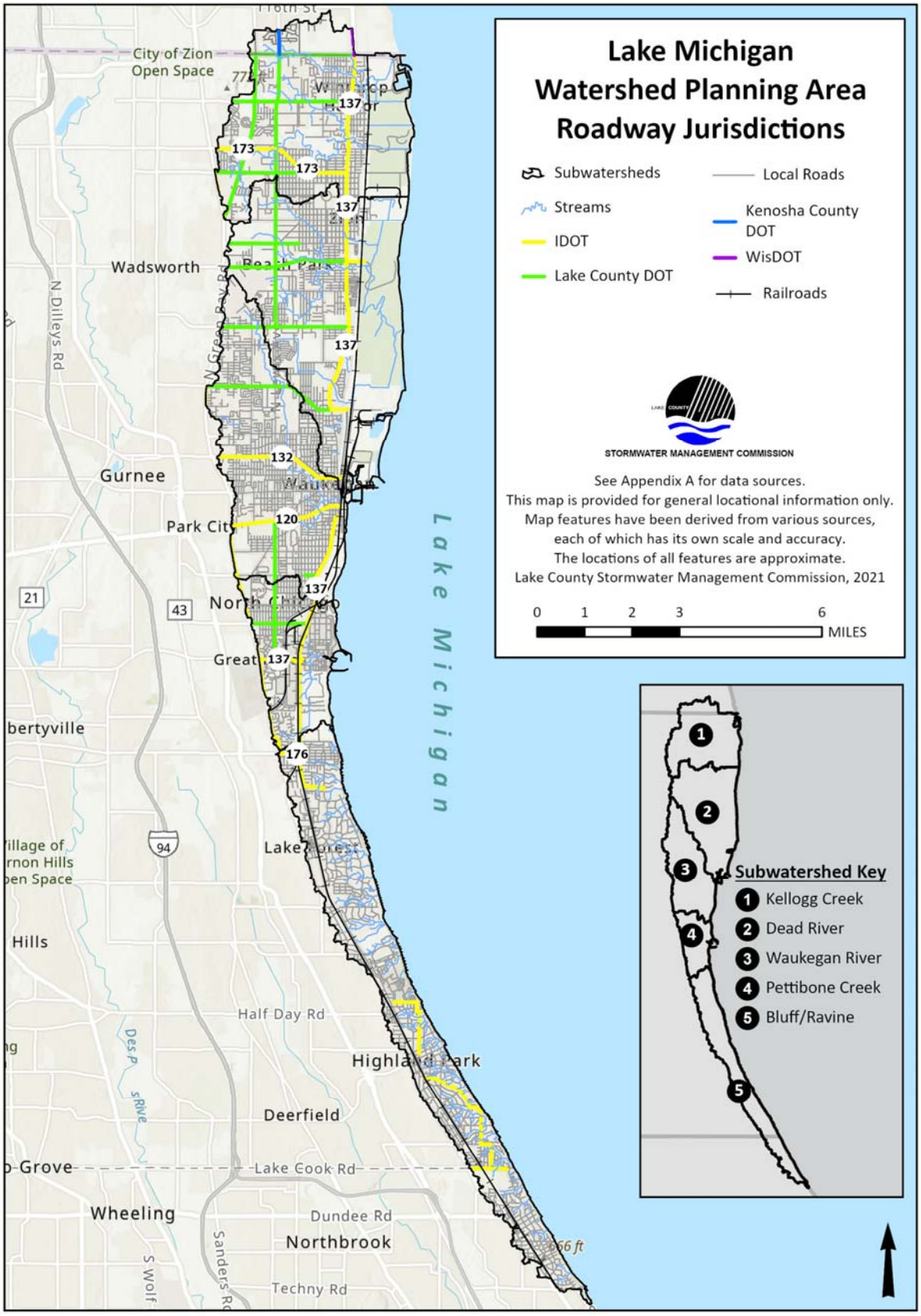


Figure 3-30: Roadway Jurisdictions

3.7.2.2 Trails

There are currently approximately 55.3 miles of pedestrian and bicycle trails in the Lake Michigan watershed, including mowed footpaths, gravel, concrete, and asphalt trails (see Figure 3-32). These trails are in various forms ranging from mowed footpaths to concrete or asphalt and are designed for single or multiple purpose users. The largest existing trail system in the Lake Michigan watershed (25.7 miles) is the Robert McClory Bike Path (Figure 3-31).

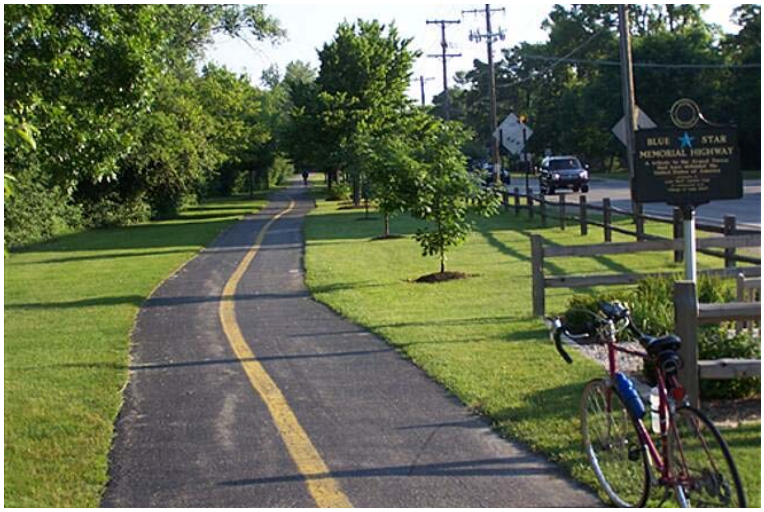


Figure 3-31: Robert McClory Bike Path
Photo Courtesy of TrailLink (Rails-to-Trails Conservancy)

Several jurisdictions develop and manage trails in the Lake Michigan watershed including the Forest Preserve Districts, Park Districts, Municipalities, Townships, Homeowner Associations (HOAs), WI DNR and LCDOT. Several villages and townships support trail systems along and across roadways within their jurisdiction. Park Districts also provide and maintain a trail network to connect people to parks and other community centers. The Forest Preserves provide a large trail network within forest preserves. HOAs may provide neighborhood trails within the subdivision which connect to community trail systems and neighborhood parks.

3.7.2.3 Railroads

There are two major railroads that exist within the Lake Michigan watershed. Railroads in the Lake Michigan watershed range from commuter rail lines (transporting passengers from the suburb areas into the City of Chicago) to large freight rails transporting goods regionally and nationally. There is a total of 44.7 miles of railway in the Lake Michigan watershed (Table 3-15). See Figure 3-33 for railroad locations in the Lake Michigan watershed.

Table 3-15: Miles of Railroad in the Lake Michigan Watershed

RAILROAD OWNER	SUBWATERSHED MILES (INSET MAP #)					
	DEAD (2)	PETTIBONE (4)	WAUKEGAN (3)	BLUFF/RAVINE (5)	KELLOGG (1)	TOTAL MILEAGE
Canadian National Railway	4.5	3.7	2.4	0	0	10.6
Union Pacific Railroad	10.6	3.1	3.1	13.4	3.9	34.1
TOTALS	**15.1**	**6.8**	**5.5**	**13.4**	**3.9**	**44.7**

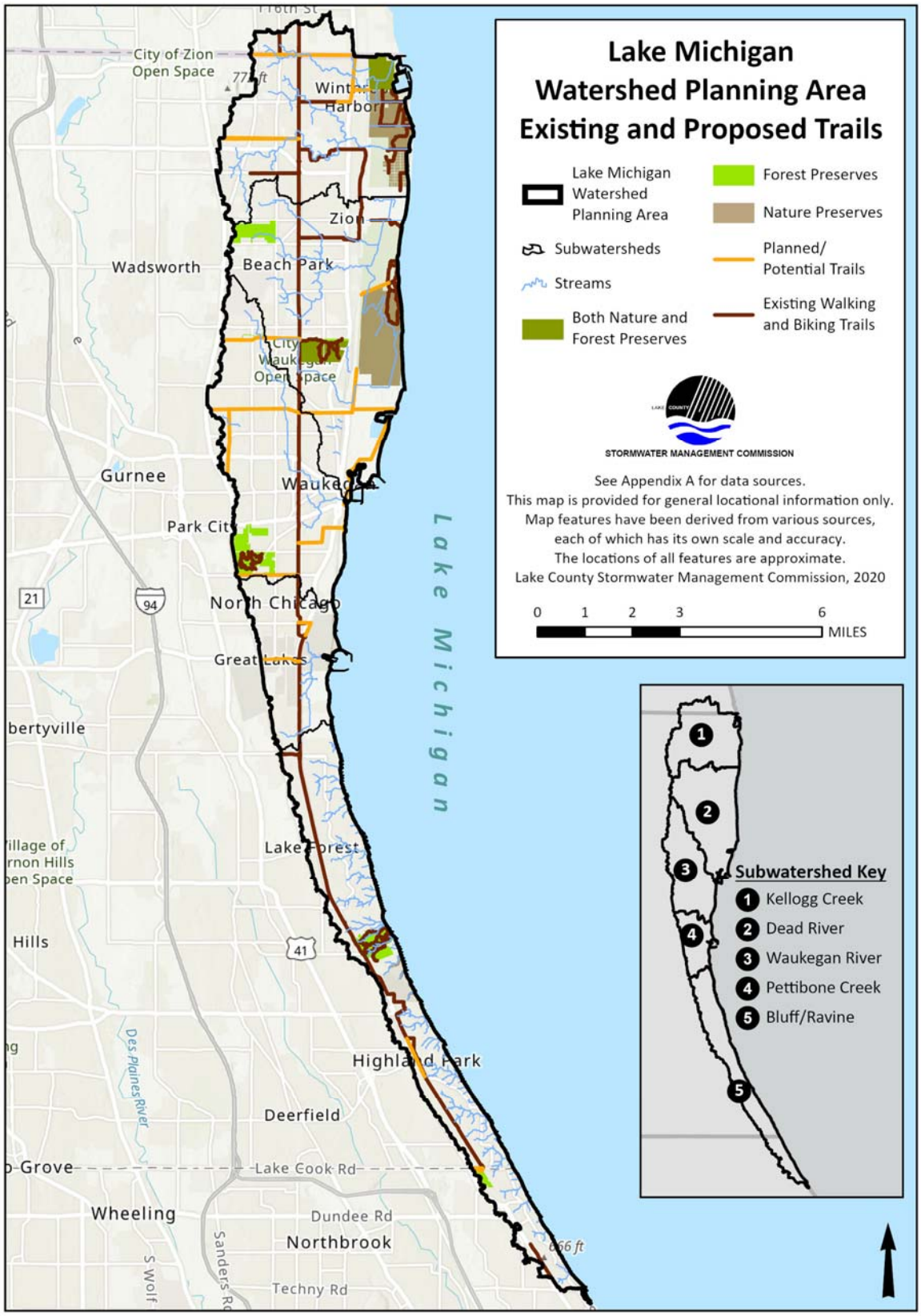


Figure 3-32: Existing & Proposed Trails

3.7.3 PLANNED TRANSPORTATION PROJECTS

The Transportation Goal is to "reduce congestion and improve transportation systems in Lake County". The strategic statement to meet this goal is to "promote development of State, County and municipal transportation systems that provide for efficient, flexible, and uncongested movement through an integrated network of road, rail, public transit, and non-motorized (bicycle, pedestrian) modes of travel.
LCDOT 2040 Transportation Plan

Information about planned roadway improvements in the Lake Michigan watershed was gathered through local, regional, and state transportation contacts and from best available road planning reports. The compiled list of planned roadway improvements includes all major county, regional, and state planned projects; however, this is not an exhaustive list of all planned roadway projects in the Lake Michigan watershed. There are likely additional local roadway improvement plans that were not captured in this analysis.

Planned roadway improvements that increase or impact the amount of existing impervious surfaces are shown in Figure 3-33. Roadway improvement projects are intended to benefit watershed and county residents and the local economy by providing better transportation access. The design of rights-of-way has a substantial impact on the livability of communities' health, safety and welfare of residents, and the quality of aquatic resources. Transportation agencies face several challenges in addressing the volume of runoff from roadways and the pollutants typical in roadway runoff. A transportation jurisdiction frequently has limited control of the pollutants entering its right of way (including pollutants generated from atmospheric deposition, vehicle operation, litter, organic debris, and surrounding land uses).

3.7.3.1 Roads

There is a total of 8.47 miles of proposed roadway (IDOT, 2019-2024), which includes roadway widening, adding auxiliary lanes, interchange reconstruction (1.89 lanes miles), bridge replacement and a study of road capacity and safety. As the Lake Michigan watershed is already highly urbanized, there are not a lot of planned new impervious surfaces for roadway projects. The largest stretch of proposed major roadway in the Lake Michigan planning area is Lewis Avenue corridor between Route 137 and Sunset Boulevard (approximately 5.77 miles). Traffic congestion on the highways and roads in Lake County negatively impacts the local economy and quality of life.

Road improvement and construction are vital to economic stability and growth but have the potential to negatively impact the environment. The effects of impervious surface on water quantity and quality are discussed in Sections 3.4 and 3.6.2. Road construction also increases the potential for soil erosion to nearby waters if erosion control measures are not implemented before, during and after construction. Because runoff from "car habitat" may contain additional pollutants, collecting and minimizing the mobilization of this material on streets and highways is the goal of successful roadway runoff management. Common pollutants related to "car habitat" are listed in Table 3-16.

Table 3-16: Highway Runoff Constituents and Their Primary Sources

CONSTITUENTS	PRIMARY SOURCES
Particulates	Pavement wear, vehicles, atmosphere, maintenance
Nitrogen, Phosphorus	Atmosphere, roadside fertilizer application
Lead	Leaded gasoline (auto exhaust), tire wear (lead oxide filler material, lubricating oil and grease, bearing wear)
Zinc	Tire wear (filler material), motor oil (stabilizing additive), grease
Iron	Auto body rust, steel highway structures (guard rails etc.), moving engine parts
Copper	Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicides and insecticides
Cadmium	Tire wear (filler material), insecticide application
Chromium	Metal plating, moving engine parts, brake lining wear
Nickel	Diesel fuel and gasoline (exhaust), lubricating oil, metal plating, bushing wear, brake lining wear, asphalt paving
Manganese	Moving engine parts
Cyanide	Anti-cake compound (ferric ferrocyanide, sodium ferrocyanide, yellow prussiate of soda) used to keep deicing salt granular
Sodium, Calcium, Chloride	Deicing salts
Sulphate	Roadway beds, fuel, deicing salts
Petroleum	Spills, leaks or blow-by motor lubricants, antifreeze and hydraulic fluids, asphalt surface leachate
PCB	Spraying of highway rights-of-way, background atmospheric deposition, PCB catalyst in synthetic tires

Source: US DOT, FHWA, Report No. FHWA/RD-84/057-060, June, 1987; USEPA 1993.

3.7.3.2 Trails

There are 24.4 miles of proposed trail and bikeway systems over the next five to twenty-four years (Lake County, 2014 and CMAP, 2010, respectively). See Figure 3-32 for Lake Michigan watershed existing and proposed trails. If constructed, many of the proposed trails would connect the network of existing trails within and outside the Lake Michigan Watershed such as the Des Plaines River Trail and the Skokie Valley Bike Path. The longest stretch of proposed trail systems in the Lake Michigan watershed is a trail that starts from the southern end of the Illinois Beach Nature Preserve to the Robert McClory Bike Path, south of Route 120 (5.47 miles).

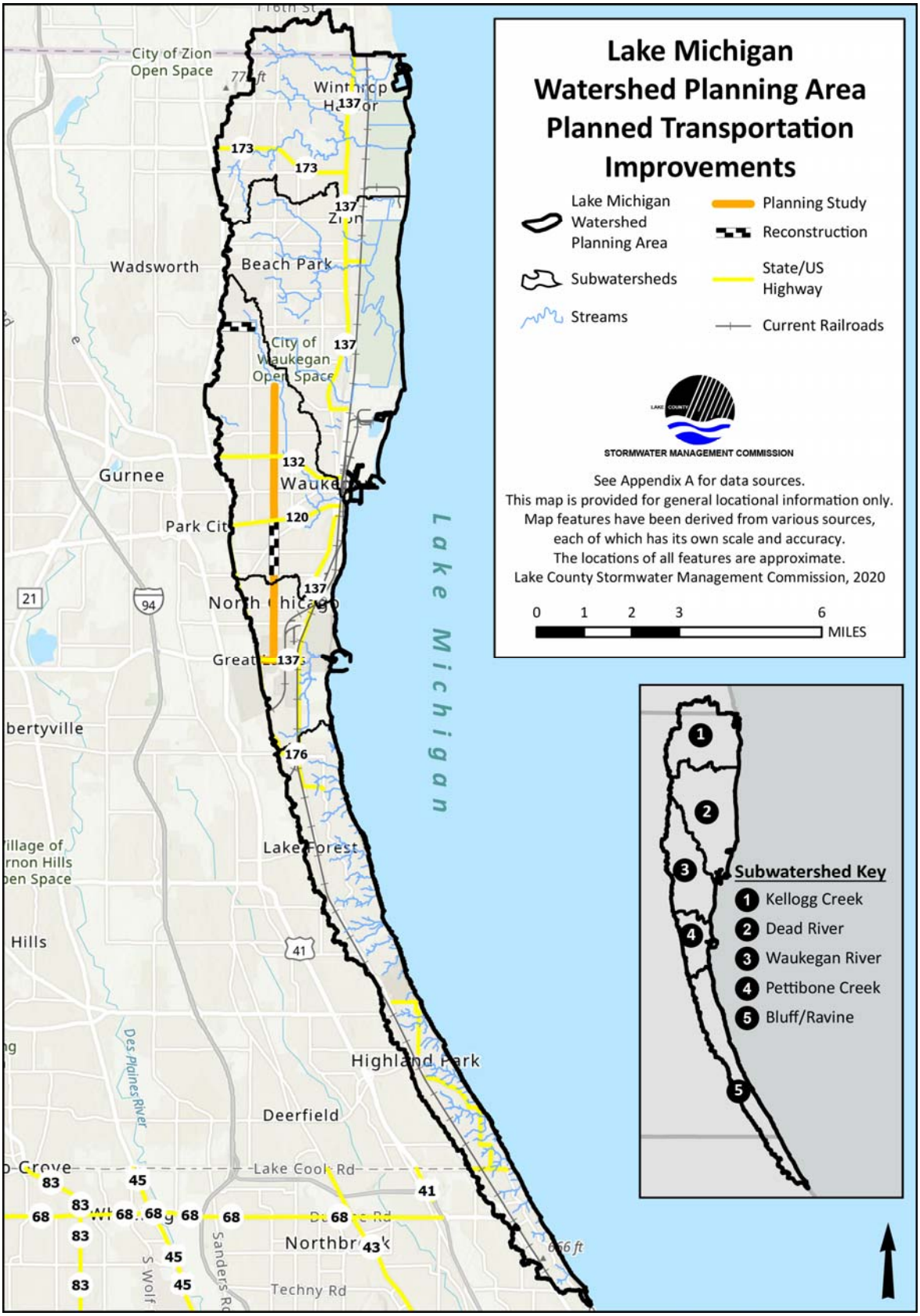


Figure 3-33: Planned and Potential Roadway Improvements

3.8 GREEN INFRASTRUCTURE

3.8.1 GREEN INFRASTRUCTURE MODEL AND STRATEGY FOR LAKE COUNTY, ILLINOIS

The Lake County Green Infrastructure Model and Strategy (GIMS) encapsulates facets of green infrastructure beyond those related to just stormwater. The GIMS provides a more comprehensive assessment of the overall green infrastructure values in this plan. The following text is taken directly from the "project summary" (page 5) of the Lake County GIMS "Technical Report" (2017):

> *The Lake County GIMS builds on the previous efforts of the Chicago Wilderness Regional Green Infrastructure Vision through building a more refined infrastructure network model with higher resolution and more up-to-date GIS data. The GIMS also builds on the efforts of The Conservation Fund's (the Fund) support to the Chicago Metropolitan Agency for Planning (CMAP) to access ecosystem service valuation in Lake and six other Illinois counties in its planning area. The Lake County GIMS provides a framework for identifying land conservation and restoration opportunities for the county's major native landscape types: woodland/forest. Prairie/grassland/savanna, wetlands, and freshwater aquatic systems. The primary products of the Lake County GIMS are derived GIS datasets and models, which describe and characterize the regional green infrastructure network, restoration opportunities, and ecosystem service values of this network. The derived GIS datasets include core areas, functional connections, restoration building blocks, and composite layers that combine the science-based, data driven ecological network with the inventory of protected and managed lands. Included in the functional connections are corridor linkages for woodland/forest, prairie/grassland/savanna, wetlands, and steam buffers, as well as functional connectivity within Lake County's trail network.*

For more information on the GIMS for Lake County, Illinois, please visit http://www.lcfpd.org /conservation/greenstrategy/. For more information on CMAP's Green Infrastructure Vision, please visit https://www.cmap.illinois.gov/programs/sustainability/open-space/green-infrastructure-vision.

3.8.2 GREEN INFRASTRUCTURE

Green Infrastructure is a stormwater management approach that saves money, supports sustainability, and more efficiently uses limited financial and natural resources. It is achieved by capturing raindrops where they fall reducing runoff volumes, and recharging groundwater supplies. By integrating natural processes into the built environment, green infrastructure provides stormwater management, flood mitigation, economic benefits, air quality management, and much more. Green infrastructure can be planned and implemented on local and regional scales:

- **Local scale**: Green infrastructure on a local scale consists of site-specific BMPs (such as naturalized detention facilities, vegetated swales, porous pavement, rain gardens, and green roofs) that are designed to maintain natural hydrologic functions by absorbing and infiltrating precipitation where it falls.
    - **Regional Scale:** Green infrastructure at the regional scale consists of the interconnected network of open spaces and natural areas that mitigate stormwater runoff, naturally recharge aquifers, and improve water quality while providing recreational opportunities and wildlife habitat (Figure 3-34). Regional scale green infrastructure aims to create an unbroken chain of natural areas and encourages

planers to design interconnected hubs of natural space. This connection enhances the health of open spaces and promotes species diversity.

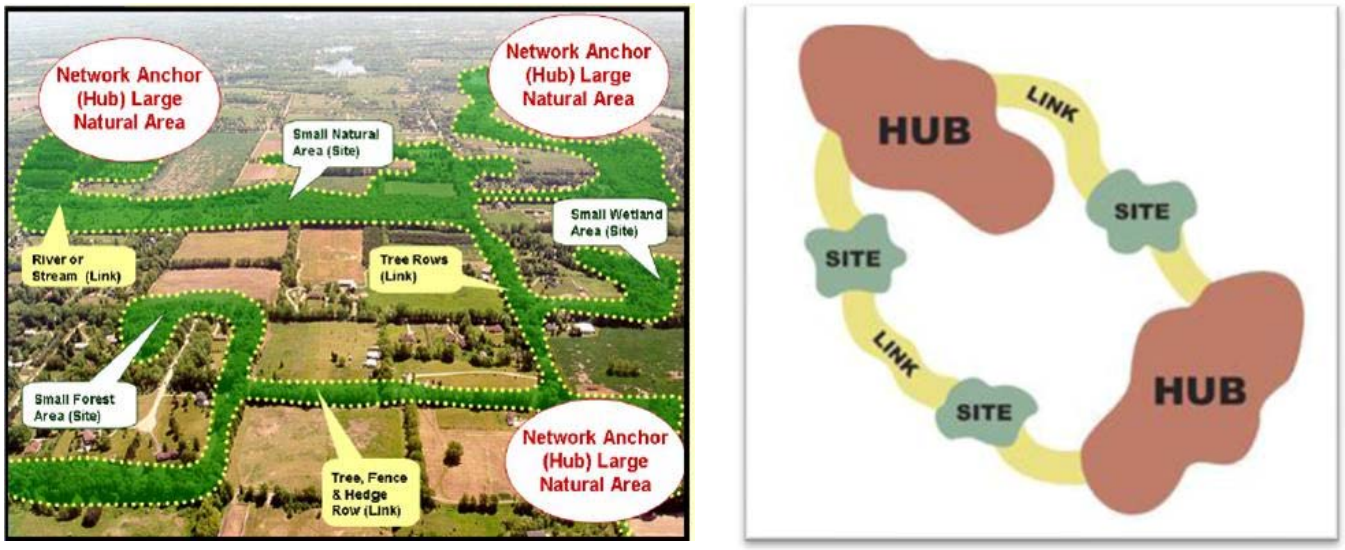


Figure 3-34: Diagram of Regional Scale Green Infrastructure

The Lake Michigan Watershed-Based Plan addresses the condition and quality of water resources and flood damage. Stormwater runoff is a major cause of water pollution and flooding in developed and semi-developed watersheds such as the Lake Michigan watershed. Impervious surfaces such as rooftops, driveways, parking lots, and streets generate stormwater runoff that conveys pollutants to components of the natural drainage or green infrastructure system (ex. wetlands, lakes, and streams). Higher flows of stormwater can also cause erosion and flooding in urban streams, damaging habitat, property, and infrastructure. Since green infrastructure substantially influences how water moves in and on the landscape, it is an important element in the Lake Michigan Watershed-Based Plan for assessing current and planning for future conditions. There are four goals that can be met by increasing the green infrastructure in the Lake Michigan watershed. These summarized goals pertaining to green infrastructure are taken from Chapter 2, Section 2.3 – Watershed Goals and Objectives.

1. <u>*Stream, Ravine and Coastal Restoration & Management:*</u> *Stabilize eroding stream, ravine, bluff, and shoreline segments and address localized erosion related to infrastructure. Naturalize stream channels and ravines and re-establish or improve stream connectivity to Lake Michigan where possible to enhance the beneficial functions of the drainage system. Restore and manage riparian areas, ravines, bluffs, and beaches (including vegetation and buffers) to enhance beneficial functions and protect property and infrastructure. Implement projects to restore or mimic natural hydrology and improve climate resilience, including resilience to fluctuations in Lake Michigan water levels.*

2. <u>*Flood Risk, Flood Damage & Stormwater Management:*</u> *Installation of green infrastructure, including trees and bioretention, and other best management practices to lessen flooding and ravine erosion. Expand, maintain and manage constructed and natural drainage systems to mitigate flood damage and improve resilience for changing precipitation patterns.*

3. *Natural Resources and Habitat: Preserve, restore, and create wetlands and wetland buffers wherever possible. Identify and connect environmental corridors across community, county and state lines. Preserve, manage, and restore rare or unique habitat and natural communities in the Chiwaukee Prairie Illinois Beach Lake Plain and Ramsar Wetland of International Importance. Preserve, manage, and restore rare or unique habitat and natural communities in other protected natural areas within the watershed. Protect existing healthy trees, and plant and maintain a diversity of native trees in appropriate locations within natural and developed areas.*
4. *Water Quality: Installing green infrastructure and implementing BMPs* to r*educe nonpoint source pollution loading and erosion from existing development, re-development and construction sites. Implementing BMPs and restoring the natural drainage system, including (where appropriate) removal, restoration or retrofitting of impoundments and piped or channelized segments in streams and reductions in impervious surfaces.*

Local and regional scale green infrastructure work in concert to infiltrate and store precipitation, thereby reducing the amount of stormwater runoff and the need to treat the water. Green infrastructure also brings many other environmental, social, and economic benefits. These benefits promote urban livability by improving the environment and preserving open space, which supports sustainable communities.

3.8.3 HUBS & FUNCTIONAL CONNECTIONS

The hubs and functional connection analysis for the Lake Michigan watershed will use existing data from *The Green Infrastructure Model and Strategy for Lake County, Illinois* (Allen et al., 2016), or GIMS, the Green Infrastructure Vision (CMAP et al., 2015), or GIV, and Southeastern Wisconsin Regional Planning Commission (SEWRPC) interactive mapping data. The SEWRPC data for Kenosha County, Wisconsin did not contain green infrastructure designated hub areas but did contain functional corridors. The GIV methodology regarding the generation of hubs and functional connections are similar with the Lake GIMS building on "previous efforts of the Chicago Wilderness regional Green Infrastructure Vision (GIV)" (Allen et al., 2016). The main difference being the Lake County GIMS focuses on Lake County and uses local data, whereas the CMAP GIV uses regional data for a seven-county area including Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will in northeastern Illinois.

There is a total of approximately 9,603 acres (or 26% of the watershed) that contains hubs and functional connections in the watershed. The majority of hubs and functional connections in terms of acreage are found in the Dead River subwatershed (4,057 acres). See Table 3-17 for a breakdown per subwatershed. Many of the identified functional connections follow streams and lakes as well as trails systems and serve as natural riparian areas and greenway connections to hubs. Major roadways may act as barriers to functional connections between hubs.

Enhancing and protecting functional connections along riparian areas, especially those adjacent to unprotected stream sections, will improve water quality and help preserve and enhance biodiversity. Riparian functional connection buffers should be restored to widths that benefit not only water quality but also benefit aquatic and terrestrial life. Functional connections identified within open space can be restored to natural land cover types more easily. Furthermore, enhancing existing and restoring/creating wetlands within functional connections will mitigate impacts from stormwater, improve water quality, and provide critical

habitat components. Figure 3-35 shows locations of hubs and functional connections throughout the Lake Michigan watershed.

Table 3-17: Hub and Functional Connection Total Area per Subwatershed

SUBWATERSHED (Inset Map #)	AREA (acres)	% of SUBWATERSHED	% of PLANNING AREA
Bluff/Ravine (5)	1,557	20%	4%
Dead River (2)	4,057	40%	11%
Kellogg Creek (1)	2,577	32%	7%
Pettibone Creek (4)	379	12%	1%
Waukegan River (3)	1,033	14%	3%
TOTAL	**9,603**		**26%**

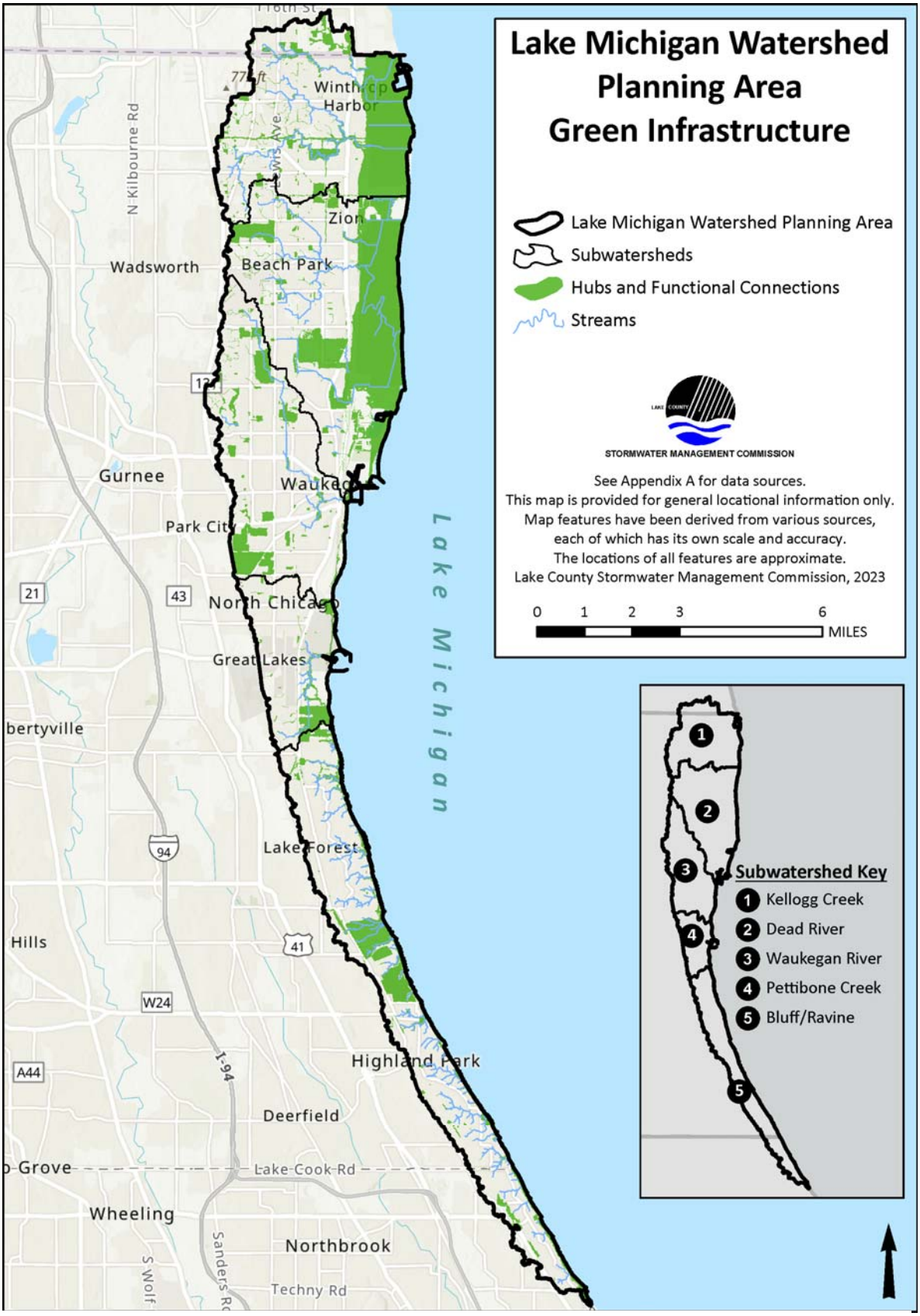


Figure 3-35: Hubs and Functional Connections

3.8.4 Protection Status

Protected and managed land differs from unprotected land because it can't be utilized for developed land uses. The land is either permanently chartered as open land or in a permanent deed restriction such as a conservation easement. Publicly protected and managed lands include forest preserve districts, state nature preserves, and park districts. Privately protected and managed lands include homeowners/business association-owned land with deed restrictions or conservation easements, and land owned by land trusts and other conservation organizations. The conversion of open space to other uses reduces the watershed benefits provided by open land. Conversion of open space to traditionally developed land uses may increase runoff, water quality degradation, and loss of wildlife habitat area and connectivity.

This section will use Protected and Managed Lands already identified using the following data sources:

1. Citizens for Conservation (Data Source: Prairie State Conservation Coalition)
2. Conserve Lake County (Data Source: Prairie State Conservation Coalition)
3. IDNR: INAI and State Parks
4. IDOT Mitigation Banks and Sites (Data Source: Resource Management Mapping Service)
5. Kenosha County GIS
6. Lake Forest Open Lands Association (Data Source: Prairie State Conservation Coalition)
7. LCFPD
8. National Conservation Easement Database (NCED)
9. Protected Areas Database of the US (PAD-US) - CBI Edition 1.1, 2010, (Data Source: USGS)
10. RIBITS - Regional In-Lieu Fee and Bank Information Tracking System. (PAD-US & USACOE)

Table 3-18 represents the acres and percent of protected and managed lands in each of the four subwatersheds and Figure 3-36 represents the geographic distribution.

Table 3-18: Protection Status Summary in the Lake Michigan watershed

SUBWATERSHED (Inset Map #)	AREA (acres)	% of SUBWATERSHED	% of PLANNING AREA
Bluff/Ravine (5)	1,068	14%	3%
Dead River (2)	3,254	32%	9%
Kellogg Creek (1)	1,669	21%	5%
Pettibone Creek (4)	1,020	32%	3%
Waukegan River (3)	840	12%	2%
TOTAL	**7,850**		**22%**

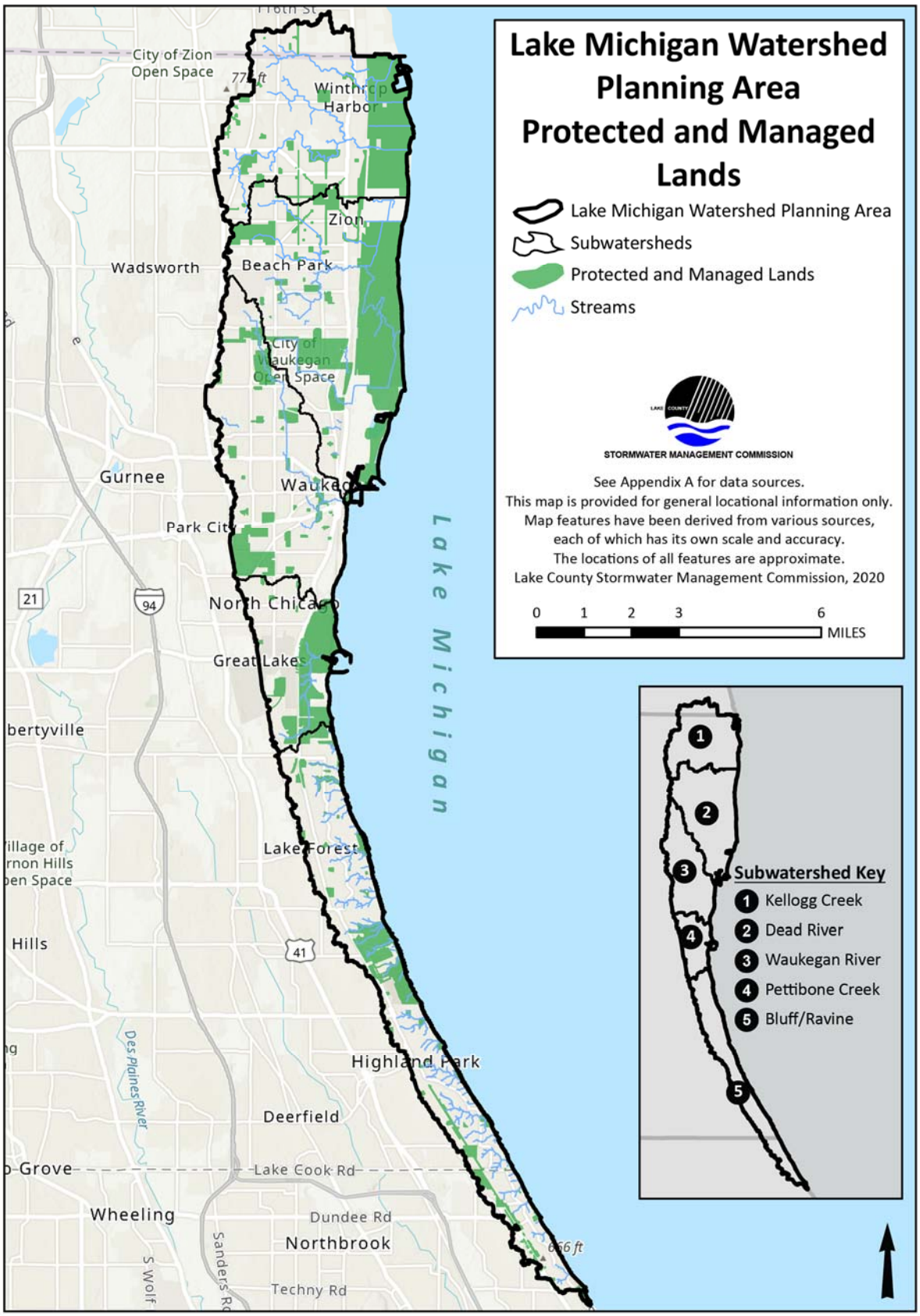


Figure 3-36: Protected and Managed Lands

3.8.5 RESTORATION OPPORTUNITIES

The GIV (Kenosha County data version 2.2 and Cook County data version 2.3) and GIMS (Lake County) identify "restoration building blocks" based on landscape type (Allen et al., 2016). Other areas of potential restoration can be gleaned from the 2008 Kellogg Creek Watershed-Based Plan, 2008 Dead River Watershed-Based Plan and the 2007 Waukegan River Watershed Plan. The green infrastructure BMP categories represented in the 2008 watershed-based plan include detention basin retrofit (correct short circuiting), green infrastructure preservation/restoration (mainly preserving stormwater green infrastructure benefits and wetlands with open space areas), wetland enhancement (enhancing existing wetlands), and wetland restoration (restoring and managing hydric soils and wetlands to improve hydraulic functions and water quality benefits).

Table 3-19 lists the restoration building block layers used in the GIV and the equivalent layers used in the GIMS. Figure 3-37 represents mapped restoration opportunities in the Lake Michigan watershed including the referenced building blocks in Table 3-19.

Table 3-19: Restoration Building Blocks Data Layers

GIV Restoration Building Block (pg. 6 GIV)	GIMS Restoration Building Block (pg. 91 GIMS)
Woodland sites (Forest_lyr5)	Forest_Sites
Pre-settlement woodland/forest (Forest_lyr6)	Forest_Restoration
Pre-settlement prairie/grassland/savanna (PGS_lyr4)	PGS_Restoration
Wetland sites (Wetland_lyr6)	Wetland_Sites
Wetland complexes (wetland_lyr7)	Wetland_Complexes
NHD+ raster buffer (stream_lyr2)*	Water_AllBuffer*
Freshwater systems (stream_lyr4)	Water_FreshWaterSystems

For more information on how these layers were compiled, refer to page 6 of the GIV and page 91 of the GIMS.
***NHD+ refers to National Hydrology Dataset Plus (or NHDPlus) dataset from the USGS. More information can be found here https://www.usgs.gov/core-science-systems/ngp/national-hydrography/nhdplus-high-resolution**

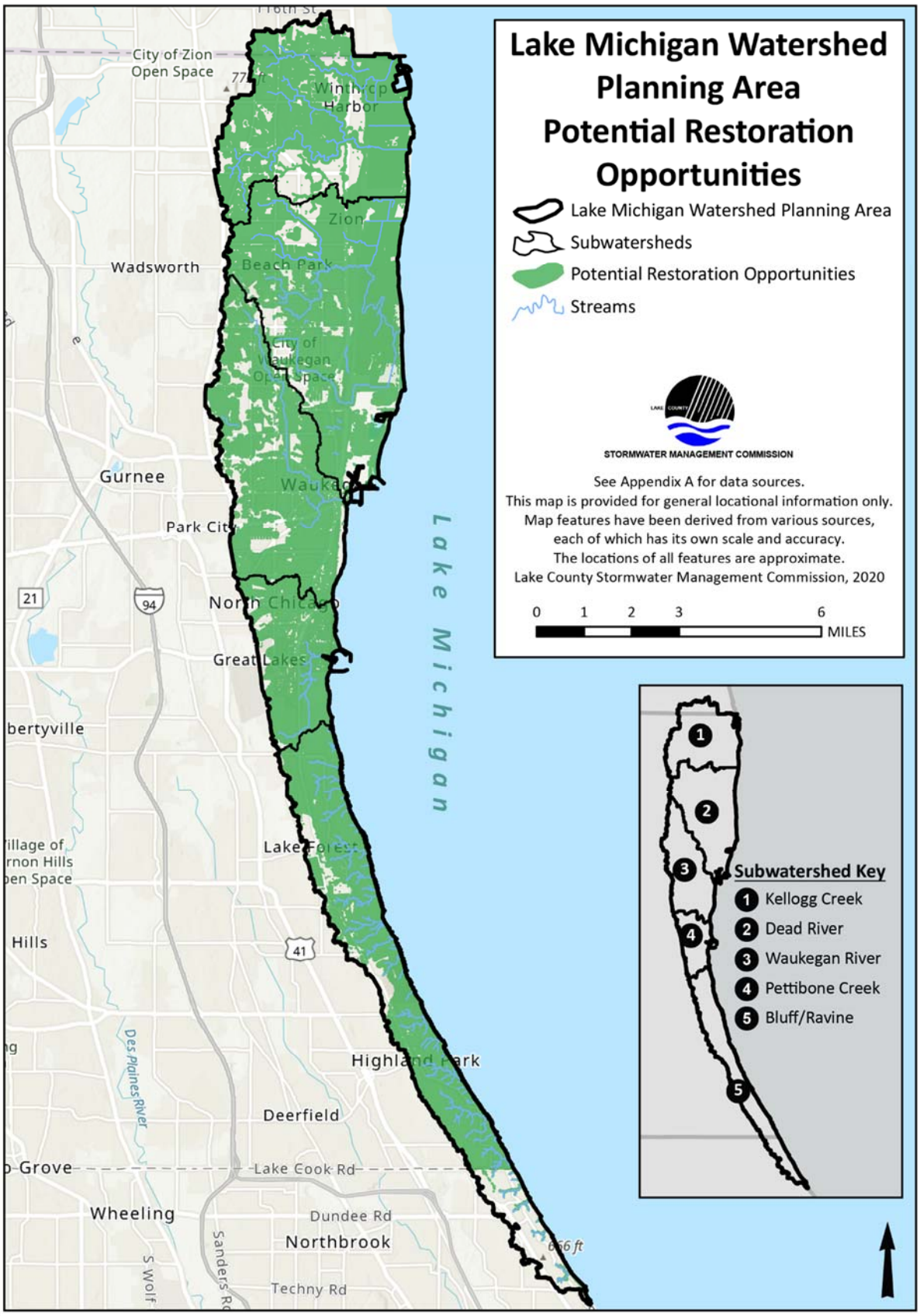


Figure 3-37: Restoration Opportunities

3.9 PARKS AND RECREATION

3.9.1 PARKS AND OPEN SPACE

Figure 3-38: Adeline Jay Geo-Karis Illinois Beach State Park

One hundred and sixty-seven (167) parks totaling approximately 5,198.24 acres were identified within the Lake Michigan watershed. For the purposes of this plan, "parks" are defined as publicly owned open space not owned by a Forest Preserve District, including all open space owned by park districts, municipalities, townships, and the State of Illinois. Management, programming, and use of these lands is varied, and includes active and passive recreation, wildlife management, hunting and fishing. This plan does not include golf courses in this definition (see Section 3.9.2). The average mean park size is approximately 31.13 acres. The number of parks per county and jurisdiction is presented in Table 3-20 and Table 3-21, respectively. Table 3-21 indicates one hundred and seventy-seven (177) total parks in the watershed but that number is derived from the number of parks per jurisdiction and there are 6 parks that are located within multiple jurisdictions, so the total number of parks is actually 167. Figure 3-38 displays an example of a park in the LM planning area and all park locations are displayed in Figure 3-39.

Table 3-20: Distribution of Parks within the Lake Michigan Watershed

PARK LOCATION (COUNTY)	NUMBER OF PARKS	SIZE (ACRES)	% OF THE WATERSHED
KENOSHA	1	8.36	0.02%
COOK	18	61.25	0.17%
LAKE	148	5,128.63	14.06%
TOTAL	**167**	**5,198.24**	**14.25%**

Table 3-21: Distribution of Parks by Jurisdiction

PARK LOCATION (JURISDICTION)	NUMBER OF PARKS	SIZE (ACRES)	% OF THE WATERSHED
Beach Park	5	35.78	0.10%
Benton Township	3	1296.02	3.55%
Glencoe	14	45.14	0.12%
Highland Park	23	128.37	0.35%
Highwood	2	2.58	0.01%
Lake Bluff	9	54.58	0.15%
Lake Forest	9	158.26	0.43%
Moraine Township	1	47.20	0.13%
North Chicago	5	134.75	0.37%
Pleasant Prairie	1	8.36	0.02%
Shields Township	1	4.22	0.01%
Waukegan	45	788.45	2.16%
Waukegan Township	5	993.00	2.72%
Winnetka	4	16.11	0.04%
Winthrop Harbor	5	809.45	2.22%
Zion	45	675.96	1.85%
TOTAL	**177**	**5,198.24**	**14.25%**

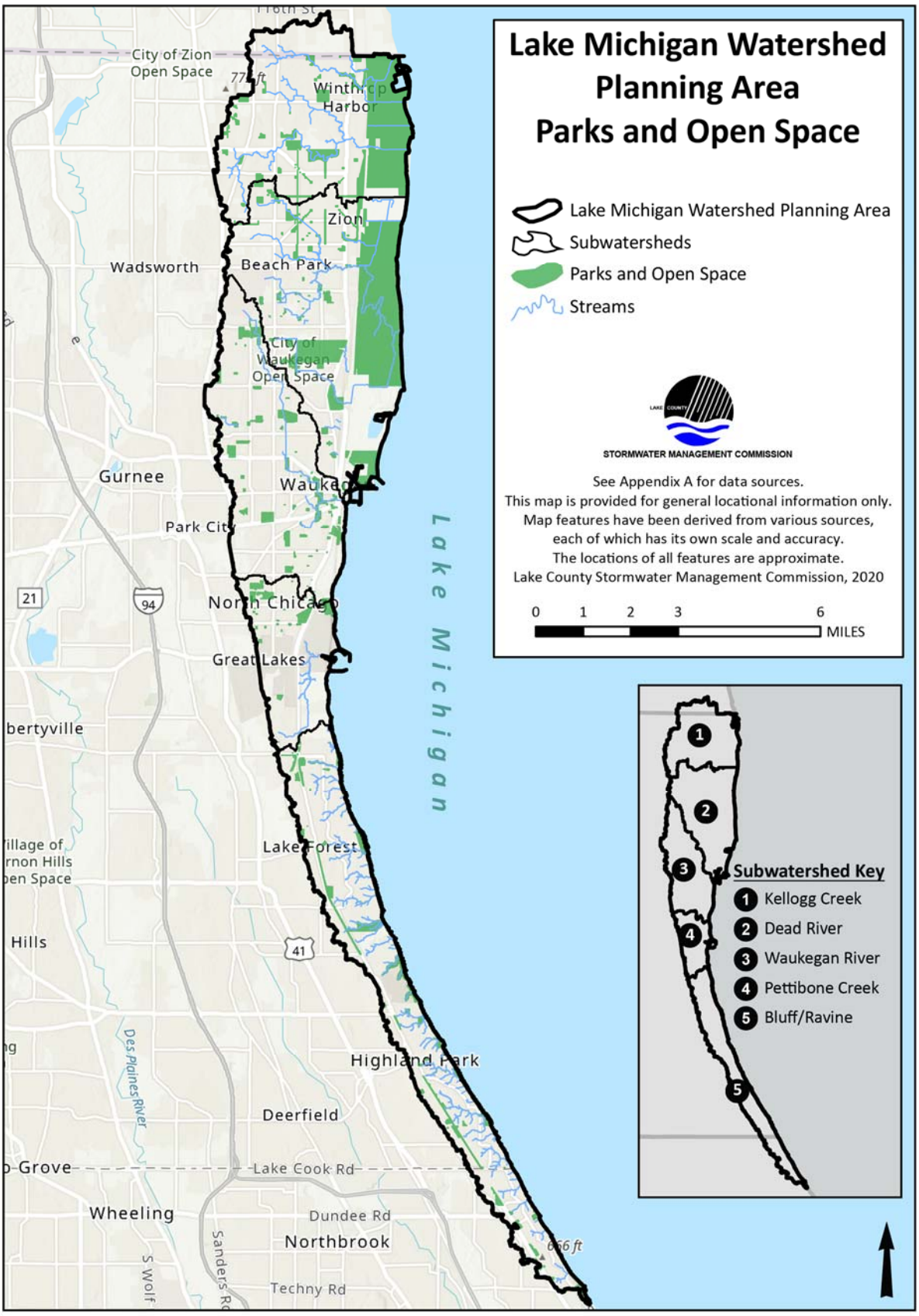


Figure 3-39: Parks & Open Space

3.9.2 Golf Courses

Ten golf courses totaling approximately 913.97 acres are located within the Lake Michigan watershed. The distribution of golf courses by jurisdiction is summarized in Table 3-22, and graphically displayed in Figure 3-40.

Table 3-22: Distribution of Golf Courses within the Lake Michigan Watershed

GOLF COURSE LOCATION (JURISDICTION)	NUMBER OF GOLF COURSES	SIZE (ACRES)	% OF THE WATERSHED
Beach Park	2	216.15	0.59%
Glencoe	1	117.11	0.32%
Highland Park	1	11.17	0.03%
Highwood	1	5.53	0.02%
Lake Bluff	2	91.57	0.25%
Lake Forest	1	1.48	0.00%
Shields Township	1	65.11	0.18%
Waukegan	2	273.81	0.75%
Zion	2	132.05	0.36%
TOTAL	**13**	**913.97**	**2.5%**

Stormwater runoff from many of these golf courses flows directly into the tributaries and ravines leading directly into Lake Michigan. Landscaping and maintenance practices at golf courses directly impact the watershed. While fertilizers and pesticides maximize productivity and performance of turf grass, the Lake Michigan watershed may be at risk from spills of concentrated chemicals used to mix fertilizers and pesticides for application. Of the many nutrients applied to golf turf and the primary contaminants of concern in fertilizers are nitrogen and phosphorus, which contribute to algal growth, weeds, and the impairment of water.

Pesticides may be toxic to aquatic and terrestrial systems depending on their solubility, toxicity, and chemical breakdown rate. Other potentially hazardous materials, such as fuels and paints that are used in everyday operation and maintenance, can contaminate water quality accidentally. Golf course BMPs should be followed for maintenance operations to prevent contamination from accidental releases. Another significant source of pollution from golf courses are waterfowl. Shallow ponds surrounded by mowed turf grass attract significant populations of waterfowl. Deposits of fecal matter by resident and migrating waterfowl (primarily Canada geese) may contribute to high levels of fecal coliform in the watershed (Figure 3-41).

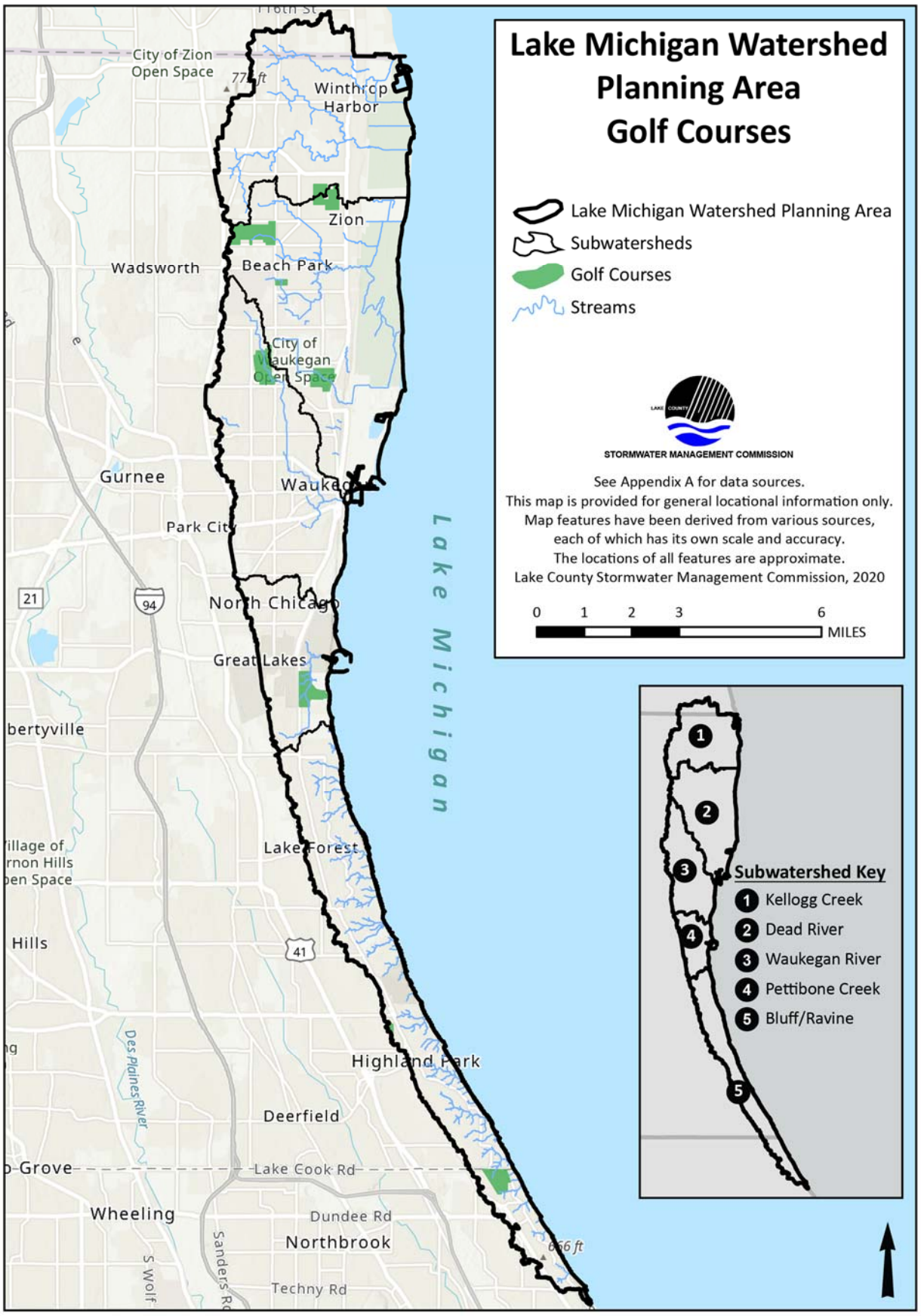


Figure 3-40: Golf Courses

Recommended BMPs for golf courses (Cornell University, 2014) include:

- *Maintain a 100-foot buffer around waterways for chemical storage and mixing. Storage areas should have a raised berm on all sides and an impervious surface for containment. Facilities should be equipped with "spill containment material".*
- *Grass clippings and debris removed from equipment should be disposed of properly and not released into waterways.*
- *Determine accurate supplemental nutrient needs based on soil chemical and physical analysis.*

Figure 3-41: Photo of geese on a golf course

- *Assess nutrient application efficiency through regular equipment calibration.*
- *Maintain turf with high shoot density to minimize runoff and maximize infiltration.*
- *Manage the surface accumulation of organic matter to maintain a permeable system that minimizes runoff and maximizes subsurface retention.*
- *Select turf that is well adapted to site conditions. Well adapted species require reduced amounts of fertilizer and pesticides, and if selected for drought tolerance, requires less water to survive and maintain playability.*
- *Minimize the amount of fertilizer and chemicals used during the establishment phase as establishing turf does not provide the needed uptake to prevent runoff and leaching.*
- *Implement methods such as core cultivation, deep slicing and water injection to alleviate soil compaction and remove organic material, resulting in increased infiltration and reduced runoff.*
- *Utilize proper topdressing material to maintain permeable turf.*
- *Utilize a combination of preventative and reactive strategies to manage pest problems. Select management options according to site conditions instead of the calendar.*
- *Establish wetland fringes around ponds to reduce populations of geese (geese prefer open water with closely mowed, visible banks to they can see predators approaching).*

3.10 NATURAL AREAS

3.10.1 NATURE PRESERVES, FOREST PRESERVES, AND HIGH-QUALITY NATURAL AREAS

Several dedicated Illinois Nature Preserves and Lake County and Cook County Forest Preserves are in the Lake Michigan watershed. There are 8 forest preserve and 6 nature preserve areas totaling 3,802.68 acres in the Lake Michigan watershed (See Figure 3-43 for a map of forest and nature preserves within Lake Michigan watershed). The 8 forest preserve areas total approximately 1,445.34 acres within the Lake Michigan watershed. Forest and nature

preserve areas are key components of the system of hubs and links creating the regional green infrastructure system in the Lake Michigan watershed. In particular, the network of forest preserves, nature preserves and parks and open space (Section 3.9.1) along Lake Michigan provides significant flood damage reduction, water quality, habitat, and quality of life benefits to the watershed (see Figure 3-42 for an example of a forest preserve). Therefore, forest preserve districts, park districts and the IDNR are all key partners in successful implementation of this plan. Forest preserve properties within the Lake Michigan watershed are listed in

Table 3-23, acres of forest preserve in each subwatershed is listed in

SITE	ACRES
Community Garden Site	0.08
Fort Sheridan Forest Preserve	259.01
Greenbelt Forest Preserve	350.53
Lyons Woods Forest Preserve	341.12
Mary Mix McDonald Woods	0.73
Spring Bluff Forest Preserve	229.58
ThunderHawk Golf Club	210.03
Turnbull Woods	54.26
TOTAL:	1,445.34

Table 3-24, and forest and nature preserve properties are mapped in Figure 3-43.

Table 3-23: Forest Preserve Areas in the Lake Michigan Watershed

SITE	ACRES
Community Garden Site	0.08
Fort Sheridan Forest Preserve	259.01
Greenbelt Forest Preserve	350.53
Lyons Woods Forest Preserve	341.12
Mary Mix McDonald Woods	0.73
Spring Bluff Forest Preserve	229.58
ThunderHawk Golf Club	210.03
Turnbull Woods	54.26
TOTAL:	1,445.34

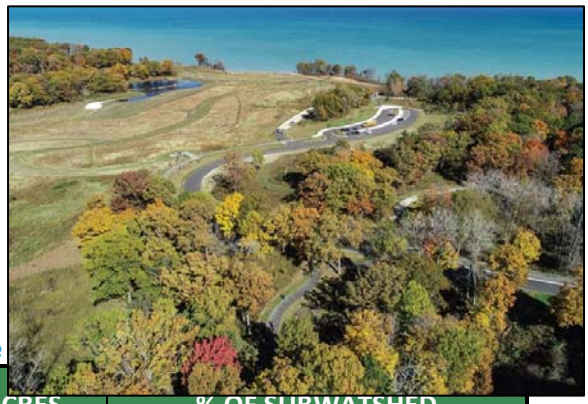


Figure 3-42: Fort Sheridan Forest Preserve
Photo Courtesy of LCFPD

Table 3-24: Forest Preserve and County Parks Acreages in the

SUBWATERSHED (Inset Map #)	FOREST PRESERVE ACRES	% OF SUBWATSHED
Bluff/Ravine (5)		
Dead River (2)	521.54	1.43%
Kellogg Creek (1)	230.08	0.63%
Pettibone Creek (4)	0.00	0.00%
Waukegan River (3)	379.72	1.04%
TOTALS	**1,445.34**	**Percent of Watershed 3.96%**

There are 6 nature preserve properties totaling 2,357.34 acres in the Lake Michigan watershed, as listed in Table 3-25. Two of these properties are located entirely within a forest preserve property (Lyons Prairie and Woods Nature Preserve and Spring Bluff Nature Preserve) totaling 493.52 acres.

Table 3-25: Nature Preserves in the Lake Michigan Watershed

SITE	ACRES	ACRES IN FOREST PRESERVE
Chiwaukee Prairie	8.36	0.00
Illinois Beach Nature Preserve	1079.49	0.00
Lyons Prairie and Woods Nature Preserve	264.06	264.06
North Dunes Nature Preserve	702.14	0.00
Openlands Lakeshore, Bluff and Ravine Nature Preserve	73.84	0.00
Spring Bluff Nature Preserve	229.46	229.46
TOTAL:	**2,357.34**	**493.52**

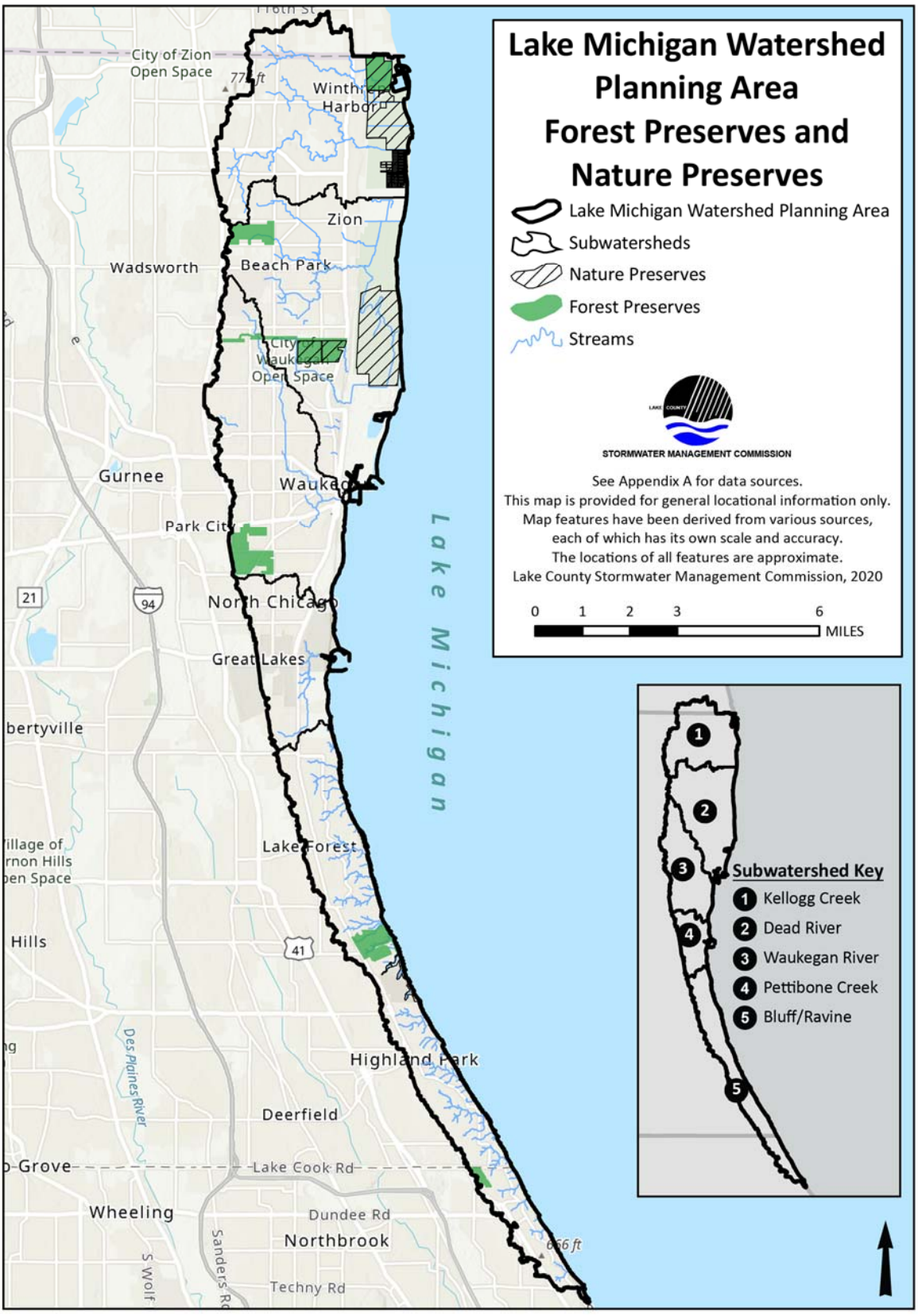


Figure 3-43: Forest and Nature Preserves

3.10.2 Threatened and Endangered Species

High quality natural resources in the Lake Michigan watershed include **threatened** and **endangered** species and communities, rare habitats, and important natural areas, including natural area inventory sites, forest preserves, nature preserves, and high quality **ADID** wetlands. No Federally endangered species have been observed in the watershed.

ENDANGERED SPECIES: A species in danger of extinction throughout all or a substantial portion of its range.

THREATENED SPECIES: A species likely to become endangered in the near future.

ADID SITES: Aquatic sites that have been determined to provide biological value by the USACE, Chicago District and the USEPA.

92 threatened and endangered species were listed in the watershed (Kenosha, Lake and Cook County) including 68 vascular plant species, 19 vertebrate animal species, and 5 invertebrate animal species. There are approximately 26 species listed as Special Concern Species. This designation is sometimes coupled with a threatened or endangered status. Federal Species of Concern are those species that may need concentrated conservation actions, which vary depending on the health of the populations and degree and types of threats. They receive no legal protection and are not necessarily species that will eventually be proposed for listing as threatened or endangered. There are 27 natural communities (terrestrial and freshwater) within the Lake Michigan watershed; no formal status is assigned to natural communities.

Noteworthy: Identifying High Quality Natural Resources

The Illinois Natural Heritage Database provides information on the presence of the state's threatened and endangered plants and animals, INAI sites, Illinois Nature Preserves, and Forest Preserve lands. The database's information was gathered from the INAI inventory (conducted in the mid 1970's), as well as by IDNR biologists, resource managers, and volunteers. Lake County threatened and endangered species information was also assembled during LCHD-ES water quality and plant sampling of the lakes, in addition to 20 years of threatened and endangered species data from the LCFPD queried through the IDNR Element Occurrence Records reports.

Table 3-26 includes the Illinois listed threatened or endangered species in the Lake Michigan watershed and provides additional information, including status and type, and Table 3-27 lists the number of Illinois threatened and endangered species in each subwatershed. Ecologically significant and protected areas in the watershed provide habitat for threatened or endangered species and contain examples of high-quality natural communities. These areas include ADID (high quality) wetlands, four INAI sites, eight forest preserves, and six nature preserves

Table 3-26: Illinois Listed T&E Species within the Lake Michigan watershed

SCIENTIFIC NAME	COMMON NAME	COUNTIES	TYPE	STATUS
Acris blanchardi	Blanchard's Cricket Frog	Kenosha	Vertebrate Animal	Endangered
Aflexia rubranura	Redveined Prairie Leafhopper	Kenosha, Lake	Invertebrate Animal	Threatened (IL)/ Endangered (WI)
Agalinis gattingeri	Roundstem Foxglove	Kenosha	Vascular Plant	Threatened
Agalinis skinneriana	Pale False Foxglove	Kenosha, Lake	Vascular Plant	Threatened (IL)/ Endangered (WI)
Alosa chrysochloris	Skipjack Herring	Kenosha	Vertebrate Animal	Endangered

SCIENTIFIC NAME	COMMON NAME	COUNTIES	TYPE	STATUS
Amelanchier interior	Shadbush	Lake	Vascular Plant	Threatened
Amelanchier sanguinea	Shadbush	Lake	Vascular Plant	Endangered
Ammophila breviligulata	Marram Grass	Cook, Kenosha, Lake	Vascular Plant	Threatened
Antistrophus silphii	Silphium Terminal Gall Wasp	Kenosha	Invertebrate Animal	Special Concern Species
Arctostaphylos uva-ursi	Bearberry	Lake	Vascular Plant	Endangered
Ardea alba	Great Egret	Kenosha	Vertebrate Animal	Threatened
Arnoglossum plantagineum	Prairie Indian-plantain	Kenosha	Vascular Plant	Special Concern Species
Asclepias hirtella	Green Milkweed	Kenosha	Vascular Plant	Special Concern Species
Asclepias sullivantii	Prairie Milkweed	Kenosha	Vascular Plant	Threatened
Aster furcatus	Forked Aster	Lake	Vascular Plant	Threatened
Bartramia longicauda	Upland Sandpiper	Lake	Vertebrate Animal	Endangered
Beach	Beach/shoredunes, Great Lakes Type	Lake	Terrestrial Community	--
Bombus affinis	Rusty Patched Bumble Bee	Lake	Invertebrate Animal	Endangered
Botaurus lentiginosus	American Bittern	Lake	Vertebrate Animal	Endangered
Botrychium campestre	Prairie Dunewort	Kenosha	Vascular Plant	Endangered
Cakile edentula var. lacustris	American Sea Rocket	Cook, Kenosha, Lake	Vascular Plant	Threatened/ Special Concern Species
Calamovilfa longifolia var. magna	Sand Reedgrass	Kenosha	Vascular Plant	Threatened
Calcareous fen	Calcareous Fen	Kenosha	Terrestrial Community	--
Calopogon tuberosus	Grass Pink Orchid	Kenosha, Lake	Vascular Plant	Endangered
Carex aurea	Golden Sedge	Lake	Vascular Plant	Threatened
Carex cryptolepis	Sedge	Lake	Vascular Plant	Threatened
Carex garberi	Sedge	Lake	Vascular Plant	Endangered
Carex viridula	Little Green Sedge	Lake	Vascular Plant	Threatened
Castilleja sessiliflora	Downy Yellow Painted Cup	Lake	Vascular Plant	Endangered
Catostomus catostomus	Longnose Sucker	Lake	Vertebrate Animal	Threatened
Ceanothus herbaceus	Redroot	Lake	Vascular Plant	Endangered
Chamaesyce polygonifolia	Seaside Spurge	Cook, Lake	Vascular Plant	Endangered
Charadrius melodus	Piping Plover	Kenosha, Lake	Vertebrate Animal	Endangered
Cimicifuga racemosa	False Bugbane	Lake	Vascular Plant	Endangered
Circus cyaneus	Northern Harrier	Lake	Vertebrate Animal	Endangered
Cirsium pitcheri	Pitcher's (Dune) Thistle	Lake	Vascular Plant	Threatened
Clinopodium arkansanum	Low Calamint	Kenosha	Vascular Plant	Special Concern Species
Clonophis kirtlandi	Kirtland's Snake	Lake	Vertebrate Animal	Threatened

SCIENTIFIC NAME	COMMON NAME	COUNTIES	TYPE	STATUS
Coccyzus erythropthalmus	Black-billed Cuckoo	Lake	Vertebrate Animal	Threatened
Coregonus artedi	Cisco	Lake	Vertebrate Animal	Threatened
Cuscuta glomerata	Rope Dodder	Kenosha	Vascular Plant	Special Concern Species
Cuscuta polygonorum	Knotweed Dodder	Kenosha	Vascular Plant	Special Concern Species
Drosera rotundifolia	Round-leaved Sundew	Lake	Vascular Plant	Endangered
Dry sand prairie	Dry Sand Prairie, Midwest Type	Lake	Terrestrial Community	--
Dry sand savanna	Barrens, Central Midwest Type	Lake	Terrestrial Community	--
Dry-mesic prairie	Dry-mesic Prairie	Kenosha	Terrestrial Community	NA
Dry-mesic sand prairie	High Prairie, Midwest Type	Lake	Terrestrial Community	--
Dry-mesic sand savanna	Barrens, Central Midwest Type	Lake	Terrestrial Community	--
Dry-mesic upland forest	Well Drained Forest	Lake	Terrestrial Community	--
Eleocharis olivacea	Capitate Spikerush	Lake	Vascular Plant	Endangered
Eleocharis pauciflora	Few-flowered Spikerush	Lake	Vascular Plant	Endangered
Elymus trachycaulus	Bearded Wheat Grass	Lake	Vascular Plant	Endangered
Emergent marsh	Emergent Marsh	Kenosha	Terrestrial Community	NA
Emydoidea blandingii	Blanding's Turtle	Kenosha, Lake	Vertebrate Animal	Endangered/ Special Concern Species
Enallagma basidens	Double-striped Bluet	Kenosha	Vertebrate Animal	Special Concern Species
Erimyzon sucetta	Lake Chubsucker	Kenosha	Vertebrate Animal	Special Concern Species
Eroding bluff	Poorly Consolidated Slope, Midwest Type	Lake	Terrestrial Community	--
Etheostoma microperca	Least Darter	Kenosha	Vertebrate Animal	Special Concern Species
Euphorbia polygonifolia	Seaside Spurge	Kenosha	Vascular Plant	Special Concern Species
Falco peregrinus	Peregrine Falcon	Kenosha	Vertebrate Animal	Endangered
Fimbristylis puberula	Chestnut Sedge	Kenosha	Vascular Plant	Endangered
Foredune	Beach/shoredunes, Great Lakes Type	Lake	Terrestrial Community	--
Fundulus diaphanus	Banded Killifish	Cook, Kenosha, Lake	Vertebrate Animal	Threatened
Geranium bicknellii	Northern Cranesbill	Lake	Vascular Plant	Endangered
Graminoid fen	Alkaline Shrub/herb Fen, Midwest Type	Lake	Terrestrial Community	--
Great lake	Great Lake	Lake	Freshwater Community	--

SCIENTIFIC NAME	COMMON NAME	COUNTIES	TYPE	STATUS
Great lakes dune	Great Lakes Dune	Kenosha	Terrestrial Community	--
Helianthus giganteus	Tall Sunflower	Lake	Vascular Plant	Endangered
Hypericum kalmianum	Kalm's St. John's Wort	Lake	Vascular Plant	Endangered
Incisalia polios	Hoary Elfin	Lake	Invertebrate Animal	Endangered
Ixobrychus exilis	Least Bittern	Lake	Vertebrate Animal	Threatened
Juncus alpinoarticulatus	Richardson's Rush	Lake	Vascular Plant	Threatened
Juncus marginatus	Grassleaf Rush	Kenosha	Vascular Plant	Special Concern Species
Juniperus communis	Ground Juniper	Cook, Lake	Vascular Plant	Threatened
Juniperus horizontalis	Trailing Juniper	Lake	Vascular Plant	Endangered
Kinosternon flavescens	Yellow Mud Turtle	Lake	Vertebrate Animal	Endangered
Lathyrus ochroleucus	Pale Vetchling	Lake	Vascular Plant	Threatened
Lechea intermedia	Pinweed	Lake	Vascular Plant	Endangered
Lonicera dioica var. glaucescens	Red Honeysuckle	Lake	Vascular Plant	Endangered
Lycaeides melissa samuelis	Karner Blue Butterfly	Lake	Invertebrate Animal	Endangered
Marsh	Permanent Marsh	Lake	Freshwater Community	--
Menyanthes trifoliata	Buckbean	Lake	Vascular Plant	Threatened
Mesic prairie	Tallgrass Prairie	Lake	Terrestrial Community	--
Mesic sand prairie	Moist Sand Prairie, Midwest Type	Lake	Terrestrial Community	--
Mesic upland forest	Rich Forest	Lake	Terrestrial Community	--
Migratory Bird Concentration Site	Migratory Bird Concentration Site	Kenosha	Terrestrial Community	Special Concern Species
Myndus ovatus	A Planthopper	Kenosha	Invertebrate Animal	Special Concern Species
Notropis heterodon	Blackchin Shiner	Lake	Vertebrate Animal	Threatened
Nycticorax nycticorax	Black-crowned Night-Heron	Lake	Vertebrate Animal	Endangered
Orobanche fasciculata	Clustered Broomrape	Lake	Vascular Plant	Endangered
Panne	Alkaline Shoredunes Pond/marsh, Great Lakes Type	Lake	Terrestrial Community	--
Papaipema beeriana	Liatris Borer Moth	Kenosha	Invertebrate Animal	Special Concern Species
Papaipema silphii	Silphium Borer Moth	Kenosha	Invertebrate Animal	Endangered
Penstemon pallidus	Pale Beardtongue	Kenosha	Vascular Plant	Special Concern Species
Phlox glaberrima ssp. interior	Smooth Phlox	Kenosha	Vascular Plant	Endangered
Pinus banksiana	Jack Pine	Lake	Vascular Plant	Endangered
Platanthera clavellata	Wood Orchid	Lake	Vascular Plant	Endangered

SCIENTIFIC NAME	COMMON NAME	COUNTIES	TYPE	STATUS
Platanthera flava	Tubercled Orchid	Kenosha Lake	Vascular Plant	Threatened
Platanthera leucophaea	Eastern Prairie Fringed Orchid	Kenosha, Lake	Vascular Plant	Endangered
Platanthera psycodes	Purple Fringed Orchid	Lake	Vascular Plant	Endangered
Poa alsodes	Grove Bluegrass	Lake	Vascular Plant	Endangered
Poa languida	Weak Bluegrass	Lake	Vascular Plant	Endangered
Poliocitellus franklinii	Franklin's Ground Squirrel	Kenosha	Vertebrate Animal	Special Concern Species
Polygala incarnata	Pink Milkwort	Kenosha	Vascular Plant	Endangered
Polygonatum pubescens	Downy Solomon's Seal	Lake	Vascular Plant	Threatened
Pond	Pond	Lake	Freshwater Community	--
Populus balsamifera	Balsam Poplar	Cook, Lake	Vascular Plant	Endangered
Procambarus gracilis	Prairie Crayfish	Kenosha	Invertebrate Animal	Special Concern Species
Ranunculus cymbalaria	Seaside Crowfoot	Kenosha	Vascular Plant	Threatened
Rhynchospora alba	Beaked Rush	Lake	Vascular Plant	Endangered
Rubus odoratus	Purple-flowering Raspberry	Cook, Lake	Vascular Plant	Threatened
Rubus pubescens	Dwarf Raspberry	Cook, Lake	Vascular Plant	Threatened
Salix syrticola	Dune Willow	Lake	Vascular Plant	Endangered
Scirpus microcarpus	Small-fruited Bulrush	Lake	Vascular Plant	Endangered
Scleria triglomerata	Whip Nutrush	Kenosha	Vascular Plant	Special Concern Species
Scleria verticillata	Low Nutrush	Kenosha	Vascular Plant	Special Concern Species
Sedge meadow	Wet Meadow, Central Midwest Type	Lake	Terrestrial Community	--
Seep	Rich Forested Fen, Lower Midwest Type	Lake	Terrestrial Community	--
Shepherdia canadensis	Buffaloberry	Lake	Vascular Plant	Endangered
Sisyrinchium albidum	White Blue-eyed-grass	Kenosha	Vascular Plant	Special Concern Species
Sisyrinchium montanum	Mountain Blue-eyed Grass	Lake	Vascular Plant	Endangered
Southern dry-mesic forest	Southern Dry-mesic Forest	Kenosha	Terrestrial Community	--
Spiranthes lucida	Yellow-lipped Ladies' Tresses	Lake	Vascular Plant	Endangered
Spiranthes magnicamporum	Great Plains Lady's-tresses	Kenosha	Vascular Plant	Special Concern Species
Sterna hirundo	Common Tern	Lake	Vertebrate Animal	Endangered
Thalictrum revolutum	Waxleaf Meadowrue	Kenosha	Vascular Plant	Special Concern Species
Tofieldia glutinosa	False Asphodel	Lake	Vascular Plant	Threatened
Triantha glutinosa	False Asphodel	Kenosha	Vascular Plant	Threatened
Trientalis borealis	Star-flower	Lake	Vascular Plant	Endangered

SCIENTIFIC NAME	COMMON NAME	COUNTIES	TYPE	STATUS
Triglochin maritima	Common Bog Arrow Grass	Lake	Vascular Plant	Threatened
Triglochin palustris	Slender Bog Arrow Grass	Kenosha, Lake	Vascular Plant	Threatened/ Special Concern Species
Trillium erectum	Ill-scented Trillium	Kenosha, Lake	Vascular Plant	Endangered
Utricularia cornuta	Horned Bladderwort	Lake	Vascular Plant	Endangered
Utricularia intermedia	Flat-leaved Bladderwort	Lake	Vascular Plant	Threatened
Utricularia minor	Small Bladderwort	Lake	Vascular Plant	Endangered
Utricularia subulata	Hair Bladderwort	Lake	Vascular Plant	Endangered
Valeriana edulis var. ciliata	Hairy Valerian	Kenosha	Vascular Plant	Special Concern Species
Veronica scutellata	Marsh Speedwell	Lake	Vascular Plant	Threatened
Wet prairie	Wet Prairie	Lake	Terrestrial Community	--
Wet sand prairie	Wet Prairie, Midwest Type	Lake	Terrestrial Community	--
Wet-mesic prairie	Wet-mesic Prairie	Kenosha	Terrestrial Community	NA
Wet-mesic sand prairie	Moist Sand Prairie, Midwest Type	Lake	Terrestrial Community	--

Table 3-27: Number of Species that are State-Threatened or Endangered by Subwatershed

SUBWATERSHED (INSET MAP #)	NUMBER OF SPECIES THAT ARE STATE-THREATENED OR ENDANGERED
Kellogg Creek (1)	54
Dead River (2)	62
Waukegan River (3)	8
Pettibone Creek (4)	7
Bluff/Ravine (5)	21

3.11 WETLAND INVENTORY

European settlers to the region altered much of the Lake Michigan watershed planning area's natural hydrology and wetland processes. They drained wet areas, channelized streams, plowed prairie land, and cleared forests to farm the rich soils. Even after these alterations, the underlying soil retains clues to its prior condition. Hydric soils (soils that remain wet for an extended period) can help identify the locations of pre-settlement wetlands.

Several wetland types exist in the LM planning area. These wetlands are characterized based on the location in the landscape, soil, vegetation, and hydrology. Marshes, often a mix of emergent vegetation and open water, are probably the most recognizable wetland type in the watershed outside of the coastal plain and form in many different landscapes, including in isolated depressions and along stream corridors.

WETLANDS: Areas with a high potential for exhibiting hydric soil, hydrophytic vegetation, and required hydrologic conditions.

FARMED WETLANDS: Agricultural cropped areas on hydric soil that have been cleared, partially drained, or filled.

Interdunal wetlands are the prominent hydrologic feature in the coastal plain extending from Waukegan to Kenosha, Wisconsin, and have been designated a Ramsar Wetland of International Importance. This interdunal wetland complex is significant within the planning area and the region both for its size and its unique natural resource characteristics. Aside from Lake Michigan, the coastal wetland complex is the most prominent single hydrologic feature in the LM watershed planning area. Wet meadows (areas with saturated soil conditions for much of the year) were once a common wetland type in the watershed but have been reduced since the time of European settlement because of drainage and agriculture. Vernal pools (forested wetland pockets that hold standing water during spring and early summer) can be found in the woodlands along the crests of the moraines that form the perimeter of the watershed and the tablelands above ravines, but are also much reduced from their historic number.

The first comprehensive effort to inventory and map wetland resources in the LM planning area was the National Wetlands Inventory (NWI), undertaken by the U.S. Fish and Wildlife Service (USFWS) in the mid-1980s. NWI maps initially were developed by interpreting high-altitude aerial photographs using stereoscope, pen, and ink. Image interpretation for the NWI has evolved to now use geospatial software. There are 3,556 acres of wetlands identified in the NWI in the LM planning area in Lake (3,432 acres), Cook (3 acres) and Kenosha (121 acres) Counties. This acreage includes streams, lakes, and ponds.

Lake County Wetlands

In 1990 a countywide wetland mapping effort was undertaken. The Lake County Wetland Inventory (LCWI) was initially published in 1993, comprehensively updated in 2002, and the current version has a publication date of 2009. By way of comparison, the LCWI reflects nearly twice the acreage of wetland resources for Lake County as the NWI and slightly more than twice the acreage for the LM planning area in Lake County.

While the NWI offers a classification of wetland areas based on vegetation and hydrology, in 1992, the U.S. Environmental Protection Agency (USEPA) completed an Advanced Identification (ADID) study of high-function wetlands in Lake County using the LCWI as a base. The ADID study identified about 200 wetland complexes in the county that were predicted to have high ecological, stormwater management, and water quality

NOTEWORTHY: LAKE COUNTY WETLAND INVENTORY

The *Lake County Wetland Inventory (LCWI)* was originally developed in 1993 by a multi-agency team using a combination of information sources, including wetland inventory maps and the 1970 Soil Survey of Lake County by the USDA-Soil Conservation Service (SCS), National Wetland Inventory (NWI) maps by the USFWS, and various years of aerial photography. The LCWI was updated in 2002 using high resolution aerial photography and enhanced with Lake County GIS topographic information (elevation contours). The updated 2002 LCWI maps identify five different wetland types: *wetlands, farmed wetlands*, *artificial wetlands*, *converted wetlands*, and *Advance Identification wetlands (ADID)*. The LCWI is intended to improve the understanding and management of the County's wetland resources.

NOTEWORTHY: HIGH FUNCTIONALITY (ADID) WETLANDS

In 1992, Lake County implemented the *Advanced Identification (ADID)* process to identify high functionality wetlands that should be protected. The ADID program is a USEPA program developed to shorten permit processing time and provide information to local governments to aid in zoning, permitting and land acquisition decisions. Three primary functions were used by the USEPA and U.S. Army Corps of Engineers (USACE) to evaluate wetlands during the ADID process: biological functions (i.e., threatened or endangered species, wildlife habitat, and plant species diversity), hydrologic functions (i.e., stormwater storage), and water quality mitigation functions (i.e., sediment and toxicant retention, shoreline/bank stabilization).

enhancement functionality. Ten wetland complexes totaling 4,292 acres in the Lake Michigan watershed in Lake County have been identified as high-quality wetlands through the ADID process. It should be noted that the mapped ADID complex in the coastal plain includes upland areas such as dune ridges and therefore likely results in an over-estimation of the true wetland acreage in the planning area. The three primary functions evaluated were ecological value based on wildlife habitat quality and plant species diversity; hydrologic functions such as stormwater storage value and/or shoreline/bank stabilization value; and water quality values such as sediment/toxicant retention and nutrient removal/transformation function. Of the ten ADID sites, the coastal plain complex in the Kellogg Creek and Dead River subwatersheds is by far the largest, accounting for 99% of the ADID acreage in the LM planning area. Additional ADID wetlands in the planning area total less than 50 acres and are distributed as follows: 1 additional ADID wetland in the Kellogg Creek subwatershed, 2 additional ADID sites in the Dead River subwatershed, 2 sites in the Waukegan River subwatershed, and 4 sites in the Bluff/Ravine subwatershed.

NOTEWORTHY: RAMSAR WETLAND OF INTERNATIONAL SIGNIFICANCE

The Ramsar Convention on Wetlands is a non-regulatory intergovernmental treaty that encourages wetland conservation by identifying wetlands of international significance throughout the world. The Chiwaukee Illinois Beach Lake Plain was designated as a Ramsar wetland of international significance in 2015. This 3,914 acre wetland along the shore of Lake Michigan contains six wetland community types of exemplary high quality, 17 state protected animal species, 44 state protected plant species, and is utilized by millions of migrating song birds each year.

The Lake County Wetland Restoration and Preservation Plan (WRAPP), which builds on these previous studies, provides the most current iteration of wetland resources and their functionality within the county. According to the WRAPP, approximately 3,476 acres or 51% of the pre-settlement wetlands remain in the watershed, along with 655 acres of streams, lakes and ponds, including constructed embayments of Lake Michigan. The estimated rate of historic wetland loss in the Lake Michigan watershed (49%) is less than the overall estimated rate for Lake County (55%), likely attributable to two factors: 1) the difficulty in identifying pre-settlement wetland resources in areas of the watershed where urban development pre-dates most reliable historic wetland data sources; and 2) the large coastal wetland complex dampens the overall effect of wetland loss within the small Lake Michigan watershed area relative to the rest of Lake County. The Lake County WRAPP estimates that wetlands comprise approximately 10% of the total area of the Lake Michigan planning area in Lake County, while wetlands cover about 13% of the total land area of Lake County. Figure 3-44 depicts the location of wetlands, as documented in the WRAPP.

NOTEWORTHY: WETLAND RESTORATION AND PRESERVATION PLAN

The Wetland Restoration and Preservation Plan (WRAPP) was adopted by SMC and the Lake County Board in 2020. Its dataset reflects enhancements of the 2002 LCWI maps using high resolution aerial photography and LiDAR collected since 2002, as well as existing information from the Lake County ADID study, soil surveys, and other available mapping products. Each WRAPP polygon was enhanced with descriptors associated with the NWI classification system and *hydrogeomorphology*. Using this combined information, the WRAPP estimates the functions (services) of mapped wetland and water resources for both existing and pre-settlement conditions within Lake County. The WRAPP supports watershed-based assessments of wetland function, identifies locations of *potentially restorable wetlands (PRWs),* and identifies opportunities for *wetland enhancement* and *preservation*. The WRAPP includes an on-line decision support tool (DST) to help users prioritize restoration and preservation opportunities based on acreage, wetland function or functional loss, allowing the user to make informed decisions on wetland restoration and preservation options targeted to user-specific goals and objectives.

Cook County Wetlands

Based on the National Wetland Inventory there are an estimated 3 acres of wetlands within the watershed planning area in Cook County, corresponding to 3 ravine streams. This is almost certainly an underestimation of the geographic footprint of wetland resources in the Cook County portion of the LM planning area (since there are 7 ravines in Cook County). However, the landscape is similar to the Lake County portion of the Bluff/Ravine subwatershed where wetlands have extremely limited distribution, estimated in the Lake County WRAPP to account for 3% of total area in the subwatershed and are associated almost entirely with ravines and the Lake Michigan shoreline. Therefore, it is likely that wetlands in the Cook County portion of the planning area are largely limited to the ravines and lakeshore areas (see Figure 3-44).

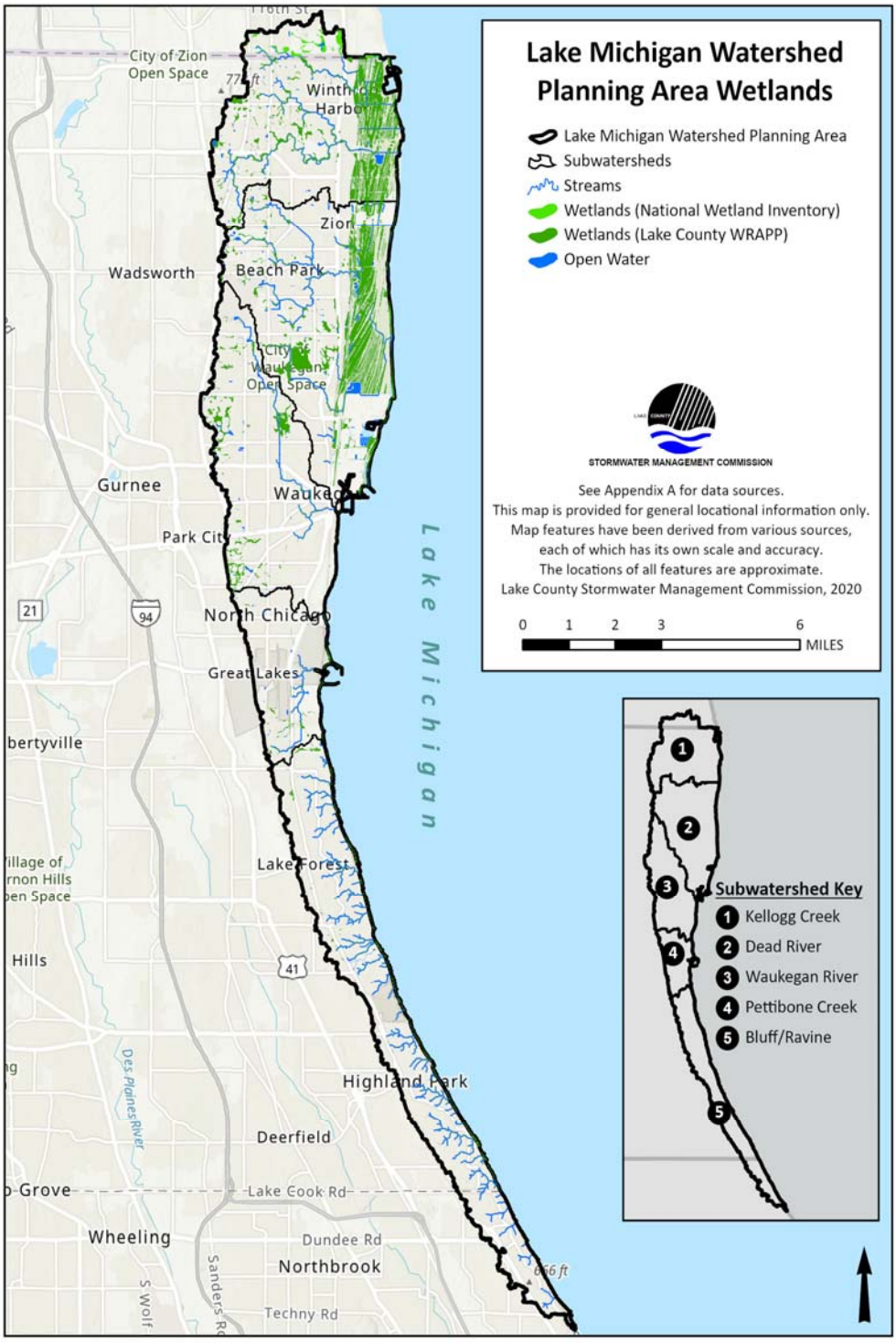


Figure 3-44: Lake Michigan Planning Area Wetland Locations

3.11.1 Wetland Function

Wetlands filter sediments and nutrients from runoff, provide wildlife habitat, reduce flooding, and help maintain water levels in streams. They also provide areas where groundwater is recharged by surface water.

By performing these functions, wetlands improve the water quality and biological health of streams and lakes located downstream and protect public safety.

The WRAPP evaluated thirteen wetland functions, which fall under three general groups: hydrologic functions, biodiversity functions, and water quality functions. As indicated in Table 3-28, not all wetlands within the Lake Michigan Watershed in Lake County perform all functions, and they also do not perform all functions equally well.

Table 3-28: Wetlands Functions and Acres of High Functional Significance

CATEGORY	FUNCTION	ACRES OF HIGH FUNCTIONAL SIGNIFICANCE
Hydrologic Functions	Flood Water Storage	2,985
	Stream Baseflow Maintenance	1,230
Biodiversity Functions	Native Fish Habitat	233
	Waterfowl Habitat	1,778
	Other Wetland-dependent Bird Habitat	2,549
	Woodland Amphibian Habitat	18
	Unique Wetland Resources	2,528
	Stream Shading	352
	Wildlife Movement Corridors	3,106
Water Quality Functions	Nutrient Transformation (P-focus)	142
	Sediment and Other Particulate Retention	436
	Shoreline/Stream Bank Stabilization	1,282
	Carbon Sequestration	1,016

3.11.2 Approaches to and Tools for Wetland Management

Within a watershed, wetlands are managed using multiple approaches and various tools, including planning efforts, regulations, and voluntary activities. Advanced planning efforts can help identify wetland needs and potential locations. Countywide planning efforts include the WRAPP, the LCWI, and the ADID wetland studies previously described. Other efforts target specific areas of the county (e.g., select creeks in Fox River Watershed and the North Branch Chicago River watersheds, per Hey 2001).

Regulation of wetland impacts by agencies and municipalities is arguably the most visible approach for wetland management. This typically involves permits and may require mitigation which can occur at the national (USACE), state, county, and local (municipal) level. At the county level, Lake and Cook county regulate wetlands through the WDO and WMO, respectively. In Lake County, the WDO establishes a no-net-loss policy for wetland impact, with a goal of net gain in function. The WDO sets the minimum requirements for the county, including the need for a permit to approve wetland impacts and requirement for mitigation if impacts will exceed the minimum threshold. Wetland impacts within Lake County are to be mitigated within the county on a watershed basis. Wetland mitigation can take the form of mitigation banking, or a site-specific mitigation project involving wetland restoration, enhancement or, in rare cases, preservation. In Cook County, the WMO discourages wetland impacts, but allows for wetland mitigation in some cases. The WMO states the preferred wetland mitigation method is payment to mitigation banks.

WETLAND RESTORATION: The re-establishment of wetlands in areas where they previously existed and were altered by drainage activities or landscape modifications.

WETLAND ENHANCEMENT: Augmenting wetland functions beyond the current conditions; enhancement of one function sometimes can occur at the expense of other functions.

MITIGATION BANKING: A system of credits and debits to offset environmental impacts associated with site development and achieve no net loss, typically accomplished via restoration, creation, enhancement, or preservation of similar wetland, stream, or natural habitats near the area of impact with the specific goal of compensating for unavoidable impacts to aquatic resources.

WETLAND PRESERVATION: Actions taken to maintain the size and functions of an existing wetland or water body.

Voluntary wetland restoration and management efforts are performed not as a required activity adjunct to a regulatory action but in response to a desire to restore or manage a target wetland for a specific purpose (e.g., duck habitat, flood water storage, etc.). Typical approaches include wetland preservation and wetland restoration or enhancement through on-the-ground activities that may include, but are not limited to, tile disablement, selective herbicide application, prescribe d burning, on-line flow restriction, and water level control.

NOTEWORTHY: WETLANDS PROTECTION IN LAKE COUNTY

Wetlands protection is provided under existing regulatory programs, including federal and state floodplain development restrictions, the USACE's Section 404 Clean Water Act wetland permit program, and the WDO.

A permit/approval is required for any development that will impact wetlands in Lake County. The USACE Chicago District issues permits for impacts to federal *Waters of the U.S.* (WOUS), while Lake County issues written approvals for impacts to *Isolated Waters of Lake County* (IWLC). The USACE-Chicago District normally issues regional permits for impacts to less than 1.0 acre of non-high quality WOUS and compensatory mitigation typically is required at a minimum 1.5:1 replacement ratio for impacts over 0.1 acre to these wetlands. An individual permit from the USACE usually is required for proposed impacts to federal ADID sites, as ADID sites are generally considered unsuitable for filling activities. The individual permit process requires permit applicants to identify and assess practicable alternatives for avoiding and minimizing impacts to the federal ADID sites. In cases where an IP is issued for impacts to federal ADID sites, the USACE usually requires mitigation at a 3:1 or higher ratio. Lake County issues written approvals for IWLC impacts as part of the Watershed Development Permit process, in accordance with the WDO regulations. Compensatory mitigation is required at a 1.5:1 ratio for impacts to 0.1 acre or more of non-high quality IWLC and 3:1 or higher for impacts to high quality IWLC. The USACE-Chicago District's regulatory program and the WDO also require buffers of native vegetation around preserved wetlands to provide a natural transition between wetlands and developed upland areas and help treat stormwater runoff by filtering sediments and pollutants before the runoff reaches the wetlands. Required buffer widths vary depending on the size, type (linear vs. water body), and quality of the wetlands. For *High Quality Aquatic Resources* (HQAR), which include ADID sites, a 100-foot-wide buffer is required under both the USACE-Chicago District's regulatory program and the WDO. A 30- to 50-foot-wide buffer typically is required around all other wetland areas, depending on wetland size and type.

3.12 STREAM & RAVINE INVENTORY

3.12.1 STREAM INVENTORY INTRODUCTION AND METHODS

The SMC conducted stream inventories in 2019 for each of the subwatersheds of the Lake Michigan watershed (Table 3-29). These assessments recorded qualitative information on several easily observed and measured parameters that provide information on the "baseline" conditions of the stream channel and riparian area. The results provide a framework for prioritizing and implementing watershed management strategies in the watershed-based plan.

The stream assessment includes the geomorphic characterization of the channel; identifying erosion, evaluating discharge points and hydraulic structures, obstructions, areas of deficient buffer zones, and areas with significant detrimental impact on the stream. Visual observations include vegetation, water quality conditions, habitat assessments, and aquatic and terrestrial life. This allows for a more comprehensive assessment of the stream conditions. Also, information captured during the inventory process includes notes and comments about the stream not

EROSION: The process by which the surface of the earth is worn away by the action of water, glaciers, winds, waves

SEDIMENT DEPOSITION: The geological process in which sediments, soil and rocks are added to a landform or land mass.

HYDRAULIC STRUCTURES: Bridges, culverts, dams, weirs, or other structures spanning or crossing the stream channel.

DISCHARGE POINTS: The location where all sanitary, storm sewer and agricultural drainpipes surface or stormwater flows back into a lake or stream channel. Discharge points also include open channels, swales, gullies and other significant tributaries.

GLOBAL POSITIONING SYSTEM (GPS): A system of earth-orbiting satellites, transmitting signals continuously towards the earth that enables the position of a receiving device on or near the earth's surface to be accurately estimated from the difference in arrival times of the signals.

DEFINED CHANNEL: Clearly discernable bed and banks of a flowing watercourse

represented in the other forms, such as specific restrictions to stream, restoration efforts or conversations with residents. A copy of the Stream Inventory Methodology and Inventory Report Form is in **Appendix B**.

The Lake Michigan watershed stream network is divided within each subwatershed into reaches; smaller geographically-defined stream segments, for which data is aggregated and evaluated. A team of two observers wade the entire length of each reach to collect data. At representative points within each reach, the observers measure the channel dimensions and relative velocity at the surface of the stream. The observers photograph and document all areas of moderate to severe ***erosion***, significant ***sediment deposition***, debris jams, ***hydraulic structures,*** and ***discharge points***. Equipment to collect photographs utilizes a ***GPS*** which provides geographic coordinates that translate point locations into GIS for analysis and mapping of data collected in the field. For determining bank erosion (lateral recession) additional measurements obtained include bank height, lateral recession rate, severity, and lateral recession characteristics. The stream inventory only assesses reaches which can be safely waded and have a ***"defined" channel***. Reaches excluded from assessments are: open-water ponds, lakes, impoundments, wetland complexes (without defined channel), roadside swales, small minor tributaries, or areas with restricted access or that create a hazard for the observer(s): depth of water, unstable substrate, or both.

The following types of data were collected during the inventory and summarized in the following section:

- Channel conditions (dimensions of the banks and bed)
- Channelization
- Pool-Riffle Development
- Bank Erosion
- Sediment Accumulation and Debris Loading
- Hydraulic Structures (bridges, culverts, dams, etc.)
- Discharge Points (storm sewers, pipes and overland flow draining to the stream)
- Riparian Corridor (vegetated buffer along the stream)

The following characteristics of the Lake Michigan watershed stream reaches are summarized by subwatershed and reach and are available in **Appendix B**:

1. In-stream and Over-bank debris loads
2. Substrate Composition
3. Channelization and Sinuosity
4. Bank Erosion
5. Channel Dimensions

3.12.2 Stream Network Description/Stream Reaches

The Lake Michigan watershed stream inventory is comprised of five subwatersheds (Figure 3-45). The Lake Michigan stream network has 56.63 miles of flow path through streams, ravines, wetlands and lakes. The stream inventories assessed 52.47 miles of stream channel as shown in Table 3-29, and detailed information on the stream reaches in **Appendix B**. Each of the subwatersheds in the Lake Michigan watershed are described below:

1. **Bluff/Ravine Subwatershed:** The Bluff/Ravine subwatershed encompasses 12.1 square miles (7,755 acres) of southern portion of Lake County and northern portion of Cook County, Illinois. The

Bluff/Ravine subwatershed includes several small tributary streams and ravines which drains directly into Lake Michigan.

2. **Dead River Subwatershed:** The Dead River subwatershed encompasses 16 square miles (10,231 acres) of northeastern portion of Lake County, Illinois. The tributaries draining into Lake Michigan were all assessed aside from the tributary reaches within state parks (in particular the Illinois Beach State Park area).

3. **Kellogg Creek Subwatershed:** The Kellogg Creek subwatershed encompasses 12.5 square miles (8,023 acres) of northern portion of Lake County, Illinois and the southeast corner of Kenosha County, Wisconsin. Kellogg Creek subwatershed contains two large and one small tributary which drain directly into Lake Michigan.

4. **Pettibone Subwatershed:** The Pettibone Creek subwatershed encompasses 5 square miles (3,211 acres) of east central portion of Lake County, Illinois. Pettibone Creek subwatershed was not assessed as part of the stream or ravine inventory because the streams were wholly located within Naval Station Great Lakes property in North Chicago and SMC did not have access to those areas. SMC performed a stream inventory with Navy staff in 2011.

5. **Waukegan River Subwatershed:** The Waukegan River subwatershed encompasses 11.4 square miles (7,268 acres) in northeastern portion of Lake County, Illinois. Waukegan River subwatershed contains one large tributary which drain directly into Lake Michigan and two small tributaries.

Table 3-29: Stream Inventory Miles in the Lake Michigan Watershed

SUBWATERSHED (INSET MAP #)	12-DIGIT HUC(s)	NUMBER OF REACHES	ASSESSED MILES
Bluff/Ravine (5)	040400020501 040400020502	79	24.95
Dead River (2)	040400020501	41	3.19
Kellogg Creek (1)	040400020501	39	16.54
Pettibone Creek (4)	040400020501	N/A	N/A
Waukegan River (3)	040400020501	33	7.80
WATERSHED TOTAL		**192**	**52.47**

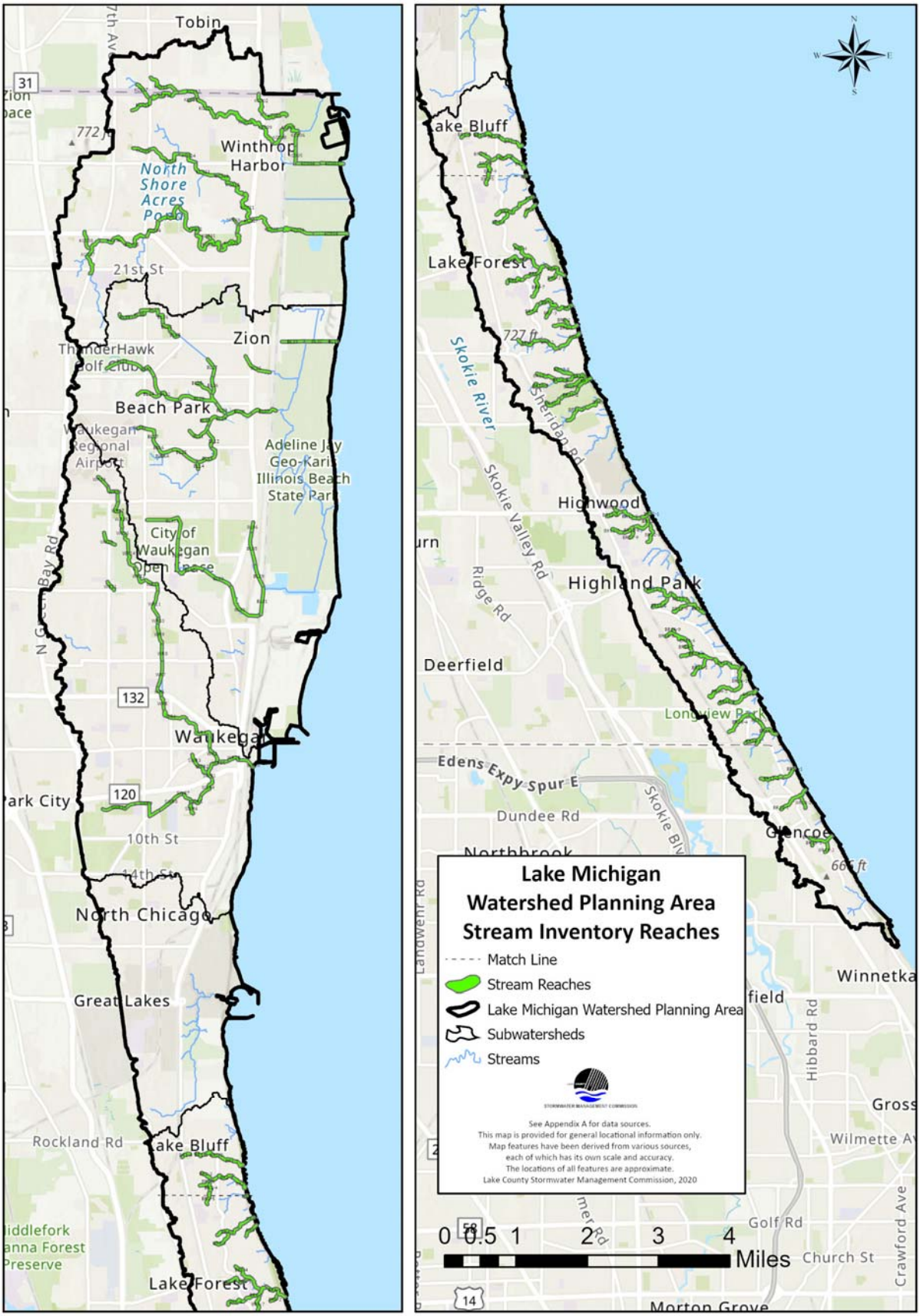


Figure 3-45: Lake Michigan Watershed Stream Inventory Reaches

3.12.2.1 Channel Conditions

Measurements of the physical dimensions of the stream channel reflect the shape of the channel and the amount of water that it can transport under **low or high flow conditions**. A summary of channel conditions by subwatershed is shown in Table 3-30.

LOW OR HIGH FLOW CONDITIONS: Typically measured as a 7-day average of the lowest or highest water flow rates annually.

Table 3-30: Channel Conditions in the Lake Michigan Watershed

SUBWATERSHED	BANK HEIGHT (FT.)		CHANNEL WIDTH TOP (FT.)		CHANNEL WIDTH BOTTOM (FT.)	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
Bluff/Ravine	0	35	0	60	0	15
Dead River	0	17	1.75	32	1.5	25
Kellogg Creek	0	10	2	45	1	40
Waukegan River	0.5	40	4	50	3	40

3.12.2.2 Channelization

Stream channelization describes any activity that moves straightens, shortens, cuts off, diverts, or fills in a stream channel. These activities, which include widening, narrowing, or lining a stream channel, alter the discharge and increase the velocity of water flowing through the streams. In natural meandering streams, channelization decreases the length of the stream and increases the gradient of the channel. Because it is the nature of concentrated, flowing water to create meandering channels with overbank floodplains that dissipate the energy of the flowing water, channelized streams may be susceptible to bank instability and erosion. Modifications in one area of the watershed or stream channel affect other areas upstream, downstream or within the immediate area. Table 3-31 and Figure 3-46 illustrate the degree of channelization of assessed reaches in each subwatershed within the Lake Michigan watershed. The degree of channelization is ranked based on the percentage of channelization. Reaches with channelization of 1%-33% ranks "low", 33%-66% ranks "moderate", and >66% of a reach channelized ranks "high". Reaches ranked as "None" have no indication of channelization.

Table 3-31: Degree of Channelization in the Lake Michigan Watershed

SUBWATERSHED	DEGREE (# OF REACHES)				
	NONE	LOW	MODERATE	HIGH	TOTAL
Bluff/Ravine	39	33	4	3	79
Dead River	14	13	3	7	37
Kellogg Creek	8	19	7	5	39
Waukegan River	16	6	3	1	26
TOTAL	**77**	**71**	**17**	**16**	**181**

The majority (67%) of stream reaches assessed in the Lake Michigan watershed had "none" or a "low" degree of channelization, 9% were moderately channelized and 8% were highly channelized. The Dead River and Kellogg Creek subwatersheds stream reaches exhibited the highest percentages of channelization. The subwatersheds with moderate to high degree of channelization typically are surrounded by turf grass and/or agricultural crops with very little buffer. As a result, these moderate to high channelized streams have reduced ***instream habitat*** and streambank stability.

INSTREAM HABITAT: Within a stream, the environment in which an animal or plant normally lives or grows.

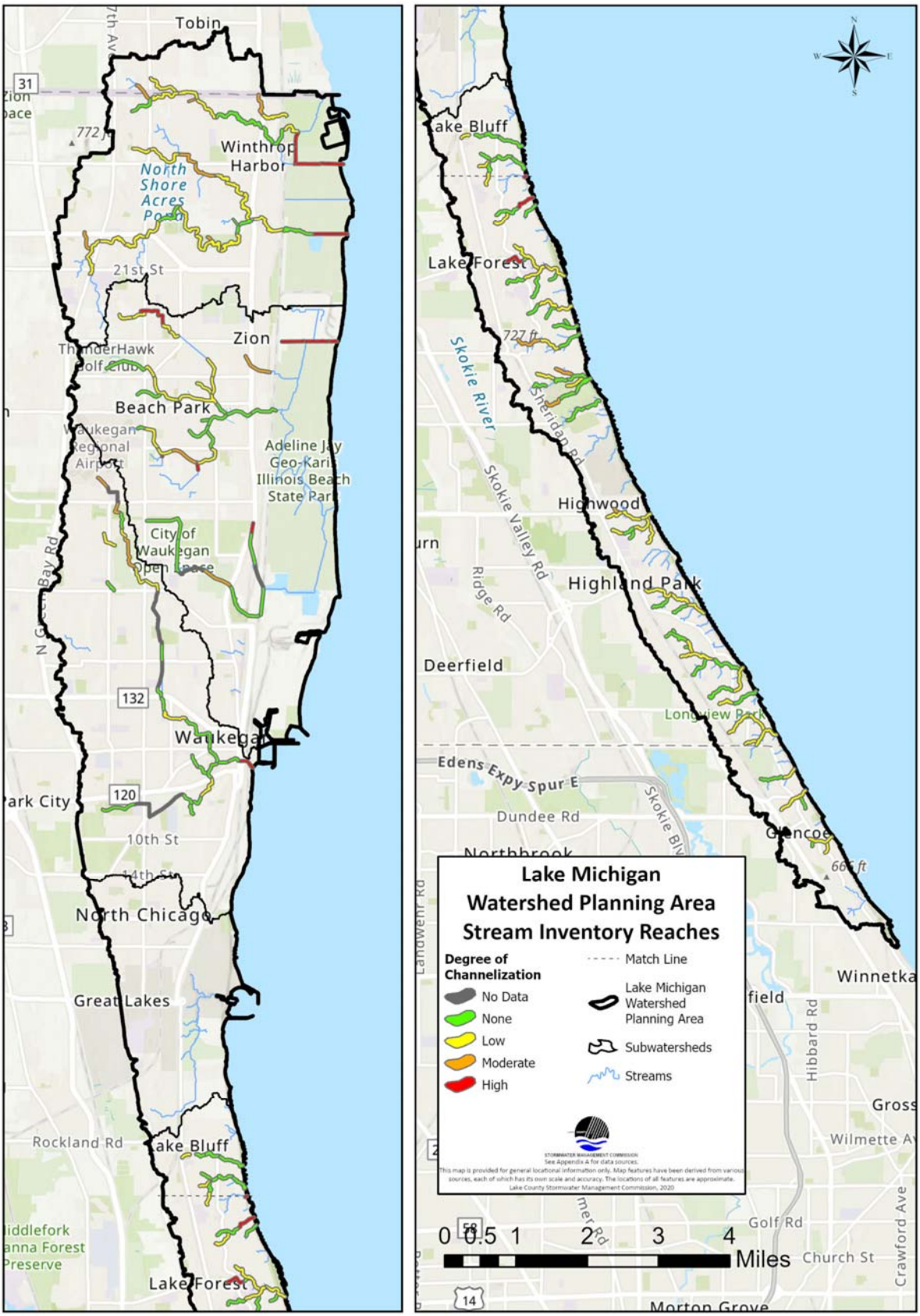


Figure 3-46: Channelization by Stream Reach

3.12.2.3 Pool-Riffle Development

Under baseflow conditions, pools are low-gradient areas of deeper water with slower velocity and riffles are high-gradient areas of shallow water with higher velocity. During baseflow conditions, sediment erodes from riffles and is deposited into pools. During bankfull conditions, the relationship of relative velocity in riffles and pools is reversed and sediments along with substrate material are scoured from pools and the channel bed and deposited on riffles or bars. During periods of elevated flow when the velocity in pools exceeds that over riffles, deposition and bar formation tend to occur in areas adjacent to pools (Figure 3-47).

In a single-**thalweg** meandering channel, pools are associated with the outer portions of meander bends while riffles are located above or below pools. Because pools and riffles have different physical conditions and are often adjacent to one another in the channel, they are important to the ecological health of the stream channel. Because of their shallow depth, increased gradient and sediment size, riffles cause turbulence in the water column which aerates the stream. Pools have slower velocities and increased depth, offering habitat to a wide range of aquatic species for a variety of uses. Channelization often reduces the extent of pool-riffle sequences in a stream. Most stream channels in the watershed exhibit some degree of pool-riffle development as shown in Table 3-32 and Table 3-33.

THALWEG: the line of lowest elevation within a valley or watercourse.

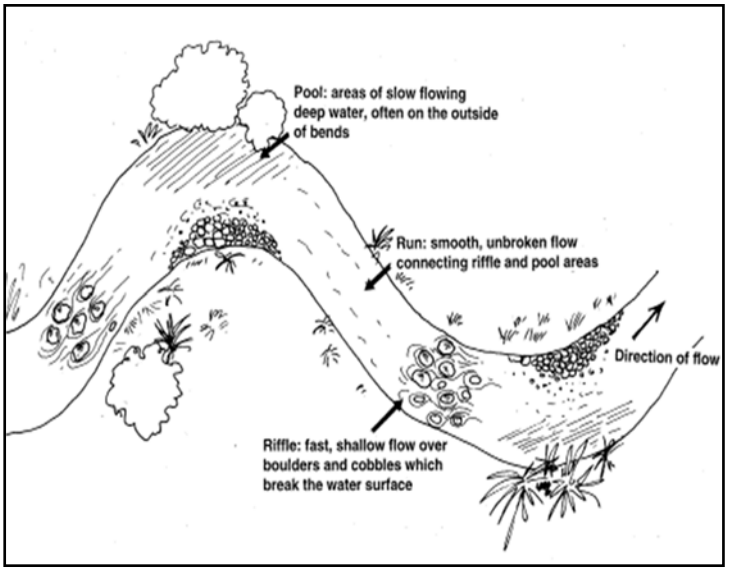


Figure 3-47: Pool/Riffle Sequence
Source: National Institute of Water and Atmospheric Research

Table 3-32: Number of Stream Reaches with Riffle Development in the Lake Michigan Watershed

SUBWATERSHED	0-10%	11-30%	31-50%	51-75%	75%+
Bluff/Ravine	15	33	22	7	2
Dead River	34	2	1	0	0
Kellogg Creek	29	10	0	0	0
Waukegan River	16	8	2	0	0
TOTALS	**94**	**53**	**25**	**7**	**2**

Table 3-33: Number of Stream Reaches with Pool Development in the Lake Michigan Watershed

SUBWATERSHED	0-10%	11-30%	31-50%	51-75%	75%+
Bluff/Ravine	32	37	10	0	0
Dead River	26	9	1	1	0
Kellogg Creek	33	4	2	0	0
Waukegan River	14	6	5	1	0
TOTALS	**105**	**56**	**18**	**2**	**0**

3.12.2.4 Streambank Erosion

The Rapid Assessment Point Method (RAP-M) assesses lateral recession and provides the degree of streambank erosion in the Lake Michigan watershed (Windhorn, 2000). Lateral recession rates (LRR) evaluates streambanks along the right and left bank (facing upstream) for each assessed reach. Segments with LRR characteristics were photo documented and measurements of left and right bank height and length were collected. The combined analysis allows for an overall assessment regarding the severity of the entire reach, including review of photographs, and repeatable measurements taken in the field. The methodology for lateral recession can be found in **Appendix B** (Windhorn, 2000).

Figure 3-48: Streambank Erosion in Bluff/Ravine Subwatershed

Streams are dynamic systems, in a perpetual state of flux, therefore, all banks exhibit some form of erosion (Figure 3-48). Streambank erosion in the Lake Michigan watershed tends to occur in developed areas, particularly residential neighborhoods, and urban areas. Surface runoff to streams contributes to streambank erosion and is dependent upon key factors such as the duration, timing, and amount of precipitation; the type and condition of soil within watershed; and land use and vegetative buffers.

The Lake Michigan watershed stream inventory assessed the degree of streambank erosion for each stream reach. The description of qualitative assessment criterion for streambank erosion is shown in Table 3-34 and the results of the streambank erosion assessment are summarized below in Table 3-35. The results of the stream inventory indicate most stream reaches (46.25%) were moderately eroded, and 36.37% of stream reaches were slightly eroded. In some reaches, streambank erosion was severe to very severe (totaling 17.15%) suggesting that the stream channels were responding to changes in watershed hydrology.

Table 3-34: Bank Erosion Criteria in the Lake Michigan Watershed

CATEGORY	DESCRIPTION
Slight	Some bare bank but active erosion not apparent. Some rills but no vegetative overhang. No exposed tree roots.
Moderate	Bank is predominantly bare, with some rills and vegetative overhang.
Severe	Bank is bare, with rills and severe vegetative overhang. Many exposed tree roots and some fallen trees and slumps or slips. Some changes in cultural features such as fence corners missing and realignment of roads or trails. Channel cross-section becomes more U-shaped as opposed to V-shaped.

Table 3-35: Percent of Stream Reaches with Streambank Erosion in the Lake Michigan Watershed

EXTENT OF EROSION (% OF MILES ASSESSED)	NONE	SLIGHT	MODERATE	SEVERE	VERY SEVERE
Bluff/Ravine	0.00%	30.44%	42.88%	23.83%	2.85%
Dead River	0.00%	39.32%	48.11%	12.57%	0.00%
Kellogg Creek	0.87%	46.24%	45.22%	7.68%	0.00%
Waukegan River	0.00%	29.43%	56.07%	14.49%	0.00%
% OF TOTAL STREAM REACHES	**0.23%**	**36.37%**	**46.25%**	**16.01%**	**1.14%**

3.12.2.5 Sediment Accumulation

Sediment erosion, transport and deposition are naturally occurring processes in stream systems. Land use changes and anthropogenic modifications within the watershed can amplify the magnitude of these processes.

Figure 3-49: Sediment Accumulation in Waukegan River Subwatershed

Typically, a stream generates, suspends, and transports sediment through high-gradient reaches and deposits sediment in low gradient reaches and/or in areas where velocity decreases (Figure 3-49). These low-velocity areas may be naturally occurring areas such as pools or sloughs. They may also occur behind debris jams or beaver dams or upstream of channel constrictions (such as culverts) or dams. Fluctuations in discharge rate results in a stepwise movement of deposition and storage of sediment within stream network. Increased sediment transported during storm events will increase sedimentation rates in downstream channels. Excessive sediment deposition affects fish and the benthic community in several ways including: the suspended sediment can interfere with food gathering or filtering organisms; decrease light levels which impact productivity and reproduction; and sediment accumulation on the bottom of channels can bury organisms to the point of starvation or death. Once sediment has entered waterways it is difficult and expensive to remove, requiring engineering solutions and heavy equipment. Preventative measures such as the revegetation of riparian areas and stream banks can help reduce sediment transport and bank erosion.

Most reaches in the Lake Michigan watershed had “Low” or “Moderate” sediment accumulation (Table 3-36). Of the assessed reaches, 49.67% exhibited moderate sediment accumulation. Also, a considerable number of reaches (59.57%) in the Bluff/Ravine stream reaches exhibited moderate sediment accumulation. The sediment accumulation is likely due to local and upstream increases in runoff and/or erosion, especially in areas with highly erodible soils.

Table 3-36: Percent of Sediment Accumulation in the Lake Michigan watershed

SUBWATERSHEDS (% OF REACHES)	NOT FULLY ASSESSED	SLIGHT	LOW	MODERATE	HIGH
Bluff/Ravine	0.87%	0.36%	15.83%	59.57%	23.36%
Dead River	0.00%	0.00%	41.66%	47.66%	10.68%
Kellogg Creek	6.63%	1.75%	29.25%	43.01%	20.70%
Waukegan River	7.50%	3.01%	33.95%	35.52%	20.01%
PERCENT OF WATERSHED	**2.68%**	**1.01%**	**27.10%**	**49.67%**	**19.56%**

Slight: < 5%, Low: 5-33%, Moderate: 34-66%, High: 67-100%

3.12.2.6 Debris Loading

In addition to sediment, most streams transport some amount of debris (organic material typically originating outside the stream itself, such as tree limbs, brush, and leaves). Because debris transport is a naturally occurring stream process, some debris can provide habitat and contribute to a diverse instream environment. However, too much debris can be problematic and may result in large debris jams, causing backwater flooding and sediment deposition (Figure 3-50). Debris jams can also cause erosion of the stream banks which can damage riparian lands and property.

Figure 3-50: Debris Jam in Kellogg Creek

In the Lake Michigan watershed, reaches having a moderate or high debris load are considered to have the potential to be problematic. In some cases, these reaches may be in natural or open space areas and no action is needed or warranted. In other cases, moderate or high debris loads may be problematic, and, for example, debris jams may warrant removal. Table 3-37 summarizes the reaches with moderate or high instream and/or overbank debris loads, along with areas that were unable to be assessed. These reaches exhibit multiple debris jams, beaver dams, or overhanging debris obstructions extending across all or significant portions of the channel and/or onto the banks. While beaver activity contributed to the debris load in some of these reaches, it did not account for the moderate or high debris loads in all reaches. Several reaches are also located in forested areas and therefore the debris loads from the adjacent riparian areas may be higher. In such cases, it is up to the land manager or owner to determine if the debris loading constitutes a true "problem."

Table 3-37: Percent of Debris Loading in the Lake Michigan Watershed

SUBWATERSHEDS	INSTREAM DEBRIS	NOT FULLY ASSESSED	OVERBANK DEBRIS	NOT FULLY ASSESSED
Bluff/Ravine	22.39%	0%	48%	0%
Dead River	38.43%	0%	37%	0%
Kellogg Creek	40.51%	2.19%	45%	2.19%
Waukegan River	21.99%	0%	36%	0%
WATERSHED TOTAL	**30.52%**	**0.58%**	**43%**	**0.58%**

3.12.2.7 Hydraulic Structures

Hydraulic structures are bridges, culverts, dams, weirs, or other structures spanning or crossing the stream channel (Figure 3-51). These structures modify or have the potential to modify the pattern or amount of flow in the stream channel and may act as constriction points under certain flow conditions (such as heavy rainfall events), leading to backwater flooding. Additionally, dams and weirs can impede the movement of fish and other aquatic organisms within the stream network. Culverts may create temporary or permanent barriers if scour causes the bottom of the culvert to become elevated above the water level of the stream.

Figure 3-51: Bridge with four culverts in Kellogg Creek Subwatershed

Problem hydraulic structures include: obstructed culverts and bridges, culverts that are undermined or collapsed, bridges, culverts, dams and weirs that have been washed out, and beaver dams that are causing severe bank erosion or impounding a significant volume of water or length of stream channel. Structures listed as "problem" structures were identified as needing further inspection; however, this designation is not a definitive determination that the structure is defective.

Modification of streams by channelization and the construction of hydraulic structures results in decreased quantity of pool-riffle complexes, increased sediment accumulation, increased debris loads, habitat alteration and decreased biological productivity. The number of bridges per subwatershed ranged from 30 – 77 and the number of culverts per subwatershed ranged from 55 – 105. Table 3-38**Error! Reference source not found.** contains a summary of hydraulic structures in the Lake Michigan watershed. Dams located on reaches not assessed were not included in the stream inventory. "Problem Hydraulic Structures," defined as structures that may require further inspection or repair, are found in every subwatershed of the Lake Michigan watershed. The Bluff/Ravine subwatershed had the most problem structures (53) while the Waukegan River subwatershed had the fewest (15). **Appendix B** contains a summary of the 583 hydraulic structures recorded in the Lake Michigan Watershed Stream Inventory. Figure 3-52 maps the problem hydraulic structures identified in the Lake Michigan Inventory.

Table 3-38: Problem Hydraulic Structures in the Lake Michigan Watershed

PROBLEM HYDRAULIC STRUCTURES	BRIDGE	CULVERT	*DAM	OTHER	TOTAL STRUCTURES	PROBLEM STRUCTURES	% OF STRUCTURES IDENTIFIED AS PROBLEM STRUCTURES
Bluff/Ravine	77	105	24	26	232	53	22.84%
Dead River	61	73	7	7	148	25	16.89%
Kellogg Creek	47	60	1	0	108	19	17.59%
Waukegan River	30	55	7	3	95	15	15.79%

WATERSHED TOTAL	215	293	39	36	583	108	18.5 % of the Total Structures

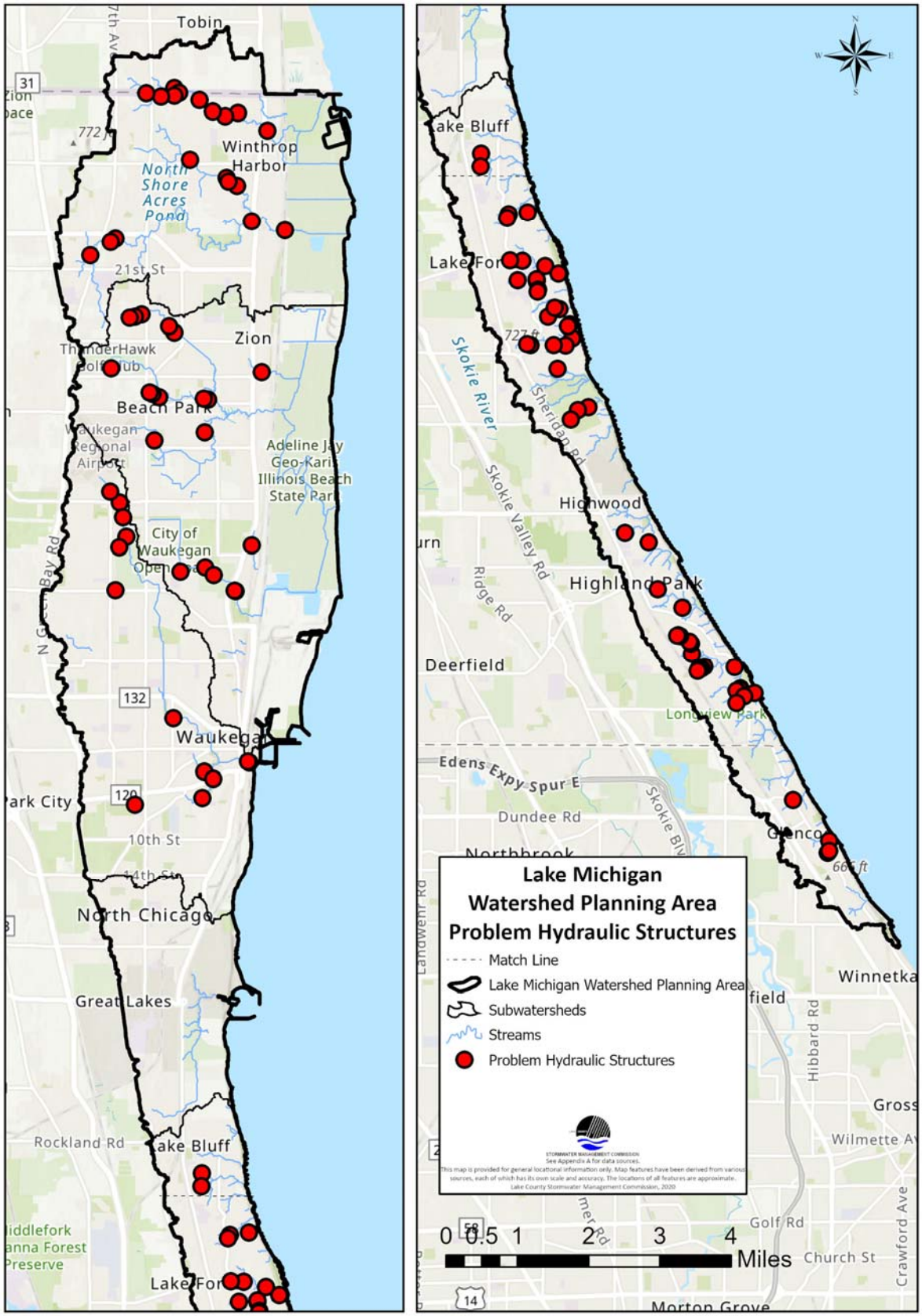


Figure 3-52: Problem Hydraulic Structures

3.12.2.8 Discharge Points

Discharge points are identified as outfalls that discharge into streams including "pipes" such as drain tile outlets, sump pump discharges, storm sewers and "open channel" discharges such as drainage swales, gullies, and small tributaries (Figure 3-53). The stream inventory documented 2,664 discharge points into the stream network. The Bluff/Ravine subwatershed contained the largest number of discharge points (1,960), and the highest density of discharge points per stream mile (78.6).

Figure 3-53: Example of a discharge point in the Bluff/Ravine Subwatershed

Problem discharge points in the Lake Michigan watesrhed contribute to streambank erosion and the transport of excess sediment and associated nutrients to the stream channel. The location of these points is summarized in Table 3-39 and shown in Figure 3-54. Outfalls may cause localized erosion, resulting in a positive feedback loop of bank erosion near the outfall, which may result in pipe, end section, apron, or headwall failure. Gullies and other open channels can also result in bank erosion, as they deliver concentrated flow to the stream channel. Pipes that appeared to have discolored discharge, substances other than water, or substantial damage were noted in the inventory.

Table 3-39: Problem Discharge Points in the Lake Michigan Watershed

DISCHARGE POINTS	SWALES, GULLIES, & TRIBUTARIES	PIPES, STORM SEWERS, & CULVERTS	TOTAL DISCHARGE POINTS	PROBLEM DISCHARGE POINTS	DISCHARGE POINTS PER STREAM MILE
Bluff/Ravine	503	1,457	1,960	358	78.6
Dead River	77	189	266	51	20.2
Kellogg Creek	116	121	237	50	14.3
Waukegan River	85	116	201	37	25.8
TOTAL	**781**	**1883**	**2,664**	**496**	**42.6**

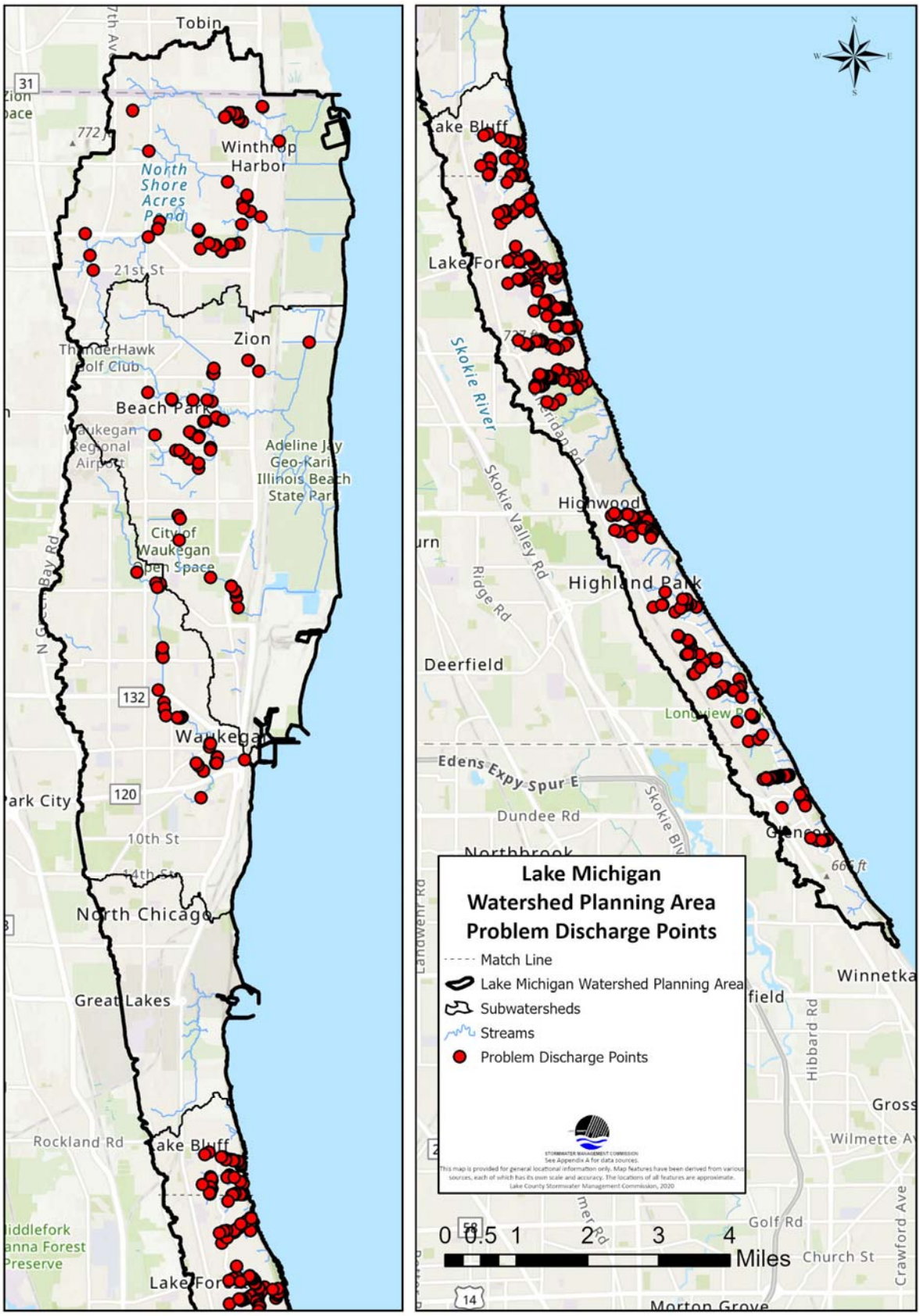


Figure 3-54: Problem Discharge Locations

3.12.2.9 Riparian Buffers

The riparian zone is the area extending 100 feet from the left and right side of the stream channel (Figure 3-55). Vegetated riparian buffers are of interest because riparian vegetation can make streambanks more resistant to erosion, buffers act as filters for runoff and pollutants, and riparian areas offer habitat for wildlife and can be important links in the watershed green infrastructure network. Riparian vegetation also provides beneficial shading to streams and lakes which helps to avoid temperature stress on fish and aquatic organisms. The width and quality of vegetated riparian buffers were visually assessed while walking the stream channel throughout the inventory and checked with aerial photography of the watershed for each reach, including several reaches that were not otherwise assessed in the stream inventory.

Figure 3-55: Example of a riparian buffer

Table 3-40 summarizes the assessment criterion for buffer width, while Figure 3-56 maps the observed vegetated riparian buffer quality in 2019. Throughout the watershed, riparian buffer width was related to riparian land use, with wide riparian buffers ("High" buffer width) in locations where the stream flows through open space areas and narrow buffers ("Low" buffer width) in locations where the stream flows through developed areas. Generally, less urbanized areas had wider riparian buffers and flows through more open space areas. Urban areas had narrower buffers. There were only a few reaches in the watershed with riparian buffer.

Table 3-40: Riparian Buffer Widths in the Lake Michigan Watershed

SUBWATERSHED	STREAM REACH RIPARIAN BUFFER WIDTH CONDITIONS				
	*NOT ACCESSED (miles)	NONE (miles)	LOW (miles)	MODERATE (miles)	HIGH (miles)
Bluff/Ravine	0.00	0.09	15.95	7.34	1.56
Dead River	0.00	0.41	5.96	5.82	2.55
Kellogg Creek	0.00	0.14	1.87	7.23	7.29
Waukegan River	0.97	1.57	2.36	2.90	2.60
TOTALS:	**0.97**	**2.21**	**26.14**	**23.29**	**14.00**

***Reaches not assessed due to entire reach piped**

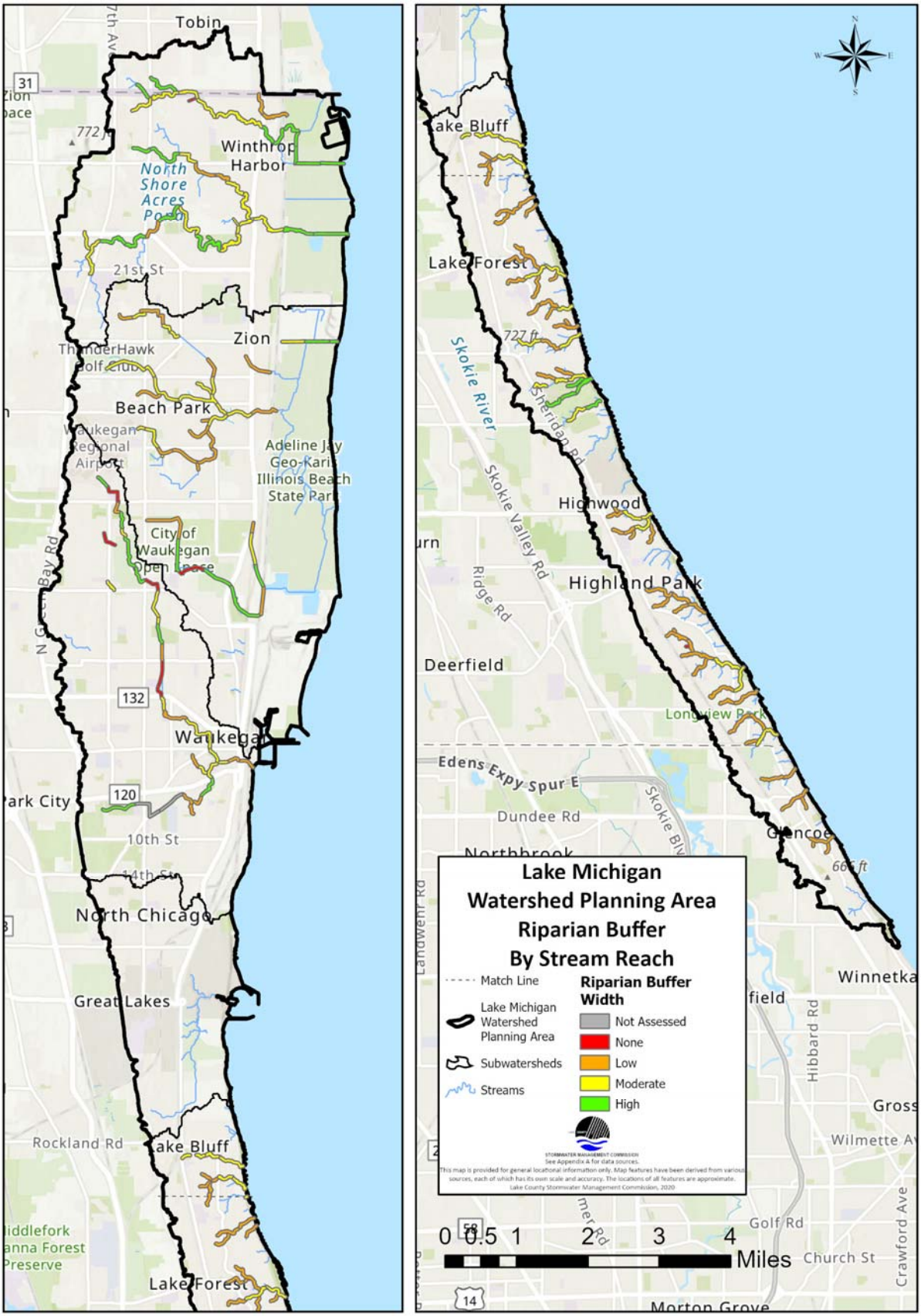


Figure 3-56: Riparian Buffers by Stream Reach

3.12.3 Ravine Inventory Introduction & Methodology

Thirty-three ravines in Lake County and seven ravines in Cook County were assessed in the late fall of 2018 and the early winter of 2019 by SMC. An additional thirteen ravines in Lake County were assessed by the City of Lake Forest in the summer of 2017. SMC produced a summary report (**Appendix C**) and data mapping application which are available on the Lake Michigan watershed page of the SMC website (https://www.lakecountyil.gov/2418/Lake-Michigan-Watershed). The report updates previous summaries produced in 2009 (Alliance for the Great Lakes, 2009) and in 2013 (Lake County Stormwater Management Commission, 2013).

In 2008 the Alliance for the Great Lakes and Northwater Consulting assessed 33 ravines in Lake and Cook counties as part of the Strategic Subwatershed Identification Process (SSIP) in concert with the Lake Michigan Watershed Ecosystem Partnership (now defunct) and Illinois DNR. In the spring of 2011 SMC assessed the following 7 ravines: Bull Creek, Dead Dog Creek, Kellogg Creek, Pettibone Creek, Ravine 7L, Spring Bluff Ravine and Waukegan River. In addition to the 2008 and 2011 assessments, Pettibone Creek was also surveyed in 2008. Ravines were assessed to determine the location of high erosion areas with regard to ravine bed and bank characteristics, density of discharge point outlets (concentrated discharge points), and distance/acreage of homes and roads to/within the ravine banks.

Ravine assessment includes calculation of a "final erosion risk score," a dimensionless index that was developed for the SSIP in 2009. Based on the field data collected in 2019, some of the criteria were updated to calculate new erosion risk scores, including: total number of discharge points, number of failing structures, number of log jams, number of natural knick points, and number of gullies ranked 'most unstable' or 'unstable'. However, data were not updated for criteria that were determined to have experienced negligible or no change, such as the average distance from ravine bank to roads or buildings. In these cases, data from 2009 and/or 2011 were used. These criteria were used to calculate an "erosion risk score". A score of 100 represents the most unstable ravine with the highest risk of erosion, and a score of 0 represents the most stable ravine with the lowest potential for erosion. Table 3-41 lists the 2019 erosion risk scores, the 2009 rank, the 2011 rank, and the new 2019 rank.

A more detailed explanation of the erosion risk calculation can be found in the "Scoring Methodology" and "Lake Michigan Ravines" chapters of the SSIP report. More information can be found in the web mapping application at the following link: https://lakecountyil.maps.arcgis.com/apps/webappviewer/index.html?id=e27d8207042a4b38bd9b36e26a39b632.

Table 3-41: Erosion risk scores, previous rankings, and current rankings.
Ravines are ranked 0-100, with 100 = highest risk

RAVINE NAME	2019 EROSION RISK SCORE	2009 RANK (OF 47)	2011 RANK (OF 52)	2019 RANK (OF 53)
Bartlett Ravine	36.4025	36	31	29
Bull Creek	95.4780	-	7	5
Carmel Park Ravine	37.6722	45	50	28
Cemetery Ravine*	30.5509	26	30	31
Clark's Ravine*	65.4665	7	8	16
Crabtree Ravine	31.6545	33	42	30

RAVINE NAME	2019 EROSION RISK SCORE	2009 RANK (OF 47)	2011 RANK (OF 52)	2019 RANK (OF 53)
Dead Dog Creek	21.6208	-	24	41
Ganster Ravine	29.3873	47	52	34
Glen Flora Tributary	13.1136	46	51	50
Hutchinson Ravine*	8.3467	44	49	53
Kellogg Creek	77.1480	-	10	12
Lakeview Terrace Ravine	21.9636	35	39	40
Lillian Dells Ravine	26.8267	28	32	37
MacArthur & Scott Loop Ravine	23.5530	32	37	39
Maplewood Road Ravine*	14.2019	30	35	49
Mayflower Ravine*	44.5753	16	20	24
McCormick/Janes Ravine*	71.0427	9	12	13
Pettibone Creek	27.0273	13	14	36
Ravine 1C	39.2507	25	28	26
Ravine 1L	96.4222	5	6	4
Ravine 2C	64.9932	11	15	17
Ravine 2L	48.1216	21	23	22
Ravine 3C	39.1825	41	46	27
Ravine 3L	99.2185	3	3	2
Ravine 4C	84.8882	8	11	10
Ravine 4L	68.9440	14	18	15
Ravine 5C	90.4108	10	13	8
Ravine 5L	50.5204	20	25	21
Ravine 6C	44.4253	24	27	25
Ravine 6L	51.8553	23	29	20
Ravine 7C	57.0019	17	21	18
Ravine 7L	99.0875	2	1	3
Ravine 8L	30.1252	19	22	32
Ravine 9L	69.6556	15	17	14
Ravine 9L2	45.9710	38	40	23
Ravine 10L	99.3350	1	2	1
Ravine Park Ravine	53.4768	18	19	19
Schenck Ravine	16.0442	27	33	48
Scott Loop Ravine	21.0759	29	36	42
South Ravine	90.8078	6	9	7
Spring Bluff Ravine	16.6455	-	45	47
Spruce Avenue Ravine	12.3410	-	-	51
Stanley Ravine	30.1129	39	43	33
Stone Gate Road Ravine*	27.8021	22	26	35
Terrace & Harding Avenue Ravine	26.4702	37	41	38
Upton Park Ravine	17.2771	43	47	45
Van Horne Ravine	12.1992	42	48	52
Walden Ravine*	86.8474	12	16	9
Waukegan River	83.0202	-	5	11
Witchhazel /Seminary Ravine*	91.7993	4	4	6
Westminster Road Ravine*	16.7804	31	34	46
Woodbine Lane Ravine*	17.3948	34	38	44
Woodland Road Ravine*	19.6086	40	44	43

***Ravines assessed by the City of Lake Forest in 2017. Larger sections of Kellogg Creek, Ravine 3L, and Ganster Ravine and a smaller section of Pettibone Creek were surveyed in 2019.**

3.12.4 Ravine Inventory Results

3.12.4.1 Ravines with Greatest Decrease in Erosion Risk Score

Pettibone Creek, Dead Dog Creek, Ravine 8L, Stone Gate Road Ravine, and Clark's Ravine sustained the greatest decreases in erosion risk score (see Figure 3-57). Since a score of 100 represents the highest qualitative risk of erosion relative to the other ravines, a decrease in score from 2011 to 2019 indicates that either: 1) remediation occurred in the subject ravine, or 2) that conditions in other ravines have worsened causing a relative decrease in score. Pettibone Creek's score decreased by almost 50, dropping from 75.93 to 27.03. This drastic decrease in score is because a smaller section of the ravine was surveyed in 2019 (only the portion south of Great Lakes Naval Station) than in 2011. The remaining ravines in this category, Dead Dog Creek, Ravine 8L, and Stone Gate Road Ravine, all scored under 30 in 2019. Clark's Ravine erosion score dropped by approximately 16, but its 2019 score of 65.47 is still relatively high. For more explanation of erosion risk scores, see the 2019 Summary Report.

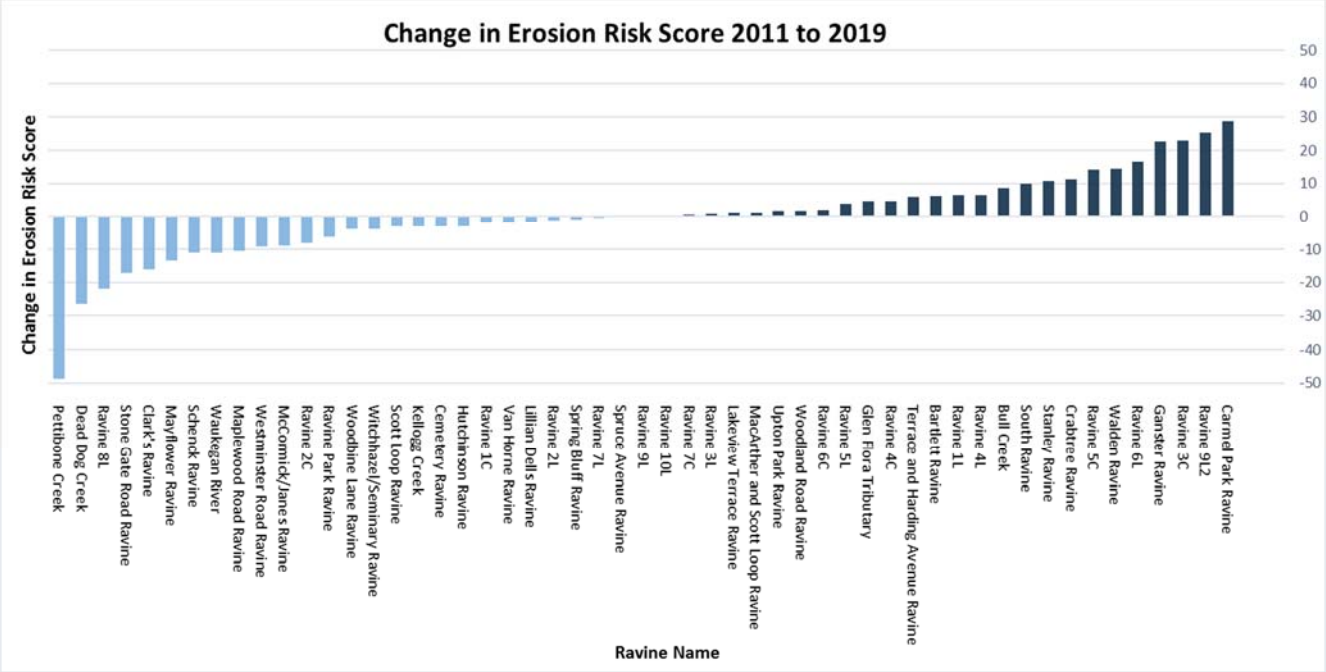


Figure 3-57: Change in erosion risk scores from 2011 to 2019
The light blue bars represent a decrease in erosion risk score and the dark blue bars represent an increase in score.

3.12.4.2 Ravines with the Greatest Increase in Erosion Risk Score

The following ravines saw the largest increases in erosion risk score from 2011 to 2019: Ravine 6L, Ganster Ravine, Ravine 3C, Ravine 9L2, and Carmel Park Ravine. Carmel Park Ravine experienced the greatest change in score. This is due to the additional discharge points found in the ravine and an increase in length of eroding channel. The extension added to Ganster Ravine impacted the number of discharge points and other bed properties causing its increase in score. While each ravine in this category increased in score, it is important to note each individual risk score, relative to other ravines, remains low. Ravine 6L has the highest risk score at 51.86. Apart from Ravine 6L, the other scores range from 29.39-45.97.

3.12.4.3 Change in Erosion From 2011 to 2019

There was a general increase in the amount of erosion observed since 2011. In 2019 there were 9 ravines found to have either no change to their percentage of bank erosion or a lower percentage of bank erosion. 18 ravines had percent increases of more than 20. Figure 3-58 displays the change in percentage of bank erosion from 2011 to 2019. While many of the ravines had increased amounts of bank erosion, closer to half of the ravines had lower amounts of channel erosion recorded in 2019 than in 2011. Figure 3-59 displays the change in percentage of channel erosion since 2011. There was also a general increase in channel erosion since 2011: 24 ravines had decreases in the percentage of eroding channel, and 6 ravines had a change of 5 or less. It is important to note the 2008, 2011, and 2019 surveys were each conducted by different groups of observers.

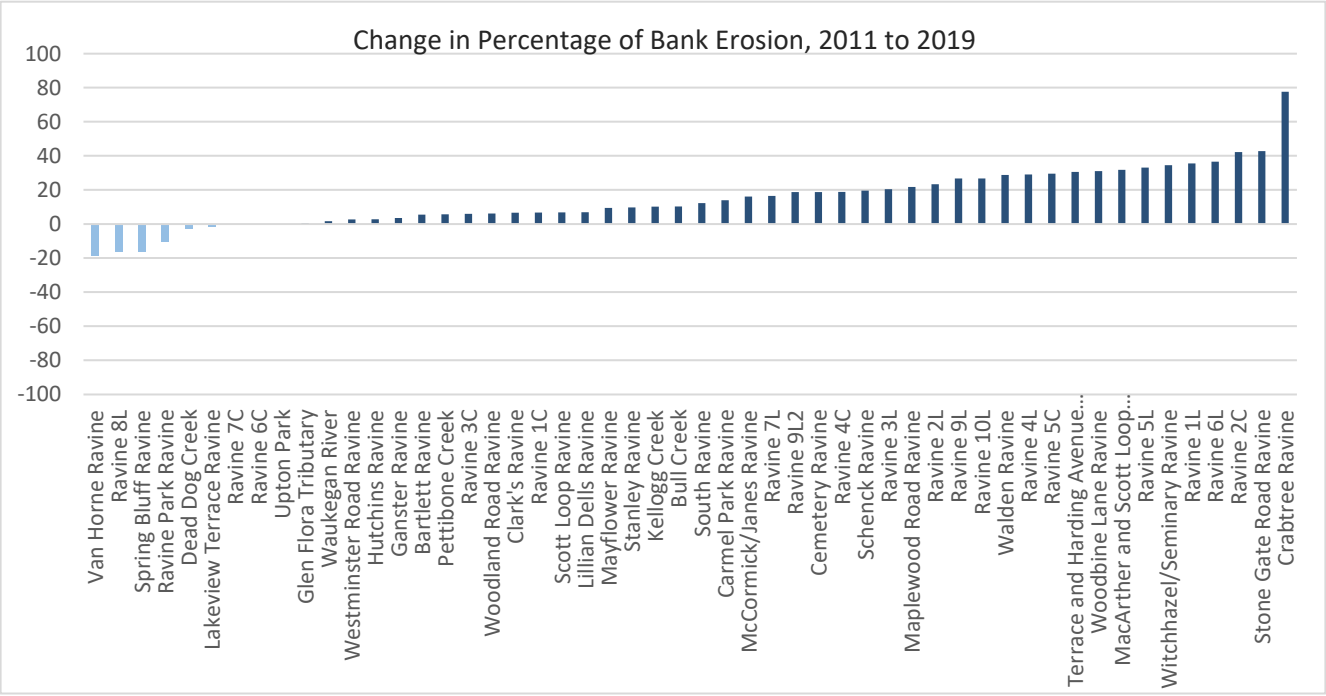


Figure 3-58: Change in percentage of bank erosion from 2011 to 2019

The light blue bars indicate a decrease in the percentage of bank erosion, where the darker blue bars show an increase in percentage of bank erosion. Each bar corresponds to the ravine name listed below. *Spruce Avenue Ravine was not surveyed in 2011 and has been excluded from this graph.

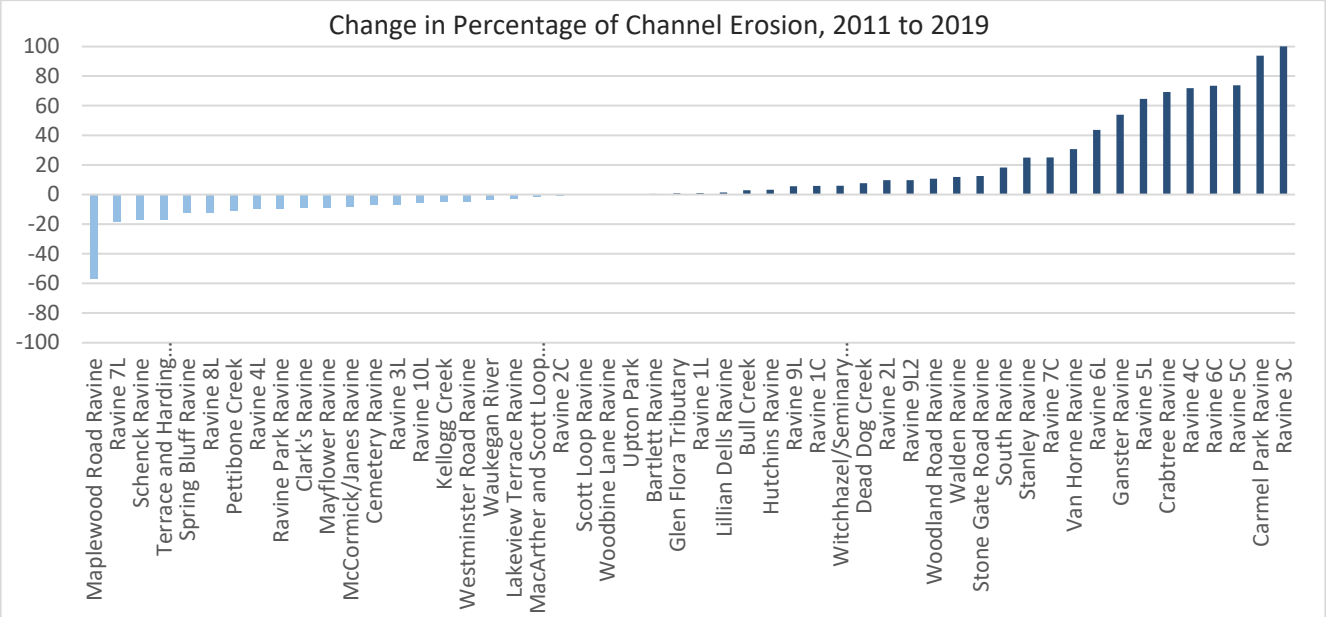


Figure 3-59: The change in percentage of channel erosion from 2011 to 2019

The light blue bars indicate a decrease in the percentage of channel erosion, where the darker blue bars show an increase in percentage of channel erosion. Each bar corresponds to the ravine name listed below. *Spruce Avenue Ravine was not surveyed in 2011 and has been excluded from this graph.

3.12.5 Ravine Inventory Summary

Ravine inventory data from 2017 and 2019 was used to evaluate erosion levels as well as to assess changes that have occurred since previous inventories (2009 and 2011). In order to make comparisons and draw conclusions from the data collected each ravine was assigned an erosion risk score. This metric allows for basic inferences to be made; however, because a ravine's erosion risk score is calculated relative to other ravines this metric cannot be used as an exact measure of erosion. When comparing the 2019 erosion risk scores with the scores from 2009 and 2011, ravines with the highest erosion risk scores remained relatively the same. There were more dynamic changes to the erosion risk scores of the lowest ranking ravines. Generally, ravines that experienced the largest increases in erosion risk score also had increases in number of discharge points, failing structure, and/or knick points. However, in several instances a ravine's erosion risk score did not correspond with observations made in the field. Some of the ravines with the greatest amounts of observed bank or channel erosion had relatively low erosion risk scores. Each field criterion is weighted differently, and ravines with low erosion risk scores and high amount of observed erosion tended to have fewer of the heavily weighted criteria. Since 2011 there has been a greater general increase in ravine bank instability than in channel instability.

3.13 LAKE INVENTORY

3.13.1 Introduction and Methods

The Illinois EPA defines lakes as open bodies of water greater than 6 acres. Lake County defines lakes as open bodies of water greater than 20 acres. This assessment was conducted on all lakes greater than 20 acres and lakes less than 20 acres that the Illinois EPA lists as impaired (see Figure 3-60). Using this criteria, two lakes were identified in the Lake Michigan watershed planning area.

A lake inventory was conducted to assess the health of lakes within the watershed and provide information on natural and anthropogenic impacts to lake systems. The lakes were assessed for number of aquatic plant species, floristic quality assessment and water quality by the Lake County Health Department-Environmental Services. Fish assessments were conducted by the Illinois Department of Natural Resources. Shoreline erosion was assessed by the Lake County Stormwater Management Commission. Collectively this data provides essential information for watershed planning and management. See Section 3.16 for a summary of fish, aquatic plants, FQI and water quality data.

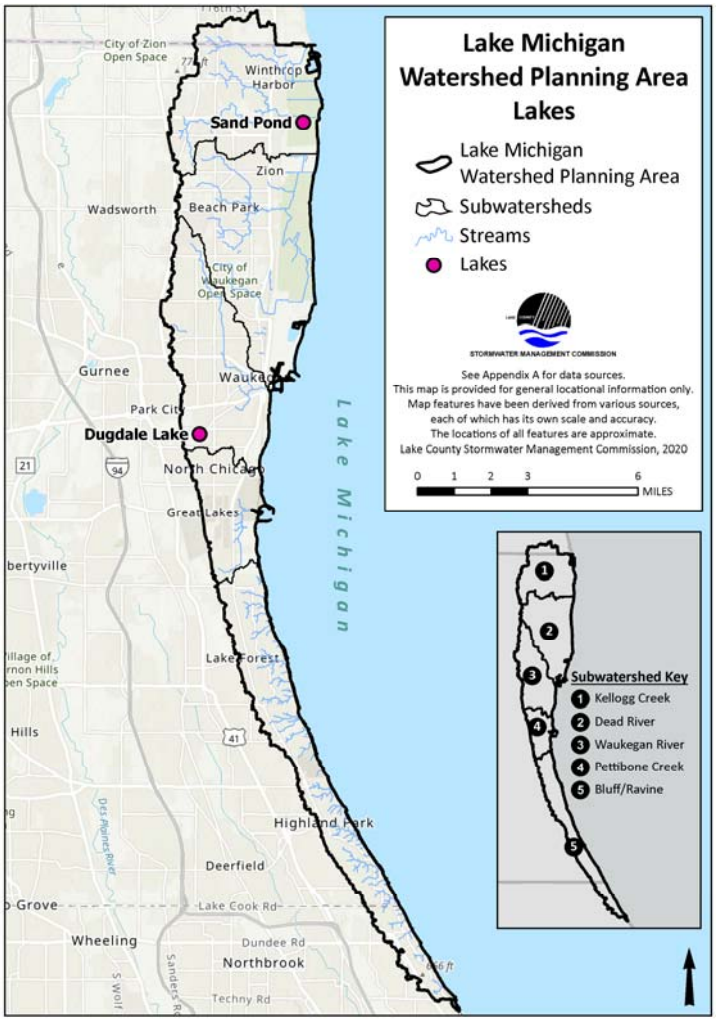


Figure 3-60: Lakes in the Lake Michigan Planning Area

3.13.2 Shoreline Erosion

Shoreline erosion is a natural process which results in the loss of sediment from a shoreline. Shoreline erosion occurs gradually; however, anthropogenic influences such as clearing of vegetation or rocks and increased stormwater runoff can substantially accelerate this process. Sediments eroded from shorelines are transferred to the lake's water column, which increases turbidity and introduces nutrients and contaminates which are attached to the sediment. This sediment is mostly deposited on the lakebed, which can result in degraded habitat for fish and aquatic life.

SHORELINE EROSION CATEGORICAL VALUES

NONE: No visible erosion. Includes purpose-built erosion control structures such as riprap and sea walls.

SLIGHT: Minimal observable erosion. Generally considered stable.

MODERATE: Obvious recession and/or eroded banks. Area may exhibit some exposed roots, fallen vegetation or minor slumping.

SEVERE: Recession is characterized by eroding of exposed soil on nearly vertical banks, exposed roots, fallen vegetation, extensive slumping of bank material, undercutting, washouts, or fence posts exhibiting realignment.

Shoreline assessments were conducted in 2019 at both lakes in the watershed by canoeing the perimeter of the waterbody and assigning a categorical value (none, slight, moderate or severe) for each segment of shoreline erosion (**Appendix E**). Values were recorded in ESRI collector using an iPad and photographs were taken at each shoreline segment. There was no observed erosion on the shoreline of Dugdale Lake. There was no observed erosion on 63% of Sand Pond's shoreline, and slight erosion on 37% of the shoreline. Based on these results, lake shoreline stabilization is not a priority in this watershed-based plan.

3.14 STORMSEWER NETWORK

The natural drainage system of the Lake Michigan watershed planning area has changed where residential, commercial, and industrial land uses replaced open lands. These land use/cover changes limit the land's capacity to infiltrate and store precipitation and runoff. In these portions of the planning area, a stormsewer network (or **stormsewersheds)** collects runoff from developed landscapes and conveys it to a stream or lake, or into a detention basin, which collects water before discharging it into a stream or lake.

STORMSEWERSHED: The land area drained by a stormsewer or stormsewer network.

Stormsewersheds were delineated in the watershed by reviewing available stormsewer data from municipalities, counties and other sources and analyzing aerial photography. The LM planning area contains 18,612 acres of stormsewersheds, which comprise about 51% of the planning area (see Table 3-42 and Figure 3-61). The acreage (and associated percentage of watershed planning area) is likely an underestimate due to the lack of stormsewer data for Naval Station Great Lakes and some newer subdivisions throughout the watershed. Stormsewersheds are associated with the urbanized portions of municipalities throughout the planning area and geographically correlate to impervious surface (see Figure 3-27 and Figure 3-28). Density of stormsewersheds is highest in the Bluff/Ravine watershed.

Undeveloped areas, lands used for agriculture, and many areas developed prior to the 1980s and 1990s do not have stormwater detention facilities as they were built before detention basins were required by ordinances. The Kellogg Creek and Dead River subwatersheds contain the largest areas of agriculture and undeveloped land in the planning area, as well as the coastal plain, which is largely open space. Correspondingly, these two subwatersheds have significantly lower percentages of sewered area relative to the other subwatersheds.

Table 3-42: Stormsewersheds in the Lake Michigan planning area

SUBWATERSHEDS (Inset Map #)	SUBWATERSHED ACRES	ACRES OF SEWERED AREA	PERCENT OF SUBWATERSHED SEWERED
Kellogg Creek (1)	8,023	2,184	27%
Dead River (2)	10,231	4,340	42%
Waukegan River (3)	7,268	4,744	65%
Pettibone Creek (4)	3,211	1,793	56%
Bluff/Ravine (5)	7,755	5,551	72%
TOTALS:	**36,844**	**18,612**	**Total % of Planning Area: 51%**

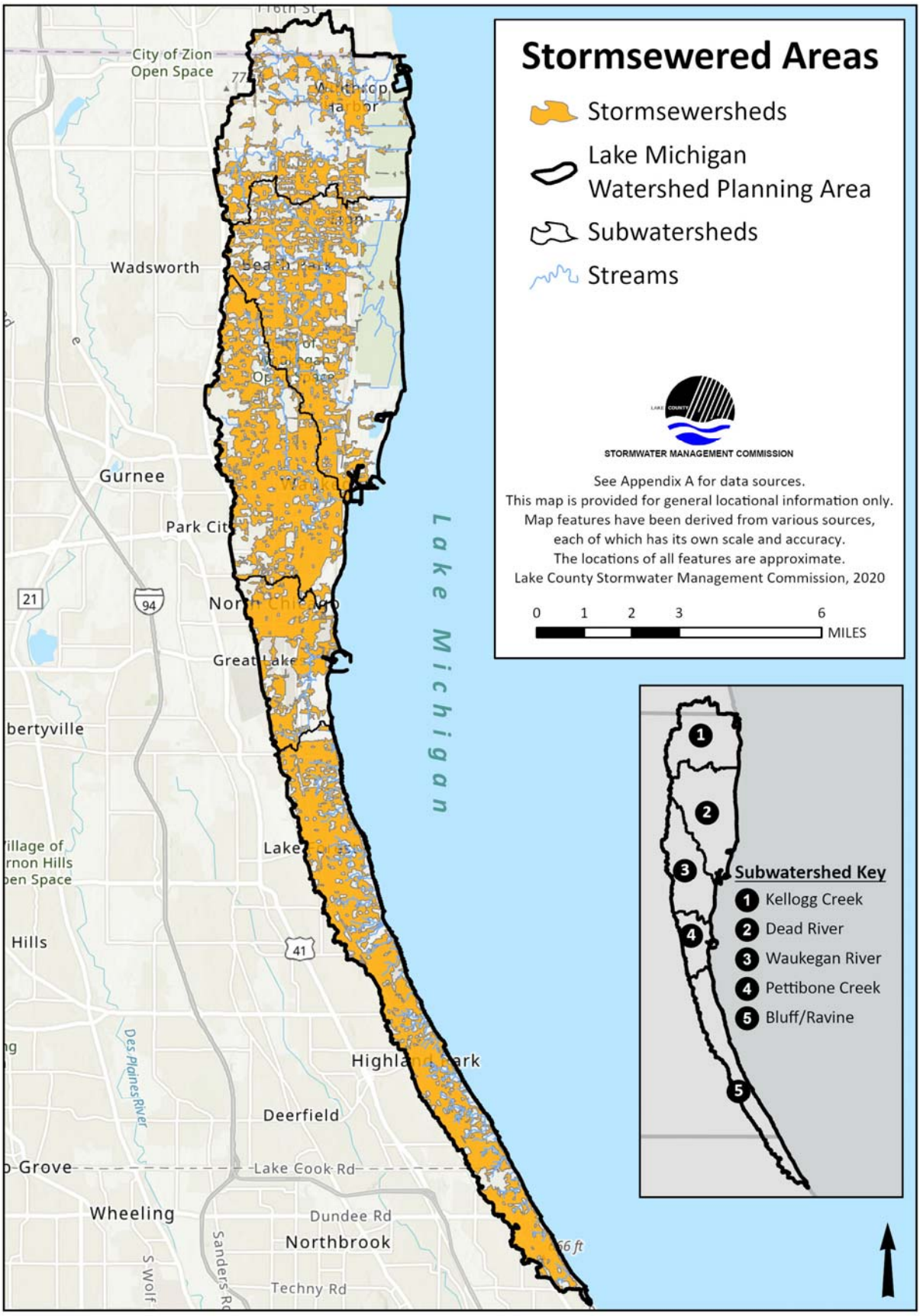


Figure 3-61: Stormsewersheds in the Lake Michigan Watershed Planning Area

3.15 DETENTION BASIN INVENTORY

In 2019, SMC conducted a detention basin inventory for all known areas being used for detention in the Lake Michigan watershed planning area. Detention basins were identified using aerial imagery analysis. A field inspection was conducted at each basin identified. Additional permit and desktop (computer) reviews were utilized as needed to supplement field assessment data. Basins were assessed for location, design features, maintenance and design needs, potential safety problems, and retrofit opportunities. Assessments were conducted at 163 detention basins (Table 3-43 and Figure 3-62). **Appendix D** summarizes the detention basin inventory results.

WET DETENTION BASINS: A stormwater control structure that provides both retention and treatment of contaminated stormwater runoff. It contains a perennial pool of water, which holds runoff from one rainfall event until displaced by a new rainfall event.

DRY DETENTION BASINS: - Basins that temporarily stores water before discharging to river or lake and usually dry up following large rainstorms or snow melt events. Typically, not effective at removing pollutants.

3.15.1 Constructed Basins, Pre and Post 1992

In 1992, the Lake County Watershed Development Ordinance (WDO) restricted stormwater release rates for all new development within Lake County. The WDO was generally more restrictive than the municipal ordinances it superseded. The WDO limited release rates from the 2-year recurrence interval design storm to 0.04 cfs per acre of development area and limited release rates from the 100-year recurrence interval design storm to 0.15 cfs per development acre. Basins built after the adoption of the WDO are required to meet these discharge rates. Basins within Kenosha county were not included in this analysis because it did not implement regulation on stormwater release rates in 1992. Of the assessed basins, 29 were built before 1992 and 140 were built after 1992.

3.15.2 Basin Type, Location, and Maintenance/Retrofit Needs

Of the 163 assessed basins, 43 were classified as **wet**, 47 were classified as **dry** and 73 were classified as **wetland**. The assessment identified 59 basins with preliminary retrofit opportunities. The most common retrofit opportunities included stabilization of erosion and inlet/outlet/restrictor maintenance and repair.

Table 3-43: Number and Type of Detention Basins Inventoried by Subwatershed

SUBWATERSHED (Inset Map #)	Number of Basins	Number of Wet Basins	Number of Dry Basins	Number of Wetland Basins
Kellogg Creek (1)	62	25	18	19
Dead River (2)	30	9	8	13
Waukegan River (3)	50	6	17	27
Pettibone Creek (4)	14	3	3	8
Bluff/Ravine (5)	7	0	1	6
Total	**163**	**43**	**47**	**73**

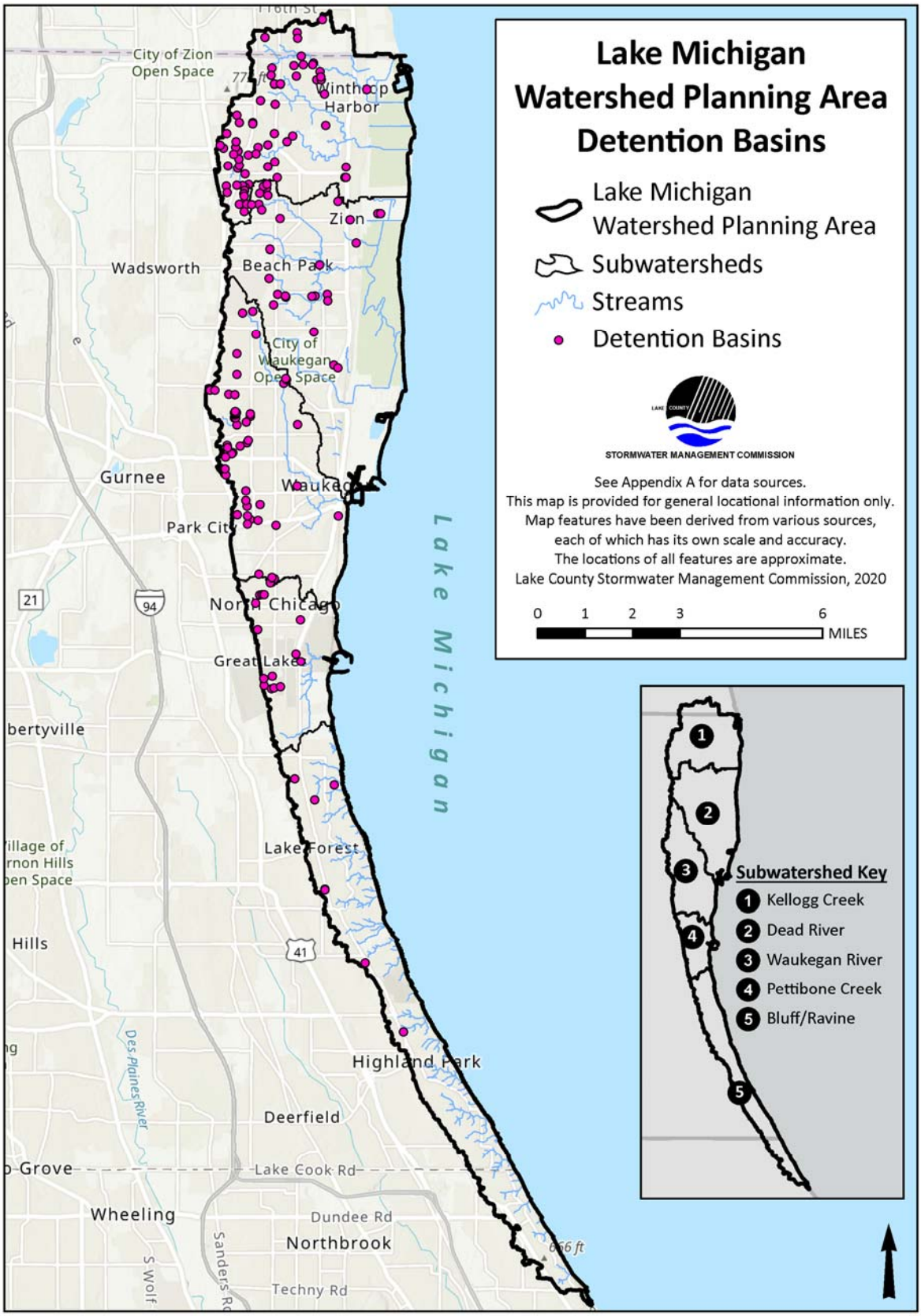


Figure 3-62: Inventoried Detention Basins in the Lake Michigan Watershed Planning Area

3.16 LAKE AND STREAM WATER QUALITY

Water quality refers to a waterbody's ability to support a variety of aquatic life, recreational and aesthetic uses. Water pollution reduces the health of aquatic ecosystems and may be harmful to human health. Water quality is impacted by pollutants from multiple point and nonpoint sources. During storms, pollutants on the landscape are washed from the ground into storm sewers, roadside drainage ditches, natural drainageways and ultimately into the watershed's receiving streams and lakes.

Physical changes in the watershed, such as stream channelization and the loss of riparian vegetation and wetlands, reduce the ability of the natural drainage system to filter pollutants and infiltrate water into the ground, and contribute sediment and other pollutants to the stream and lakes, thereby reducing the quality of aquatic habitat. Water quality degradation is also caused by an increase in watershed impervious cover that has led to an increase in the volume and rate of runoff in the watershed. The increased quantity of runoff causes problems such as excessive stream bank/ravine erosion and the deepening of the stream channel. Figure 3-63 shows the Lake Michigan watershed planning area 2018 303(d) listed streams, lakes, harbors and shores.

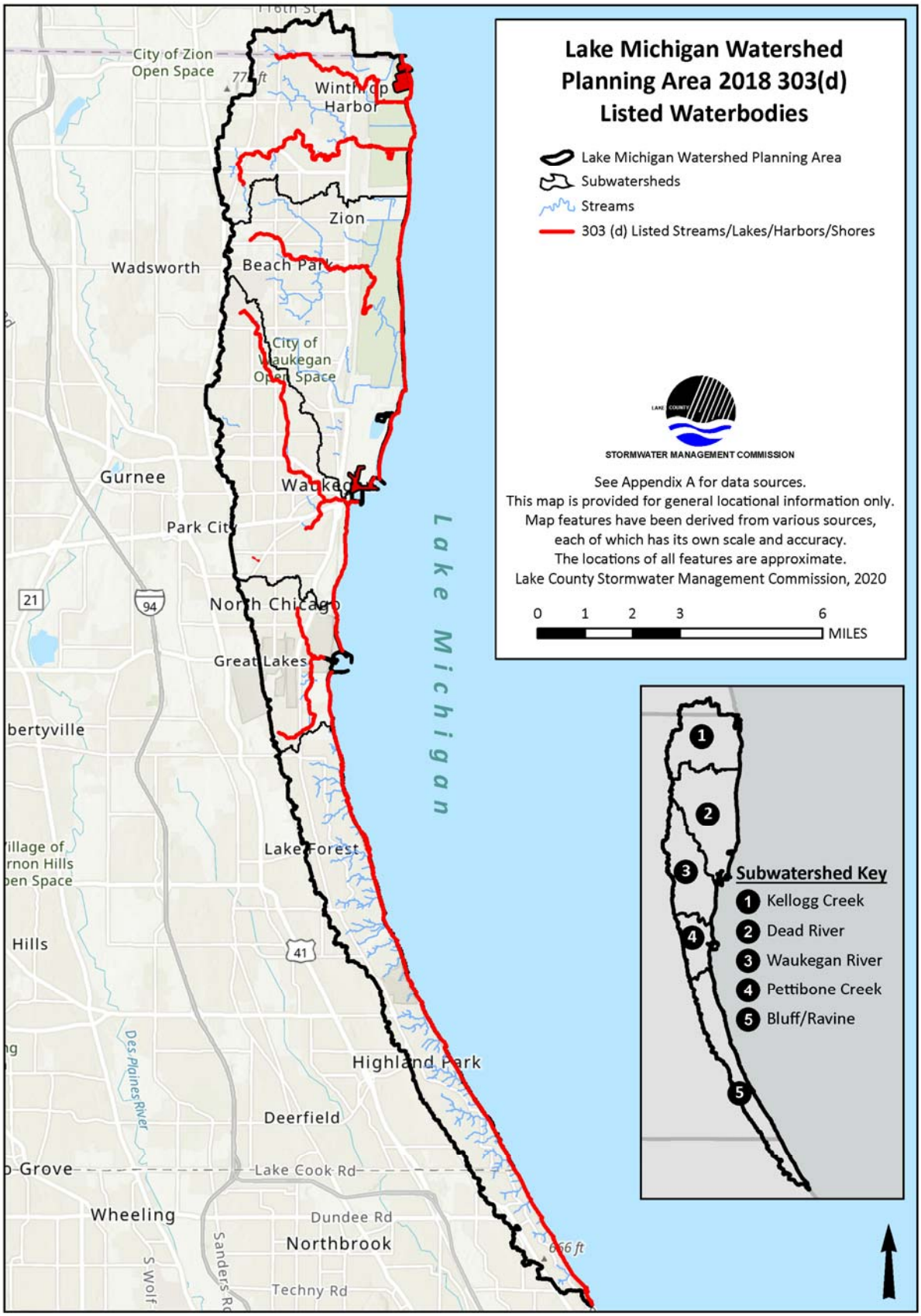


Figure 3-63: Lake Michigan Watershed 2018 303(d) listed Streams, Lakes, Harbors & Shores

3.16.1 Status of Designated Use Support

The Illinois EPA produces a biennial report on the water quality of surface waters and groundwater in Illinois. The "Integrated Water Quality Report and Section 303(d) List" ("Integrated Report") is based on federal guidance for meeting the requirements of Sections 305(b), 303(d) and 314 of the Clean Water Act. Discussion of the Integrated Report in this section is specifically related to surface water (lakes and streams) in the 2018 Integrated Report. Assessment of water quality for an individual water body or stream segment is expressed in terms of support of "designated uses". Designated uses assessed in the 2018 Integrated Report applicable to lakes and streams in the Lake Michigan watershed planning area include Aquatic Life, Fish Consumption, Primary Contact, and Aesthetic Quality. These uses are determined to be fully supported, not supported, not assessed, or to have insufficient information to make a determination.

Illinois EPA evaluates physical, biological, and chemical monitoring data to make these assessments of designated use support. For some uses, monitoring data may indicate non-support or "impairment". For example, depauperate fish or invertebrate taxa may indicate impairment of the aquatic life designated use. In these cases, physical and/or chemical monitoring data are compared to numeric water quality standards to determine if pollutants are present in sufficient quantities to cause an impairment of one or more designated uses. In other cases, exceedance or violation of the water quality standard is enough to list the use as not supported and the water as "impaired". For example, exceedance of the fecal coliform standard results in non-support of the Primary Contact designated use, if it is an assessed use for a given water. Waters with one or more pollutants identified as the cause of impairment are added to the "303(d) list" of impaired waters and put onto a schedule for development of a Total Maximum Daily Load study for the pollutant(s) of concern. In some cases, "non-pollutants" are identified as the cause of non-support. Non-pollutants are typically non-chemical causes of impairment such as modification of flows in a stream by dams, alteration of habitat, or the presence of non-native invasive species. Once a surface water assessment is made, it typically remains unchanged in subsequent editions of the Integrated Report unless new data is obtained by Illinois EPA. Changes from previous editions are reported by Illinois EPA in an appendix to the integrated report.

3.16.1.1Streams

Eight stream segments in the Lake Michigan watershed planning area are assessed by Illinois EPA for support of designated uses as indicated by applicable water quality standards. These segments consist of 28 miles of rivers and streams. Of these, three are segments of the Waukegan River (7 total miles), two are segments of Pettibone Creek (4 total miles), one is a segment of the Kellogg Creek (7 miles), one is a segment of Dead Dog Creek (5 miles) and one is a segment of Bull Creek (5 mile). All eight segments did not support the Aquatic Life designated use. Three segments (Kellogg Creek, Dead Dog Creek, and Waukegan River) were assessed and determined to fully support the aesthetic quality designated use. Streams within the planning area were not assessed for fish consumption and primary contact recreation designated uses. Multiple ravines within the planning area are not assessed by the Illinois EPA.

Twenty-Two causes of impairment are identified and multiple causes may affect a single stream segment. Causes of impairment and sources of pollution are summarized in Table 3-44 and Table 3-45, respectively. Sources of pollution fall into five categories and multiple sources may affect a single segment. The most

common source within the planning area is contaminated sediments. A summary of stream impairments is provided in

Table 3-46.

Table 3-44: Causes of Stream Impairments in the Lake Michigan Planning Area

CAUSE OF IMPAIRMENT	SEGMENTS AFFECTED
.alpha.-BHC	2
Aldrin	5
Arsenic	1
Cause Unknown	1
Changes in Stream Depth and Velocity Patterns	1
Chromium (total)	1
Copper	1
DDT	3
Dieldrin	1
Dissolved Oxygen	3
Endrin	3
Heptachlor	1
Hexachlorobenzene	2
Lead	1
Loss of Instream Cover	1
Manganese	1
Mercury	1
Nickel	2
Other flow regime alterations	1
Polychlorinated biphenyls	4
Silver	2
Zinc	1

Source: Illinois EPA 2018

Table 3-45: Sources of Stream Impairments in the Lake Michigan Planning Area

SOURCE OF POLLUTION	SEGMENTS AFFECTED
Channelization	1
Contaminated Sediments	8
Source Unknown	3
Upstream Impoundments	1
Urban Runoff/Storm Sewers	2

Table 3-46: Stream Impairments List in the Lake Michigan Watershed Planning Area
2018 Bold font indicates the Designated Use and cause(s) of impairment for which the water appears on the 303(d) list.

STREAM	ILLINOIS EPA ASSESSMENT UNIT ID	DESIGNATED USE(S) AND LEVEL OF SUPPORT	CAUSE(S)	SOURCE(S)
Bull Creek	IL_QG	**Aquatic Life: Non-Support** Fish Consumption: Not Assessed Primary Contact Recreation: Not Assessed Aesthetic Quality: Not Assessed	**Aldrin, Endrin, Dissolved Oxygen**	Contaminated Sediments, Source Unknown
Dead Dog Creek	IL_QE-01	**Aquatic Life: Non-Support** Fish Consumption: Not Assessed Primary Contact Recreation: Not Assessed Aesthetic Quality: Full Support	**Aldrin, Cause Unknown, Loss of Instream Cover**	Contaminated Sediments, Source Unknown
Kellogg Creek	IL_QF	**Aquatic Life: Non-Support** Fish Consumption: Not Assessed Primary Contact Recreation: Not Assessed Aesthetic Quality: Full Support	**Aldrin, Dissolved Oxygen, Changes in Stream Depth and Velocity Patterns**	Contaminated Sediments, Source Unknown, Channelization
Pettibone Creek	IL_QA-C4	**Aquatic Life: Non-Support** Fish Consumption: Not Assessed Primary Contact Recreation: Not Assessed Aesthetic Quality: Not Assessed	**.alpha.-BHC, Arsenic, Copper, Dieldrin, Endrin, Lead, Manganese, Mercury, Nickel, Polychlorinated biphenyls, Silver, Zinc**	Contaminated Sediments
South Branch Pettibone Creek	IL_QAA-D1	**Aquatic Life: Non-Support** Fish Consumption: Not Assessed Primary Contact Recreation: Not Assessed Aesthetic Quality: Not Assessed	**.alpha.-BHC, Endrin, Heptachlor, Polychlorinated biphenyls**	Contaminated Sediments
South Branch Waukegan River	IL_QCA-01	**Aquatic Life: Non-Support** Fish Consumption: Not Assessed Primary Contact Recreation: Not Assessed Aesthetic Quality: Not Assessed	**Aldrin, Chromium (total), DDT, Hexachlorobenzene, Nickel, Other flow regime alterations, Silver**	Contaminated Sediments, Upstream Impoundments, Urban Runoff/Storm Sewers
Waukegan River	IL_QC-05	**Aquatic Life: Non-Support** Fish Consumption: Not Assessed Primary Contact Recreation: Not Assessed Aesthetic Quality: Not Assessed	**DDT, Polychlorinated biphenyls**	Contaminated Sediments
Waukegan River	IL_QC-03	**Aquatic Life: Non-Support** Fish Consumption: Not Assessed Primary Contact Recreation: Not Assessed Aesthetic Quality: Full Support	**Aldrin, DDT, Hexachlorobenzene, Dissolved Oxygen, Polychlorinated biphenyls**	Contaminated Sediments, Urban Runoff/Storm Sewers

Source: Illinois EPA

3.16.1.2 Inland Lakes

Sand Pond and Dugdale Lake are the only inland lakes in the Lake Michigan watershed planning area that appear on Illinois EPA's list of assessed waters for 2018. Both lakes do not support the aesthetic quality designated use and fully support the aquatic life designated use. A summary of inland lake impairments, causes and sources is provided in Table 3-47.

Table 3-47: Causes of Impairment and Source of Pollution by Lake
Bold font indicates the Designated Use and cause(s) of impairment for which the water appears on the 303(d) list.

LAKE	ILLINOIS EPA ASSESSMENT UNIT ID	DESIGNATED USE(S) AND LEVEL OF SUPPORT	CAUSE(S)	SOURCE(S)
Dugdale	IL_UQA	Aquatic Life: Full Support Fish Consumption: Not Assessed Primary Contact: Not Assessed **Aesthetic Quality: Non-Support**	**Cause Unknown**, Aquatic Plants (Macrophytes)	Source Unknown
Sand Pond	IL_QZV	Aquatic Life: Full Support Fish Consumption: Not Assessed Primary Contact: Not Assessed **Aesthetic Quality: Non-Support**	**Cause Unknown**	Source Unknown

Source: Illinois EPA

3.16.1.3 Lake Michigan Harbors

Two harbors in the Lake Michigan watershed planning area are assessed by Illinois EPA for support of designated uses as indicated by applicable water quality standards. The primary contact designated use was not assessed in either harbor. The Waukegan Harbor does not support the aquatic life, fish consumption or aesthetic quality designated uses. The North Point Marina harbor does not support the fish consumption designated use and fully supports the aquatic life, and aesthetic quality designated uses. A summary of Lake Michigan harbor impairments, causes and sources is provided in Table 3-48.

Table 3-48: Causes of Impairment and Source of Pollution by Harbor
Underlined bold font indicates waterbodies which have a TMDL. Bold font indicates the Designated Use and cause(s) of impairment for which the water appears on the 303(d) list. *indicates pollutant causes of impairment for which a TMDL has been developed.

HARBOR	ILLINOIS EPA ASSESSMENT UNIT ID	DESIGNATED USE(S) AND LEVEL OF SUPPORT	CAUSE(S)	SOURCE(S)
North Point Marina Harbor	IL_QH	Aquatic Life: Full Support **Fish Consumption: Non-Support** Primary Contact: Not Assessed Aesthetic Quality: Full Support	**Mercury*, PCBs***	Atmospheric Deposition, Source Unknown
Waukegan Harbor	L_QZO	**Aquatic Life: Non-Support** **Fish Consumption: Non-Support** Primary Contact: Not Assessed **Aesthetic Quality: Non-Support**	**Arsenic, Cadmium, Chromium, Copper, Lead, Mercury*, PCBs*, Zinc, Phosphorus, Bottom Deposits**	Contaminated Sediment, Urban Runoff/Storm Sewers, Industrial Point Source Discharge, Atmospheric Deposition, Source Unknown

Source: Illinois EPA, 2018

3.16.1.4 Lake Michigan Shoreline

Thirteen shoreline segments in the Lake Michigan watershed planning area are assessed by Illinois EPA for support of designated uses as indicated by applicable water quality standards. These segments comprise the eastern boundary of the Lake Michigan watershed planning area. All thirteen segments did not support the fish consumption or primary contact designated uses. The Lake Michigan nearshore was not assessed for aesthetic quality or aquatic life designated uses. A summary of Lake Michigan nearshore impairments is provided in Table 3-49.

Table 3-49: Causes of impairment and source of pollution by nearshore segment

Underlined bold font indicates waterbodies which have a TMDL. Bold font indicates the Designated Use and cause(s) of impairment for which the water appears on the 303(d) list.*indicates pollutant causes of impairment for which a TMDL has been developed.

SHORELINE SEGMENT	ILLINOIS EPA ASSESSMENT UNIT ID	DESIGNATED USE(S) AND LEVEL OF SUPPORT	CAUSE(S)	SOURCE(S)
Glencoe Park Beach	IL_QK-04	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Illinois Beach State Park North	IL_QH-03	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Illinois Beach State Park South	IL_QH-09	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Lake Bluff Sunrise Beach	IL_QI-06	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Lake Forest Beach	IL_QI-10	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
North Point Beach	IL_QH-01	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown

SHORELINE SEGMENT	ILLINOIS EPA ASSESSMENT UNIT ID	DESIGNATED USE(S) AND LEVEL OF SUPPORT	CAUSE(S)	SOURCE(S)
Park Avenue Beach	IL_QJ-05	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Rosewood Beach	IL_QJ	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Waukegan North Beach	IL_QH-04	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Waukegan South Beach	IL_QH-05	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Winnetka Lloyd Beach	IL_QK-07	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Winnetka Maple Beach	IL_QK-08	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown
Winnetka Tower Beach	IL_QK-06	Aquatic Life: Not Assessed **Fish Consumption: Non-Support** **Primary Contact: Non-Support** Secondary Contact: Not Assessed Aesthetic Quality: Not Assessed	**Mercury*, Polychlorinated biphenyls*, Escherichia coli***	Atmospheric Deposition , Source Unknown

Source: Illinois EPA, 2018

3.16.2 Total Maximum Daily Loads

Section 303(d) of the Clean Water Act requires Illinois EPA to identify all waters that do not meet water quality standards. For waters impaired by pollutants, Section 303(d) requires the development of a total maximum daily load. The Illinois EPA developed draft total maximum daily load reports for nearshore mercury, nearshore PCB's and shoreline segments in the Lake Michigan watershed in 2015. Where applicable, actions identified in the total maximum daily load reports were included in the programmatic and site-specific action plans (see Chapter 6).

Total Maximum Daily Load (TMDL): An estimation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. It assesses contributing point and nonpoint sources and identifies pollution reductions necessary for designated use attainment.

The Illinois Lake Michigan (nearshore) Mercury Total Maximum Daily Load Report addresses fish consumption and aquatic life impairments caused by mercury for beaches, shorelines, harbors, and open water segments within the Illinois Lake Michigan Basin. This includes the entire Lake Michigan shoreline within the Lake Michigan watershed planning area, Waukegan Harbor, and North Point Marina Harbor. The majority of mercury pollution within the study area is due to atmospheric deposition. Atmospheric deposition of mercury comes from regional, national, and global sources. There are natural and anthropogenic sources of mercury. A large portion of the anthropogenic mercury pollution load comes from fossil fuel combustion, particularly coal-fired power plants. Other anthropogenic sources of mercury include metal production emissions, industrial processes, waste incinerators, cement manufacturing, and lime manufacturing. The total maximum daily load report determined an 89.29% reduction of 2001 anthropogenic emission sources is needed to reach the target fish mercury concentration of 0.06 mg/kg. Mercury emission reductions are needed at a local, national, and global scale to reach the target reduction.

The Illinois Lake Michigan (nearshore) PCB Total Maximum Daily Load report addresses fish consumption and aquatic life impairments caused by PCBs for beaches, shorelines, harbors, and open water segments within the Illinois Lake Michigan Basin. This includes the entire Lake Michigan shoreline within the Lake Michigan watershed planning area, Waukegan Harbor, and North Point Marina Harbor. Atmospheric deposition is the main source of PCB loading to waterbodies in the study area. Stormwater runoff could contribute high PCB loads to select locations if a contaminate source is present; however, there was insufficient data to identify stormwater PCB loads for the total maximum daily load. Atmospheric PCB sources from Illinois must be reduced by 94.7% of 2005 levels to meet the goals established within the total maximum daily load . Additional reduction of atmospheric PCB sources outside of Illinois are also needed to meet total maximum daily load goals. The report used a highly conservative method to estimate needed PCB reductions. Actual reductions needed to reach total maximum daily load goals may be substantially less than the 94.7% reduction identified in the report. Gas phase atmospheric PCB concentrations have been steadily decreasing since the 1979 ban on commercial production of PCBs. This trend is expected to continue, and actions identified in the total maximum daily load are intended to expedite the decrease in atmospheric PCB concentrations.

The Illinois Shoreline Segments in Lake County, Illinois and Illinois Shoreline Segments in Suburban Cook County Illinois Total Maximum Daily Load reports address primary contact recreation impairments caused by *E. coli* within the Lake Michigan watershed planning area. *E. coli* concentrations can be influenced by a variety of factors including precipitation, seagulls, beach slope, waves, currents, surface runoff, and illicit discharges.

Local sources of contamination (within 500 meters of beach) are likely the major source of high *E. coli* concentrations in the planning area. The total maximum daily load reports established *E. coli* or fecal coliform concentration load allocations for wastewater, stormwater, and non-point source loads as summarized in Table 3-50. The total maximum daily load reports also identified needed actions to achieve total maximum daily load reduction targets for each beach within the planning area as summarized in Table 3-51.

Table 3-50: Load allocations for Lake County and Suburban Cook County shoreline TMDLs.

Source	Allocation/Indicator
Wastewater	400 CFU/100 mL fecal coliform
Untreated Wastewater	0
Municipal Stormwater	126 CFU/100 mL *E. coli*
Industrial Stormwater	126 CFU/100 mL *E. coli*
Gulls, dogs, wildlife, resuspended beach sand, longshore currents, and other nonspecific loading sources.	126 CFU/100 mL *E. coli*

Sources: Illinois EPA, 2013a; Illinois EPA, 2013b

Table 3-51: Actions needed to attain Total Maximum Daily Load E. coli geometric mean target as reported in the TMDL Shoreline Segments in Suburban Cook County, Illinois and TMDL Shoreline Segments in Lake County, Illinois.

Beach Information			Actions Needed to Meet TMDL Reduction Target				
Name	Assessment Unit ID	Beach ID	Reduce 24-hr Rainfall Below (in.)*	Reduce 48-hr Rainfall Below (in.)*	Reduce Daily Gull Count Below	Increase Beach Slope (%)	Decrease Impervious Area (%)
North Point Marina Beach	IL_QH-01	IL913512	0.20	n/a	40	2	n/a
Illinois Beach State Park North Beach	IL_QH-03	IL677426	1.50	n/a	60	n/a	n/a
Illinois Beach State Park South Beach	IL_QH-09	IL215601	1.00	n/a	50	1	n/a
Waukegan North Beach	IL_QH-04	IL087773	1.00	n/a	50	1	n/a
Waukegan South Beach	IL_QH-05	IL234945	0.20	n/a	25	3	n/a
Lake Bluff Sunrise Beach	IL_QI-06	IL195441	2.00	n/a	65	n/a	n/a
Lake Forest Forest Park Beach	IL_QI-10	IL634222	1.00	n/a	50	1	n/a
Highland Park Rosewood Beach	IL_QJ	IL730475	1.00	n/a	50	1	n/a
Highland Park Avenue Boating Beach	IL_QJ-05	IL782704	1.50	n/a	60	n/a	n/a

Beach Information			Actions Needed to Meet TMDL Reduction Target				
Name	Assessment Unit ID	Beach ID	Reduce 24-hr Rainfall Below (in.)*	Reduce 48-hr Rainfall Below (in.)*	Reduce Daily Gull Count Below	Increase Beach Slope (%)	Decrease Impervious Area (%)
Glencoe Park Beach	IL_QK-04	IL942128	n/a	1.35	n/a	n/a	n/a
Winnetka Tower Beach	IL_QK-06	IL108354	n/a	1.50	n/a	n/a	n/a
Winnetka Lloyd Park Beach	IL_QK-07	IL595016	n/a	1.50	n/a	n/a	n/a
Winnetka Maple Park Beach	IL_QK-08	IL750698	n/a	1.50	n/a	n/a	n/a

Sources: Illinois EPA, 2013a; Illinois EPA, 2013b

3.16.3 Summary of Monitoring

Chemical, physical, and biological monitoring has been conducted by multiple agencies within the planning area. Monitoring frequency and intensity varies considerably between waterbodies. Stream monitoring has mostly been conducted in the northern portion of the planning area. There is currently no known water quality data for the Pettibone Creek and Bluff/Ravine subwatersheds. Due to the hydrology of the watershed and inconsistent monitoring, results will be summarized by subwatershed.

3.16.3.1 Dead Dog Creek

The Lake County Health Department monitored water temperature (n=19,376), turbidity (n=18,763), pH (n= 19,376), dissolved oxygen (n= 19,376), and specific conductivity (n= 19,376) at 15-minute intervals from approximately August to November 2006 and from March to November 2007 at QE-01 in Dead Dog Creek near Illinois Beach State Park (Figure 3-64). The Illinois EPA conducted periodic water quality monitoring at the same sampling site in 2007, 2011, and 2016. Parameters monitored by the Illinois EPA include chloride (n=2), dissolved oxygen (n=6), phosphorus (n=10), pH (n=6), specific conductivity (n=6), water temperature (n=6), total suspended solids (n=9) and endrin (n=1).

Water Temperature

Water temperatures fluctuated with daily and seasonal air temperature changes, i.e., water temperatures were higher in summer and cooler in spring and fall. In 2006, Dead Dog Creek had a maximum water temperature of 22°C and a median temperature of 15°C. In 2007, the max was 24°C (July 8) and the median 17°C. The Illinois EPA measured water temperature between May and September in 2007 (n=3) and 2011 (n=3), with a maximum and median water temperature of 19 °C and 16 °C, respectively. Results from the Illinois EPA monitoring do not indicate any substantial changes in water temperature since the intensive LCHD monitoring was conducted in 2006-2007; however, additional data is needed to definitively determine no changes have occurred.

Dissolved Oxygen

In 2006, dissolved oxygen in Dead Dog Creek ranged from 4.5-10.8 mg/L, with a median concentration of 8.05 mg/L. In 2007, Dead Dog Creek ranged from 4.35-14.14 mg/L with a median concentration of 8.24 mg/L. Dissolved oxygen data collected by the Illinois EPA in 2007 (n=3) and 2011 (n=3) had similar results to the LCHD study.

Dissolved oxygen concentrations below the Illinois Environmental Protection Agency standard of 5.0 mg/L can stress many fish species, and concentrations below 1.0 mg/L (hypoxic conditions) can be detrimental to aquatic life. In Dead Dog Creek, 0.19% of samples were below 5.0 mg/L (3 days in August 2006 and 1 day in July 2007). There were no observed dissolved oxygen concentrations below 1 mg/L.

Specific Conductivity and Chloride

The median specific conductivity in Dead Dog Creek was 968 µS/cm in 2006 and 1,054 µS/cm in 2007. The maximum specific conductivity was 1,119 µS/cm in 2006 (October) and 3,380 µS/cm in 2007 (April). The large difference in maximum specific conductivity between 2006 and 2007 is likely due to differences in sampling (no spring sampling in 2006), and not indicative of a major change in water quality. Specific conductivity data collected by the Illinois EPA in 2007 (n=3) and 2011 (n=3) had similar results to the LCHD study.

The Illinois EPA measured chloride concentrations of 119 mg/L and 64.6 mg/L in August and September of 2011, respectively. Additional monitoring is needed to characterize chloride concentrations in Dead Dog Creek.

pH

In Illinois, the acceptable range of pH to be supportive of the Aquatic Life designated use in 6.5 - 9.0 s.u. All recorded pH values by the Illinois EPA (n=6) and LCHD (n=19,376) were within this range.

Turbidity/Total Suspended Solids

There is currently no numeric standard for turbidity in Illinois; however, high turbidity could violate narrative standards for the aesthetic quality designated use. Turbidity in Dead Dog Creek ranged from 1.7 - 1,067.8 NTU with a median of 7.3 NTU in 2006. In 2007, turbidity ranged from 1.8-923 NTU with a median of 10 NTU. Turbidity data collected by the Illinois EPA in 2007 (n=3) and 2011 (n=3) had similar results to the LCHD study.

Currently, no water quality standard exists for total suspended solids in Illinois streams. Prior to 2012, the Illinois EPA used a non-water quality standard-based criterion of 116 mg/L to determine whether total suspended solids was a potential cause of aquatic life impairment in streams. The Illinois EPA collected total suspended solids data in 2007 (n=2), 2011 (n=5) and 2016 (n=2). Total suspended solids values ranged from no detection to 38 mg/L, with a median of 9.6 mg/L.

Phosphorus

The Illinois EPA collected phosphorus data in 2007 (n=3), 2011 (n=5) and 2016 (n=2). Phosphorus concentrations ranged from no detection to 0.103 mg/L, and had a median of 0.052 mg/L. Existing data indicates there may be an increasing trending in total phosphorus concentration; however, more data is needed to determine if the observed trend is a result of infrequent monitoring.

Aldrin

Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 1.0 µg/kg for aldrin to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use. On 05/14/2007, the Illinois EPA recorded an aldrin concentration of 1.2 µg/kg. More data is needed to accurately characterize aldrin concentrations within Dead Dog Creek.

3.16.3.2 Kellogg Creek

The Lake County Health Department monitored water temperature (n=18,695), turbidity (n=18,145), pH (n=18,695), dissolved oxygen (n=17,322), and specific conductivity (n=18,694) at 15-minute intervals from approximately August to November 2006 and from March to November 2007 at QF-02 in Kellogg Creek near Illinois Beach State Park (Figure 3-64). The Illinois EPA conducted periodic water quality monitoring at the same sampling site in 2007, 2011, and 2016. Parameters monitored by the Illinois EPA include chloride (n=4), dissolved oxygen (n=7), phosphorus (n=12), pH (n=7), specific conductivity (n=7), water temperature (n=7), total suspended solids (n=11) and aldrin (n=1).

Water Temperature

Water temperatures fluctuated with daily and seasonal air temperature changes. In 2006, the maximum recorded water temperature in Kellogg Creek was 21°C (August 26th) and a median water temperature was 16°C. In 2007, the maximum water temperature was 24°C (July 10th) and the median was 17°C. The Illinois EPA measured water temperature between May and September in 2007 (n=3), 2011 (n=3) and 2016 (n=1) with a maximum and median water temperature of 22 °C and 16 °C, respectively. Results from the Illinois EPA monitoring do not indicate any substantial changes in water temperature since the intensive LCHD monitoring was conducted in 2006-2007; however, additional data is needed to definitively determine no changes have occurred.

Dissolved Oxygen

In 2006, dissolved oxygen in Kellogg creek ranged from 0.0-10.92 mg/L with a median concentration of 7.08 mg/L. In 2007, dissolved oxygen ranged from 1.17-13.06 mg/L with a median concentration of 6.24 mg/L. Dissolved oxygen data collected by the Illinois EPA in 2007 (n=3), 2011 (n=3) and 2016 (n=1) ranged from 3.0-9.95 mg/L with a median of 7.19 mg/L.

During 2006 and 2007, approximately 35% of all Kellogg Creek samples exhibited dissolved oxygen concentrations below 5.0 mg/L, and 1% of samples exhibited concentrations below 1.0 mg/L, during low flow conditions in September of both sampling years. Kellogg Creek fell below the standard for 35 days between August and September of 2006, and 49 days between May and August 2007.

Specific Conductivity and Chloride

Median specific conductivity readings in Kellogg Creek were 814 µS/cm in 2006 and 986 µS/cm in 2007. The maximum specific conductivity was 1,136 µS/cm in 2006 and 1,962 µS/cm in 2007. Specific conductivity data collected by the Illinois EPA in 2007 (n=3), 2011 (n=3) and 2016 (n=1) had similar results to the LCHD study.

The Illinois EPA directly measured chloride concentrations in 2011 (n=3) and 2016 (n=1). Chloride concentrations ranged from 87.63-166 mg/L with a median concentration of 146 mg/L. Additional monitoring is needed to characterize chloride concentrations in Kellogg Creek.

pH

The pH at Kellogg Creek ranged from 7.08-8.23 s.u. with a median of 7.63 s.u. All values were within acceptable pH ranges. Data collected by the LCHD and Illinois EPA had similar results; however, additional data is needed to definitively determine no changes have occurred.

Turbidity/Total Suspended Solids

Turbidity in Kellogg Creek ranged from 2.9-1,113.2 NTU with a median of 8.30 NTU in 2006. In 2007, turbidity ranged from 0-1,124.6 NTU with a median of 7.90. Turbidity data collected by the Illinois EPA in 2007 (n=3), 2011 (n=3) and 2016 (n=1) had similar results to the LCHD study.

The Illinois EPA collected TSS data in 2007 (n=3), 2011 (n=5) and 2016 (n=3). TSS values ranged from no detection to 12.0 mg/L, with a median of 6.0 mg/L.

Phosphorus

The Illinois EPA collected phosphorus data in 2007 (n=3), 2011 (n=5) and 2016 (n=3). Phosphorus concentrations ranged from no detection to 0.112 mg/L, and had a median of 0.049 mg/L. Existing data indicates there may be an increasing trending in total phosphorus concentration; however, more data is needed to determine if the observed trend is a result of infrequent monitoring.

Aldrin

On 05/14/2007, the Illinois EPA recorded an aldrin concentration of 1.1 µg/kg. More data is needed to accurately characterize aldrin concentrations within Kellogg Creek.

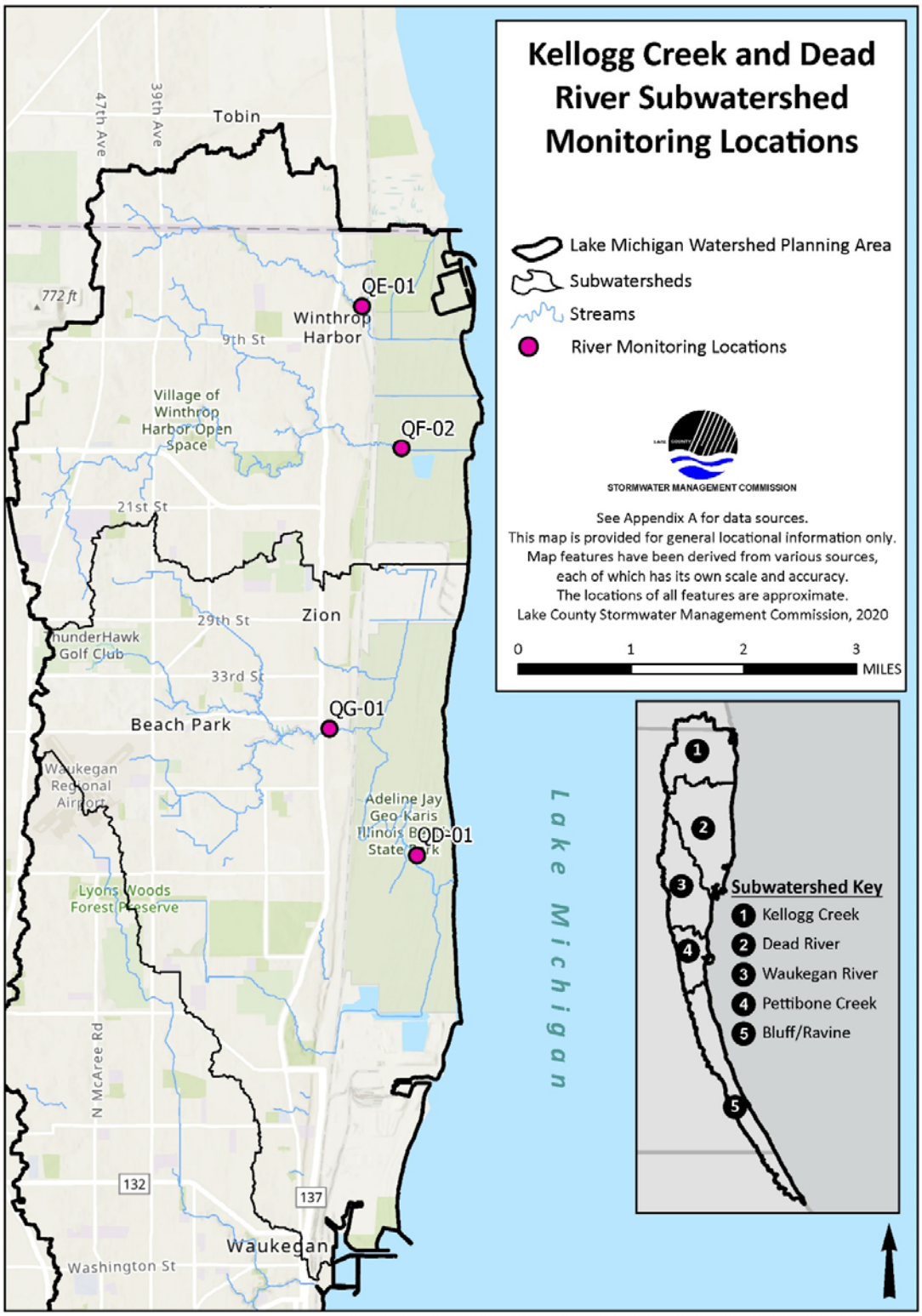


Figure 3-64: Water Quality Monitoring Locations in the Kellogg Creek and Dead River Subwatersheds

3.16.3.3 Bull Creek

The Lake County Health Department monitored water temperature (n=19,385), turbidity (n=19,243), pH (n= 19,385), dissolved oxygen (n= 18,776), and specific conductivity (n= 19,380) at 15-minute intervals from approximately August to November 2006 and from March to November 2007 at QG-01 in Bull Creek near Illinois Beach State Park (Figure 3-65). The Illinois EPA conducted periodic water quality monitoring at the same sampling site in 2007. Parameters monitored by the Illinois EPA include dissolved oxygen (n=3), phosphorus (n=3), pH (n=3), specific conductivity (n=3), water temperature (n=3), total suspended solids (n=3), aldrin (n=1) and endrin (n=1). The North Shore Sanitary district conducted limited water quality sampling in May and September 2007.

Water Temperature

Water temperatures fluctuated with daily air temperatures as well as with seasonal changes. In 2006, Bull Creek had a maximum recorded water temperature of 23°C and a median of 15°C. In 2007, the maximum was 25°C and the median 17°C. Water Temperature data collected by the Illinois EPA in 2007 had similar results to the LCHD study.

Dissolved Oxygen

In 2006, dissolved oxygen in Bull Creek ranged from 1.79-13.5 mg/L with a median concentration of 7.19 mg/L. In 2007, dissolved oxygen ranged from 1.17-13.78 mg/L with a median concentration of 7.85 mg/L. Data collected by the Illinois Environmental Protection Agency in 2007 had similar results to the LCHD study.

Bull Creek dissolved oxygen concentrations were below the Illinois EPA standard of 5.0 mg/L for 23 days in 2006 and 7 days in 2007. Approximately 8% of samples fell below the IEPA standard of 5.0 mg/L during both years. There were no observed dissolved oxygen concentrations below 1 mg/L.

Specific Conductivity

Median specific conductivity readings in Bull Creek were 945 µS/cm in 2006 and 912 µS/cm in 2007. The maximum specific conductivity was 1,532 µS/cm in 2006 and 3,218 µS/cm in 2007. The large difference in maximum specific conductivity between 2006 and 2007 is likely due to differences in sampling (no spring sampling in 2006), and not indicative of a major change in water quality. Specific conductivity data collected by the Illinois EPA in 2007 had similar results to the LCHD study.

pH

The pH at Bull Creek ranged from 7.42-8.30 s.u., with a median of 7.85 s.u. All recorded values were within acceptable pH ranges.

Turbidity /Total Suspended Solids

Turbidity at Bull Creek ranged from 2.5-1,149.7 NTU, with a median of 11.4 NTU in 2006. In 2007 turbidity ranged from 0-1,084.9 NTU with a median of 17.3 NTU. Turbidity data collected by the Illinois EPA in 2007 (n=3) had similar results to the LCHD study.

The Illinois EPA observed TSS concentrations of 7.2, 21 and 32 mg/L on 05/10/2007, 07/24/2007 and 09/13/2007, respectively. The North Shore Sanitary District measured a TSS concentration of 156 mg/L in May 2007 and 31 mg/L in September 2007.

Aldrin

On 05/15/2007, the Illinois EPA observed an aldrin concentration of 1.2 µg/kg. More data is needed to accurately characterize aldrin concentrations within Bull Creek.

Endrin

Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 1.0 µg/kg for endrin to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use. On 05/15/2007 the Illinois EPA observed an Endrin concentration of 2.9 µg/kg. More data is needed to accurately characterize endrin concentrations within Bull Creek.

3.16.3.4 Dead River

The Illinois EPA collected water quality data at QD-01 in the Dead River on 06/12/2006 (Table 3-52). Results from this sampling event are summarized in Table 3-52. There is no other known water quality data for the Dead River. Additional monitoring is needed to accurately characterize water quality within the Dead River.

Table 3-52: Illinois EPA Sampling Results for the Dead River on 06/12/2006

Analyte	Result	Unit
Water Temperature	19.73	°C
Dissolved Oxygen	9.21	mg/L
Specific Conductivity	838	µS/cm
Chloride	140	mg/L
pH	8.05	s.u.
Turbidity	10	NTU
Total Suspended Solids	10.8	mg/L
Phosphorus	0.0263	mg/L

3.16.3.5 Waukegan River

The Lake County Health Department monitored water temperature, turbidity, pH, dissolved oxygen, and specific conductivity at 15-minute intervals at five sites in the Waukegan River (Figure 3-65). Monitoring was conducted from 2003-2006 and 2008-2009 at QC-03 (North Branch at Washington Park) and QCA-01 (South Branch at Washington Park). Monitoring was conducted from 2008-2009 at QC-10 (Bonnie Brook Lane), QC-02 (Powell Park) and QC-04 (Amstutz). Additionally, the LCHD monitored flow at the same interval as the water quality samples in 2008-2009 at QC-10, QC-02, QC-03, QCA-01 and QC-04 (Figure 3-65). The Illinois EPA conducted periodic water quality sampling at QC-01, QC-02, QC-03, QC-04, QC-05, QC-06, QC-07, QC-08, QC-09, QC-10, QCA-01 and QCA-02 in 2000, 2001, 2006, 2008, 2009, 2011 and 2016 (Figure 3-65). Parameters monitored by the Illinois EPA include chloride, dissolved oxygen, phosphorus, pH, specific conductivity, water temperature, total suspended solids, aldrin, total chromium, DDT, hexachlorobenzene, nickel, silver and PCB's.

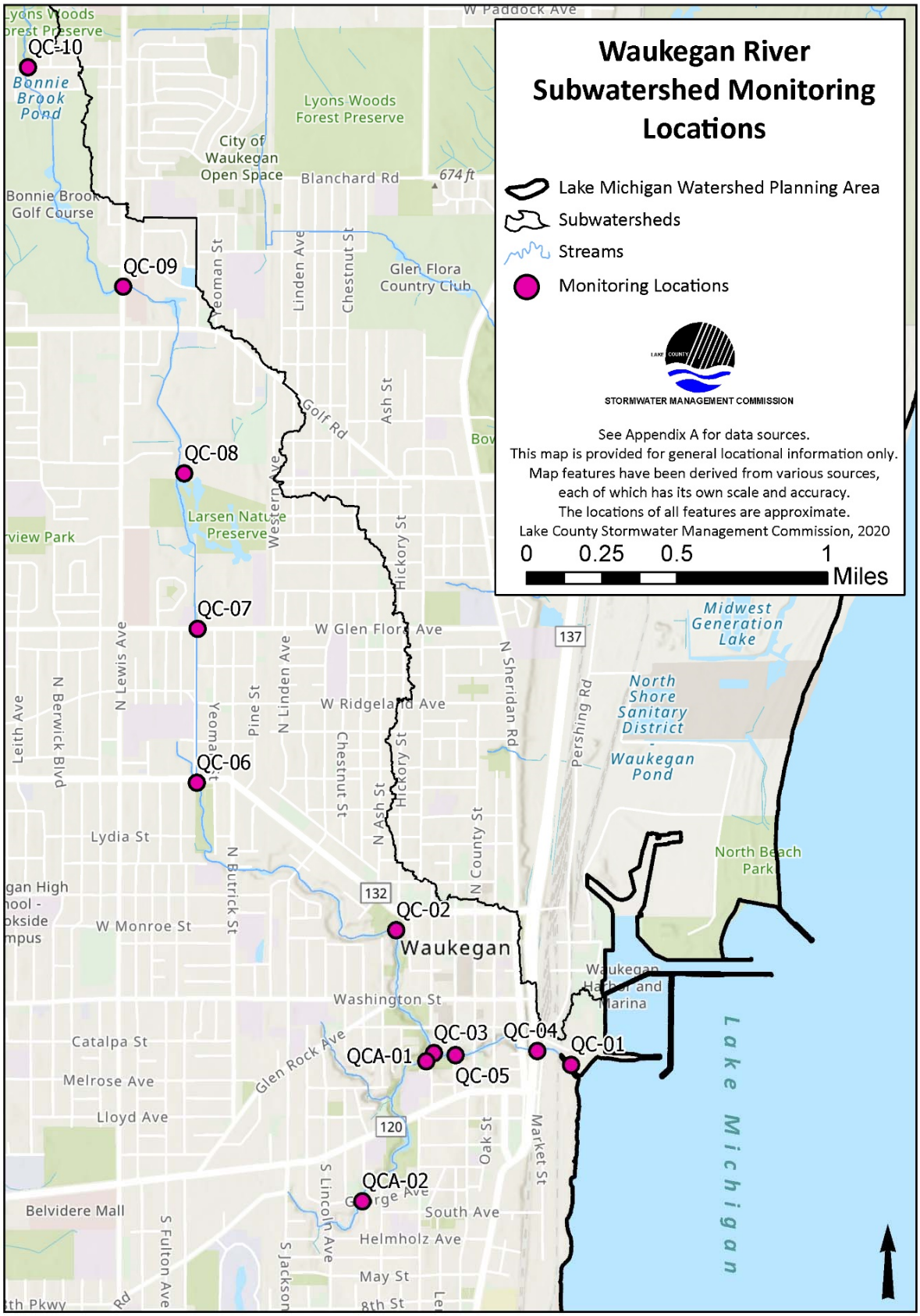


Figure 3-65: Water Quality Monitoring Locations in the Waukegan River Subwatershed

Flow

Monthly average water level, velocity and discharge are summarized in Figure 3-66. Results for QC-10 are biased high because insufficient water levels frequently precluded flow monitoring, resulting in flow only being recorded in above average conditions. Additionally, flow levels and velocity are biased high at QC-10 because the sensor was placed in a narrow section of the channel which constricted flow. The discrepancy in monthly average flow between QC-03 and QC-04 is likely due to instrument error artificially lowering results at QC-04. Overall, QC-04 had the highest discharge of all sites and QC-10 had the lowest. Discharge was typically higher in the North Branch than the South Branch near their convergence. The observed flow was similar to anticipated values based on landscape position. The peaks in September 2008 and June 2009 correspond to high precipitation totals in those months (6.9 in. and 7.5 in., respectively).

Water Temperature

Water temperature results are summarized by site and year in Table 3-53. Water temperatures were similar at the five monitoring locations (Figure 3-67). Maximum water temperatures between 2008-2009 ranged from 22.6 ° C (QC-04) to 26.8 °C (QC-02). Water temperatures observed at QC-03 and QCA-01 between 2003-2006 were similar to observed water temperatures between 2008-2009. Additionally, water temperatures observed by the Illinois EPA (n=5) in 2006, 2011 and 2016 were similar to previously observed water temperatures.

Dissolved Oxygen

Dissolved Oxygen results are summarized by site and year in Table 3-54. Dissolved oxygen violated state standards at each of the five monitoring stations, often for extended periods of time. The South Branch (QCA-01) had the most samples outside of state standards. In 2005, 68% of observed dissolved oxygen concentrations at QCA-01 were below 5 mg/L. Dissolved oxygen increased slightly from upstream (QC-10) to downstream (QC-03) in the North Branch of the Waukegan River and was typically lower in the South Branch (QCA-01) than the North Branch (QC-03) (Figure 3-68). Precipitation events, particularly in low flow conditions, resulted in a temporary increase in dissolved oxygen, followed by a steady decline to pre-event concentrations. Median dissolved oxygen concentrations at QC-03 and QCA-01 between 2003-2006 were similar to observed dissolved oxygen concentrations between 2008-2009. The 2008-2009 dissolved oxygen concentration observations had a lower percentage of samples below 5 mg/L than observations between 2003-2006. It is not clear if this is due to differences in sampling, meteorological conditions, stream restoration, or other unknown changes. Dissolved oxygen concentrations observed by the Illinois EPA (n=5) in 2006, 2011 and 2016 were within the range observed by the Lake County Health Department between 2003-2009.

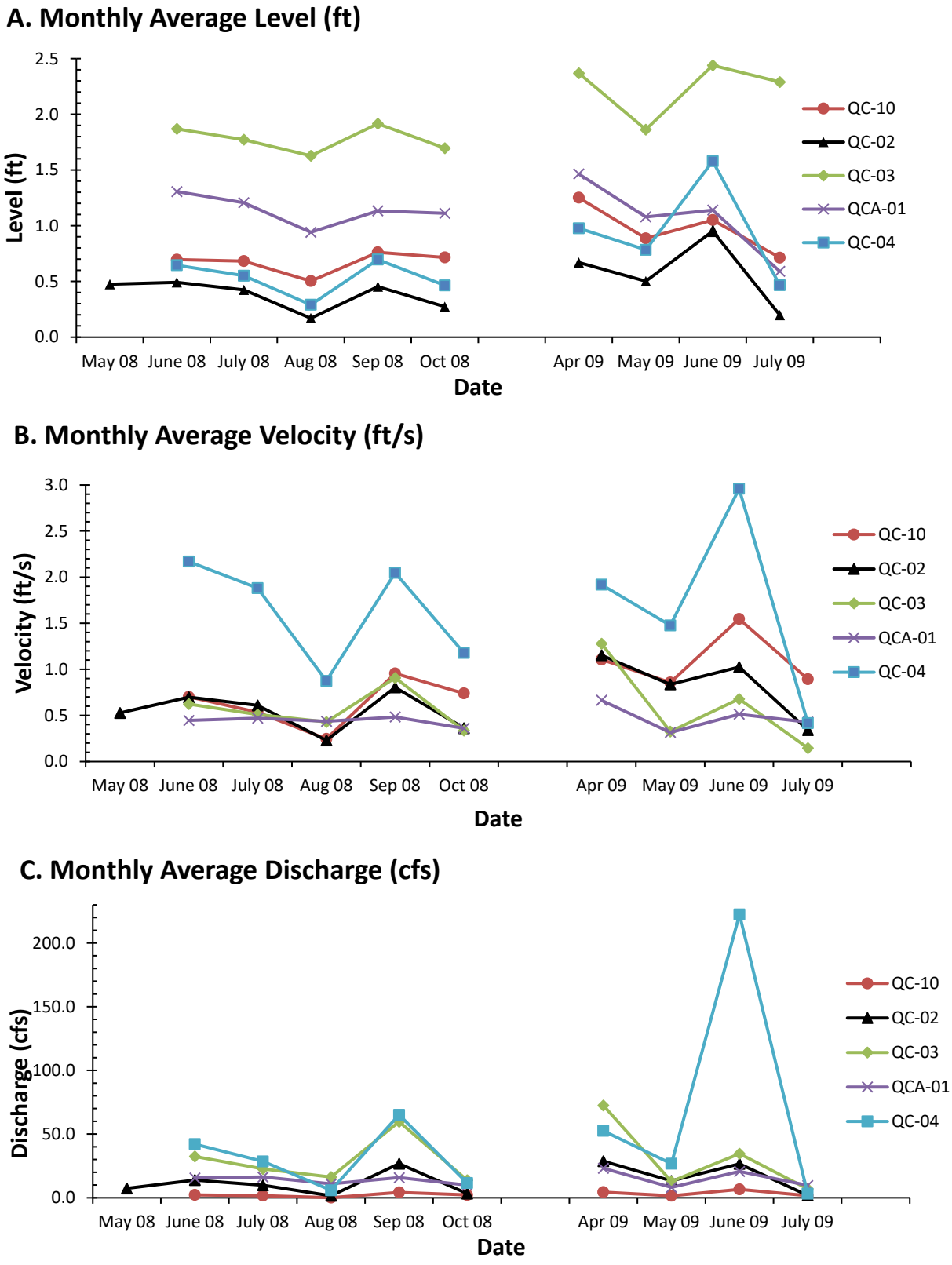


Figure 3-66: Monthly Average Water Quality Data

A. 2008 and 2009 Monthly Average Water Level (ft) in Waukegan River Monitoring Sites. B. 2008 and 2009 Monthly Average Velocity [Feet per Second (ft/s)] in Waukegan Rive Monitoring Sites C. 2008 and 2009 Monthly Average Discharge [Cubic Feet per Second (cfs)] in Waukegan River Monitoring Sites

Table 3-53: Summary of Water Temperature (°C) in the Waukegan River 2003-2009
n: Number of Observations, Min: Minimum Observed Value, Max: Maximum Observed Value

Water Temperature (°C)							
Site	Year	Date Range	n	Min	Max	Mean	Median
QC-10	2008	05/16/08 - 11/06/08	15,197	4.58	25.49	16.82	17.63
	2009	04/07/09 - 07/30/09	9,525	3.38	24.56	14.66	15.69
QC-02	2008	05/16/08 - 11/6/08	16,707	4.93	26.84	17.46	18.44
	2009	04/07/09 - 07/30/09	10,918	4.30	25.55	15.31	15.52
QC-03	2003	06/20/03 - 10/9/03	11,473	6.59	25.31	18.31	19.34
	2004	05/04/04 - 10/20/19	16,187	6.98	24.25	16.84	17.31
	2005	04/27/05 - 10/20/05	16,883	5.29	25.91	17.92	19.11
	2006	04/28/06 - 10/19/06	16,032	5.60	26.55	17.78	18.72
	2008	05/16/08 - 11/6/08	16,704	5.21	24.61	17.35	18.50
	2009	04/7/09 - 07/30/09	10,922	3.72	24.67	15.07	15.47
QCA-01	2003	06/9/03 - 10/9/03	11,692	6.73	26.67	18.16	19.19
	2004	05/04/04 - 10/20/04	15,489	6.75	24.66	16.00	17.14
	2005	04/27/05 - 10/20/05	16,882	5.25	26.54	17.79	18.97
	2006	04/28/06 - 10/19/06	15,438	5.62	27.55	17.40	18.21
	2008	05/16/08 - 11/06/08	16,687	5.16	25.51	17.25	18.45
	2009	04/07/09 - 07/30/09	10,209	3.29	25.79	14.79	15.71
QC-04	2008	05/16/18 - 11/06/08	14,227	5.68	24.75	17.71	18.74
	2009	04/07/09 - 07/30/09	9,284	4.08	22.55	14.49	14.82

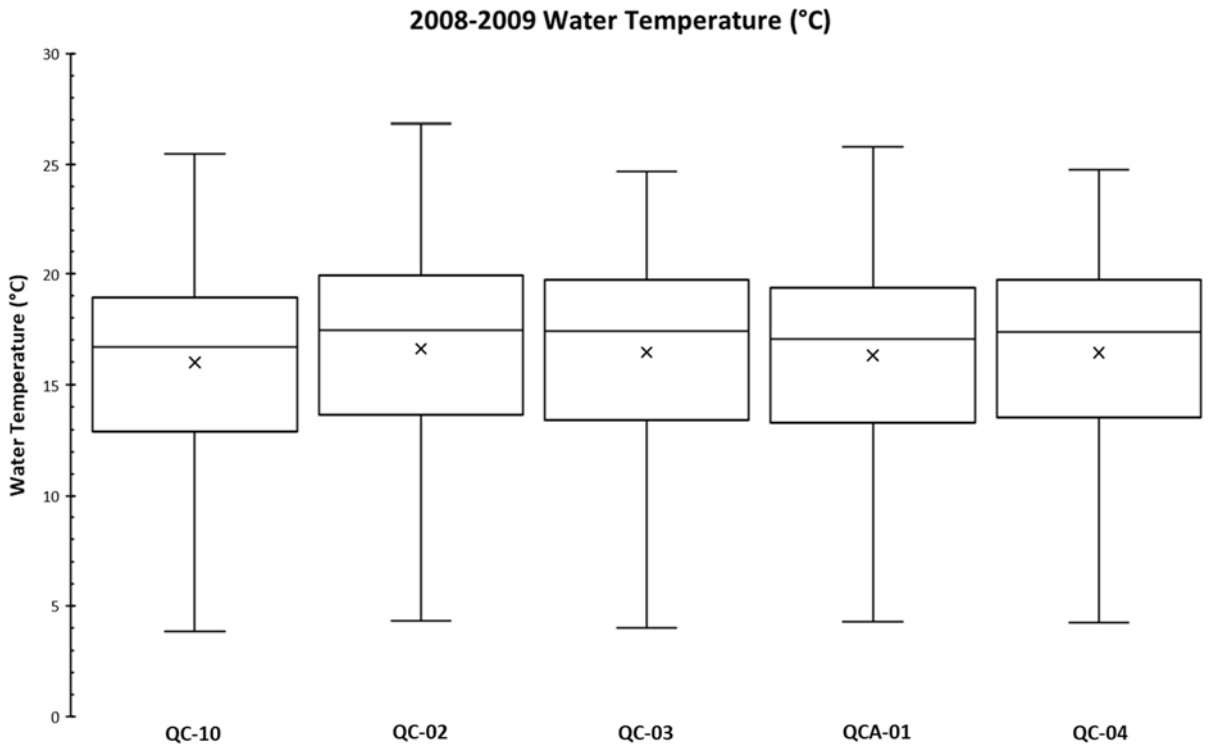


Figure 3-67: 2008-2009 Water Temperature (°C) Boxplot by Site
Sites are in order from upstream to downstream. Statistical outliers are not displayed.

Table 3-54: Summary of Dissolved Oxygen (mg/L) in the Waukegan River 2003-2009
n: Number of Observations, Min: Minimum Observed Value, Max: Maximum Observed Value, % <5: Percent of Samples Less Than 5 mg/l, % <1: Percent of Samples Less Than 1 mg/l

Dissolved Oxygen (mg/L)									
Site	Year	Date Range	n	Min	Max	Mean	Median	% <5	% <1
QC-10	2008	05/16/08 - 11/06/08	15,022	0.05	10.06	5.16	5.74	37.7	10.9
	2009	04/07/09 - 07/30/09	9,383	0.17	15.56	6.92	7.09	24.4	3.7
QC-02	2008	05/16/08 - 11/6/08	16,689	0.45	19.90	6.69	6.39	29.0	0.1
	2009	04/07/09 - 07/30/09	9,981	0.28	22.22	8.03	7.33	26.0	0.5
QC-03	2003	06/20/03 - 10/9/03	11,473	0.06	12.33	5.68	6.41	33.0	6.0
	2004	05/04/04 - 10/20/19	16,187	0.53	17.46	7.25	7.41	11.0	0.3
	2005	04/27/05 - 10/20/05	16,883	0.01	17.87	6.63	7.13	25.0	13.0
	2006	04/28/06 - 10/19/06	15,678	0.01	16.20	6.55	6.82	20.0	8.0
	2008	05/16/08 - 11/6/08	16,704	2.96	13.03	7.24	7.26	3.5	0.0
	2009	04/7/09 - 07/30/09	10,922	1.59	19.01	9.45	8.96	2.0	0.0
QCA-01	2003	06/9/03 - 10/9/03	11,579	0.01	15.72	4.78	4.83	52.0	10.0
	2004	05/04/04 - 10/20/04	15,143	0.03	18.59	4.80	4.98	50.0	15.0
	2005	04/27/05 - 10/20/05	16,490	0.01	16.74	3.51	2.63	68.0	34.0
	2006	04/28/06 -10/19/06	14,613	0.01	18.48	4.73	4.58	53.0	25.0
	2008	05/16/08 - 11/06/08	16,085	0.02	19.11	5.76	5.91	35.0	4.0
	2009	04/07/09 - 07/30/09	9,867	0.01	21.74	7.52	8.19	29.0	6.0
QC-04	2008	05/16/18 - 11/06/08	11,941	2.07	14.70	7.63	7.55	2.8	0.0
	2009	04/07/09 - 07/30/09	8,604	1.37	18.04	9.12	8.58	4.1	0.0

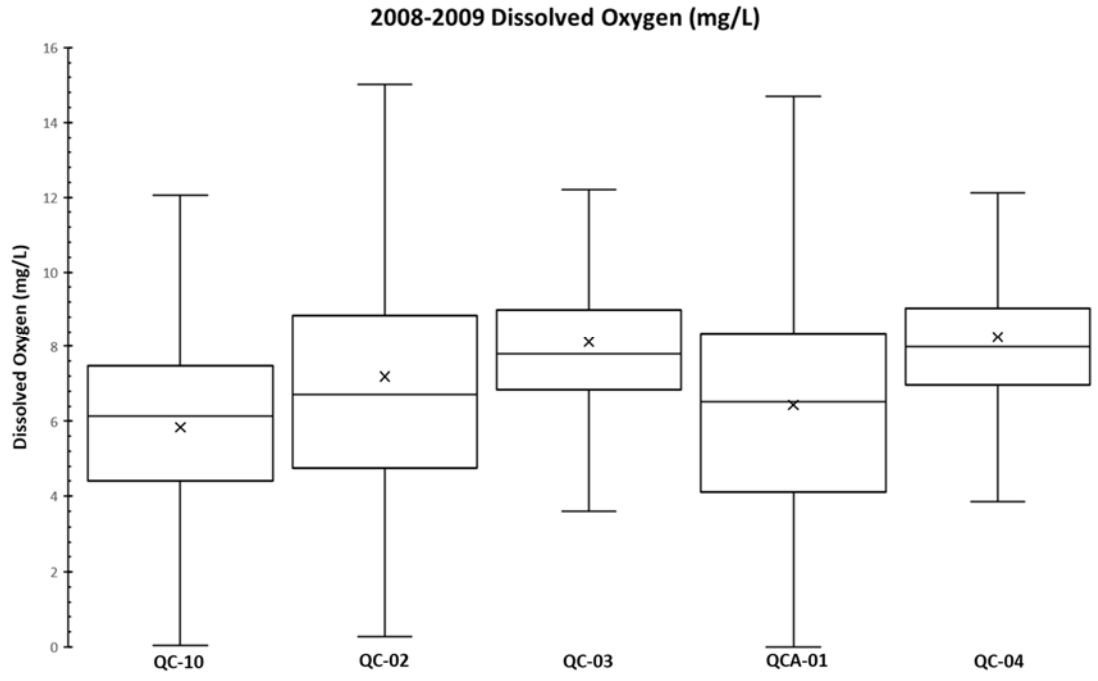


Figure 3-68: 2008-2009 Dissolved Oxygen (mg/L) Boxplot by Site
Sites are in order from upstream to downstream. Statistical outliers are not displayed.

Specific Conductivity and Chloride

Specific conductivity results are summarized by site and year in

Table 3-55. Maximum yearly specific conductivity in 2008-2009 ranged from 849 µs/cm (QC-10) to 3,647 µs/cm (QC-04). Median yearly specific conductivity in 2008-2009 ranged from 685 µs/cm (QC-10) to 1,368 µs/cm (QC-04). Specific conductivity values were lower and less variable at QC-10 than other sites (Figure 3-69). Additional monitoring is needed to determine if the difference in conductivity between QC-10 and the other monitoring sites is due to landscape position, geology, illicit discharges, sanitary cross connections, urban runoff, or other unknown sources. Specific conductivity values at QC-03 and QCA-01 between 2003-2006 were similar to observed specific conductivity values between 2008-2009. Additionally, specific conductivity values observed by the Illinois EPA (n=5) in 2006, 2011 and 2016 were similar to previously observed specific conductivity. Precipitation events typically decreased conductivity, followed by a steady increase to pre event levels.

The Lake County Health Department conducted monthly chloride monitoring at QC-10, QC-02, QC-03, QCA-01 and QC-04 between May 2008 and July 2009 (Figure 3-70). Minimum chloride concentrations ranged from 48 mg/L (QC-10) to 145 mg/L (QC-02). Maximum chloride concentrations ranged from 149 mg/L (QC-10) to 633 mg/L (QC-04). The USEPA chloride chronic threshold of 230 mg/L was exceeded in 51% of samples. Chloride concentrations frequently exceeded the USEPA chronic threshold during warm weather. The watershed-wide median concentration of chloride was 232 mg/L and the mean concentration was 236 mg/L. QC-10 was the only monitoring location with no observed chloride concentrations above the USEPA chronic threshold. The Illinois EPA chloride water quality standard (acute threshold) of 500 mg/L was exceed in two samples at QC-04. These exceedances occurred when the other monitoring sites were frozen. It is likely that chlorides were elevated throughout the watershed when QC-04 exceeded the Illinois EPA chloride water quality sample. Chloride concentrations observed by the Illinois EPA (n=5) in 2006, 2011 and 2016 ranged from 68.1 - 292 mg/L.

The minimal chloride data collected in the Waukegan sub-watershed indicates there is likely persistent chloride contamination at concentrations shown to negatively impact aquatic life. Additional chloride monitoring should be conducted to more accurately characterize chloride concentrations in the watershed and determine if the observed elevated chloride concentrations are due to winter maintenance activities or another unknown source. Additionally, chloride monitoring should be conducted in the entire Lake Michigan watershed planning area to determine the spatial extent of elevated chloride concentrations.

pH

Results for pH are summarized by site and year in Table 3-56. Observations of pH between 2008-2009 ranged from 6.91-9.21 s.u. Observations outside of the acceptable range of pH occurred in 0.18% of samples. The exceedances occurred at QC-02 in October 2008 and QC-02, QC-03, and QC-04 in April 2009. There were no observed pH values outside of the acceptable range at QC-03 or QCA-01 between 2003-2006. All pH values observed by the Illinois EPA (n=5) in 2006, 2011, and 2016 were within acceptable ranges.

Table 3-55: Summary of Specific Conductivity (µS/cm) in the Waukegan River 2003-2009
n: Number of Observations, Min: Minimum Observed Value, Max: Maximum Observed Value

Specific Conductivity (µS/cm)							
Site	Year	Date Range	n	Min	Max	Mean	Median
QC-10	2008	05/16/08 - 11/06/08	15,197	263	849	655	685
	2009	04/07/09 - 07/30/09	9,524	359	1,010	714	692
QC-02	2008	05/16/08 - 11/6/08	16,707	109	1,882	1,130	1,173
	2009	04/07/09 - 07/30/09	10,917	135	1,709	1,090	1,105
QC-03	2003	06/20/03 - 10/9/03	11,473	140	2,060	1,032	990
	2004	05/04/04 - 10/20/19	16,187	110	2,180	1,066	1,060
	2005	04/27/05 - 10/20/05	16,883	80	2,290	935	920
	2006	04/28/06 - 10/19/06	16,032	110	2,510	1,262	1,220
	2008	05/16/08 - 11/6/08	16,704	137	1,909	1,176	1,219
	2009	04/7/09 - 07/30/09	10,922	97	1,753	1,039	1,030
QCA-01	2003	06/9/03 - 10/9/03	11,692	110	1,886	1,188	1,231
	2004	05/04/04 - 10/20/04	15,489	90	1,950	1,203	1,225
	2005	04/27/05 - 10/20/05	16,882	80	2,030	1,280	1,363
	2006	04/28/06 - 10/19/06	15,438	70	1,864	1,034	1,060
	2008	05/16/08 - 11/06/08	16,686	77	1,992	1,279	1,318
	2009	04/07/09 - 07/30/09	10,209	99	1,985	1,325	1,365
QC-04	2008	05/16/18 - 11/06/08	14,227	100	3,647	1,292	1,368
	2009	04/07/09 - 07/30/09	8,820	116	3,590	1,322	1,245

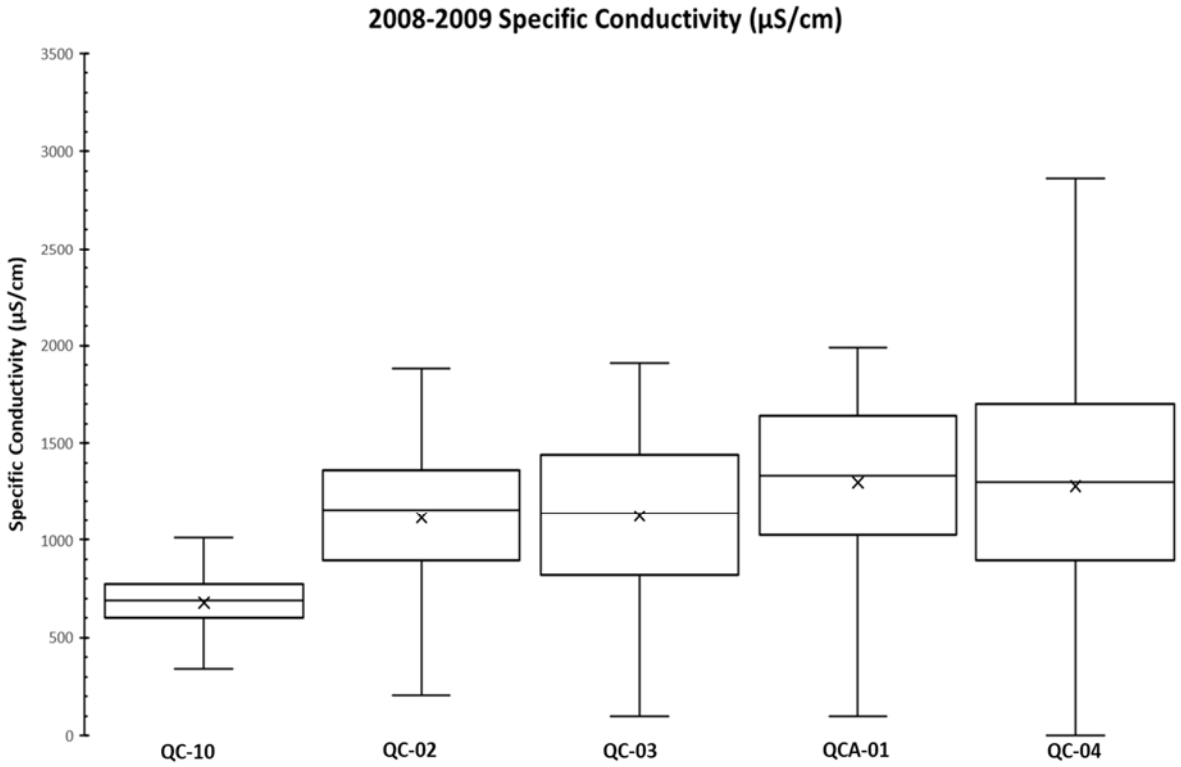


Figure 3-69: 2008-2009 Specific Conductivity (µs/cm) Boxplot by Site
Sites are in order from upstream to downstream. Statistical outliers are not displayed.

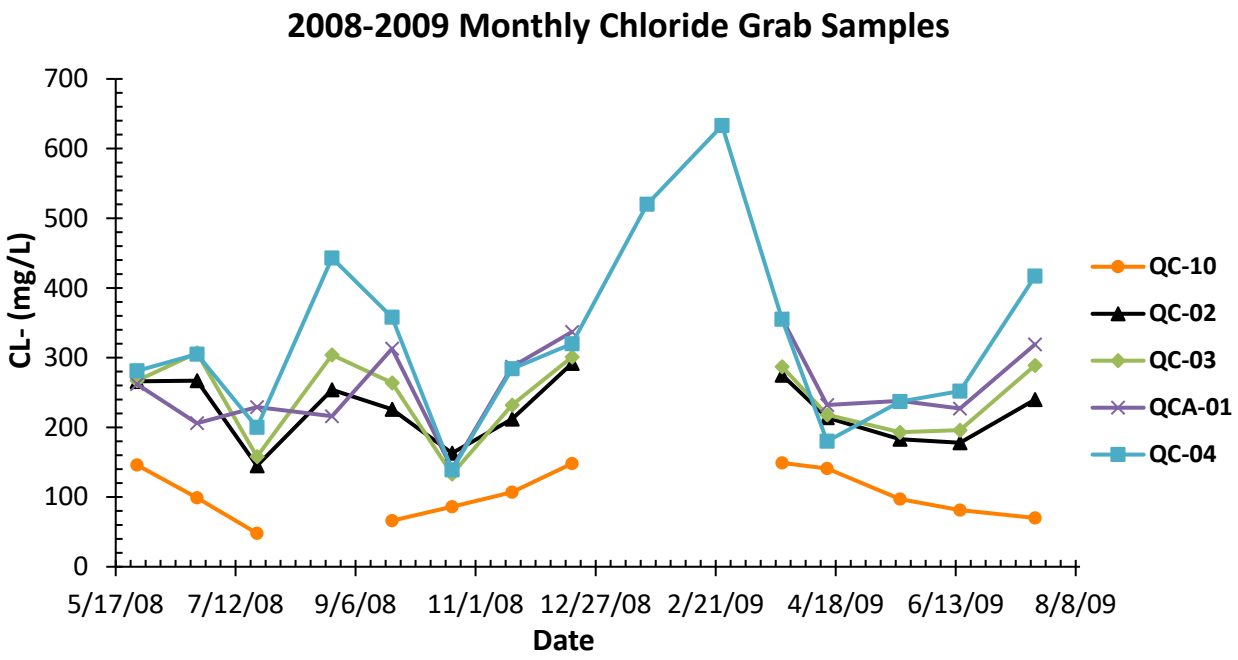


Figure 3-70: 2008-2009 Monthly chloride grab sample line chart
X-axis major tick mark interval is 56 days. X-axis minor tick mark interval is 7 days.

Table 3-56: Summary of pH (s.u.) in the Waukegan River 2003-2009
n: Number of Observations, Min: Minimum Observed Value, Max: Maximum Observed Value

pH (s.u.)							
Site	Year	Date Range	n	Min	Max	Mean	Median
QC-10	2008	05/16/08 - 11/06/08	15,197	7.22	8.86	7.69	7.70
	2009	04/07/09 - 07/30/09	9,524	7.10	8.63	7.56	7.79
QC-02	2008	05/16/08 - 11/6/08	15,345	7.13	9.21	7.96	7.89
	2009	04/07/09 - 07/30/09	10,918	7.25	9.09	7.97	7.91
QC-03	2003	06/20/03 - 10/9/03	11,473	7.23	8.86	7.78	7.80
	2004	05/04/04 - 10/20/19	16,187	6.97	8.81	7.66	7.70
	2005	04/27/05 - 10/20/05	16,883	6.57	8.68	7.57	7.63
	2006	04/28/06 - 10/19/06	16,032	7.13	8.56	7.79	7.79
	2008	05/16/08 - 11/6/08	16,704	6.91	8.28	7.68	7.75
	2009	04/7/09 - 07/30/09	10,922	7.08	9.05	7.91	7.88
QCA-01	2003	06/9/03 - 10/9/03	11,692	7.01	8.22	7.46	7.45
	2004	05/04/04 - 10/20/04	15,489	6.57	8.18	7.38	7.37
	2005	04/27/05 - 10/20/05	16,882	6.69	8.57	7.40	7.36
	2006	04/28/06 - 10/19/06	15,438	6.44	8.65	7.29	7.25
	2008	05/16/08 - 11/06/08	16,687	7.15	8.39	7.70	7.69
	2009	04/07/09 - 07/30/09	10,209	7.03	8.74	7.79	7.92
QC-04	2008	05/16/18 - 11/06/08	14,227	7.35	8.77	7.95	7.98
	2009	04/07/09 - 07/30/09	8,488	6.98	9.06	7.81	7.78

Turbidity/Total Suspended Solids

Results for turbidity are summarized by site and year in Table 3-57. Turbidity was highly variable at all sites with minimum values ranging from 0.1-2 NTU and maximum values ranging from 736-3,000 NTU. High turbidity was typically associated with precipitation events.

The Lake County Health Department conducted monthly total suspended solids monitoring at QC-10, QC-02, QC-03, QCA-01 and QC-04 between May 2008 and July 2009 (n=66) (Figure 3-71). Minimum total suspended solids values ranged from 1.2 mg/L (QC-04) to 5.8 mg/L (QC-10). Maximum total suspended solids values ranged from 14.1 mg/L (QC-02) to 55.6 mg/L (QC-10). High total suspended solids concentrations were associated with precipitation events. The Illinois EPA conducted periodic total suspended solids monitoring at QC-03 in 2011 and 2016 (n=9). Total suspended solids observations at QC-03 ranged from no detection to 19 mg/L, with an mean concentration of 7.1 mg/L.

Table 3-57: Summary of Turbidity (NTU) in the Waukegan River 2003-2009
n: Number of Observations, Min: Minimum Observed Value, Max: Maximum Observed Value

Turbidity (NTU)							
Site	Year	Date Range	n	Min	Max	Mean	Median
QC-10	2008	05/16/08 - 11/06/08	15,131	0.1	804	25.1	12.7
	2009	04/07/09 - 07/30/09	9,006	0.1	1,226	21.0	13.2
QC-02	2008	05/16/08 - 11/6/08	14,402	0.1	1,031	11.1	3.2
	2009	04/19/09 - 07/30/09	6,689	0.1	1,340	59.5	3.9
QC-03	2004	08/27/04 - 10/7/04	2,575	1.7	1,229	178.9	5.0
	2005	04/27/05 - 10/20/05	9,009	2.0	1,743	36.0	12.2
	2006	04/28/06 - 06/15/06	2,801	1.0	1,801	13.9	5.1
	2008	05/16/08 - 11/6/08	16,702	1.0	1,265	13.8	5.9
	2009	04/13/19 - 07/30/09	9,562	0.1	1,763	83.6	7.2
QCA-01	2003	06/9/03 - 10/9/03	11,644	0.1	1,535	75.0	6.5
	2004	05/04/04 - 10/20/04	15,489	0.3	1,594	26.6	5.2
	2005	04/27/05 - 10/20/05	16,835	0.1	1,676	63.4	5.6
	2006	04/28/06 - 10/19/06	13,215	0.1	1,455	203.0	12.6
	2008	05/16/08 - 11/06/08	16,488	1.1	1,083	16.2	5.2
	2009	04/08/09 - 07/30/09	8,819	0.1	736	13.6	5.1
QC-04	2008	05/22/18 - 11/06/08	12,219	0.1	2,609	135.2	20.2
	2009	04/07/09 - 07/30/09	7,766	0.4	3,000	98.4	8.8

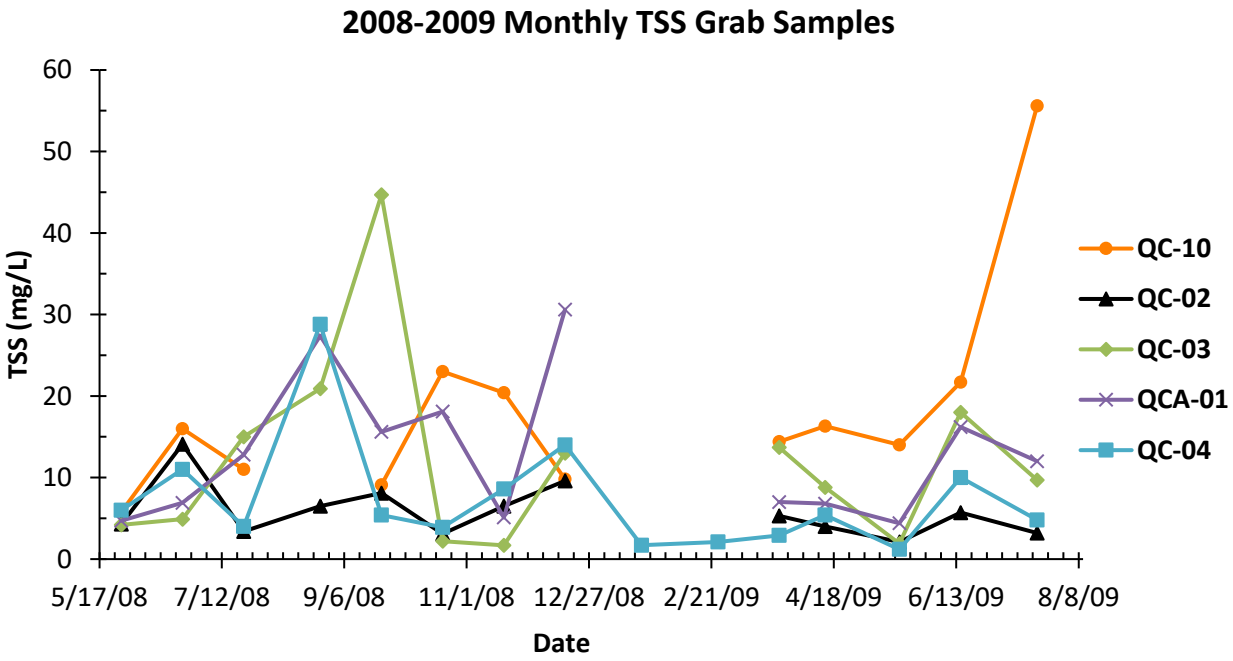


Figure 3-71: 2008-2009 Monthly TSS grab sample line chart
X-axis major tick mark interval is 56 days. X-axis minor tick mark interval is 7 days.

Phosphorus

The Lake County Health Department conducted monthly total phosphorus monitoring at QC-10, QC-02, QC-03, QCA-01 and QC-04 between May 2008 and July 2009 (n=66) (Figure 3-72). Minimum total phosphorus concentrations ranged from 0.020 - 0.030 mg/L. Maximum total phosphorus concentrations ranged from 0.125 - 0.166 mg/L. The mean total phosphorus concentration was 0.070 mg/L. Phosphorus concentrations were generally higher in warm months and lower in cold months.

The Illinois EPA monitored total phosphorus at QC-03, QC-10 and QCA-01 in 2000 (n=1), 2006 (n=1), 2011 (n=5) and 2016 (n=4). Total phosphorus concentrations ranged from 0.06-0.146 mg/L, with a mean concentration of 0.096 mg/L. The difference between LCHD and Illinois EPA phosphorus results may be partially due to differences in sampling. The LCHD conducted year-round monitoring, while the Illinois EPA monitoring occurred between May and September. The average concentration of LCHD total phosphorus collected between May and September is 0.080 mg/L, which is closer to the average total phosphorus concentration observed by the Illinois EPA.

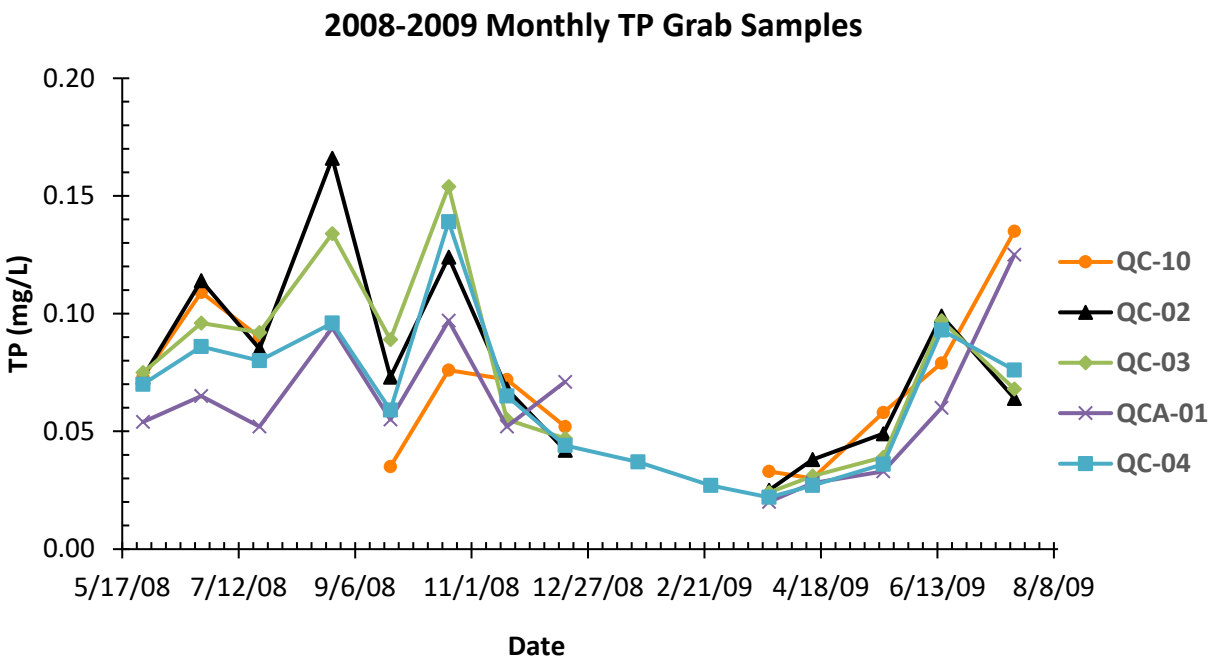


Figure 3-72: 2008-2009 Monthly TP grab sample line chart
X-axis major tick mark interval is 56 days. X-axis minor tick mark interval is 7 days.

TKN

The Lake County Health Department conducted monthly total Kjeldahl nitrogen monitoring at QC-10, QC-02, QC-03, QCA-01 and QC-04 between May 2008 and July 2009 (n=66) (Figure 3-73). Minimum total Kjeldahl nitrogen concentrations ranged from 0.326-0.766 mg/L and maximum concentrations ranged from 0.807-1.46 mg/L. The mean total Kjeldahl nitrogen concentration was 0.745 mg/L. High total Kjeldahl nitrogen concentrations were typically associated with precipitation events. The high total Kjeldahl nitrogen concentrations observed at QC-10 during fall may be associated with decaying leaf material from the forested upstream section.

The Illinois EPA conducted periodic total Kjeldahl nitrogen monitoring between 2006-2016 at QC-03 and QC-10 (n=5). Observed total Kjeldahl nitrogen concentrations ranged from 0.53-3.31 mg/L, with a mean concentration of 1.18 mg/L.

Nitrate+Nitrite

The Lake County Health Department conducted monthly nitrate + nitrite (NO_3^-+NO_2^-) monitoring at QC-10, QC-02, QC-03, QCA-01 and QC-04 between May 2008 and July 2009 (n=65) (Figure 3-74). Minimum observed concentrations ranged from no detection to 0.252 mg/L. Maximum observed concentrations ranged from 0.588-0.973 mg/L. The mean NO_3^-+NO_2^- concentration was 0.418 mg/L. The south branch of the Waukegan River (QCA-01) had the highest concentrations of NO_3^-+NO_2^-. Nitrate + nitrite concentrations increased from upstream (QC-10) to downstream (QC-02 and QC-03) in the north branch of the Waukegan River.

The Illinois EPA conducted periodic NO_3^-+NO_2^- monitoring between 2000-2016 at QC-10, QC-03 and QCA-01 (n=11). NO_3^-+NO_2^- concentrations ranged from 0.161-0.732 mg/L with a mean concentration of 0.452 mg/L.

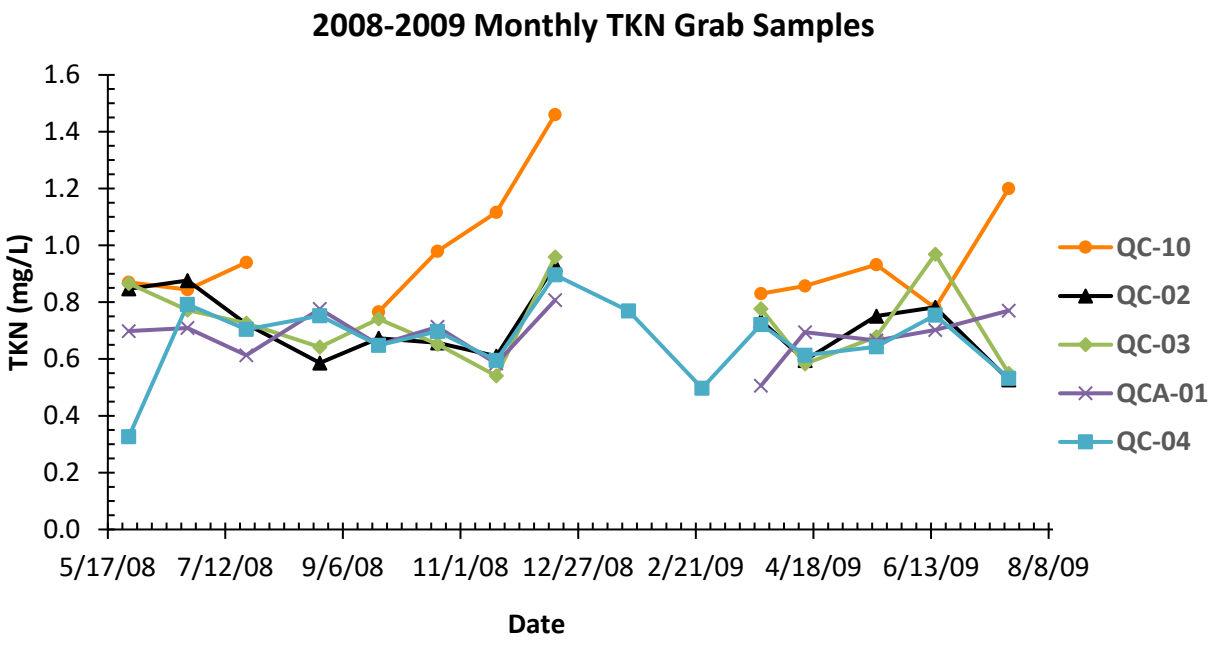


Figure 3-73: 2008-2009 Monthly TKN grab sample line chart
X-axis major tick mark interval is 56 days. X-axis minor tick mark interval is 7 days.

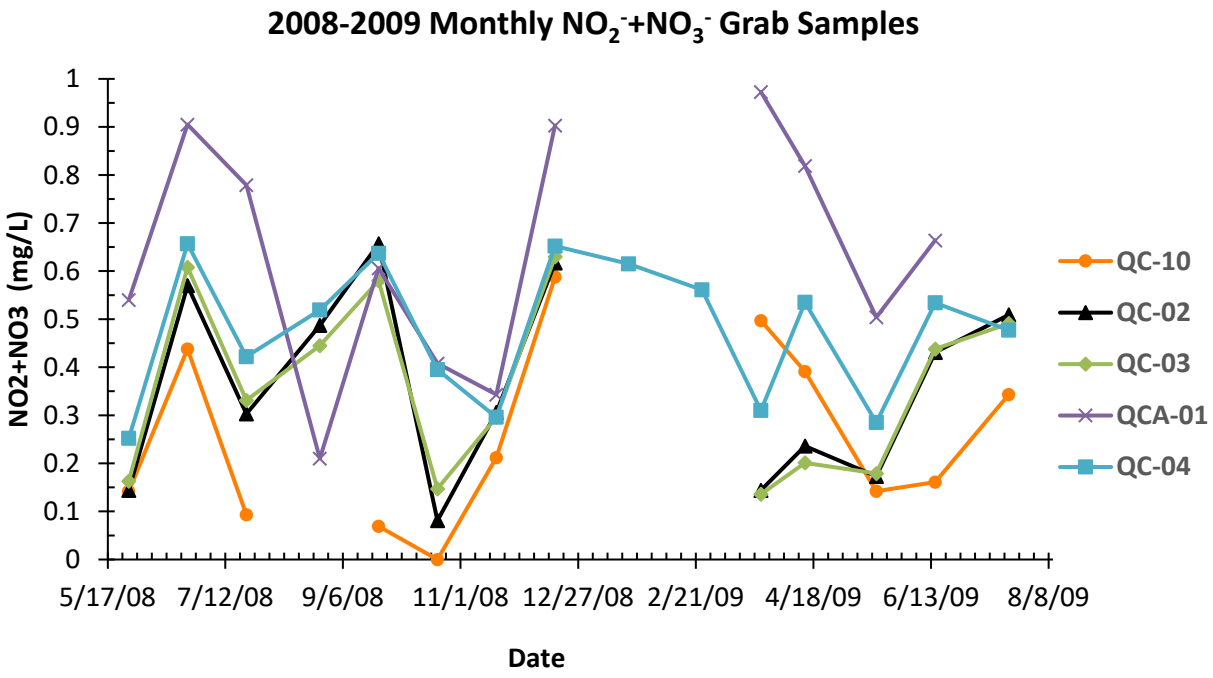


Figure 3-74: 2008-2009 Monthly TSS grab sample line chart
X-axis major tick mark interval is 56 days. X-axis minor tick mark interval is 7 days.

Fecal Coliform

The Lake County Health Department conducted monthly fecal coliform monitoring at QC-10, QC-02, QC-03, QCA-01 and QC-04 between May 2008 and July 2009 (n=66) (Figure 3-75). Minimum fecal coliform concentrations ranged from 10-180 CFU/100 mL. Maximum concentrations ranged from 2,200-11,000 CFU/100 mL. The median fecal coliform concentration was 510 CFU/100 mL. Half of the observed fecal coliform concentrations were above the state standard of 500 CFU/100 mL. The south branch of the Waukegan River (QCA-01) had the highest median fecal coliform concentration (940 CFU/100 mL) and the highest percentage of samples that exceed state standards (69%). Elevated fecal coliform concentrations were observed during dry weather. Further monitoring is needed to determine if this is caused by failing sanitary sewer infrastructure, illicit discharges or other unknown sources.

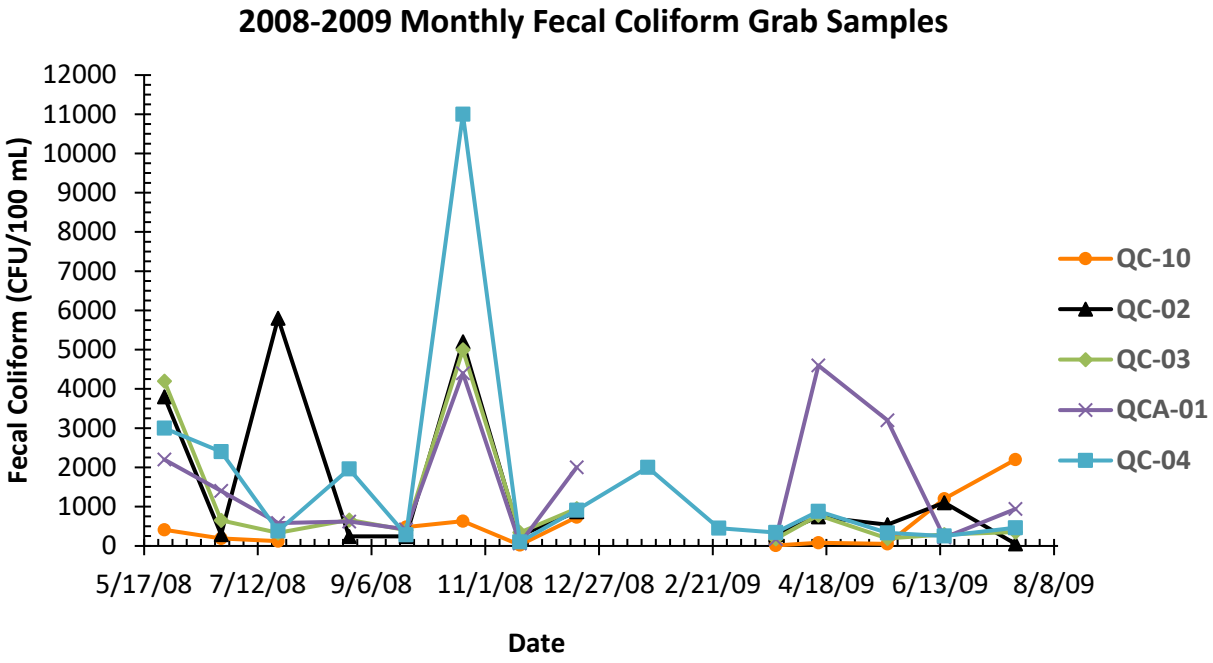


Figure 3-75: 2008-2009 Monthly Fecal Coliform grab sample line chart
X-axis major tick mark interval is 56 days. X-axis minor tick mark interval is 7 days.

Aldrin

Aldrin was periodically measured in the water column at QC-02, QC-03, QC-04, QC-10, QCA-01 and QCA-02 between 2008 and 2009 (n=63). Aldrin was not detected in 62 of the 63 samples. On 10/21/2008 an aldrin concentration of 0.013 µg/l was observed in the water column at QC-03.

Aldrin concentrations in sediment were measured at all twelve monitoring locations in the Waukegan River between 2001-2009 (n=24). Aldrin was not detected in the sediment at seven of the twelve sampling sites. An Aldrin concentration of 8.9 µg/kg was observed at QC-02 on 11/24/08. An Aldrin concentration of 11.0 µg/kg was observed at QC-03 on 10/09/2001. An aldrin concentration of 3.4 ug/kg was observed at QC-09 on 10/15/2001 Aldrin samples collected in 2001 and 2008 at QCA-01 ranged from 3.2 µg/kg - 5.5 µg/kg. An aldrin concentration of 4.7 ug/kg was observed at QCA-02 on 10/09/2001. Aldrin was not detected at any monitoring location in 2009.

Total Chromium

The Illinois Environmental Protection Agency has water quality standards for hexavalent and trivalent chromium. The acute and chronic standards for hexavalent chromium are 16 µg/L and 11 µg/L, respectively. The acute and chronic water quality standards for trivalent chromium are hardness dependent. Monitoring results are for total chromium, so it is not possible to distinguish concentrations of each valence state and make comparisons to state standards. Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 110 mg/kg for total chromium to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

The Illinois EPA measured total chromium in the water column at QC-02, QC-03, QC-04, QC-10 and QCA-01 from 2000-2009 (n=27). Samples ranged from no detection to 18.8 µg/L with a mean concentration of 7.15 µg/L. The Illinois EPA also measured total chromium in the sediment at all twelve monitoring locations in the Waukegan River between 2001-2009 (n=27). Sediment samples of total chromium ranged from 16.6-130 mg/kg with a mean concentration of 33.7 mg/kg.

DDT

Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 34 µg/kg for dichlorodiphenyltrichloroethane (DDT) to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use. The Illinois EPA measured the sum of p,p' isomers (DDT+DDD+DDE) in the sediment at QC-09, QC-03, QCA-01 and QCA-02 in 2001 (n=4). Concentrations ranged from 240-1,300 µg/kg, with an average concentration of 722.5 µg/kg.

Hexachlorobenzene

Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 1 µg/kg for hexachlorobenzene to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use. The Illinois EPA monitored hexachlorobenzene in the water column at QC-02, QC-03, QC-04, QC-10, QCA-01 and QCA-02 in 2008 and 2009. Hexachlorobenzene was not detected in any of the 59 samples from the water column. The Illinois EPA monitored hexachlorobenzene in the sediment at QC-01, QC-02, QC-03, QC-04, QC-05, QC-06, QC-08, QC-09, QC-10, QCA-01 and QCA-02 between 2001-2009 (n=19). Hexachlorobenzene concentrations ranged from no detection to 29 µg/kg, with a mean concentration of 3.3 µg/kg. Hexachlorobenzene was not detected in the sediment at QC-10.

Nickel

The Illinois EPA acute and chronic water quality standards for nickel are hardness dependent. Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 45 µg/kg for nickel to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

The Illinois EPA monitored nickel in the water column at QC-02, QC-03, QC-10 and QCA-01 in between 2000-2009 (n=10). Concentrations ranged from no detection to 21.3 µg/L, with a mean concentration of 5.7 µg/L. Nickel was measured in the sediment at all twelve monitoring locations in the Waukegan River between 2001-

2009 (n=28). Sediment concentrations of nickel ranged from 18.8-54.0 mg/kg, with a mean concentration of 29.0 mg/kg. On 08/08/2001 QCA-02 exceeded the non-standards-based sediment criteria for nickel. There were no other observations of nickel above 45 µg/kg.

Silver

The Illinois EPA has an acute water quality standard of 5 µg/L for silver. Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 5 mg/kg for silver to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

The Illinois EPA monitored silver in the water column at QC-02, QC-03, QC-04, QC-10 and QCA-01 between 2000-2011 (n=64). Silver was not detected in the water column in any of the 64 samples. The Illinois EPA monitored silver in the sediment at all twelve monitoring locations in the Waukegan River between 2001-2009 (n=17). Silver concentrations ranged from no detection to 5.6 mg/kg, with a mean concentration of 1.7 mg/kg. On 08/08/2001 QCA-02 exceeded the non-standards-based sediment criteria for silver. There were no other observations of silver above 5 mg/kg.

PCBs

Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 100 µg/kg for polychlorinated biphenyls (PCBs) to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use. The Illinois EPA monitored PCBs in the water column at QC-02, QC-03, QC-04, QC-10, QCA-01 and QCA-02 between 2008-2009 (n=70). PCBs were not detected in any of the 70 samples. The Illinois EPA observed sediment concentrations of PCBs at all twelve monitoring locations in the Waukegan River between 2001-2009 (n=26). Sediment concentrations of PCBs ranged from no detection to 1,700 µg/kg. The non-standard-based sediment criteria was exceeded at eleven of the twelve sites and in 61.5% of samples.

3.16.3.6 Indices of Biotic Integrity

The macroinvertebrate index of biotic integrity (mIBI) is one of the criteria for the aquatic life designated use. Monitoring sites must have an mIBI ≥41.8 to fully support the aquatic life designated use. The Illinois EPA conducted macroinvertebrate monitoring in 2007, 2011 and 2016 in the Lake Michigan Watershed. Results of this monitoring are summarized in Table 3-58. All observed mIBI scores were below the 41.8 needed to be fully supportive of the aquatic life designated use. The minimal data shows a trend of increasing mIBI scores in the Lake Michigan Water, particularly between 2007 and 2011 at Dead Dpg Creek and Kellogg Creek.

The Illinois EPA also uses the fish index of biotic integrity (fIBI) to determine if a waterbody is supportive of the aquatic life designated use. The highest possible fIBI score is 60. Scores ≤20 indicate severe impairment, scores <41 and >20 indicate moderate impairment and scores ≥41 indicate no impairment. The fIBI criteria that determines if a waterbody is supportive of the aquatic life designated use is dependent on mIBI scores, water chemistry and habitat data (see the Illinois Integrated Water Quality Report for additional information). The Illinois DNR conducted fish monitoring in 2011 and 2016 at Kellogg Creek and the Waukegan River. The fIBI scores are summarized in Table 3-58. The most recent fIBI scores indicate moderate impairments in Kellogg Creek and the Waukegan River. Species richness was low at both monitoring locations. Three state threatened Banded Killifish were identified at Kellogg Creek in 2016.

Table 3-58: Summary of Macroinvertebrate Index of Biotic Integrity (mIBI) and Fish Index of Biotic Integrity (fIBI)
-: No Data

Monitoring Sites	mIBI			fIBI	
	2007	2011	2016	2011	2016
Dead Dog Creek (QE-01)	28.20	33.80	-	-	-
Kellogg Creek (QF-02)	21.65	32.92	32.81	20	21
Bull Creek (QG-01)	31.15	-	-	-	-
Waukegan River (QC-03)	-	23.00	23.76	14	20

3.16.3.7 North Point Marina Harbor

North Point Marina Harbor monitoring locations are mapped in Figure 3-76.

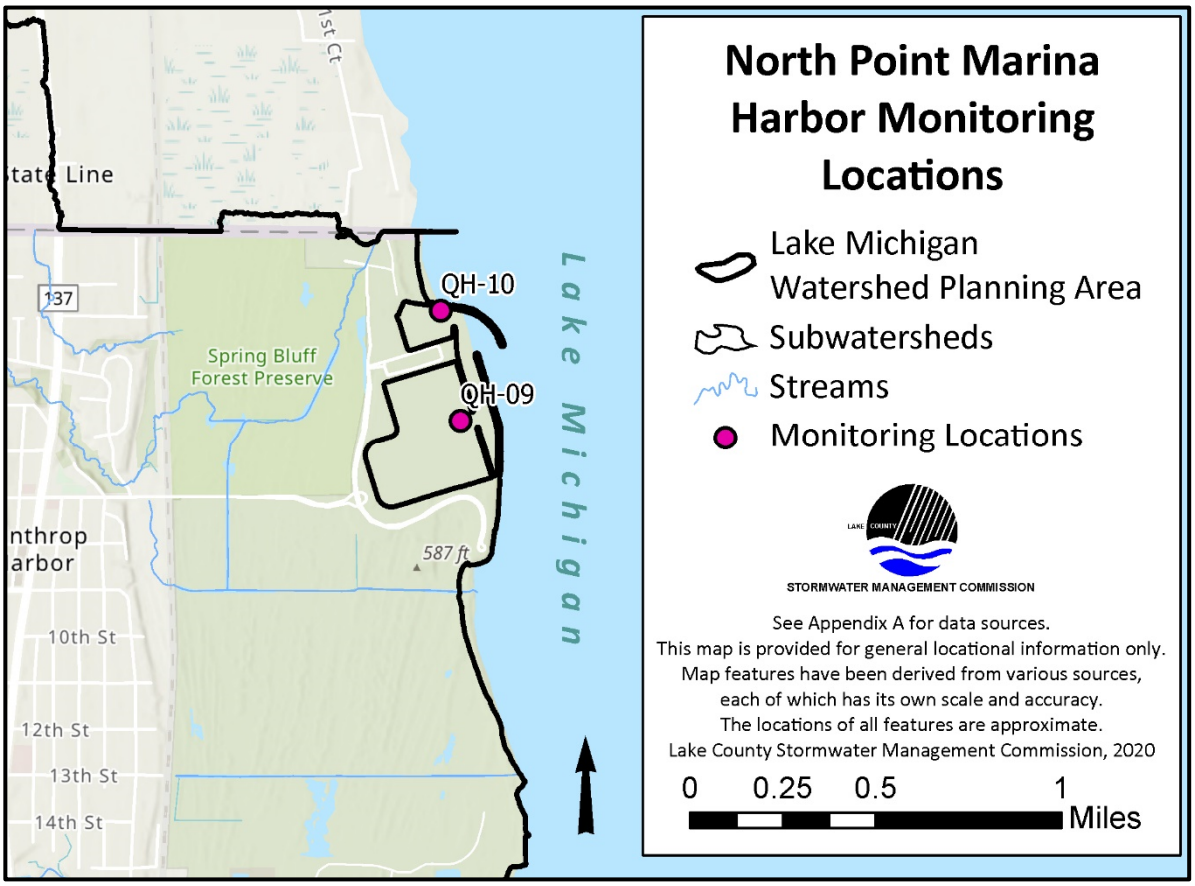


Figure 3-76: North Point Marina Harbor Monitoring Locations

PCBs

Fish consumption impairments for PCBs in the Lake Michigan watershed are due to a waterbody-wide consumption advisory or commercial fishing ban. The Illinois EPA collected fish tissue PCB concentration data at the southern portion of the North Point Marina harbor (QH-09) between 1997-2015 (n=50). PCBs were not detected in 36% of samples. The maximum observed fish tissue PCB concentration was 15.0 mg/kg from a

common carp on 05/02/2000. The PCB concentration in tissue varied by fish taxon (Table 3-59). Bluegill and rock bass had the lowest mean PCB concentration (0.05 mg/kg). This concentration is likely biased high because all bluegill samples and 50% of rock bass samples were below practical quantitation limits. Samples below practical quantitation limits were reported as 0.05 mg/kg. Common carp had the highest mean fish tissue concentration (4.45 mg/kg). The samples collected by the Illinois EPA indicate that PCB concentrations in fish tissue may be decreasing over time.

The Illinois EPA sampled PCBs in the water column three times at QH-09 2016. PCBs were not detected in any of the three samples. The Illinois EPA measured a PCB sediment concentration of 14 µg/kg at QH-09 and 120 µg/kg in the northern portion of the harbor (QH-10) in 2009

Mercury

Waters with fish consumption advisories for Mercury have had at least 0.06 mg/kg of mercury in fish tissue of any species, in at least one of the two most recent years of samples collected in 1985 or later or a commercial fish ban is in effect for the waterbody. The Illinois EPA collected fish tissue mercury concentration data at QH-09 between 1998 - 2015 (n=31). The mercury standard was exceeded in 42% of samples collected at the North Point Marina Harbor, and exceedances have occurred in the most recent two years of sampling (2012 and 2015). Mercury concentrations in fish tissue ranged from no detection to 0.46 mg/kg. The mercury concentration in tissue varied by fish taxon (Table 3-59). Bluegill and sunfish had the lowest mean fish tissue concentration (0.05 mg/kg) and smallmouth bass had the highest mean fish tissue concentration (0.19 mg/kg). The samples collected by the Illinois EPA indicate that mercury concentrations in fish tissue may be decreasing over time.

The Illinois EPA sampled mercury in the North Point Marina sediment in 2010. Mercury was not detected at QC-09 and QC-10 had a concentration of 0.02 mg/kg. No mercury sampling has been conducted in the North Point Marina water column.

Table 3-59: Mean PCB and Mercury Fish Tissue Concentration by Fish Taxon

PCB: Number of fish sampled for PCB, Mean PCB: Mean concentration of PCBs in mg/kg, n Mercury: Number of fish sampled for Mercury, Mean Mercury: Mean concentration of mercury in mg/kg, -: No Data

North Point Marina Harbor Fish Tissue				
Fish Taxon	**n PCB**	**Mean PCB**	**n Mercury**	**Mean Mercury**
Bluegill	3	0.05	3	0.03
Common Carp	13	4.45	0	-
Largemouth Bass	9	0.12	8	0.16
Rock Bass	10	0.05	10	0.06
Round Goby	2	0.11	0	-
Smallmouth Bass	3	0.31	3	0.19
Sunfish (Unspecified)	4	0.07	3	0.03
White Sucker	6	0.11	4	0.04

3.16.3.8 Waukegan Harbor

Waukegan harbor monitoring locations are mapped in Figure 3-77.

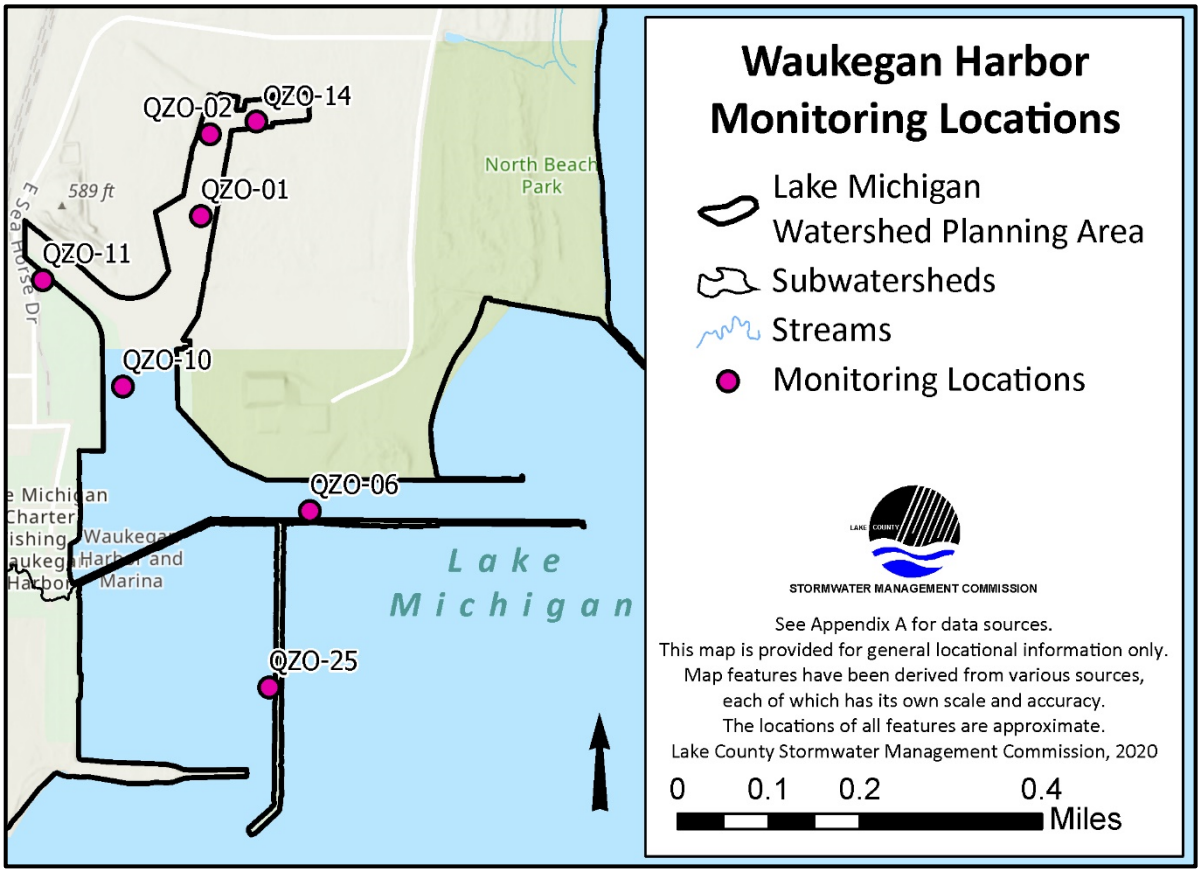


Figure 3-77: Waukegan Harbor Monitoring Locations

Arsenic

The chronic acute and chronic state standards for arsenic is 340 µg/L and 148 µg/L, respectively. Prior to 2012 the Illinois EPA used a non-standards-based sediment criterion of 8 mg/kg for arsenic to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

The Illinois EPA monitored arsenic in the water column at QZO-02, QZO-06, QZO-10 and QZO-25 between 2006-2016 (n=33). Results are summarized in Table 3-60. Arsenic concentrations in the water column ranged from no detection to 7.4 µg/L. No samples were observed above the acute or chronic state standards, and no arsenic was detected in the water column of the harbor in the most recent sampling season (2016). The Illinois EPA measured arsenic in the sediment at QZO-01, QZO-02, QZO-06, QZO-10, QZO-11 AND QZO-14 in 2001 and 2006 (n=8). Sediment concentrations of arsenic ranged from 9.3 mg/kg - 110.0 mg/kg, with a mean concentration of 34.2 mg/kg. The non-standards-based sediment criteria was exceeded in each of the eight sediment samples in the Waukegan Harbor.

Table 3-60: Summary of Waukegan Harbor Water Column Arsenic Concentrations.
n: number of samples, Min: minimum observed concentration, Max: maximum observed concentration, ND: not detected

Waukegan Harbor Arsenic (µg/L)				
Site	n	Min	Max	Mean
QZO-02	11	ND	7.4	2.84
QZO-06	8	ND	2.12	0.93
QZO-10	10	ND	3.45	1.03
QZO-25	4	ND	2.47	0.62

Cadmium

The Illinois EPA acute and chronic water quality standards for cadmium are hardness dependent. Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 14 mg/kg for cadmium in Lake Michigan to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

The Illinois EPA monitored cadmium in the water column at QZO-02, QZO-10, QZO-06 AND QZO-25 between 2010-2016 (n=36). Cadmium was below detection limits in all 36 samples. The Illinois EPA monitored cadmium in the sediment at all seven monitoring sites in the Waukegan Harbor between 2001-2010 (n=12) (Figure 3-77). Sediment concentrations of cadmium ranged from 0.86-12.0 mg/kg with a mean concentration of 6.22 mg/kg. Based on the available data, it is not clear why the Waukegan Harbor is impaired for cadmium.

Chromium

The Illinois Environmental Protection Agency has water quality standards for hexavalent and trivalent chromium. The acute and chronic standards for hexavalent chromium are 16 µg/L and 11 µg/L, respectively. The water acute and chronic water quality standards for trivalent chromium are hardness dependent. Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 75 mg/kg for chromium in Lake Michigan to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

The Illinois EPA monitored total chromium in the water column at QZO-02, QZO-10, QZO-06 AND QZO-25 between 2006-2016 (n=27). All 27 samples were below detection limits. The Illinois EPA monitored total chromium in the sediment at all seven monitoring sites in the Waukegan Harbor between 2001-2010 (n=12). Sediment concentrations ranged from 9.65-78.00 mg/kg with a mean concentration of 43.52 mg/kg. The non-standards-based sediment criteria was exceeded on 10/11/2001 at QZO-01 with a concentration of 78 mg/kg.

Copper

The Illinois EPA acute and chronic water quality standards for copper are hardness dependent. Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 590 mg/kg for copper in Lake Michigan to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

The Illinois EPA monitored copper in the water column at QZO-02, QZO-10, QZO-06 and QZO-25 between 2006-2016 (n=24). Copper was below detection limits in 23 of the 24 samples. A copper concentration of 15 µg/L was measured at QZO-02 on 07/31/2006. This sample exceeded the hardness dependent chronic water quality standard. The Illinois EPA monitored copper in the sediment at all seven monitoring sites in the Waukegan Harbor between 2001-2010 (n=12). Sediment concentrations of copper ranged from 20.5-370 mg/kg with a mean concentration of 104.16 mg/kg.

Lead

The Illinois EPA acute and chronic water quality standards for lead are hardness dependent. Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 60 mg/kg for lead in Lake Michigan to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

The Illinois EPA monitored lead in the water column at QZO-02, QZO-10, QZO-06 and QZO-25 between 2006-2016 (n=25). Lead was below detection limits in 24 of the 25 samples. A total lead concentration of 8.38 µg/L was observed at QZO-10 on 05/24/2010. This sample exceeded the hardness dependent chronic water quality standard. The Illinois EPA monitored lead in the sediment at all seven sampling locations in the Waukegan Harbor (n=12). Sediment concentrations of lead ranged from 19.1-120.0 mg/kg with a mean concentration of 68.0 mg/kg. The non-standards-based sediment criteria was exceeded in 66.7% of sediment samples. There were no observed exceedances of the non-standards-based sediment criteria at QZO-06 or QZO-25.

PCBs

The Illinois EPA monitored fish tissue PCB concentration at QZO-01 (n=85) and QZO-25 (n=1) between 1998-2015. Fish tissue PCB concentrations ranged from no detection to 83.8 mg/kg with a median concentration of 0.97 mg/kg. The PCB concentration in tissue varied by fish taxon (

Table 3-61). The common carp had the highest maximum (83.8 mg/kg) and mean (5.54 mg/kg) fish tissue concentration.

The Illinois EPA monitored PCB's in the water column at QZO-10 in 2016 (n=3). PCB's were not detected in any of the three samples. The Illinois EPA monitored PCB's in the sediment at all seven monitoring sites in the Waukegan Harbor between 2001-2010 (n=11). Sediment concentrations of PCB's ranged from 35-6,800 µg/kg. Sediment PCB concentrations were higher in the northern portion of the harbor (QZO-14, QZO-02, QZO-01, QZO-11 and QZO-10) than the southern portion of the harbor (QZO-06 and QZO-25). The mean PCB concentration was 3,425 µg/kg in the northern portion of the harbor and 99 µg/kg in the southern portion.

Mercury

The Illinois EPA monitored fish tissue mercury concentration data at QZO-01 (n=22) and QZO-25 (n=1). Fish consumption standards for mercury were exceeded in 30% of samples (7/23) in the Waukegan Harbor. The most recent sampling event (2015) had a fish consumption standard exceedance rate of 9% (1/11). The Illinois EPA monitored sediment concentrations of mercury at all seven sampling sites in the Waukegan Harbor between 2001-2010 (n=11). Sediment concentrations of mercury ranged from no detection to 0.213 mg/kg, with a mean concentration of 0.112 mg/kg.

Table 3-61: Waukegan Harbor Mean PCB and Mercury Fish Tissue Concentration by Fish Taxon
n PCB: Number of fish sampled for PCB, Mean PCB: Mean concentration of PCBs in mg/kg, n Mercury: Number of fish sampled for Mercury, Mean Mercury: Mean concentration of mercury in mg/kg, -: No Data

Waukegan Harbor Fish Tissue				
Fish Taxon	n PCB	Mean PCB	n Mercury	Mean Mercury
Black Bullhead	4	0.86	3	0.08
Bluegill	2	0.15	2	0.03
Common Carp	53	5.54	-	-
Largemouth Bass	3	0.31	2	0.05
Pumpkinseed	2	0.23	-	-
Rock Bass	9	0.39	8	0.11
Sunfish (Unspecified)	3	0.32	2	0.03
White Sucker	9	0.22	6	0.03
Yellow perch	1	0.12	-	-

Zinc

The Illinois EPA acute and chronic water quality standards for dissolved zinc are hardness dependent. Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 200 mg/kg for zinc in Lake Michigan to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

The Illinois EPA monitored dissolved zinc in the water column at QZO-02 and QZO-10 in 2010 and 2016 (n=9). All nine samples were below detection limits. Although there is no water quality standard for total zinc, monitoring results are summarized below for informational purposes. The Illinois EPA monitored total zinc in the water column between 2006-2016 (n=30). Water column monitoring results for total zinc are summarized in Table 3-62. Total zinc concentrations ranged from no detection to 45 µg/L with a mean concentration of 6.4 µg/L. Total zinc was below detection limits in 73% of samples. The Illinois EPA monitored total zinc in the sediment at all seven monitoring locations in the Waukegan Harbor between 2001-2010 (n=12). Sediment concentrations ranged from 64.8-240.0 mg/kg with a mean concentration of 146.4 mg/kg. The non-standards-based sediment criteria was exceeded in 25% of samples (3/12). The exceedances occurred at QZO-14, QZO-01 and QZO-11 on 10/11/2001.

Table 3-62: Summary of Waukegan Harbor Water Column Total Zinc Concentrations
n: number of samples, Min: minimum observed concentration, Max: maximum observed concentration, ND: not detected

Waukegan Harbor Total Zinc (µg/L)					
Site	n	Min	Max	Mean	Median
QZO-02	8	ND	45.0	7.5	ND
QZO-06	9	ND	39.0	5.8	ND
QZO-10	10	ND	37.0	5.2	ND
QZO-25	4	ND	14.3	6.9	6.6

Phosphorus

Aesthetic quality impairments for phosphorus are based on the offensive conditions narrative standard in 35 Ill. Adm. Code 302.515. Assessments of the narrative standard is conducted by trained biologists experienced with the natural conditions and expectations for Lake Michigan Basin waters. There are no aquatic life standards for total phosphorus in Lake Michigan harbors. Prior to 2012 the Illinois EPA used a non-standards-based sediment criteria of 640 mg/kg for phosphorus in Lake Michigan to identify causes of aquatic life designated use impairments. Causes identified prior to the criteria change will remain on the impaired waters list until the segment is determined to be in full support of the associated designated use.

Although there is no water quality standard for total phosphorus in Lake Michigan harbors, monitoring results are summarized below for informational purposes (Table 3-63). The Illinois EPA monitored total phosphorus in the water column between 2006-2016 (n=38). Total phosphorus concentrations ranged from no detection to 0.141 mg/L, with a mean concentration of 0.016 mg/L. The Illinois EPA monitored sediment concentrations of phosphorus at all seven monitoring locations in the Waukegan Harbor between 2001-2010 (n=12). Sediment concentrations of total phosphorus ranged from 249-924 mg/kg with a mean concentration of 519 mg/kg. The non-standards-based sediment criteria was exceeded in 33% of samples.

Table 3-63: Summary of Waukegan Harbor Water Column Total Phosphorus Concentrations
n: number of samples, Min: minimum observed concentration, Max: maximum observed concentration, ND: not detected

Waukegan Harbor Phosphorus (mg/L)					
Site	**n**	**Min**	**Max**	**Mean**	**Median**
QZO-02	11	ND	0.141	0.029	0.012
QZO-10	11	ND	0.028	0.013	0.013
QZO-06	10	ND	0.020	0.007	0.007
QZO-25	6	0.005	0.023	0.011	0.009

3.16.3.9 Lake Michigan Shoreline

Lake Michigan shoreline monitoring locations are shown in Figure 3-78. Beach closure and swim advisory data for beaches identified in the Illinois Shoreline Segments in Lake County, Illinois and Illinois Shoreline Segments in Suburban Cook County Illinois TMDL reports are summarized in Figure 3-79 (A and B) and Table 3-64. During swim advisories, notifications are posted warning beach users that there is an increased risk of gastrointestinal illness from primary contact recreation (swimming/wading). During beach closures primary contact recreation is prohibited. Beach closures and advisories are based on *E. coli* concentrations. *E. coli* concentrations can be influenced by a variety of factors including precipitation, seagulls, beach slope, waves, currents, surface runoff, and illicit discharges. Local sources of contamination (within 500 meters of beach) are likely the major source of high *E. coli* concentrations in the planning area. North Point Marina had the most closures/advisories, with a mean yearly closure and advisory rate of 39.5 and 1.6 days, respectively. Lake Bluff Sunrise Beach had the least closures/advisories, with a mean yearly closure and advisory rate of 4.8 and 0 days, respectively. A more detailed discussion on beach closures and likely *E. coli* sources for each beach can be found in the respective total maximum daily load report.

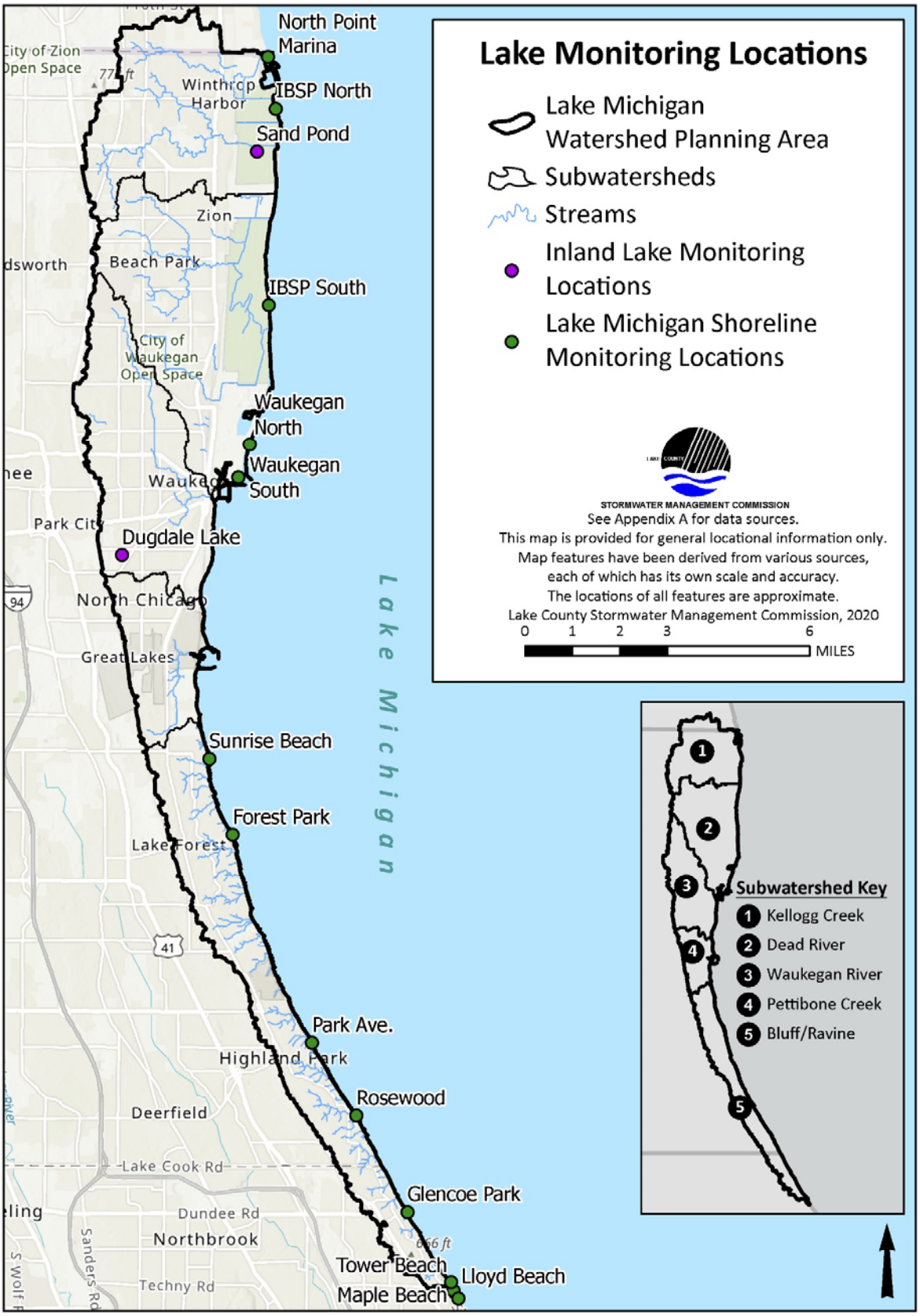
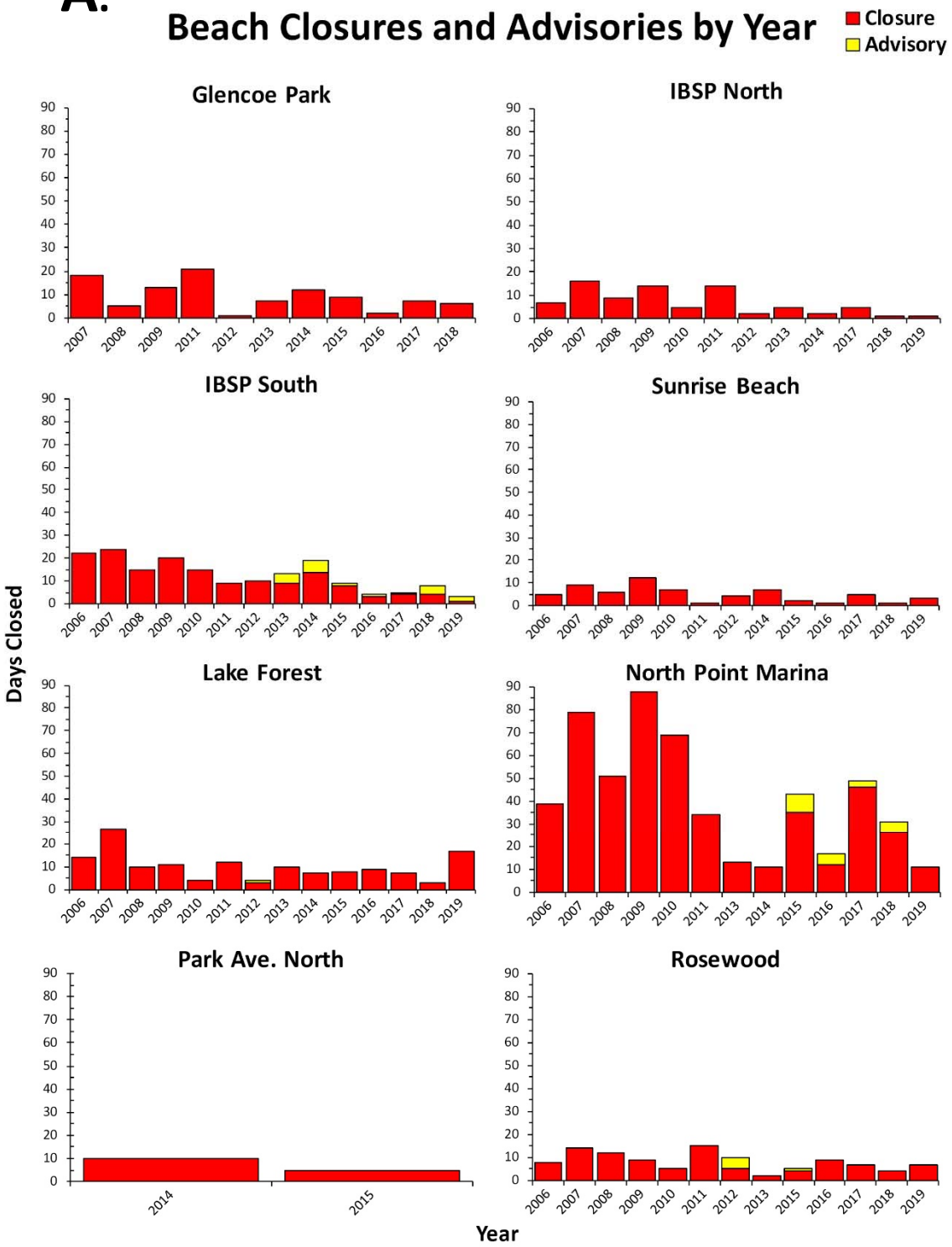


Figure 3-78: Lake Michigan Watershed Planning Area Inland Lake and Lake Michigan Shoreline Monitoring Locations

A.


Beach Closures and Advisories by Year
Closure
Advisory
Glencoe Park
IBSP North
IBSP South
Sunrise Beach
Lake Forest
North Point Marina
Park Ave. North
Rosewood
Days Closed
Year

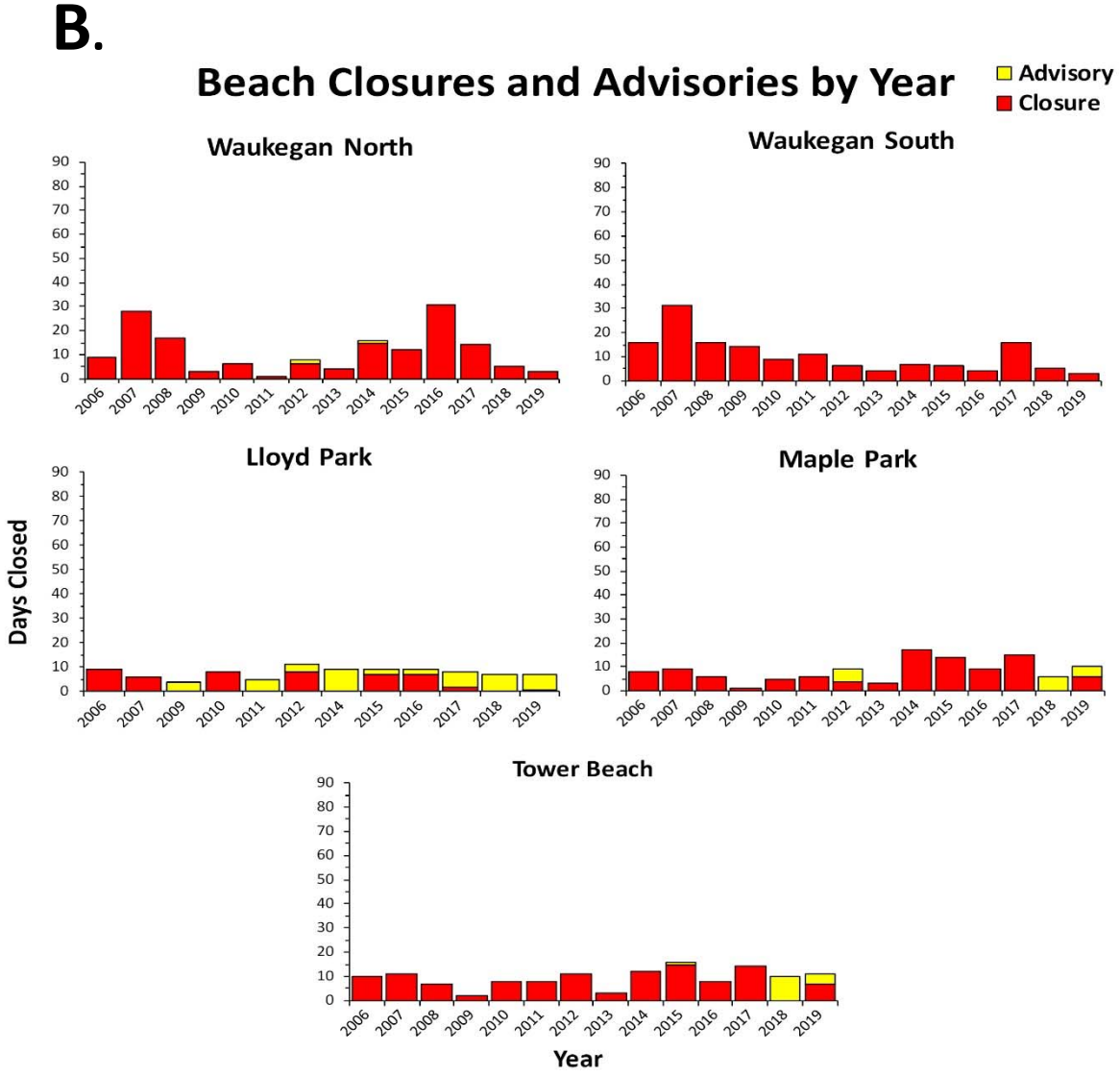


Figure 3-79 (A and B): Number of Beach Closure Days by Year for Beaches
Years without reported data are excluded from graph (ex. Sunrise Beach did not report data in 2013 and Park Avenue North only reported data for 2014-2015) Source: IL DPH, 2019.

Table 3-64: Summary of Lake Michigan Beach Closures and Advisories

C: Number of days the beach was closed A: Number of days the beach had a swim advisory

Beach	2006		2007		2008		2009		2010		2011		2012		2013	
	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A
Glencoe Park	-	-	18	0	5	0	13	0	-	-	21	0	1	0	7	0
Lloyd Park	9	0	6	0	-	-	0	4	8	0	0	5	8	3	-	-
Maple Park	8	0	9	0	6	0	1	0	5	0	6	0	4	5	3	0
Tower	10	0	11	0	7	0	2	0	8	0	8	0	11	0	3	0
Waukegan South	16	0	31	0	16	0	14	0	9	0	11	0	6	0	4	0
Waukegan North	9	0	28	0	17	0	3	0	6	0	1	0	6	2	4	0
Rosewood	8	0	14	0	12	0	9	0	5	0	15	0	5	5	2	0
Park Ave. North	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North Point Marina	39	0	79	0	51	0	88	0	69	0	34	0	-	-	13	0
Forest Park	14	0	27	0	10	0	11	0	4	0	12	0	3	1	10	0
Sunrise Beach	5	0	9	0	6	0	12	0	7	0	1	0	4	0	-	-
IBSP South	22	0	24	0	15	0	20	0	15	0	9	0	10	0	9	4
IBSP North	7	0	16	0	9	0	14	0	5	0	14	0	2	0	5	0

Beach	2014		2015		2016		2017		2018		2019		Mean	
	C	A	C	A	C	A	C	A	C	A	C	A	C	A
Glencoe Park	12	0	9	0	2	0	7	0	6	0	-	-	9	0
Lloyd Park	0	9	7	2	7	2	2	6	0	7	1	6	4	4
Maple Park	17	0	14	0	9	0	15	0	0	6	6	4	7	1
Tower	12	0	15	1	8	0	14	0	0	10	7	4	8	1
Waukegan South	7	0	6	0	4	0	16	0	5	0	3	0	11	0
Waukegan North	15	1	12	0	31	0	14	0	5	0	3	0	11	0
Rosewood	-	-	4	1	9	0	7	0	4	0	7	0	8	1
Park Ave. North	10	0	5	0	-	-	-	-	-	-	-	-	8	0
North Point Marina	11	0	35	8	12	5	46	3	26	5	11	0	40	2
Forest Park	7	0	8	0	9	0	7	0	3	0	17	0	10	0
Sunrise Beach	7	0	2	0	1	0	5	0	1	0	3	0	5	0
IBSP South	14	5	8	1	3	1	4	1	4	4	1	2	11	1
IBSP North	2	0	-	-	-	-	5	0	1	0	1	0	7	0

3.16.3.10 Inland Lakes

Inland lake monitoring locations are summarized in Figure 3-78.

Sand Pond

Sand Pond is 19.7-acre lake within Illinois Beach State Park with a maximum depth of 9.6 ft and an average depth of 4.8 ft. It was evaluated by Lake County Health Department in 2000 and 2007. The lake was unstratified in 2000 and July-September of 2007 and weakly stratified in May and June of 2007. During June and July of 2000, the lake experienced low dissolved oxygen concentrations, which was likely the result of die-off of a large population of Eurasian water milfoil after an herbicide treatment. In 2007 the dissolved oxygen concentrations remained above 5.0 mg/L for all samples during the entire year.

Sand Pond had a total phosphorus concentration of 0.023 mg/L in 2000 and 0.017 mg/L in 2007. These results are similar to the mean phosphorus concentrations observed by the Illinois EPA in 2011 and 2014 of 0.021 and 0.022 mg/L, respectively. The total phosphorus to total nitrogen ratio (TP:TN) measured 43:1 in 2000 and 62:1 in 2007, which indicate that Sand Pond is highly phosphorus limited. The 2000 and 2007 water quality data indicate that the primary source of phosphorus is internal loading because phosphorus levels did not coincide with precipitation events and stormwater runoff to the lake. Thus, lake preservation measures should focus on limiting internal loading of phosphorus. Sand Pond had a Trophic State Index (TSI) of 49.4 in 2000 and 41.4 in 2007, which identifies the lake as mesotrophic, or moderately productive. Chara, Eurasian watermilfoil and sago pondweed were the only observed aquatic vegetation species in Sand Pond. Eurasian watermilfoil was the dominant aquatic plant in the lake. The low aquatic vegetation diversity and prevalence of Eurasian watermilfoil resulted in a low floristic quality index score of 3.5. The most recent fish survey at Sand Pond was conducted by the Illinois Department of Natural Resources in 1997, where 11 fish species were observed.

Dugdale Lake

Dugdale Lake is a 4.6 acre lake in the Greenbelt forest Preserve, with a maximum depth of 17 ft and a mean depth of 8.5 ft. The Lake County Health Department monitored water quality in the lake in 2003. Dugdale Lake was thermally stratified between May and September. In September, the lake became weakly stratified and began to turn over. The lowest dissolved oxygen concentrations were observed in June and August, with dissolved oxygen concentrations < 5 mg/L below a depth of 6 ft and anoxic conditions below 9 ft.

In Dugdale Lake, total phosphorus concentrations were low, with a seasonal average of 0.027 mg/L in the epilimnion. Total Kjeldahl nitrogen was very low in Dugdale Lake. The epilimnetic and hypolimnetic samples averaged 0.71 mg/L and 1.52 mg/L, respectively. The TN:TP ratio of Dugdale Lake was 26:1, indicating it phosphorus limited. The lake was mesotrophic, with a trophic state index for phosphorus of 48.5.

Dugdale Lake had good water clarity with observed mean water clarity and total suspended solids of 9.22 ft and 2.2 mg/L, respectively. During 2003, the conductivity readings in Dugdale Lake were higher than the Lake County average, at 1,063 µS/cm in the epilimnion. Total dissolved solids concentrations in Dugdale Lake were also higher than the Lake County median of 451 mg/L during 2003, with a seasonal average of 566 mg/L in the epilimnion. The high specific conductivity and total dissolved solids is likely due to stormwater runoff from 10th Street, 14th Street and Green Bay Road.

Eight species of aquatic vegetation were observed in Dugdale Lake, resulting in a floristic quality index score of 14. Bluegill and largemouth bass were the only observed fish species during the most recent fish survey which was conducted by the Illinois Department of Natural Resources in 2009.

3.17 NPDES POINT SOURCE PERMITS

The USEPA under the Federal Water Pollution Control Act Amendments of 1972, regulates and monitors point source industrial and wastewater pollutant discharges into the nation's waterways (Public Law 92-500; 33 U.S.C. 1251 et seq.). Authorized under amendments made to the 1977 CWA in 1987 and implemented in 1990, the USEPA developed a two-phased NPDES permit program to address industrial and MS4s, serving populations of greater than 100,000, requiring a permit to discharge stormwater from their outfalls into

waterways. NPDES Phase 2, enacted into law in 1999 and implemented in 2003, builds upon the existing Phase I program by regulating stormwater discharges from small MS4s located in urbanized areas (as defined by the latest decennial census) and construction sites that disturb one to five acres obtain a permit to discharge stormwater from their outfalls into waterways. Additional information regarding the NPDES program and specifically permit basics and definitions are available from USEPA NPDES website (USEPA WMPD, 2012; USEPA, 2017).

Point sources are defined as discrete conveyances including but not limited to any pipe, ditch, channel, or conduit from which pollutants are or may be discharged into waterways. Point source regulation through NPDES includes wastewater treatment plants, industrial discharges, concentrated animal feeding operations, combined sewer overflows, sanitary sewer overflows, urban stormwater runoff and MS4 urban stormwater discharges. The NPDES program plays a key role in restoring water quality since it sets discharge limits, requires monitoring and reporting requirements, and limits discharge of specific pollutants including BOD, TSS, ammonia nitrogen, fecal coliform, DO, and phosphorus.

3.17.1 Wastewater Treatment Plants

WWTP's are vital to public health. Sewers collect wastewater from homes, businesses, and industries and deliver it to wastewater treatment facilities to remove pollutants from water impacted by human waste which can be either discharged to water bodies or land or reused.

Sewage treatment processes typically use a series of processes to treat wastewater prior to discharge. The typical series of unit processes includes:

- preliminary treatment or screening to remove large solids,
- primary clarification (or preliminary sedimentation) to remove floating and settleable solids,
- biological treatment (also referred to as secondary treatment) to remove biodegradable organic pollutants and suspended solids, and
- disinfection to deactivate pathogens.

Some facilities also provide more advanced treatment which is designed to reduce constituents, such as nitrogen and phosphorus, that are not removed in any significant quantity by traditional biological treatment processes. Some municipalities currently experience high peak influent flows during periods of increased wet weather that exceed the treatment capacity of existing biological or advanced treatment units.

Under these 'peak flow conditions,' in order to prevent damage to the wastewater treatment plant, some plant operators divert a portion of the flow around biological or advanced treatment units. The diverted flow is then either recombined with flows from the biological treatment units or discharged directly into waterways" (USEPA, 2016).

Within the Lake Michigan Watershed planning area, there are five active WWTPs of varying capacity, function and treatment capabilities based on the USEPA Facility Registry System database (Table 3-65 and

Table 3-66) (USEPA, 2020). Based on the available data from current NPDES permits, the WWTPs in the Lake Michigan Watershed planning area contribute an actual average of 90.665 million gallons per day (MGD) of treated water into the Lake Michigan system.

Table 3-66 lists wastewater treatment plants in the Lake Michigan Watershed planning area direct discharges and violations.

The North Shore Water Reclamation District Waukegan Sewage Treatment Plant is located within the Lake Michigan Watershed; however, it primarily discharges to the Des Plaines River. In accordance with Consent Order No. 99 Ch 1070, 19th Judicial Court, Lake County, IL, preventive testing is performed annually on the Waukegan Force Main and the entire force main is tested every five years (Illinois EPA, 2020). During this force main testing, replacement and repair program, wastewater is discharged to the Waukegan North Ditch (Outfall B02) (Illinois EPA, 2020). Flows in excess of 30,536 gpm at the treatment plant are diverted to the excess flow retention basins for storage (Illinois EPA, 2020). After plant influent flows subside to less than design maximum flow, the sewage in the basins is returned to the plant for treatment (Illinois EPA, 2020). Flows in excess of the 38 MG capacity of the excess flow facilities is discharged through the Excess Flow Outfall (A02) to the Waukegan North Ditch after screening, sedimentation and disinfection (Illinois EPA, 2020).

Table 3-65: Wastewater Treatment Plants in the Lake Michigan Watershed Planning Area.
***The North Shore Water Reclamation District primarily discharges to the Des Plaines River Watershed with an average facility flow of 22 MGD and design flow of 44 MGD. Data Source: USEPA Facility Registry Service (FRS).**

PERMIT NO.	WASTEWATER TREATMENT PLANT	ACTUAL AVERAGE FACILITY FLOW (MGD)	FACILITY DESIGN FLOW (MGD)	RESIDENTS SERVED	SITE FUNCTION
IL0001881	Abbott Laboratories	42.8	None	Varies	Non-Contact Cooling Water, Utilities Water and Stormwater
IL0002364	Winnetka Electric Plant	15.43	None	Varies	Non-Contact Cooling Water, Heated Water from Intake Structure and Stormwater
IL0002763	Zion Solutions LLC	31.7	None	Varies	House Service Water, Wastewater Treatment Facility Discharge, and Radwaste Treatment System Discharge
IL0030244*	North Shore Water Reclamation District Waukegan STP	N/A*	N/A*	126,629	Wastewater Treatment Facility Discharge
IL0076457	BRP US INC	0.735	None	Varies	Non-Contact Cooling Water
Total		**90.665**			

Table 3-66: Wastewater Treatment Plants in the Lake Michigan Watershed planning area Direct Discharges and Violations

***A violation is noted as per the EPA Discharge Monitoring Report Pollutant Loading Tool as one or more exceedances of permit effluent limits for this pollutant sometime during the year recorded. Violation issue date range is 01/01/2017-06/05/2020, **The North Shore Water Reclamation District primarily discharges to the Des Plaines River Data Source: USEPA Facility Registry Service (FRS).**

PERMIT NO.	WASTEWATER TREATMENT PLANT	DIRECT DISCHARGES TO	VIOLATION ISSUES 2017-2020*
IL0001881	Abbott Laboratories	Lake Michigan	Temperature, Total Suspended Solids
IL0002364	Winnetka Electric Plant	Lake Michigan	No Issues
IL0002763	Zion Solutions LLC	Lake Michigan	No Issues
IL0030244	North Shore Water Reclamation District Waukegan STP	Waukegan North Ditch**	Fecal Coliform, Ammonia
IL0076457	BRP US INC	Waukegan Harbor	No Issues

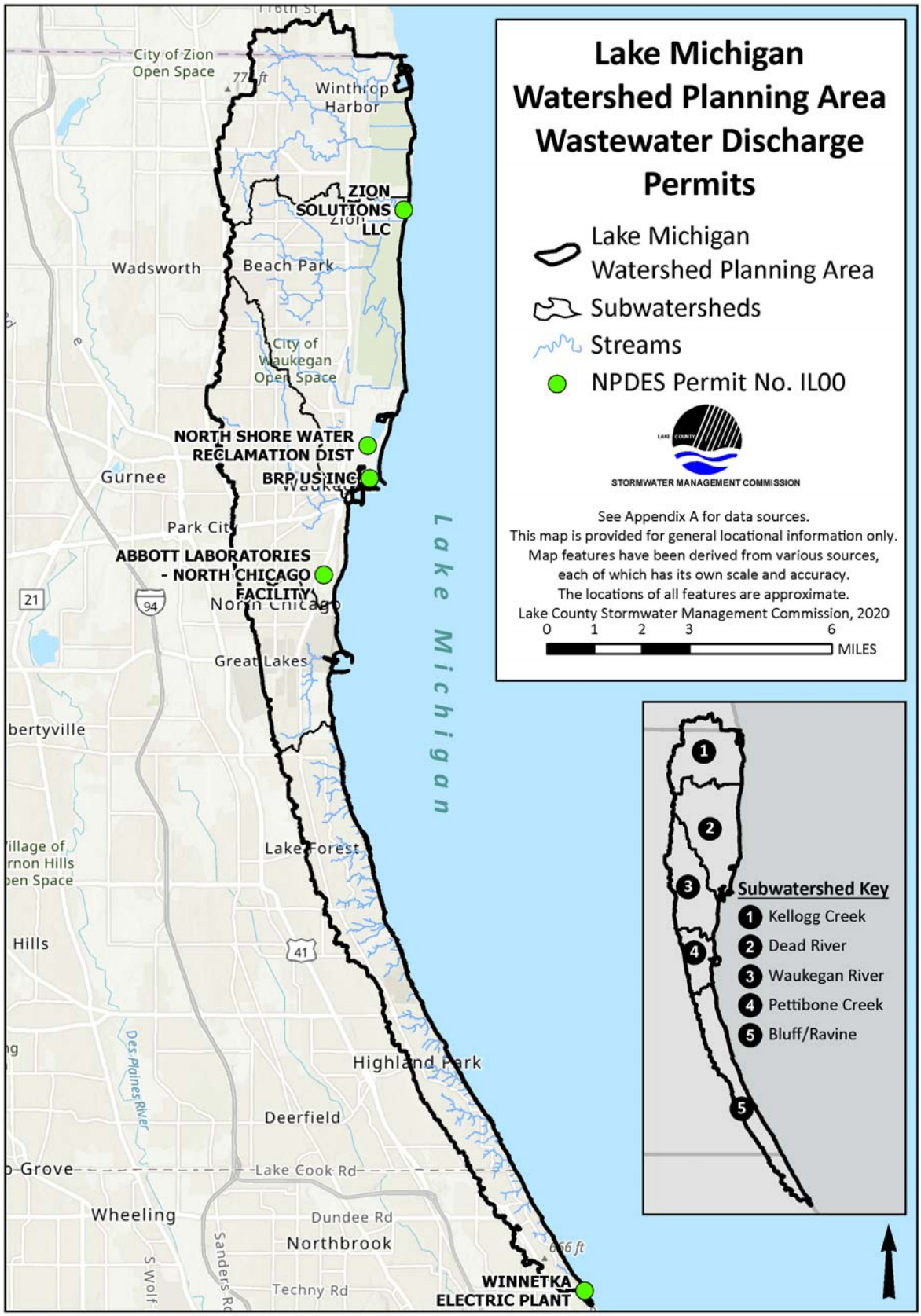


Figure 3-80: Lake Michigan Watershed Planning Area Active WWTPs

3.17.2 Other Point Sources

3.17.2.1 Pesticide Point Source Discharge

Pesticide Application Point Source Discharges regulates point source discharges of biological pesticides and chemical pesticides that leave a residue over or into waters of the U.S. and requires a permit under the USEPA NPDES pesticides general permit (Illinois EPA, 2011). The USEPA's pesticides general permit authorizes discharges to waters of the U.S. from the application of biological pesticides and chemical pesticides that leave a residue for mosquito and other flying insect pest control, aquatic weed and algae control, aquatic nuisance animal control and forest canopy pest control.

Agricultural runoff and/or irrigation return flows that contain pesticides are exempt from NPDES permitting requirements as authorized by Congress in 1987 with an amendment to the CWA for the exemption. In Illinois, the Pesticide Application Point Source Discharges permit is NPDES Permit No. ILG87. In Wisconsin the Pesticide Application Point Source Discharges permits are: Aquatic Plants, Algae and Bacteria - Permit No. WI0064556, Detrimental or Invasive Aquatic Animals - Permit No. WI0064564, Forest Canopy Pests - Permit No. WI-0064572, or Mosquitoes or Other Flying Insects - Permit No. WI-0064581.

Within the study area are seven NPDES Pesticide Application Point Source Discharge permits (USEPA, 2020), all located in Illinois within the Lake Michigan Watershed planning area or within a municipality that comprises some percentage of the land jurisdiction within the planning area, see Table 3-67 and Figure 3-81 for individual NPDES pesticide permits. There may be additional commercial organizations with an NPDES pesticides general permit performing work on public and private property within the study area but are not included within this inventory as their activities cannot be determined at this time.

Table 3-67: ILG87 Permits Issued to Organizations located within a Municipality with Jurisdiction in the Lake Michigan Planning Area.
Data Source: USEPA Facility Registry Service (FRS).

PERMITTEE	NPDES PERMIT NO.	CITY
Exmoor Country Club	ILG870167	Highland Park
Integrated Lakes Management	ILG870013	Waukegan
Lake Bluff Park District	ILG870134	Lake Bluff
Lake Shore Country Club	ILG870351	Glencoe
Park District of Highland Park	ILG870292	Highland Park
Waukegan Port District	ILG870002	Waukegan
Winnetka Park District	ILG870125	Winnetka

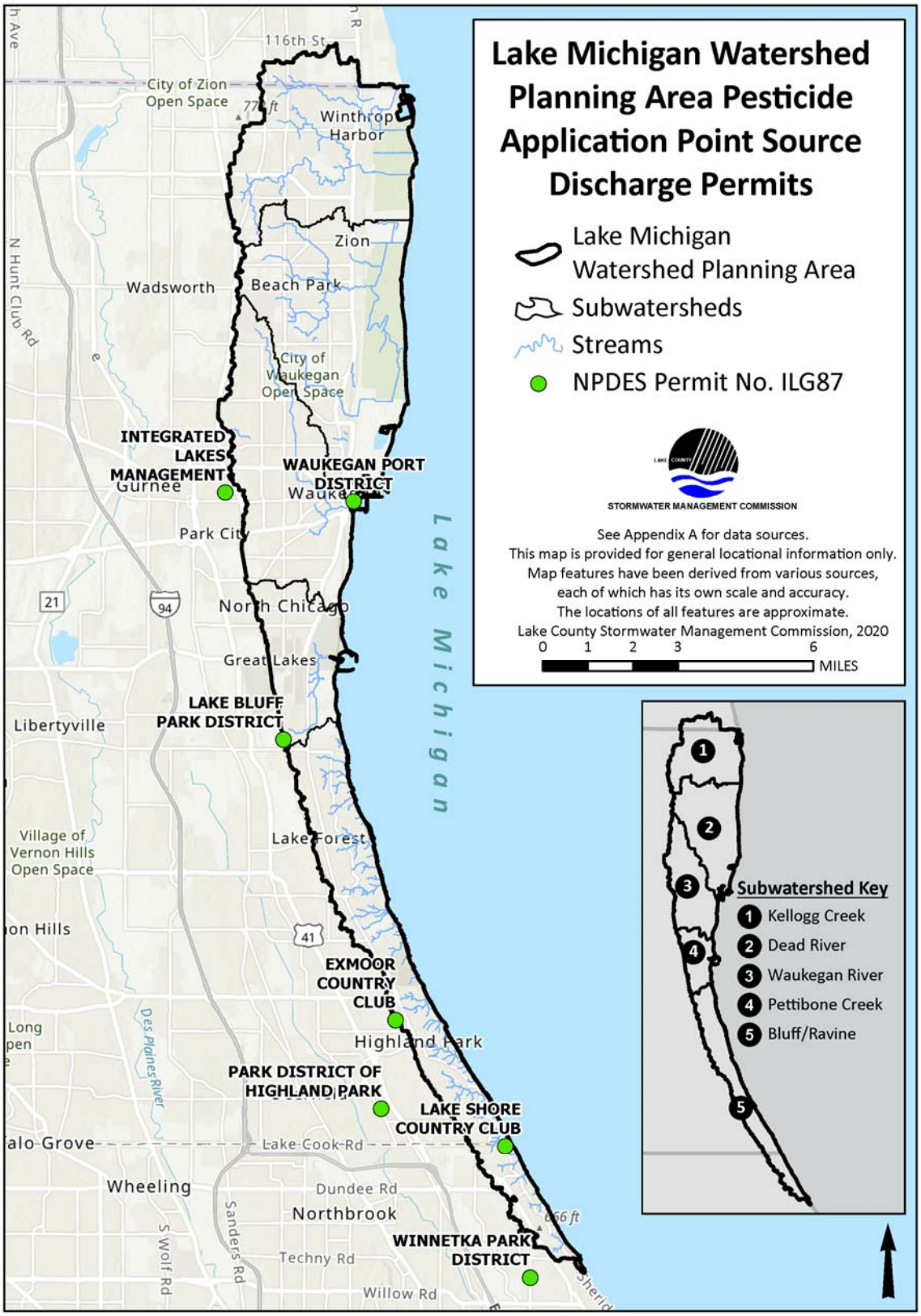


Figure 3-81: Lake Michigan Planning Area Pesticide Application Point Source Discharge Permit

3.18 NPDES PHASE II STORMWATER PERMITS

The NPDES Phase II Program regulates stormwater discharges from small MS4s, industrial and construction site activities. Stormwater runoff is identified as a key method of conveying pollutants from impervious surfaces into local rivers and streams causing, untreated water to degrade water quality. Polluted runoff or nonpoint source (NPS) pollution substantially impacts water quality. Polluted runoff is caused by rainfall or snowmelt moving over and through the ground picking up natural and human–made pollutants, depositing them into rivers, lakes, wetlands and groundwater.

Under the permitting requirements of the NPDES Phase II, permittees are required to implement certain practices that control pollution in stormwater runoff. They are required to prevent the contamination of stormwater runoff and develop a SWPPP. NPDES Phase II, is intended to reduce negative impacts to water quality and aquatic habitats by preventing and controlling unregulated sources of storm water discharge, educating communities about water quality and improving water quality.

3.18.1 Industrial Activity Storm Water Point Source Discharge (Stormwater Discharges from Industrial Activities, 2020)

Storm Water Discharges from Industrial Activities into waters of the United States require a permit under the USEPA NPDES. This permit is applicable to storm water discharges associated with industrial activity from areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water in the state of Illinois. Runoff from rainfall or snowmelt that comes in contact with these industrial activities can pick up pollutants and transport them directly to a nearby river or lake coastal water or indirectly via a storm sewer and degrades water quality. The permit provides a list of facilities that are included and excluded under a General NPDES Permit for Industrial Storm Water Discharge into waters of the United States.

In Illinois, the Industrial Activity Storm Water Point Source Discharge is NPDES Permit No. ILR00 *(*Illinois EPA, 2020). In Wisconsin, there are 6 individual permits for Industrial Activity Storm Water Point Source Discharges: Tier 1 Permit No. S067849; Tier 2 Permit No. S067857; Non-metallic Mining Operations Permit No. A046515 or B046515; Auto Recycling Permit No. S059145 or Permit No. S058831 (WI DNR, 2016).

There are 22 NPDES Industrial Activity Storm Water Point Source Discharge permits located within the Lake Michigan Watershed planning area (Illinois EPA, 2020). No permittees were observed in Wisconsin.

Table 3-68 and Error! Reference source not found. identifies individual NPDES industrial storm water discharge permits.

Table 3-68: ILR00 Permits Issued to Organizations located within the Lake Michigan Watershed Planning Area.
Data Source: USEPA Facility Registry Service (FRS).

PERMITTEE	NPDES PERMIT NO.	CITY	PERMITTEE	NPDES PERMIT NO.	CITY
AkzoNobel Aerospace Coatings	ILR000490	Waukegan	Jelly Belly Candy Company	ILR006440	North Chicago
Al Hansen Co Inc	ILR000130	Waukegan	Larsen Marine-Lake Michigan	ILR001924	Waukegan
BC Automotive Inc	ILR006288	Zion	Naval Training Center-GR Lakes	ILR002630	Great Lakes
C & M Recycling	ILR007268	North Chicago	New NGC	ILR000113	Waukegan
Coleman Cable Sys Div 3 4 8	ILR005803	Waukegan	Pfanstiehl Inc	ILR007100	Waukegan
Coral Chemical Company	ILR007608	Zion	Skipper Bud's Marina	ILR007343	Winthrop Harbor
Coral Chemical Company	ILR000029	Waukegan	Union Pacific RR - Waukegan Yard	ILR003068	Waukegan
Durham School Services-Beach Park (CSC 4007)	ILR007469	Beach Park	Waukegan National Airport	ILR002977	Waukegan
Emco Chemical	ILR005500	North Chicago	Waukegan Sewage Treatment Plnt	ILR004380	Waukegan
Fedex Freight East-Zion Ctr	ILR006624	Zion	Waukegan Steel Sales Inc	ILR002896	Waukegan
International Precision Components Corp-Lake Forest	ILR007367	Lake Forest	WestRock Company	ILR003516	North Chicago

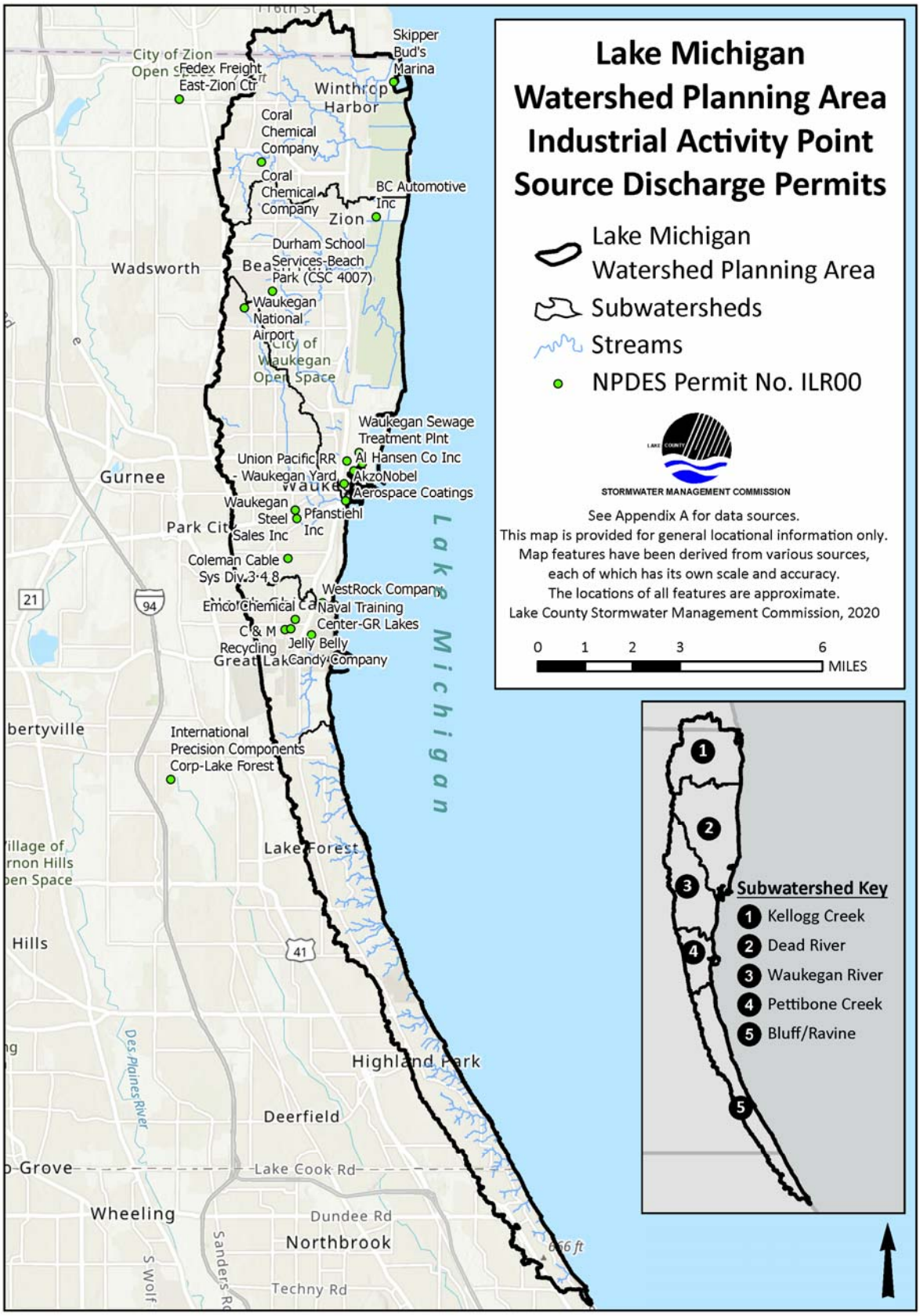


Figure 3-82: Lake Michigan Planning Area Industrial Activity Point Source Discharge Permits

3.18.2 Construction Site Activities Storm Water Discharge ("General Stormwater NPDES Permit for Construction Activities," 2010)

A USEPA NPDES permit is required for stormwater discharges into waters of the United States from construction sites where one or more acres of land is disturbed. Smaller sites within a larger construction project or development must consider the total disturbance of the project when determining if a USEPA NPDES permit is required. Many permittees in Illinois obtain permit coverage for their construction projects under the State's General Storm Water NPDES Permit for Construction Activities. In order for storm water discharges from construction sites to be authorized under this General Permit, the owner must submit a notice of intent in accordance with the requirements of the general permit. Permittees must develop and implement a stormwater pollution prevention plan to effectively manage the discharge of pollutants from the site.

In Illinois, the Construction Site Activities Storm Water Discharge is Permit No. ILR10 *(*Illinois EPA, 2018). In Wisconsin, the construction site activities storm water discharge permit is Permit No. WI-S067831 (WI DNR, 2018).

Within the study area 32 NPDES ILR10 permits are identified as being located within the Lake Michigan Watershed planning area (Illinois EPA, 2020). No permittees were observed in Wisconsin. Table 3-69 identifies individual NPDES construction site activity storm water point source discharge permits.

Table 3-69: ILR10 Permits Issued to Organizations located within the Lake Michigan Planning Area.
Data Source: USEPA Facility Registry Service (FRS).

PERMITTEE	NPDES PERMIT NO.	PROJECT NAME	CITY
2789 Oak (HP), LLC	ILR10AQ95	2789 Oak Street Development	Highland Park
Abbvie	ILR10AN82	Corporate Hangar	Waukegan
Barwell Rehabilitation LLC	ILR10BD91	Barwell Manor Homes	Waukegan
City of Highland Park - Department of Public Works	ILR10AK59	Ravine 3 Restoration and Stabilization Project	Highland Park
City of Lake Forest	ILR10BI43	Burr Oak Area	Lake Forest
City of Lake Forest	ILR10AR53	Lake Forest North Beach Access Road	Lake Forest
College of Lake County	ILR10AU44	Student Services & Adult Education	Waukegan
Coral Chemical	ILR10BA03	Coral Chemical	Zion
Dept of Veterans Affairs	ILR10BJ47	New Parking Garage	North Chicago
Foss Park	ILR10AV22	Foss Park Golf Course Beautification Project	North Chicago
Fountain Square Hospitality INC	ILR10AZ52	Marriot Town Place Suites	Waukegan
JJS Properties, LLC	ILR10AN07	Self Storage Facility	Beach Park
Lake County Division of Transportation	ILR10AK39	14th Street Green Bay Rd. to Sheridan Rd.	North Chicago
Lake County Health Department	ILR10AS81	Lake County Health Department	Waukegan
Lake Forest College	ILR10BH65	Brown Hall Renovation & Expansion	Lake Forest
Lake Forest College	ILR10BH60	South Sports Field Improvements	Lake Forest
Lake Shore Country Club	ILR10AN06	Lake Shore Country Club	Glencoe
Naval Facilities Engineering Command NAVFAC	ILR10BB53	Replace Sanitary Sewer Lines and Manholes Mainside	Great Lakes

PERMITTEE	NPDES PERMIT NO.	PROJECT NAME	CITY
Naval Station Great Lakes	ILR10BB46	Great Lakes Building 534 Demolition	Great Lakes
Naval Station Great Lakes	ILR10BB44	Great Lakes Building 131H Demolition	Great Lakes
Naval Station Great Lakes	ILR10AS03	Great Lakes Navy Barracks	Great Lakes
Naval Station Great Lakes Public Works Officer	ILR10AY24	Sanitary Lines & Manhole Replacement Mainside	Great Lakes
Neal School Development LLC	ILR10BI81	Neal Math and Science Academy	North Chicago
OTR	ILR10AS64	Kirwan Apartments	Waukegan
Phil and Janice Beck	ILR10BA14	Beck Residence	Winnetka
Shoreacres	ILR10AR34	Ravine Stabilization Project	Lake Bluff
V Covington Realty	ILR10AK89	Lake Behavioral Hospital	Waukegan
Waukegan Park District	ILR10AW28	Rose Park Splash Pad	Waukegan
Waukegan Port District	ILR10AX26	Waukegan Airport Entrance Road	Waukegan
White Wing Holdings LLC	ILR10AN88	White Wing Hangar	Waukegan
Zion Benton Highschool	ILR10AJ10	Zion Benton Highschool	Zion
Zion-Benton Township High School	ILR10BL46	Zion-Benton Township High School Swimming Pool	Zion

3.18.3 ILR40, Discharges from Small Municipal Separate Storm Sewer Systems (MS4)

Per Permit No. *ILR40 (*Illinois EPA, 2016), Storm Water Discharges from Small MS4s into waters of the United States require a permit under the USEPA NPDES program as many units of government have distinct roles and responsibilities related to water quality and nonpoint source pollution control. Discharges from small MS4s in USEPA Region 5 states are regulated under each state's general NPDES Permit No. ILR40 (Illinois) and WI-S050075-2 (Wisconsin) (USEPA, 2016). In the Lake Michigan Watershed planning area, the state NPDES program administrators are the Illinois EPA and the WI DNR.

The permit requires that MS4 operators develop, implement, and enforce a stormwater management program to reduce the discharge of pollutants. A permittee's stormwater management program must include six minimum control measures:

1. Public education and outreach on storm water impacts
2. Public involvement and participation
3. Illicit discharge detection and elimination
4. Construction site storm water runoff control
5. Post construction storm water management in new development and redevelopment
6. Pollution prevention / good housekeeping for municipal operations

To define its storm water management program, a permittee must define BMPs and measurable goals for each of the six minimum control measures.

In the Lake Michigan planning area, there is one unit of county government, two units of township government, and ten units of municipal government operating as MS4's with distinct roles and responsibilities related to activities and water quality control.

3.18.3.1 Municipal

In the Lake Michigan watershed planning area, there are twelve units of municipal government with a NPDES MS4 permit (Table 3-70). Contributing acres by municipal units of government ranges from 191 - 9,650 acres.

Table 3-70: ILR40 Permits Issued to Municipalities located within the Lake Michigan Watershed Planning Area.
% in Planning Area: Percentage of municipal land area within the Lake Michigan Watershed planning area. Data Source: USEPA Facility Registry Service (FRS).

PERMITTEE	PERMIT NO.	ACRES IN PLANNING AREA	% IN PLANNING AREA	PERMITTEE	PERMIT NO.	ACRES IN LM PLANNING AREA	% IN PLANNING AREA
City of Highland Park	ILR400352	2,464.03	31.4%	Village of Beach Park	ILR400164	3,150.86	69.8%
City of Highwood	ILR400353	298.85	64.6%	Village of Glencoe	ILR400198	1,144.50	47.8%
City of Lake Forest	ILR400367	2,685.44	24.3%	Village of Lake Bluff	ILR400366	1,636.16	62.6%
City of North Chicago	ILR400402	3,016.16	58.5%	Village of Pleasant Prairie	WI-S050075, FIN: 31158	855.75	4.0%
City of Waukegan	ILR400465	9,649.87	61.4%	Village of Winnetka	ILR400476	190.66	7.6%
City of Zion	ILR400482	4,803.22	75.4%	Village of Winthrop Harbor	ILR400477	2983.48	97%

3.18.3.2 Townships

There are two townships with a NPDES permit in the Lake Michigan Watershed planning area (Table 3-71).

Table 3-71: ILR40 Permits Issued to Townships located within the Lake Michigan Watershed planning area.
Data Source: USEPA Facility Registry Service (FRS).

PERMITTEE	NPDES PERMIT NO.	COUNTY
Shields Township	ILR400123	Lake
Waukegan Township	ILR400148	Lake

3.18.3.3 Counties

There is one unit of county government in the Lake Michigan planning area (Lake County permit # ILR400517) that require a NPDES permit. Cook County also has an NPDES permit for its highway-related stormsewer system operations but does not maintain any stormsewers within the planning area.

3.18.3.4 Transportation Agencies

The Illinois Department of Transportation has a NPDES (#ILR400493) permit that is applicable within the Lake Michigan Watershed Planning area.

3.19 SEPTIC SYSTEM ANAYLSIS

The Lake County Health Department and IDNR Coastal Management Program completed a project in 2019 to identify and catalog septic systems in the Lake Michigan watershed of Lake County that are not captured in the LCHD permit database and based on age, may be at higher risk of failure (LCHD, 2019). The study identified 1,276 permitted septic systems and an additional 409 probable septic systems in the Lake Michigan watershed in Lake County. No permitted or probable septic systems were identified in the Bluff/Ravine subwatershed. Based on information reviewed for this watershed plan, it is also unlikely that any septic systems exist in the Cook County portion of the Lake Michigan watershed planning area, also in the Bluff/Ravine subwatershed. Permitted and probable septic systems are most common in the Kellogg Creek and Waukegan River subwatersheds, where they comprise 43.6% and 33.8% of the total number of septic systems in the watershed planning area, respectively. Of the 409 probable septic systems, more than 84% were associated with a house constructed before 1980, and more than 62% were associated with houses constructed prior to 1960.

The LCHD study also examined complaint and failure rates of septics. Over a 9-year period (2010-2018), 63 complaints regarding septic systems were documented. In the course of resolving 14 of those instances, either a new system was installed, the associated house was demolished, or the house was connected to a sanitary sewer system. The other complaints were resolved with no major alterations. This suggests a lower failure rate of septic systems than has been used in previous watershed planning efforts in the region, which generally assumed a 2% failure rate. In this case, the rate of septic system replacement or removal was less than 1% of all septic systems over the entire 9-year period examined.

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COMMON ACRONYMS/ABBREVIATIONS USED IN CHAPTER 4

AC- ACRE

BMP – Best Management Practices

CCFPD - Cook County Forest Preserve District

CFU - Colony Forming Unit

Ch- Chapter

CMAP – Chicago Metropolitan Agency for Planning

CWP – Center for Watershed Protection

E. coli - Escherichia coli

EMC - Event Mean Concentration

FLU – Future Land Use

FPDCC - Forest Preserve District of Cook County

GI - Green Infrastructure

GIMS – Green Infrastructure Model and Strategy

GIS- Geographic Information System

GIV- Green Infrastructure Vision

IC – Impervious Cover

IDNR – Illinois Department of Natural Resources

IDOT- Illinois Department of Transportation

IGA – Intergovernmental Agreement

Illinois EPA – Illinois Environmental Protection Agency

lb- Pounds

LCDOT- Lake County Department of Transportation

LCFPD- Lake County Forest Preserve District

LCHD- Lake County Health Department

LCHD-ES- Lake County Health Department- Ecological Services

LID- Low Impact Development

LRR- Lateral Recession Rates

MBI - Midwest Biodiversity Institute

MG- Million Gallons

MGD- Million Gallons per Day

MLSWCD – McHenry-Lake Soil & Water Conservation District

MRLC - Multi-Resolution Land Characteristics Consortium

Mun.- Municipal

MWRD – Metropolitan Water Reclamation District of Greater Chicago

NA- Not Applicable

NCSWCD – North Cook Soil & Water Conservation District

ND- No Data

NLCD - National Land Cover Database

NPDES- National Pollutant Discharge Elimination System

NPDES II- National Pollutant Discharge Elimination System Phase Two

NRCS- Natural Resources Conservation Service

NSWRD – North Shore Water Reclamation District

PAH – Polycyclic Aromatic Hydrocarbons

PB&D –Planning, Building and Development

PCBs – Polychlorinated Biphenyl

PEC- Probable Effect Concentration

SMC – Lake County Stormwater Management Commission

SSURGO- Soil Survey Geographic Database

STEPL- Spreadsheet Tool for Estimating Pollutant Load

SWAMM™- Spatial Watershed Assessment and Management Model

SWCD - Soil & Water Conservation District

TEC- Threshold Effect Concentration

TMDL – Total Maximum Daily Load

TSS – Total Suspended Solids

U of IL Extension- University of Illinois Extension

UDO – Unified Development Ordinance

USACE- United Stated Army Corps of Engineers

USEPA- United States Environmental Protection Agency

USLE- Universal Soil Loss Equation

WASCB- Water and Sediment Control Basin

WOUS – Waters of the United States

WDO – Watershed Development Ordinance

WI DNR- Wisconsin Department of Natural Resources

WMO – Watershed Management Ordinance

WWTP- Wastewater Treatment Plant

4 WATERSHED PROBLEM ASSESSMENT

This chapter assesses in detail the problems identified in Chapter 3 Watershed Characteristics Assessment. The Watershed Problem Assessment chapter sections describe the effect of land use and land cover change on water resources in the Lake Michigan planning area; estimate the most prevalent causes and sources of pollution in streams and lakes; estimate nonpoint source pollutant loading in the Lake Michigan planning area; and identify critical areas where programmatic or site-specific actions or projects are likely to result in nonpoint source pollutant reductions. This chapter also assesses how jurisdictional roles, including regulatory oversight, can be better coordinated to improve the condition of water resources.

4.1 LAND USE IMPACTS AND IMERVIOUS COVER CHANGES

As discussed in Chapter 3, impervious cover (IC) is the result of altering or replacing native soil permeability as a result of land cover changes. IC produces an increase in direct storm water runoff and nonpoint source pollution stressors into wetlands, ponds, streams, and rivers thereby impacting local water quality. Stressors increase pollutant loads in stormwater runoff, alter stream flow, decrease bank stability, increase water temperatures, and reduce wetland capacity and function. These impacts affect terrestrial and aquatic wildlife, plant establishment, habitat function, recreational opportunities, environmental health, and property use and value.

As discussed in Chapter 3, research also shows that IC impacts water quality at relatively low levels of development and land use (0-9% IC or **Low IC**). Symptoms of water quality impact from land use stressors have been observed at 10-29% IC (or **Medium IC**) of a watershed, and research has quantified and observed degradation of natural water bodies when IC is between 30-100% (**High IC**) of the watershed. Figure 4-1 visualizes percent imperviousness based on impacted land use (Chabaeva, 2007).

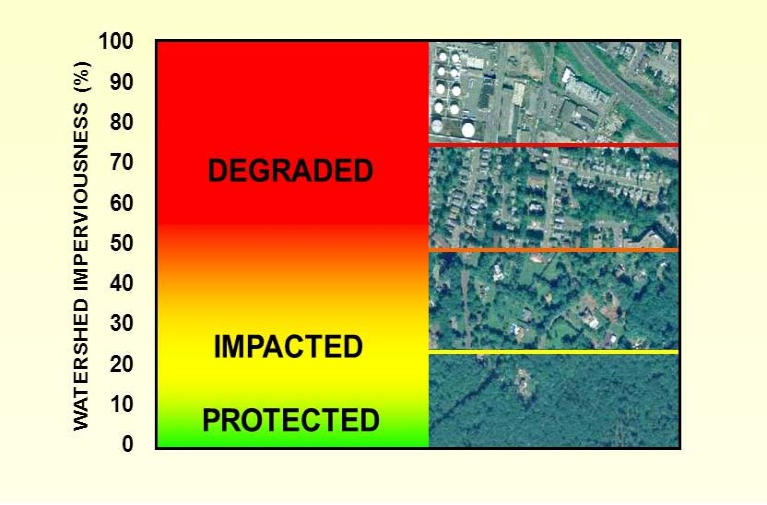


Figure 4-1: Comparison of percent imperviousness to land use

IMPERVIOUS COVER (IC) CLASSIFICATION: As mentioned in section 3.6.2 Impervious Cover, water quality is impacted at 10% and degradation of water quality is consistent at greater than 30% impervious cover. The impervious cover is analyzed by impacts:

Low IC – Land use changes increase impervious cover to 0-9% of the watershed with minimal impact to water quality.

Medium IC – Land use changes increase impervious cover to 10-29% of the watershed with water quality impacts noticeable.

High IC – Land use changes increase impervious cover to 30-100% of the watershed with water quality degradation expected.

4.1.1 Effects of Land Use Change on Water Quantity

Land disturbance associated with land use modification has a direct effect on stormwater quantity. Disturbance of a natural site alters hydrology due to impacts to the native soils and vegetation. Plowing, clearing, and tree removal eliminate vegetation that reduces stormwater runoff volumes through the hydrologic processes of interception, evaporation, and transpiration. Earthwork and grading disturb native soils and may remove or fill areas with natural depressions that collect, infiltrate, and retain rainfall and stormwater runoff onsite. Soil compaction resulting from the operation of heavy machinery over and across the site reduces the infiltration capacity of underlying soil. Land use changes that increase impervious surfaces, such as roads, parking lots, and rooftops, further reduce the infiltration capacity of an area and increase stormwater runoff volume and velocity.

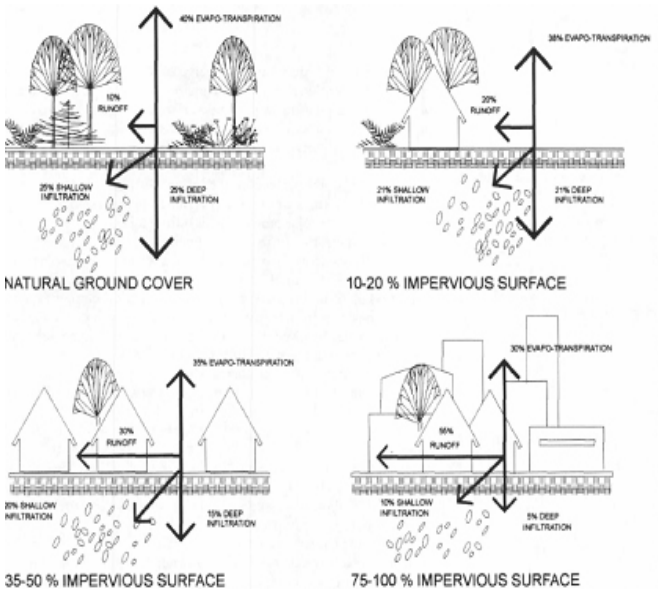
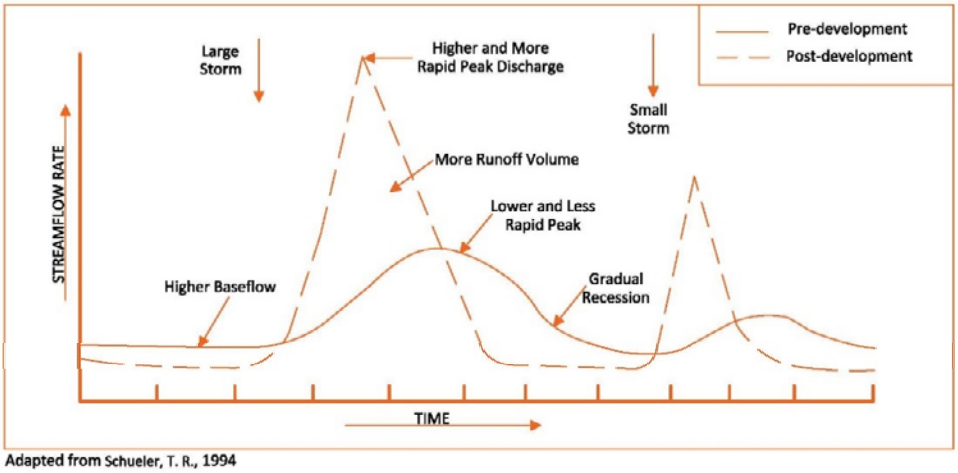


Figure 4-2: Influence of impervious surface on the fate of precipitation

The installation of drainage improvements (e.g., channelization, dredging, or artificial drainage systems) further reduces a site's ability to retain rainfall. Collectively these impacts result in substantially increased stormwater runoff volumes and velocities (Figure 4-2) and reductions in groundwater recharge (Pitt, 1994; Shueler, 1987; Thompson, 2009). Increased stormwater runoff volumes and velocities result in increased peak discharge rates, which can be at least two to five times higher on developed sites than undeveloped sites, resulting in increased flooding risk (Figure 4-3). Reduced groundwater recharge decreases baseflow to aquatic resources, including streams and wetlands. In recently developed areas, these impacts are partially offset by modern stormwater-related land development regulations.



Adapted from Schueler, T. R., 1994

Figure 4-3: Pertinent impacts of urbanization on hydrology at the catchment scale

4.1.2 Effects of Land Use Change on Water Quality

Land use change also affects stormwater quality. Impervious and compacted surfaces, such as parking lots, roads, lawns, parks, and athletic fields, accumulate pollutants during dry weather. These pollutants are quickly transferred to receiving waters during precipitation events, often through artificial drainage systems, resulting in increased pollutant loads to aquatic resources (Figure 4-4). Tables in sections 3.16.1 Status of Designated Use Support and 3.16.3 Summary of Monitoring characterize water quality impacts, causes and sources to lakes and streams.

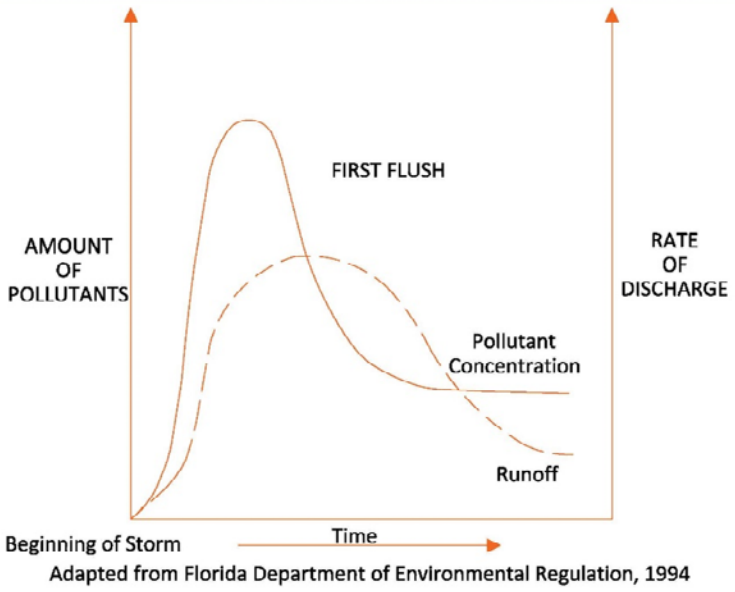


Figure 4-4: Influence of impervious surface on fate of pollutant concentrations

Stormwater pollutants come from a variety of diffuse and scattered sources, many of which are a direct or indirect result of land use change. These nonpoint source pollutants include:

- Sediment: Sources of sediment to stormwater runoff include land disturbing activities, atmospheric deposition, and surface or streambank erosion. Sediment particles can adsorb other stormwater pollutants, such as nutrients, metals, hydrocarbons, and pesticides, and transport them into receiving streams, wetlands, and other aquatic resources.
- Nutrients: Sources of nutrients such as nitrogen and phosphorus to stormwater runoff include fertilizer, pet and animal waste, leaves, grass clippings, sanitary sewer overflows & illicit connections, septic system discharges, and atmospheric deposition.
- Bacteria: Sources of bacteria and pathogens to stormwater runoff include pet and animal waste, sanitary sewer overflows, and septic system discharges. Runoff impacted by these sources typically exceeds public health standards for recreational contact.
- Organic Matter: Sources of organic matter to stormwater runoff include leaves, grass clippings, pet and animal waste, sanitary sewer overflows, and septic system discharges. The decomposition of this organic matter can decrease dissolved oxygen to levels that are detrimental to aquatic life.
- Metals: Sources of heavy metals, such as lead, zinc, copper, and cadmium, to stormwater runoff include atmospheric deposition, vehicle wear, and commercial, industrial, and hazardous waste sites.
- Hydrocarbons: Sources of hydrocarbons (i.e., PAHs or coal tar sealants) to stormwater runoff include vehicle wear, chemical spills, restaurant grease traps, and improper handling and disposal of waste oil and grease.
- Pesticides: Sources of insecticides, herbicides, and other pesticides to stormwater runoff include farming activities, lawn care and maintenance activities, chemical spills, and atmospheric deposition.
- Chlorides: Sources of chlorides to stormwater runoff include winter sidewalk, driveway, roadway, and parking lot anti-icing and deicing activities, and water softeners.

- Chemicals: Sources of chemicals, such as chlorine, solvents, soaps and detergents, degreasers, drain cleaners, vehicular liquids and paint, to stormwater runoff include residential, commercial, industrial, and hazardous waste sites.
- Trash and Debris: Considerable quantities of trash and debris typically accumulate on impervious or compacted pervious surfaces and are transferred to receiving waters by stormwater runoff. This trash and debris can accumulate in stormwater conveyance systems, potentially causing clogging and nuisance flooding.

As outlined below, an extensive and ever-growing body of research shows that these nonpoint source pollutants have substantial negative impacts on streams, wetlands, and other aquatic resources. Negative impacts include impaired water quality, reduced dissolved oxygen levels, increased primary productivity (e.g., eutrophication, algal blooms), sediment contamination, degradation of habitat, and a general decline in the abundance and diversity of wildlife and aquatic animals.

4.1.3 Effects of Land Use Change on Stormwater Temperature

Land use changes also affect stormwater temperature. The compacted pervious and impervious surfaces resulting from land use change absorb and retain heat, especially when exposed to sunlight. The heating of these surfaces is exacerbated by reduced shade resulting from the clearing of vegetation. During precipitation events, these heated surfaces increase the temperature of stormwater runoff, resulting in increased water temperatures and decreased dissolved oxygen in receiving waters.

4.1.4 Impacts on Aquatic Resources

Changes in hydrology and stormwater runoff characteristics (e.g., increased stormwater runoff rates, volumes, and pollutant loads) resulting from changes in land use can have a wide range of negative impacts on the aquatic resources of the LM planning area. Additional information about these impacts is provided below.

4.1.4.1 *Streams*

Impacts on the stream resources within the planning area are characterized in sections 3.12.2 Stream Network Description/Stream Reaches and 3.16.3 Summary of Monitoring. Changes in stormwater quantity, quality, and temperature resulting from changes in land use can have multiple negative impacts on freshwater streams. These well-documented impacts (CWP, 2003; CWP, 2009; Cruse et al., 2012) include:

- Increased Channel Forming Events: Increased stormwater runoff rates and volumes resulting from land use changes increase the frequency and duration of channel forming bankfull and near-bankfull events, resulting in changes in channel form, stream channel enlargement (e.g., stream down-cutting and widening), and streambank erosion.
- Increased Flooding: Increased stormwater runoff rates and volumes resulting from land use changes also increase the frequency, duration, and severity of overbank and extreme flooding events. These flooding events can cause property damage and endanger public health and safety.
- Decreased Baseflow: Increased stormwater runoff volumes resulting from land use changes reduce the amount of recharge to shallow groundwater aquifers which supply baseflow to streams and rivers.

- Stream Channel Enlargement: Stream channels enlarge (e.g., downcut and widen) to accommodate the increased peak discharges resulting from land use changes.
- Streambank Erosion: As stream channels enlarge to accommodate an increased frequency and duration of channel forming events and the increased peak discharges resulting from land use changes, streambanks are gradually undercut, scoured, and eroded away.
- Loss of Riparian Vegetation: As stream channels enlarge and streambanks are gradually eroded away, the roots of vegetation along the stream corridor may become exposed, undercut, uprooted, and conveyed downstream.
- Degradation of Habitat: Increased stormwater runoff rates and volumes resulting from land use changes scour stream beds and degrade aquatic habitat. The increased sediment loads that result from land use changes and erosion can also degrade aquatic habitat by filling in streambeds and destroying the important pool-riffle structure found in many streams.
- Increased Temperatures: Increased stormwater runoff temperatures resulting from land use changes can raise the temperature of freshwater streams. Since aquatic organisms can only survive within a specific temperature range (e.g., some darter fish species and other cool water species), increased stream temperatures can lead to a decline in wildlife abundance and diversity.
- Degradation of Water Quality: Increased stormwater pollutant loads resulting from land use changes reduce the overall water quality of freshwater streams. This water quality degradation negatively impacts many of the ecological functions that these important natural resources provide.
- Reduced Dissolved Oxygen Levels: Increased amounts of organic matter found in urban stormwater runoff, and increased stormwater runoff temperatures that result from land use changes, reduce the amount of dissolved oxygen found in freshwater streams. Fish kills and the loss of other aquatic organisms can occur if dissolved oxygen levels decrease enough. Low dissolved oxygen levels can also cause the release of harmful pollutants such as metals, nutrients, hydrocarbons, and pesticides that have accumulated within stream bottom sediment.
- Decline in Wildlife Abundance and Diversity: Increased stormwater runoff rates, volumes, and pollutant loads resulting from land use changes degrade habitat and water quality. This reduces the abundance and diversity of aquatic organisms found in freshwater streams. Sensitive keystone or indicator organisms that require high quality habitat may become stressed and be gradually replaced by organisms more tolerant of degraded conditions. For more detailed information on threatened and endangered species see section 3.10.2.
- Reduced Recreational and Aesthetic Value: Increased trash, debris, and pollutant loads found in stormwater runoff can accumulate in freshwater streams and detract from their natural beauty and recreational value.

4.1.4.2 *Lakes and Wetlands*

Impacts on aquatic lake resources within the planning area are characterized in sections 3.13.2 Shoreline Erosion and 3.16 Lake and Stream Water Quality. Impacts on aquatic wetland resources within the planning area are characterized in section 3.11 Wetland Inventory. Changes in stormwater quantity and quality resulting from changes in land use can have multiple negative impacts on lakes and wetlands.

The water quality of lakes, particularly man-made lakes, is substantially negatively impacted by increased stormwater pollutant loads. Since lakes function as sinks within the landscape, incoming sediment, nutrient,

bacteria, metals, hydrocarbons, pesticides, chlorides, and trash and debris can remain in a lake for a long time. The accumulation of these various pollutants can reduce overall water quality, contaminate sediments, increase primary productivity (e.g., increase algal growth), and negatively impact many of the important ecological functions that lakes provide. Elevated conductivity and total dissolved solids, indicators of elevated chloride concentrations, have been identified in Dugdale Lake (see Chapter 3).

As documented above, land use changes can have a wide range of impacts on the health of terrestrial and aquatic resources. These impacts, which range from additional runoff volume to degraded water quality to a decline in wildlife abundance and diversity, have been well documented by an extensive and ever-growing body of research. These impacts have been observed within the aquatic resources of the Lake Michigan planning area, as described in Chapter 3 and can, in part, be linked to changes in hydrology and stormwater runoff characteristics (i.e., increased stormwater runoff rates, volumes, and pollutant loads) resulting from land use changes that have occurred in the watershed over the last two centuries. Changes in stormwater quantity and quality resulting from changes in land use can have multiple negative impacts on lakes and wetlands. These well-documented impacts (Wright et al., 2006; Cruse et al., 2012) include:

- Increased Ponding: Increased stormwater runoff rates and volumes resulting from land use changes can cause increased ponding within wetlands. This can stress native wetland plant communities, especially in wetlands that did not previously receive large inputs of stormwater runoff.
- Increased Water Level Fluctuations: Increased stormwater runoff rates and volumes resulting from land use changes can cause increased water level fluctuations in wetlands. This can stress native wetland plant communities and reduce plant and wildlife abundance and diversity.
- Decreased Baseflow: Increased stormwater runoff volumes resulting from land use changes reduce the amount of precipitation available to recharge shallow groundwater aquifers and provide a steady supply of baseflow to wetlands, particularly during dry weather.
- Shoreline Erosion: Increased ponding and water level fluctuations and decreased baseflow resulting from land use changes can stress native wetland plant communities and leave portions of wetland shorelines unvegetated, making them vulnerable to undercutting, scour, and erosion.
- Degradation of Habitat: Increased ponding and water level fluctuations and decreased baseflow resulting from land use changes can stress native wetland plant communities and degrade wetland habitat. Increased sediment loads resulting from land use changes and surface and streambank erosion can also degrade wetland habitat.
- Degradation of Water Quality: Increased stormwater pollutant loads resulting from land use changes reduce the overall water quality of wetlands. This negatively impacts many of the ecological functions these important natural resources provide.
- Increased Primary Productivity: Increased nutrient loads in stormwater runoff increases the primary productivity of wetlands, promoting algal growth and forcing native wetland plant communities to compete for available nutrients. This competition can stress native wetland plant communities and reduce plant and wildlife abundance and diversity.
- Sediment Contamination: Metals, hydrocarbons, and pesticides in stormwater runoff can become attached to sediment particles and accumulate within wetlands. This can cause sediment contamination and expose aquatic and terrestrial organisms to the harmful effects of these pollutants.

- Decline in Wildlife Abundance and Diversity: When increased stormwater runoff rates, volumes, and pollutant loads resulting from land use changes degrade habitat and water quality, the abundance and diversity of plants, animals, and other organisms found in freshwater wetlands may be significantly reduced. In these situations, native wetland plant communities tend to be replaced by invasive species, and sensitive macroinvertebrate, amphibian, reptile, and bird populations become stressed and gradually replaced by populations that are more tolerant of the degraded conditions. This can result in the local extinction of native aquatic and terrestrial organisms. For more detailed information on threatened and endangered species see section 3.10.2.
- Reduced Aesthetic Value: Trash, debris, and pollutant loads in stormwater runoff can accumulate in wetlands, detracting from their natural beauty and aesthetic value.

4.1.5 Assessing the Impacts of Forecasted Land Use Changes

4.1.5.1 *Impervious Cover by Catchment*

Assessing impacts of forecasted land use changes within the Lake Michigan planning area involves further analysis of current land use and IC. Section 3.6.2 presents two data sources on IC: planimetric data and the National Land Cover Database (NLCD). These data sets were compared for each catchment using simple linear regression to determine if they reasonably represent impervious cover in the watersheds. Except in a few outlier catchments, planimetric imperviousness reasonably predicts NLCD IC and vice-versa. IC percentages were generated for each land use category in the watershed based on the IC datasets (detailed in **Appendix G**). These percentages were applied to the Existing and Future Land Use data to determine the expected change in impervious cover in the future within each catchment. Due to slight differences in the way that land use and future land use are classified and the uncertainty of the future land use layer, catchments are analyzed by comparing standard deviations rather than calculated acres of impervious cover change or percent change. This allows for a determination of whether the estimated future IC change in a particular catchment is similar to that of other catchments or if it appears to be of greater magnitude.

Geographic Information System: A computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface.

The impervious cover data was analyzed by catchment within the LM planning area. This information was used to determine IC within each catchment (Figure 4-5) and subwatershed (Table 4-1), which differs from the analysis in Section 3.6 (which is strictly by subwatershed). More than 75% of the catchments in the Waukegan River, Pettibone Creek, and Bluff/Ravine subwatersheds fall in the “High” IC category. Most catchments in the Kellogg Creek and Dead River subwatersheds are in the “Medium” IC category. Owing to the presence of Illinois Beach State Park, the Dead River subwatershed has the only appreciable aggregation of catchments with “Low” IC, comprising about 15% of the subwatershed.

This analysis aligns with Section 3.6, in that the Waukegan River, Pettibone Creek, and Bluff/Ravine subwatersheds have high levels of existing urban development. Therefore, while these subwatersheds fall into the “High” IC category, they are unlikely to be vulnerable to future land use changes.

Table 4-1: Catchment Imperviousness by Subwatershed

SUBWATERSHED (Inset Map #)	CATCHMENT IC PERCENTAGE 0-9% (Low)		CATCHMENT IC PERCENTAGE 10-29% (Medium)		CATCHMENT IC PERCENTAGE 30-100% (High)	
	ACRES	% AREA	ACRES	% AREA	ACRES	% AREA
Kellogg Creek (1)	198.49	2.47%	5,855.39	72.98%	1,969.47	24.55%
Dead River (2)	1,585.5	15.5%	5,304.13	51.85%	3,340.96	32.66%
Waukegan River (3)	--	--	1,813.56	24.95%	5,454.24	75.05%
Pettibone Creek (4)	--	--	721	22.45%	2,490.43	77.55%
Bluff/Ravine (5)	98.38	1.27%	1,541.79	19.88%	6,114.56	78.85%
Planning Area Total	1,882.37	5.16%	15,235.87	41.76%	19,369.66	53.09%

To assess potential changes in IC associated with future land use conditions, the current IC model data is first associated with current land use data to develop observational trends for a forecast model. The prediction model then compares the relative IC of current land use categories to anticipated FLU data (Table 3-13) to present a forecast future IC. A couple adjustments were made to the forecast future IC. First, future land use data does not exist for the Cook County portion of the planning area. As indicated in the comprehensive land use plans for the Villages of Glencoe and Winnetka, the Cook County portion of the planning area is built-out, so the assumption was made that IC in this area would not change. Additionally, for the purposes of this analysis, an assumption was made for the rest of the catchments that IC would not decrease in the future. Therefore, any catchments for which the model indicated a decrease in future IC were adjusted to have no change in IC; as it is assumed that modeled decreases are likely artefacts of the differences in the way that existing and future land use are classified and the scale at which they are mapped. Table 4-2 identifies IC changes at a catchment scale based on future land use mapping.

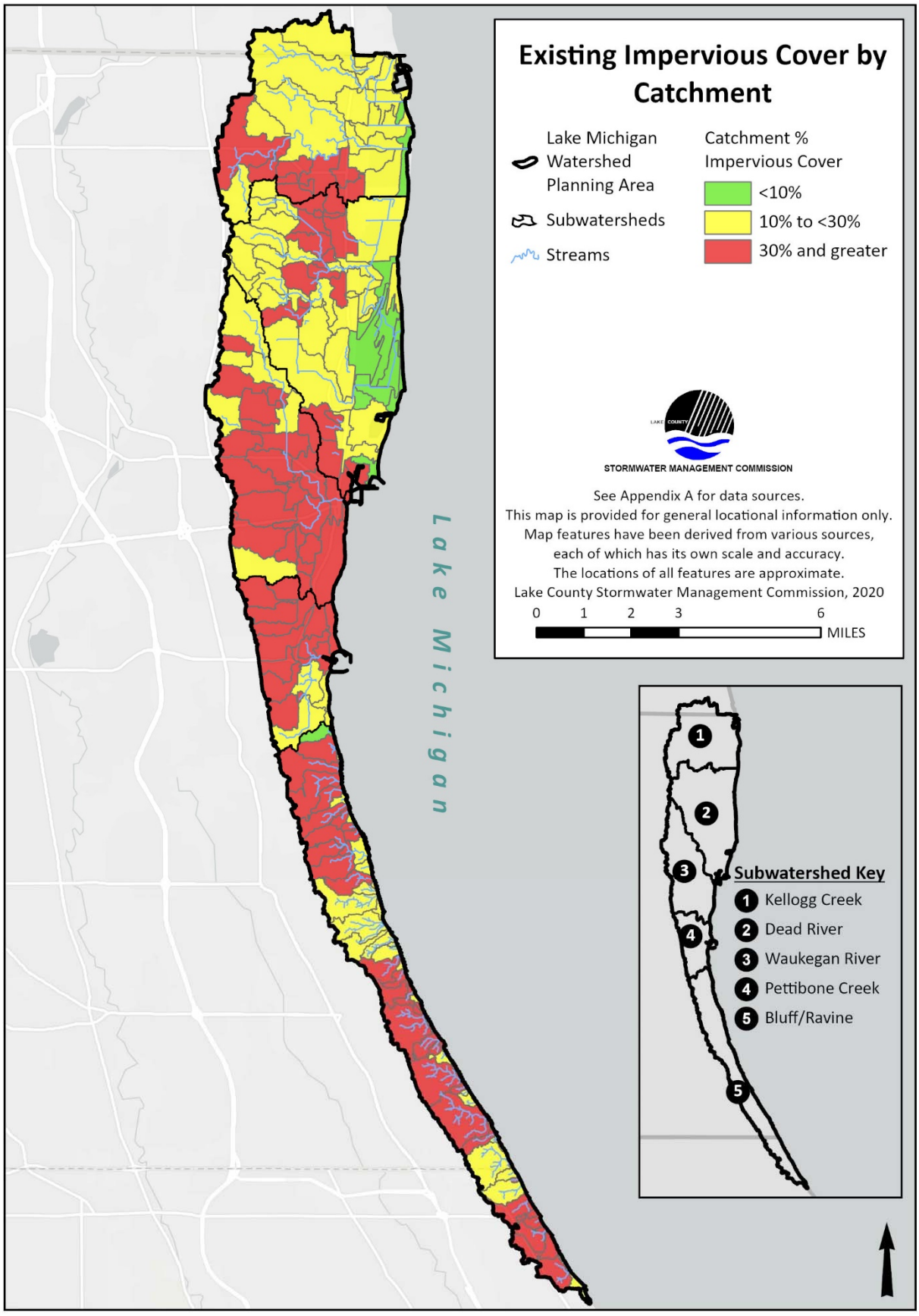


Figure 4-5: Impervious Cover by Catchment in the Lake Michigan Watershed Planning Area

Table 4-2: Estimated Planning Area IC associated with Future Land Use

SUBWATERSHED (Inset Map #)	CATCHMENT IC PERCENTAGE 0-9% (Low)		CATCHMENT IC PERCENTAGE 10-29% (Medium)		CATCHMENT IC PERCENTAGE 30-100% (High)	
	ACRES (Change)	% AREA (Change)	ACRES (Change)	% AREA (Change)	ACRES (Change)	% AREA (Change)
Kellogg Creek (1)	198.49 (0)	2.47% (0%)	5,855.39 (-2,684.22)	39.52% (-33.46%)	1,969.47 (+2,684.22)	58% (+33.46%)
Dead River (2)	1,110.4 (-475.1)	10.85% (-4.65%)	3,212.96 (-2,091.17)	31.41% (-20.44%)	5,907.22 (+2,566.26)	57.74% (+25.08%)
Waukegan River (3)	-- (0)	-- (0%)	704.63 (-1,108.93)	9.7% (-15.25%)	6,563.18 (+1,108.94)	90.3% (+15.25%)
Pettibone Creek (4)	-- (0)	-- (0%)	721 (0)	22.45% (0%)	2,490.43 (0)	77.55% (0%)
Bluff/Ravine (5)	-- (-98.38)	-- (1.27%)	1,317.06 (-224.73)	16.98% (-2.9%)	6,437.68 (+323.12)	83.02% (+4.17%)
Planning Area Total	1,308.89 (-573.48)	3.59% (-1.57%)	11,811.04 (-3,424.83)	32.37% (-9.39%)	23,367.98 (+3,998.32)	64.15% (+11.06%)

4.1.5.2 *Impervious Cover Changes Related to Future Land Use Mapping*

As identified in Section 3.6, much of the planning area, particularly the Waukegan River, Pettibone Creek, and Bluff/Ravine subwatersheds, is largely developed. Where land use is expected to change in the future, it is expected that impervious cover will increase. As indicated in Table 4.2, the number of catchments in the "Low" (0-9%) and "Medium" (10-29%) IC categories is expected to decrease while the number of catchments in the "High" (30-100%) IC category is expected to increase. No shifts in IC categories resulted from the modeling for catchments in the Pettibone Creek subwatershed, indicative of the existing "built-out" nature of that subwatershed. Based on Future Land Use map conditions, it is expected that most catchments in all 5 subwatersheds within the planning area will have greater than 30% IC in the future. This result suggests that critical catchments for IC are those indicated to have the greatest potential change from existing imperviousness to future imperviousness (see Figure 4-7).

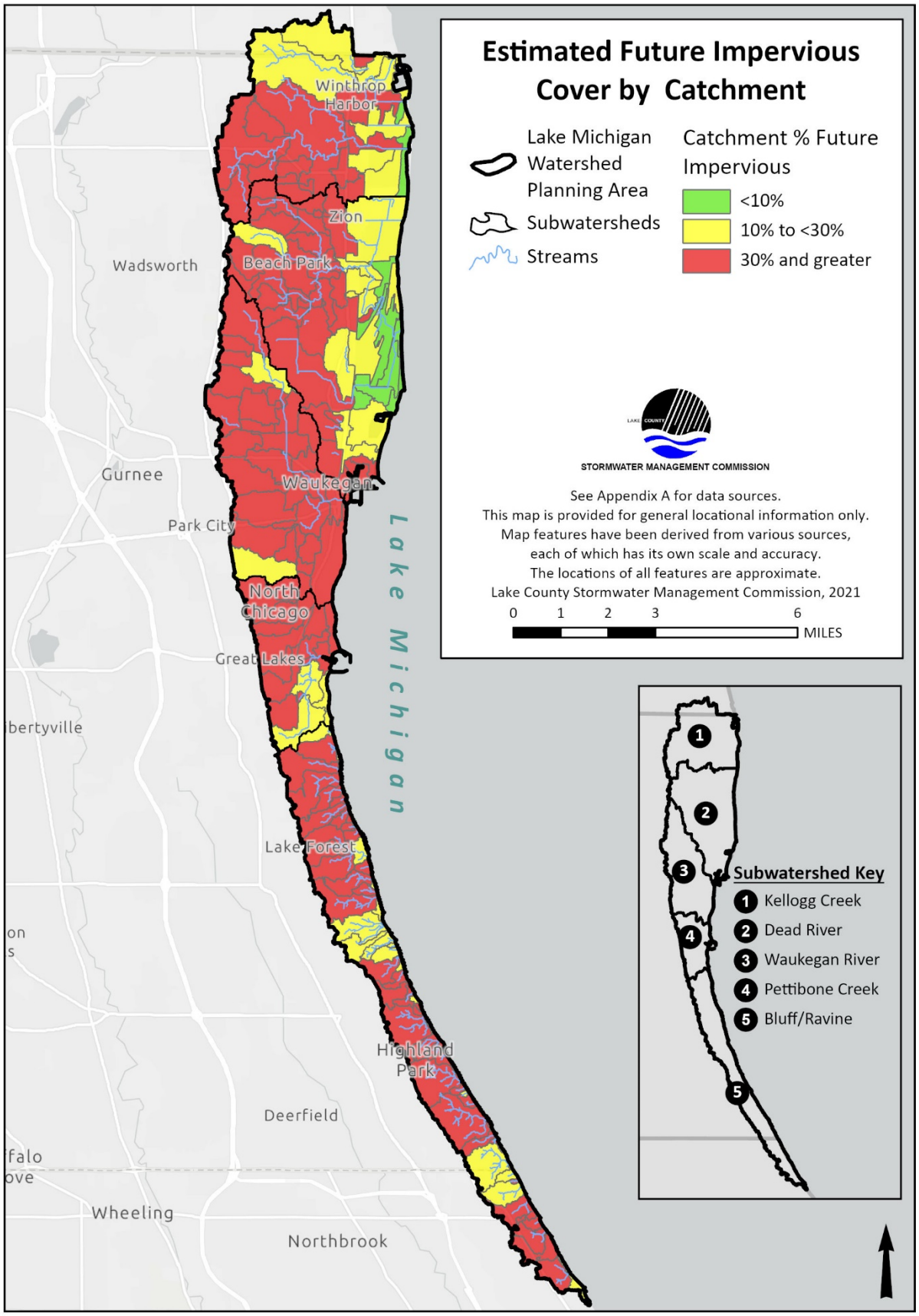


Figure 4-6: Estimated Impervious Cover by Catchment Based on Future Land Use Mapping

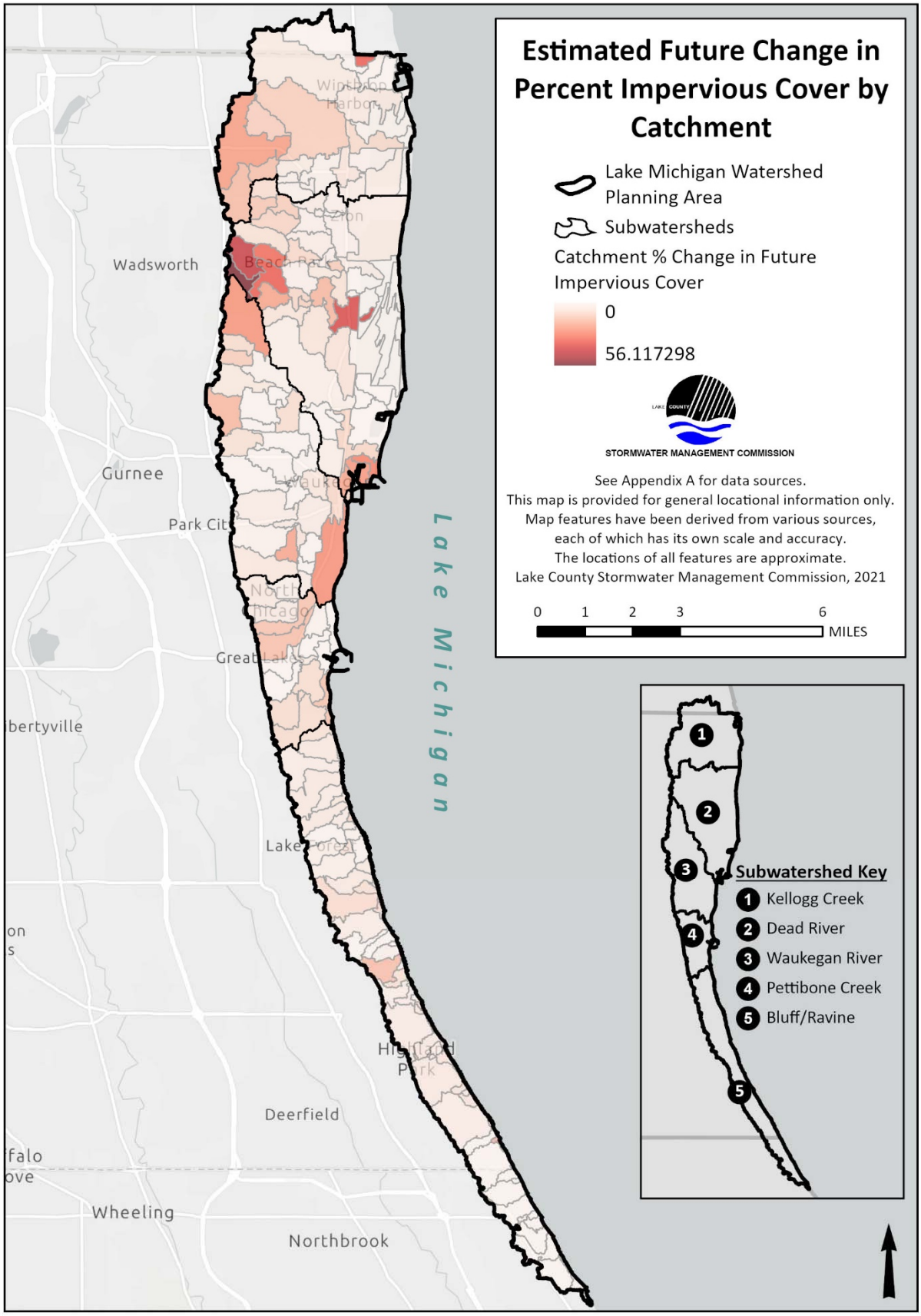


Figure 4-7: Estimated Percent Change in Catchment Impervious Cover Based on Future Land Use Mapping

4.1.6 Reducing Land Use Impacts Through Development Standards and Policy

The Lake Michigan Watershed-Based Plan recommends actions for protecting and restoring natural resources, improving water quality, and reducing and preventing flood damage in the watershed. These actions include both remedial and preventative measures for communities to support. Among the most significant and influential are preventative measures such as policies and regulatory programs, which are proactive practices rather than costly remedial measures after the problems become unavoidable.

This watershed-based plan does not recommend specific land uses or zoning; however, it does consider the health of watershed streams, waters and wetlands, which is a direct reflection of land use and land management. Therefore, consideration of land management and development impacts by local land use authorities is necessary for effective watershed planning. Resolution of water resource issues may be supported by review and modification of policies, standards, and practices guiding land development and land management.

It is anticipated that stormwater runoff volume and pollution will continue to increase as IC increases within the LM planning area. Municipalities and counties should review relevant ordinances to evaluate policies, standards, and regulations for new and retrofitted development, and for land management as it pertains to stormwater runoff volume, detention, water quality, **floodplains/floodways**, and wetlands. Both watershed development regulations and policies focused on stormwater management and local ordinances and policy that direct development practices that influence IC and drainage should be reviewed based on their potential to positively influence watershed health by preventing negative land development impacts.

Floodplains: Floodplains are lowlands, adjacent to rivers, streams and creeks that are subject to recurring floods. Mapped regulatory floodplains are defined as the area of land, which is inundated with water during 100-year flood events.

Floodway: A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

4.1.6.1 *Stormwater Management*

Current stormwater regulations are enforced locally with minimum standards for development based on local ordinance and NPDES minimum requirements. Section 4.3 Watershed Jurisdictional Coordination identifies roles and jurisdictions of development programs. Section 3.18 NPDES Phase II Stormwater Permits identifies national stormwater requirements. Future local ordinance revisions could consider conditions unique to individual subwatersheds that warrant consideration for developing and administering watershed-specific stormwater management regulations to address the technical issues of concern in the subwatershed.

The primary technical issues of concern related to stormwater management are:

- Hydrologic changes have resulted in stream/ravine channel changes and slope instability. Deepening and widening of the stream channel in some locations has created excessive erosion and sedimentation, property loss, debris loads and blockages, and aquatic habitat impairments.
- Current IC and land use vary within an individual catchment or jurisdiction, IC tends to be relatively high compared to other local watersheds.

- Current drainage infrastructure varies within an individual catchment and/or jurisdiction with undersized, older, not maintained, or inadequate infrastructure which largely contributes to urban flooding.
- While significant increases in impervious surface are not forecast, historic urbanization of the watershed has caused hydrologic change.
- Nonpoint source pollution from urban land uses, transportation infrastructure and maintenance practices, and additional volume from urban runoff may contribute to impairment of waterways and wetlands.

The effects of increased runoff volume resulting from land use changes can be addressed in a variety of ways, including the following examples:

- Institute more effective and consistent runoff volume reduction practices as at least 4,000 acres are projected to convert to land uses with greater IC.
- Review the detention volume/release rate requirements for the watershed and determine if unique conditions warrant adjustments or changes to storage and release regulations.
- Review and revise ordinance and policy language to ensure that the disconnection and minimization of impervious surfaces are allowed by right.
- Low impact development practices and the use of green infrastructure best practices (that maintain natural hydrology post-development) could be expanded by municipal and county ordinances for all new development and significant redevelopment.
- Mitigate unavoidable wetland loss within the watershed or subwatershed where the wetland impact/loss occurs and restore wetlands and runoff-reducing wetland function(s) where feasible.
- Utilize tree preservation ordinances that protect mature healthy native trees and stands of forest/savanna for stormwater reductions, habitat value and increased urban tree canopy coverage.

Water quality has been identified as a watershed issue and concern. Local community ordinances can be reviewed and revised to ensure that development codes do not preclude but rather encourage BMPs to protect and improve water quality. Examples of such BMPs include:

- The use of native vegetation in home and business landscaping.
- Sustainable street designs, including alternative transportation opportunities (complete streets) and bio-swales or other vegetated conveyance systems for stormwater management instead of traditional curb and gutter.
- Infiltration for a significant portion of increased runoff volume due to land development. County stormwater management ordinances provide runoff volume reduction measures.
- Preservation of natural retention and infiltration areas recognized as green infrastructure to reduce polluted runoff.
- Rainwater harvesting such as through the use of rain barrels and cisterns.

Site-specific and ravine erosion issues were identified as a concern. Many of these erosion issues can be addressed with the following:

- Requirements or incentives for stream corridor and/or ravine buffering and restoration for stream reaches located on new development sites could provide water quality, flood reduction, and habitat enhancement benefits. Currently stream corridor enhancements are not required as part of land development activities.
- Continued outreach and education to riparian landowners on proper maintenance and protections.
- Development and support for standardized long-term maintenance and monitoring protocols for naturalized stormwater drainage systems and natural areas. Development of a standardized protocol for monitoring and maintenance plans for new developments and required endowment funds for long-term implementation of the plans.
- Collective resolution (by landowners and others) to multi-property erosion problems

4.1.6.2 *Local Municipal and County Policies and Ordinances*

Policy and regulatory changes regarding land use are the responsibility of the county and municipal planning and development departments. Those entities should consider developing and implementing sound environmental long-term planning goals in their guiding documents. Planning documents vary in function (e.g., master plans, comprehensive plans, overlay or area-specific plans) but can seek balanced land use, land preservation, and development guidelines to positively affect watershed response. Development guidelines may be the best avenue for incorporating watershed-specific development standards and practices that prevent flood damage and protect water quality. Because elected officials change, long-term planning guidelines support county and municipal staff in preserving watershed health through the available resources for enforcement and recommendations.

Planning and zoning guidance provides the next level of watershed protection. Most planning and zoning regulations are in the form of local comprehensive land use plans and development-related ordinances that regulate onsite land use practices to ensure adequate floodplain, wetland, stream, lake, pond, soil conservancy, and other natural resource protection. Zoning ordinances, and overlay districts in particular, define the allowed type of development and where it can be located relative to natural resources. Other examples of planning/zoning resource protection include riparian and wetland buffers, impervious area reduction, open space/greenway dedication, and conservation development.

An excellent source of information on model development principles and a sample code and ordinance review worksheet can be found in *Better Site Design: A Handbook for Changing Development Rules in Your Community* (CWP, 1998). In addition, the Center for Watershed Protection and USEPA have self-appraisal checklists that watershed communities may use to evaluate their existing codes and ordinances. Adopting watershed-friendly codes and ordinances will elevate protection and enhancement of watershed resources. Watershed communities should perform this self-appraisal and establish an action plan to revise ordinances and codes where needed.

Improved coordination and communication between county and local government would benefit water resource protection. Municipal stormwater officials, local planners, and zoning boards should be very familiar with watershed development regulations and should consider revising local ordinances that address watershed and site-specific water, natural resource, and flooding issues not covered by county, regional, or state program requirements.

NOTEWORTHY: COMMUNITY PROGRAMS AND REGULATIONS INFLUENCE WATERSHED HEALTH

Many codes and ordinances influence the health and function of a watershed. The table below includes typical types of codes and ordinances to evaluate and potentially change or modify to help improve watershed conditions.

Code or Ordinance Types with Ties to Watershed Health

SUBJECT OF REGULATION	CODE/ORDINANCE/REGULATION
Erosion and Sediment Control	Zoning Ordinance, Stormwater Ordinance
Environmental Regulations (e.g., Buffers, Water Quality, Wetlands, Threatened/Endangered Species)	Subdivision Codes, Stormwater Ordinance, Planned Unit Development Agreements, Special Use Permits
Floodplain Regulations	Zoning Ordinance, Stormwater Ordinance, Subdivision Codes, Building Code
Stormwater Management and Drainage	Stormwater Ordinance, Subdivision Codes, Zoning Ordinance, Planned Unit Development Agreements, Street Standards and Road Design, Building Code, Fire Code
Tree Protection and Landscaping	Tree Protection Ordinance, Landscape Ordinance, Nuisance Ordinance, Planned Unit Development Agreements, Building Code, Fire Code
Parking Requirements	Zoning Ordinance; Planned Unit Development Agreements, Special Use Permit, Grading Ordinance

NOTEWORTHY: CONSERVATION DEVELOPMENT AND LID

County and local governments can work together to develop incentives for conservation development and LID. Some ways to incorporate conservation development into projects and provide incentives for developers include:

- Allow conservation development "by-right" (does not require variances)
- Establish a joint review department/agency application process that reduces review time
- Reduce fees for conservation development application review
- Require all developments have a certain percentage of preserved open space
- Develop native landscaping ordinances
- Reduce setback requirements between lots and encourage multi-level and clustered residential development to reduce land consumption
- Provide credit for combining natural buffers with recreational opportunities
- Require native plantings in all detention basins

Communities may incorporate conservation development and LID using several methods and strategies. Conservation development zoning could be applied to rezoning. The conservation development zoning classification should outline the intent, design guidelines, density bonus, and the specific areas where conservation development zoning changes would be permitted. The areas that may be rezoned to a conservation development might include areas that are adjacent to ecologically significant lands or are identified in local green infrastructure plan. Rural residential districts or less productive agricultural areas may also be considered. Areas that are defined as rural residential could provide a transition from higher density residential to rural.

Design guidelines for conservation developments should include LID practices, a detailed outline of the process used to define the environmentally sensitive areas on the site, and identify areas on the site that are developable. Because each site will have different developable areas and sizes, design guidelines should be flexible and should consider different development characteristics, such as roadway length, width, and lot size. Density bonuses may be written into the zoning code and could include bonuses for the following: use of native vegetation throughout the development including individual lots, reduction in pavement or impervious surface, use of permeable pavements, increased percentages of open space, trail or sidewalk connections to other developments or regional trails, additional expanded buffering of natural areas and adjacent spaces, and creation of wildlife habitat.

4.2 WATERSHED RESOURCE PROBLEMS ASSESSMENT

This section assesses the problems and concerns identified in Chapter 2 and Chapter 3 in order to better understand them and guide informed and prioritized actions to address them. Many water resources in the watershed planning area have water quality impairments which negatively affect aesthetic value, aquatic habitat, recreational value, and fish consumption uses.

The following subsections describe further analysis used to assess how watershed conditions are affecting the water quality, natural resources, and green infrastructure throughout the LM planning area.

4.2.1 LAKE IMPAIRMENTS

Based on the 2018 Illinois EPA 305(b) list, 2 inland lakes in the planning area have been assessed for beneficial uses and both have statutory impairments, as thoroughly detailed in Chapter 3. Dugdale Lake and Sand Pond are both impaired for the aesthetic quality beneficial use while meeting the water quality standards for aquatic life use. Causes of impairment are identified as "unknown cause" for both lakes as well as aquatic plants (macrophytes) for Dugdale. No sources of impairment/pollution are identified for either lake.

A lake shoreline erosion inventory was completed for both lakes and based on the findings (see section 3.13.2) shoreline erosion is not currently an issue of concern at Dugdale Lake or Sand Pond. Both lakes are located within dedicated preserves (Dugdale in Greenbelt Forest Preserve and Sand Pond in Illinois Beach State Park), so the land managers should continue to monitor the condition of the shorelines intermittently, but there are no additional actions recommended related to inland lake shoreline erosion.

Due to the limited monitoring data available for both lakes and the fact that neither lake has been monitored within the last 10 years, it is recommended that both Dugdale Lake and Sand Pond be monitored again prior to any management activity. New data might also indicate if the lakes are still impaired for aesthetic quality or indicate what the heretofore unknown causes of impairment are. Additionally, a trend of steadily rising chloride levels has been identified in other lakes across the region (though levels do not exceed Illinois water quality standards) and monitoring would provide an indication of whether this trend is occurring in Dugdale Lake and Sand Pond.

Several impairments exist for portions of Lake Michigan, including beaches and harbors. Thirteen beach and corresponding nearshore water segments of the coastline, comprising the entire Lake Michigan shoreline of the watershed planning area are identified as impaired for primary contact recreation and fish consumption. E. coli is identified as the cause of impairment of primary contact recreation while mercury and PCBs are identified as the cause of impairment of fish consumption in all 13 segments. Sources of E. coli are typically local and may include birds, wildlife and domestic animals, sewage, and urban runoff. Active sources of mercury and PCB contamination of Lake Michigan fishes are atmospheric deposition and hydrodynamic cycling from the main lake basin. These sources primarily originate outside the planning area (and Illinois).

Water quality impairments have been identified in Lake Michigan harbors as well. North Point Marina in Winthrop Harbor is impaired for fish consumption resulting from mercury and PCB. Sources of contamination are either atmospheric deposition or "unknown." Waukegan Harbor is impaired for aquatic life use, fish

consumption, and aesthetic quality. There are 10 causes and 5 sources of impairment for Waukegan Harbor identified in the 2018 Integrated Water Quality Report (Illinois EPA, 2021). Resolution of Waukegan Harbor beneficial use impairments is governed by a remedial action plan for the Area of Concern.

4.2.2 Stream Impairments

All eight of the assessed stream segments in the LM planning area are classified as impaired by the Illinois EPA in the 2018 Integrated Water Quality Report (Illinois EPA, 2021; also see Chapter 3). Twenty-two different causes are listed for the impairments; the predominant causes identified are metals, compounds related to pesticide use and polychlorinated biphenyls (PCBs), all of which occur in contaminated sediments. Dissolved oxygen is the most common cause of impairment identified in the 2018 Integrated Report that occurs in the water column. These statutory impairments are based on a limited set of data and more robust monitoring programs are needed to thoroughly characterize a watershed and understand the issues that affect aquatic life and the overall health and function of the watershed.

Supplementary data from local sources was also reviewed in Chapter 3. Furthermore, numerous stakeholders provided input related to stream impairments during the planning process. Overwhelmingly, the greatest concern among stakeholders was related to the process and cycle of stream channel and bank erosion and downstream sediment transport that is occurring in nearly all stream and ravine systems in the planning area. Additional concerns within the watershed indicated by the data and stakeholders include the effect of chlorides, the ubiquity of polycyclic aromatic hydrocarbons (PAHs), and the presence of E. coli in specific streams.

4.2.3 Causes and Sources

Chapter 3 introduced and identified problems and impairments in the LM planning area, this section considers that assessment and prioritizes the level to which causes and sources of water quality impairment are addressed in this plan. Various sources of quantitative and qualitative data and information were analyzed with the goal to identify the causes and sources of impairment that will need to be managed to achieve the goals and objectives of this plan.

The combined efforts outlined in the inventory presented in Chapter 3, the Illinois EPA Integrated Report (2021), additional local studies and stakeholder input provide a wealth of data, scientific assessment, and watershed knowledge to assess the water quality impairments and better understand the causes and sources. Table 4-3 provides a planning level inventory of impairments, causes, and sources based on the characterization and inventory of the LM planning area. This table serves as a summary to document the issues and provides a baseline to further characterize them in a sufficient manner to recommend priority areas and specific actions.

Table 4-3: Summary of Causes and Sources of Pollution and Impairments

IMPAIRMENT	CAUSES	SOURCES	PRIORITY	HIGHEST PRIORITY WATERS
Aquatic Life and Aesthetic Quality	Chloride / Conductivity	▪ Urban runoff, impervious surfaces not detained or retained ▪ Salt application for deicing of parking lots and roadways	MEDIUM	Waukegan River, Bull Creek, Kellogg Creek
	Phosphorus	▪ Urban Runoff/Stormsewers	MEDIUM	Waukegan Harbor
	Total Suspended Sediment (TSS)	▪ Bank Erosion ▪ Altered hydrology ▪ Urban runoff ▪ Streambank modifications/destabilization	HIGH	Ravine systems, Dead Dog Creek, Kellogg Creek, Bull Creek, Waukegan River
Aquatic Life and Aesthetic Quality (continued)	Arsenic, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Silver, Zinc	▪ Contaminated sediment	LOW	Pettibone Creek, S. Br. Waukegan River, Waukegan Harbor
	Bottom Deposits	▪ Contaminated sediment	LOW	Waukegan Harbor
	Dissolved Oxygen	▪ Urban runoff ▪ Unknown	HIGH	Bull Creek, Kellogg Creek, Waukegan River
	Bank Erosion	▪ Urban runoff ▪ Altered hydrology ▪ Habitat alteration ▪ Streambank modifications/destabilization	HIGH	Ravines and ravine segments of streams
	Loss of In-Stream Cover	▪ Unknown	MEDIUM	Dead Dog Creek
	Other flow regime alterations & Changes in Stream Depth and Velocity Patterns (Illinois EPA)	▪ Dam or impoundment ▪ Channelization	MEDIUM	S. Br. Waukegan River, Kellogg Creek
	.alpha.-BHC	▪ Contaminated sediment	LOW	Pettibone Creek, S. Br. Pettibone Creek
Aquatic Life and Aesthetic Quality (continued)	Aldrin	▪ Contaminated sediment	LOW	Bull Creek, Dead Dog Creek, Kellogg Creek, S. Br. Waukegan River, Waukegan River

IMPAIRMENT	CAUSES	SOURCES	PRIORITY	HIGHEST PRIORITY WATERS
	DDT	▪ Contaminated sediment	LOW	S. Br. Waukegan River, Waukegan River
	Dieldrin	▪ Contaminated sediment	LOW	Pettibone Creek
	Endrin	▪ Contaminated sediment	LOW	Bull Creek, Pettibone Creek, S. Br. Pettibone Creek
	Heptachlor	▪ Contaminated sediment	LOW	S. Br. Pettibone Creek
	Hexachlorobenzene	▪ Contaminated sediment	LOW	S. Br. Waukegan River, Waukegan River
	Aquatic Plants	▪ Unknown	LOW	Dugdale Lake
	PCBs	▪ Contaminated sediment	LOW	Pettibone Creek, S. Br. Pettibone Creek, Waukegan River
Primary Contact Recreation	Fecal Coliform Bacteria	▪ Urban runoff ▪ Birds/Wildlife/Domestic Animals	HIGH	Lake Michigan Beaches
Fish Consumption	PCBs	▪ Contaminated Sediment ▪ Atmospheric Deposition ▪ Hydrodynamic transport/cycling ▪ Industrial Point Source Discharge	LOW	Waukegan Harbor, North Point Marina Harbor, Lake Michigan Nearshore Waters
	Mercury	▪ Atmospheric Deposition	LOW	

4.2.4 Pollution Loading and Nonpoint Sources

Pollutant loading from a watershed is the sum of point sources and nonpoint sources. Nonpoint source pollution is a primary concern related to water quality in the LM planning area based on the watershed characterization. Based on the data available, the watershed plan identifies priority impairments and problems to address in this watershed-based plan as detailed in Table 4-3.

Point sources are also major contributors to the overall watershed pollutant loads, especially phosphorus, nitrogen, and chloride. Existing regulatory permit processes and enforcement address point source pollution; however, some parameters are not regulated and contribute to watershed problems and stakeholder concerns. The permitted point source facilities within the LM planning area include 18 wastewater treatment facilities. All permitted facilities are subject to regulatory monitoring and reporting requirements, which are all public records.

4.2.4.1 *Nonpoint Source Pollution Load Model*

A GIS model was developed to estimate nonpoint source pollutant loads for twelve (12) parameters: total suspended solids (TSS), total dissolved solids (TDS), total phosphorus (TP), dissolved phosphorus (DP), total nitrogen (TN), total kjeldahl nitrogen (TKN), 5-day chemical oxygen demand (COD), 5-day biological oxygen demand (BOD), cadmium (Cd), lead (Pb), copper (Cu) and zinc (Zn). The output illustrates and quantifies the estimated spatial distribution of nonpoint source loading in the LM planning area by catchment.

The model used to estimate pollutant loads incorporates the land use described in Chapter 3. Runoff volumes are based on the impervious area associated with a given land use and annual rainfall. **Event mean concentrations (EMCs)** were applied to the runoff volumes based on land use mapping. The EMCs are established based on literature sources, water quality studies, and professional experience, and are listed in **Appendix F**. Formulas and EMCs incorporated into the model are derived from Unit Area Pollutant Load Estimates for Lake County, Illinois Lake Michigan Watersheds (NIPC, 1993) as modified and applied in the Dead River and Kellogg Creek watershed plans (SMC, 2008a; SMC, 2008b).

EVENT MEAN CONCENTRATION (EMC): Method for characterizing pollutant concentrations in stormwater runoff. The pollutant concentrations are measured in studies and on-going research that collects and analyzes runoff from various land-use practices in different geographic and climatic regions. The values are determined by compositing (in proportion to flow rate) a set of samples, taken at various points in time during a runoff event, into a single sample for analysis.

COLONY FORMING UNIT (CFU): CFU is a measure of viable bacterial or fungal numbers. Unlike direct microscopic counts where all cells, dead and living, are counted, CFU measures viable cells.

4.2.4.2 *Nonpoint Source Loading, Current Conditions*

Figure 4-8 through Figure 4-20 illustrate the spatial distribution of nonpoint source loading for total suspended sediment, total phosphorus, chemical oxygen demand, biological oxygen demand, total dissolved solids, total nitrogen, total Kjeldahl nitrogen, dissolved phosphorus, cadmium, lead, copper, zinc and fecal coliform bacteria, respectively. Table 4-4 through Table 4-5 display the total pollutant load and the 10% of catchments with the highest loading rate (load per acre) for the LM planning area. Total load estimates indicate which catchments are estimated to contribute the greatest amount of a pollutant annually. Loading rate estimates indicate which catchments contribute greater amounts of a pollutant per acre. A larger catchment may contribute a high pollutant load as a function of its size while a catchment with a high loading rate might be characterized as a “hot spot” because it contributes a higher pollutant load per unit area.

As identified in the maps of nonpoint source pollutant load estimates and discussed in section 4.2.4.5 (below), several catchments throughout the planning area are estimated to contribute higher loads for all pollutants. Because the pollutant load estimates are based on land use, it is not surprising that the same catchments are predicted to have high loads for all pollutants. At the subwatershed scale, Pettibone Creek has the lowest estimated annual load for all parameters, likely due to its smaller area. The Kellogg Creek subwatershed has the lowest loading rate (load per acre) of the five subwatersheds due to the relative amount of open space and agricultural land remaining in the subwatershed.

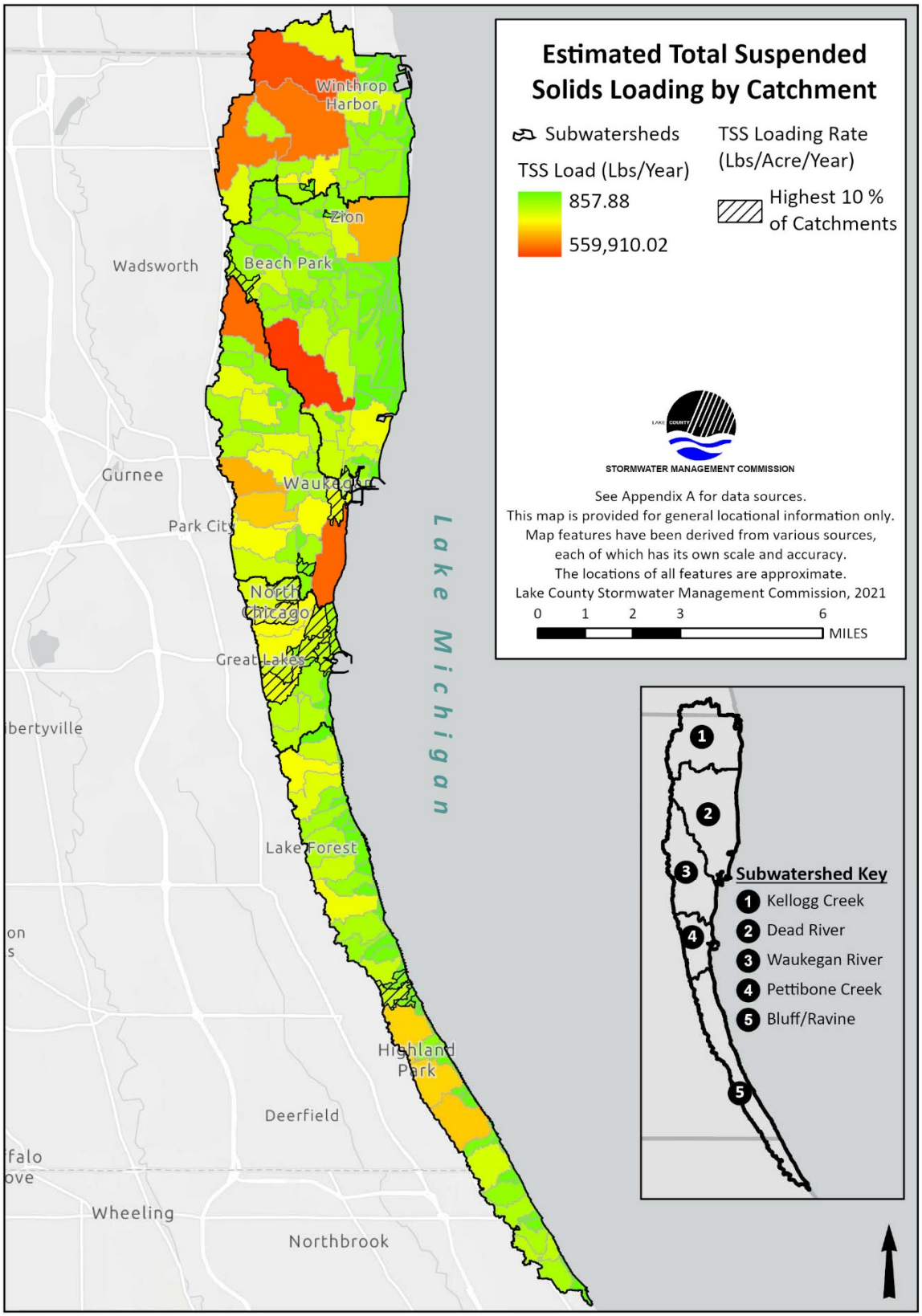


Figure 4-8: Estimated Annual Nonpoint Source Total Suspended Solids Loading

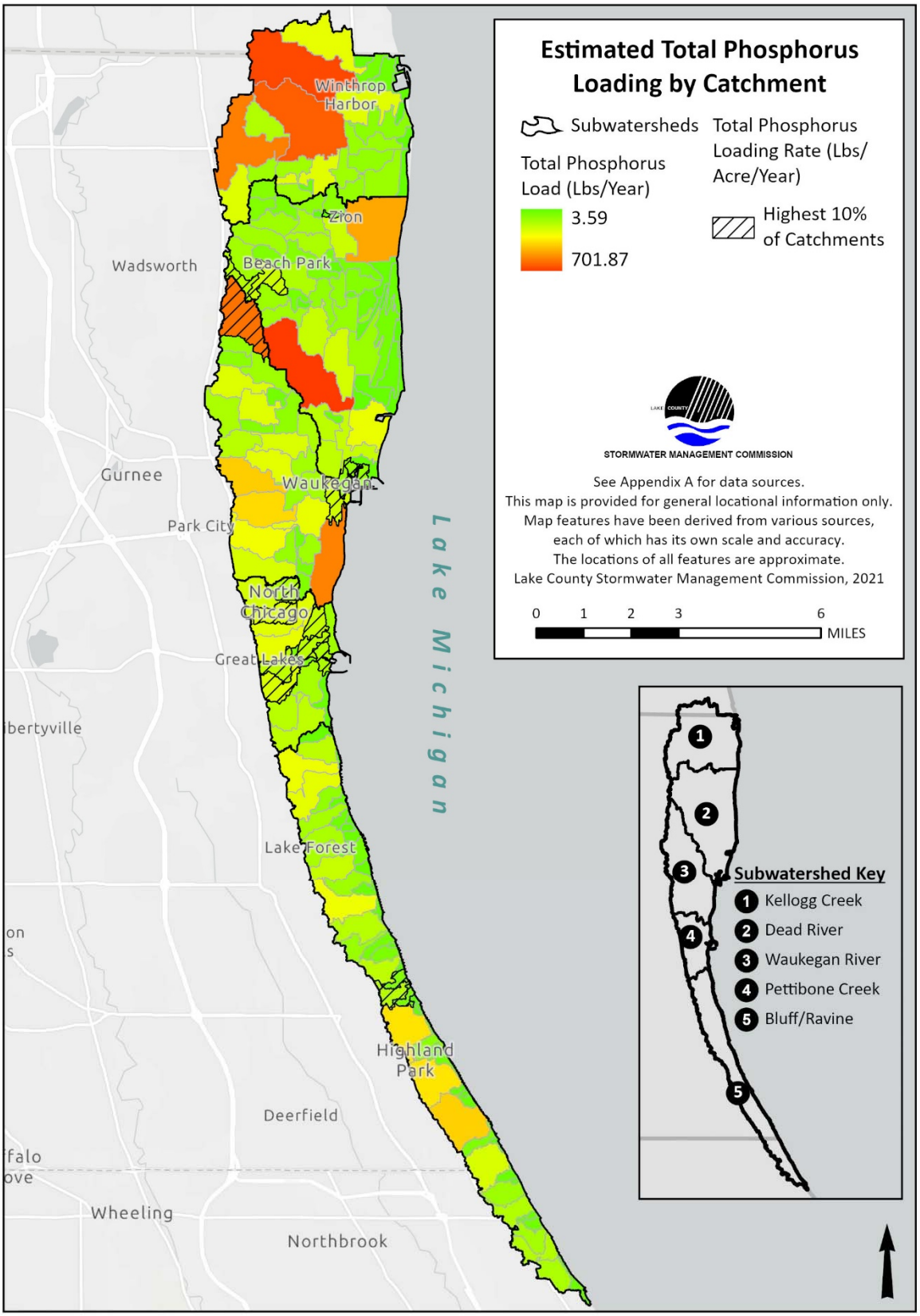


Figure 4-9: Estimated Annual Nonpoint Source Total Phosphorus Loading

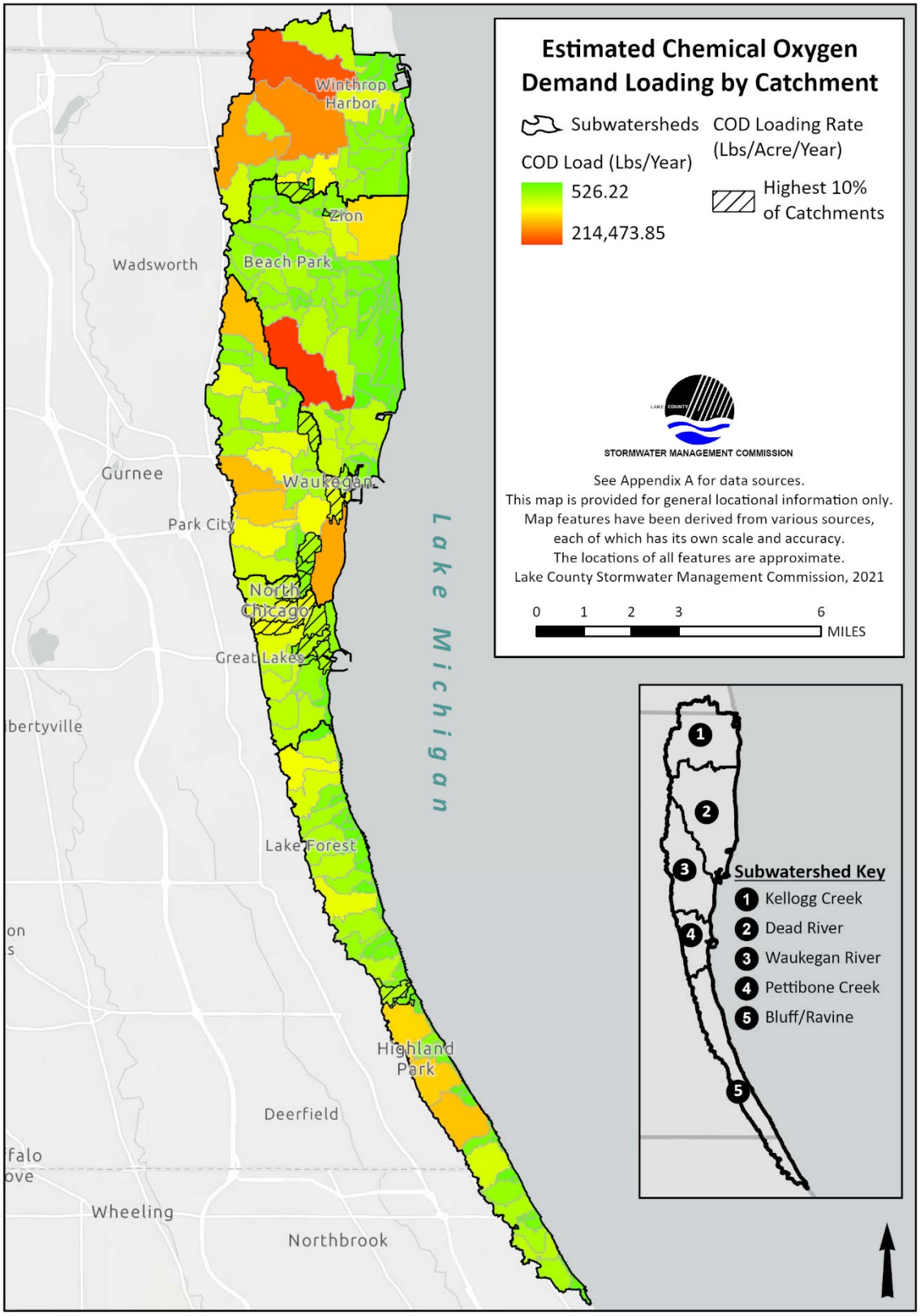


Figure 4-10: Estimated Annual Chemical Oxygen Demand Loading

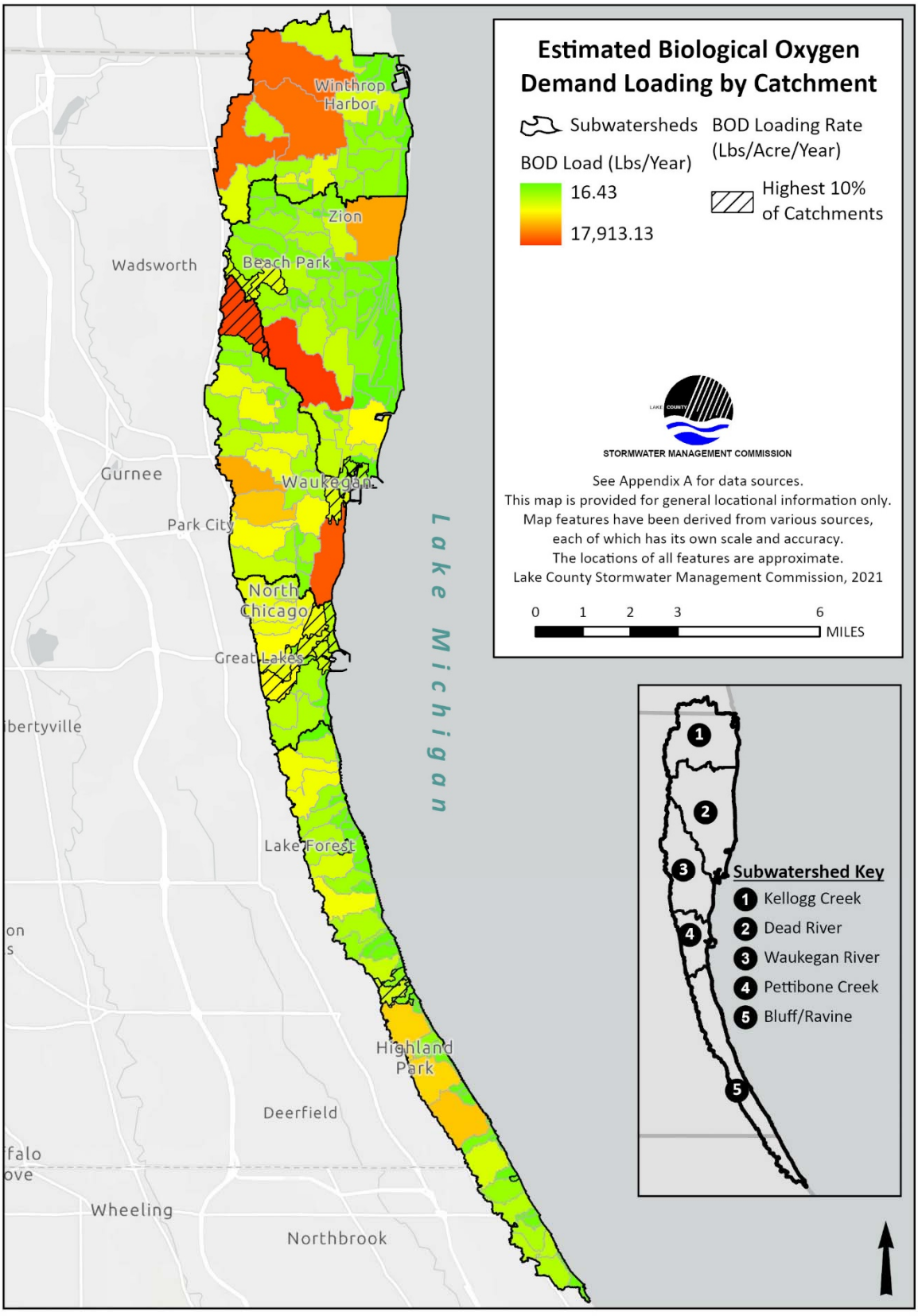


Figure 4-11: Estimated Annual Nonpoint Source Biological Oxygen Demand Loading

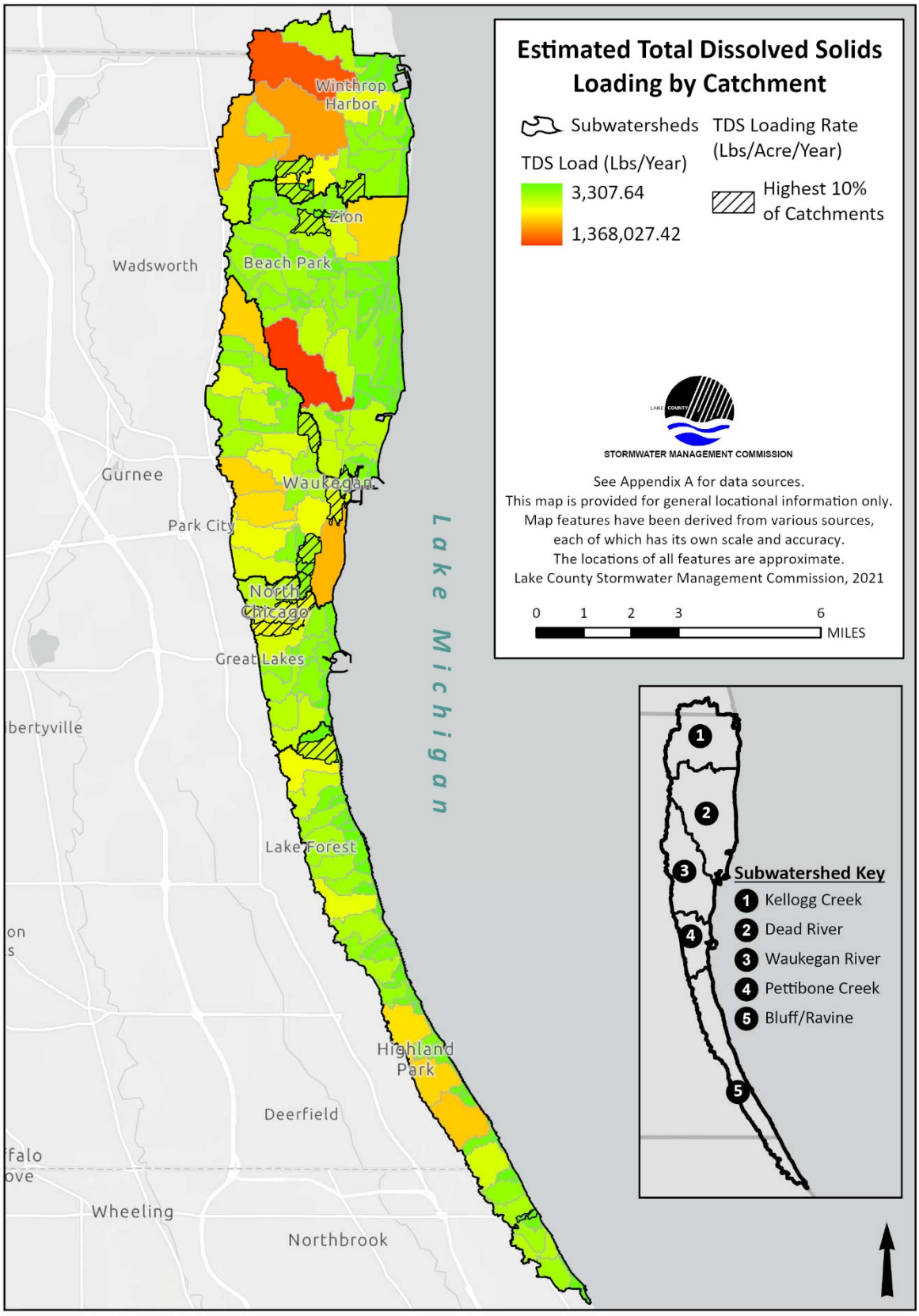


Figure 4-12: Estimated Annual Nonpoint Source Total Dissolved Solids Loading

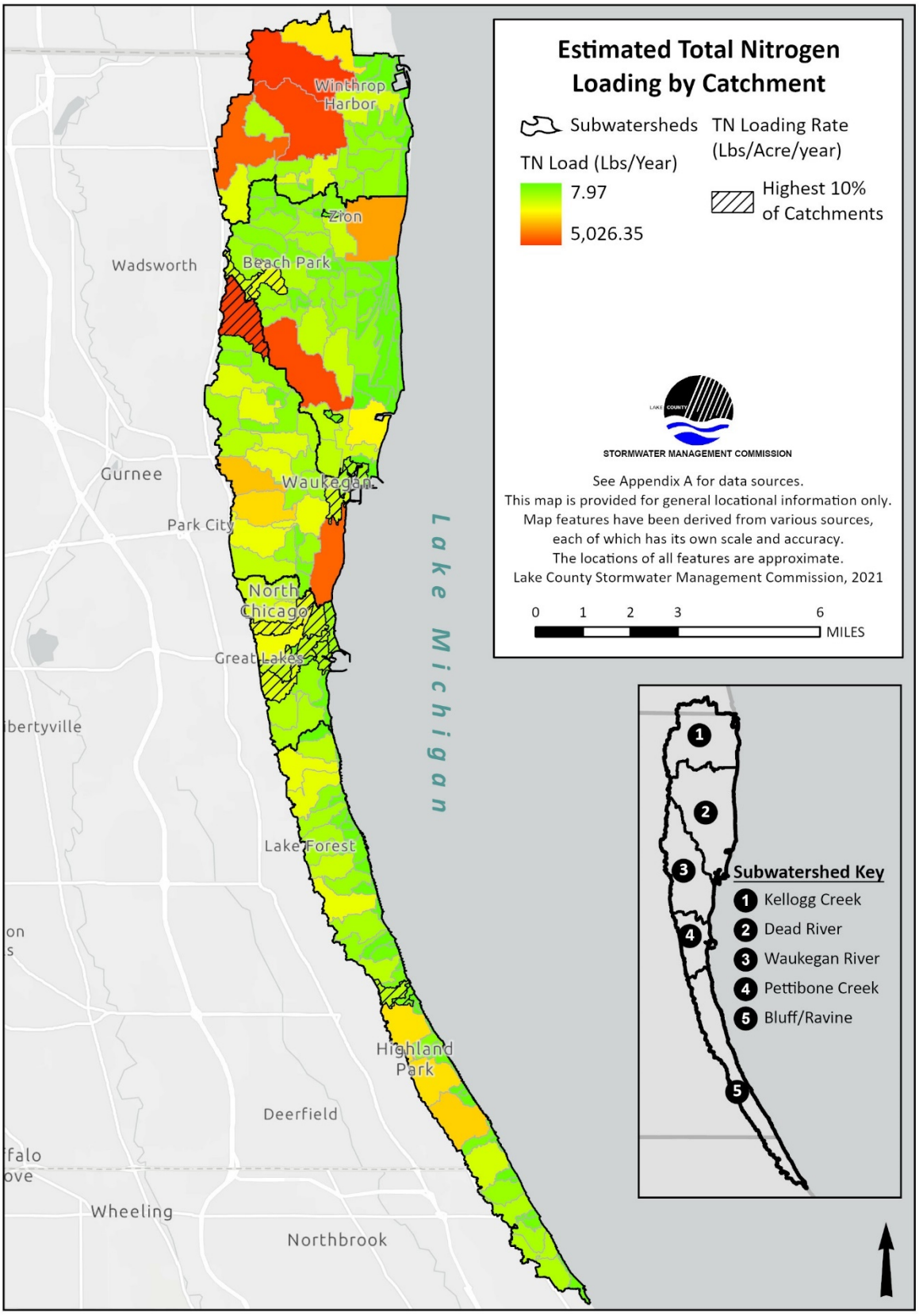


Figure 4-13: Estimated Annual Nonpoint Source Total Nitrogen Loading

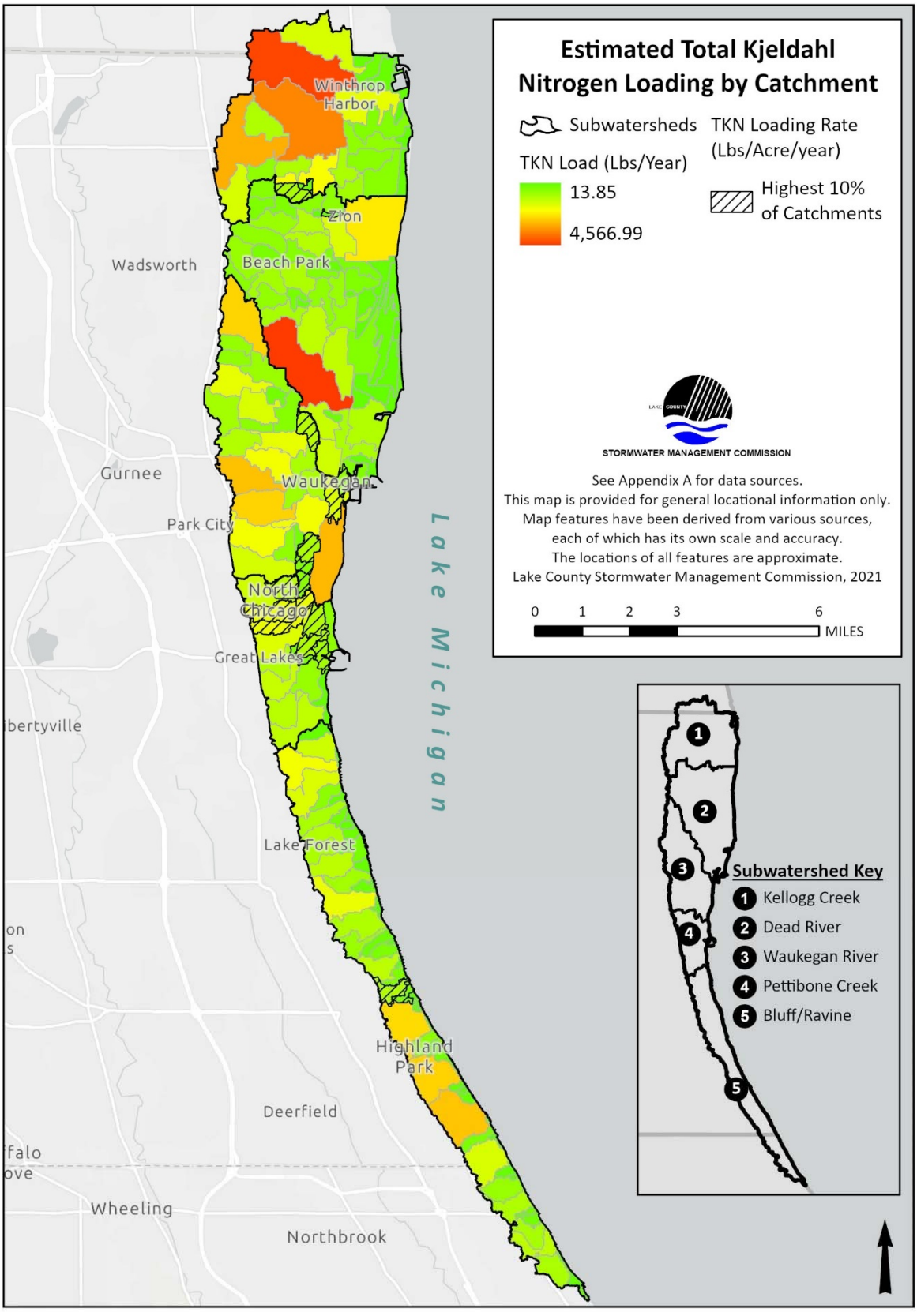


Figure 4-14: Estimated Annual Nonpoint Source Total Kjeldahl Nitrogen Loading

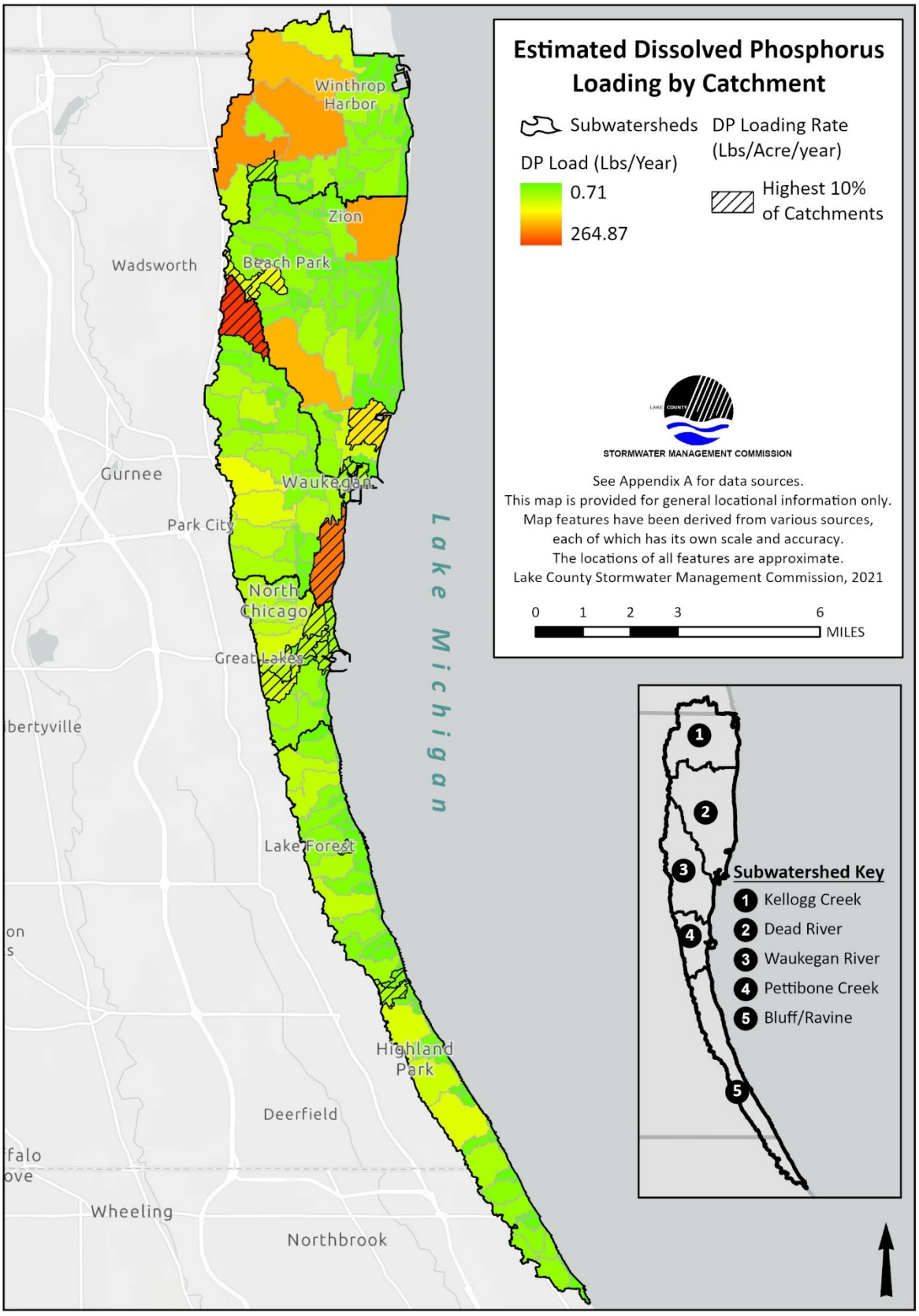


Figure 4-15: Estimated Annual Nonpoint Source Dissolved Phosphorus Loading

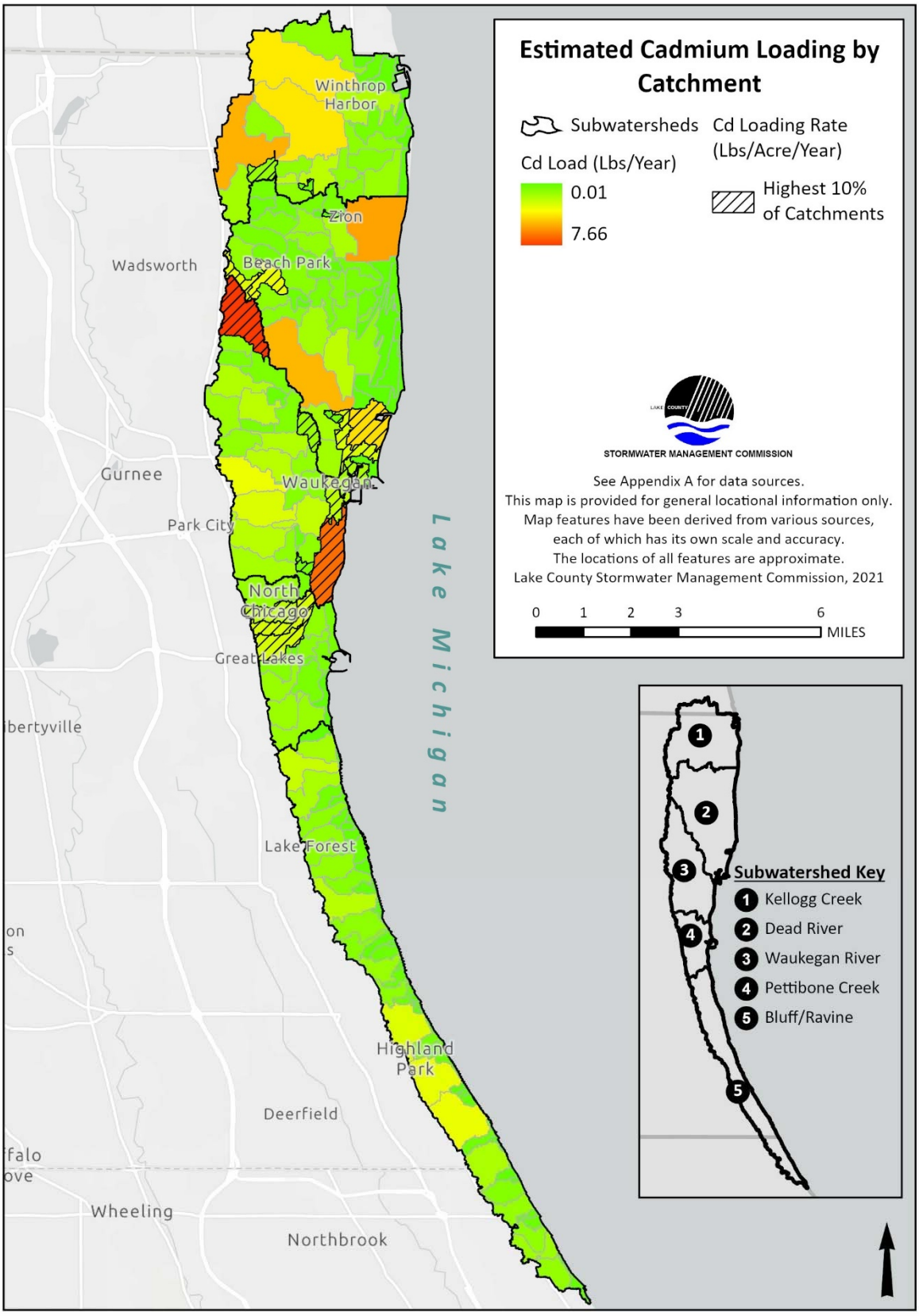


Figure 4-16: Estimated Annual Nonpoint Source Cadmium Loading

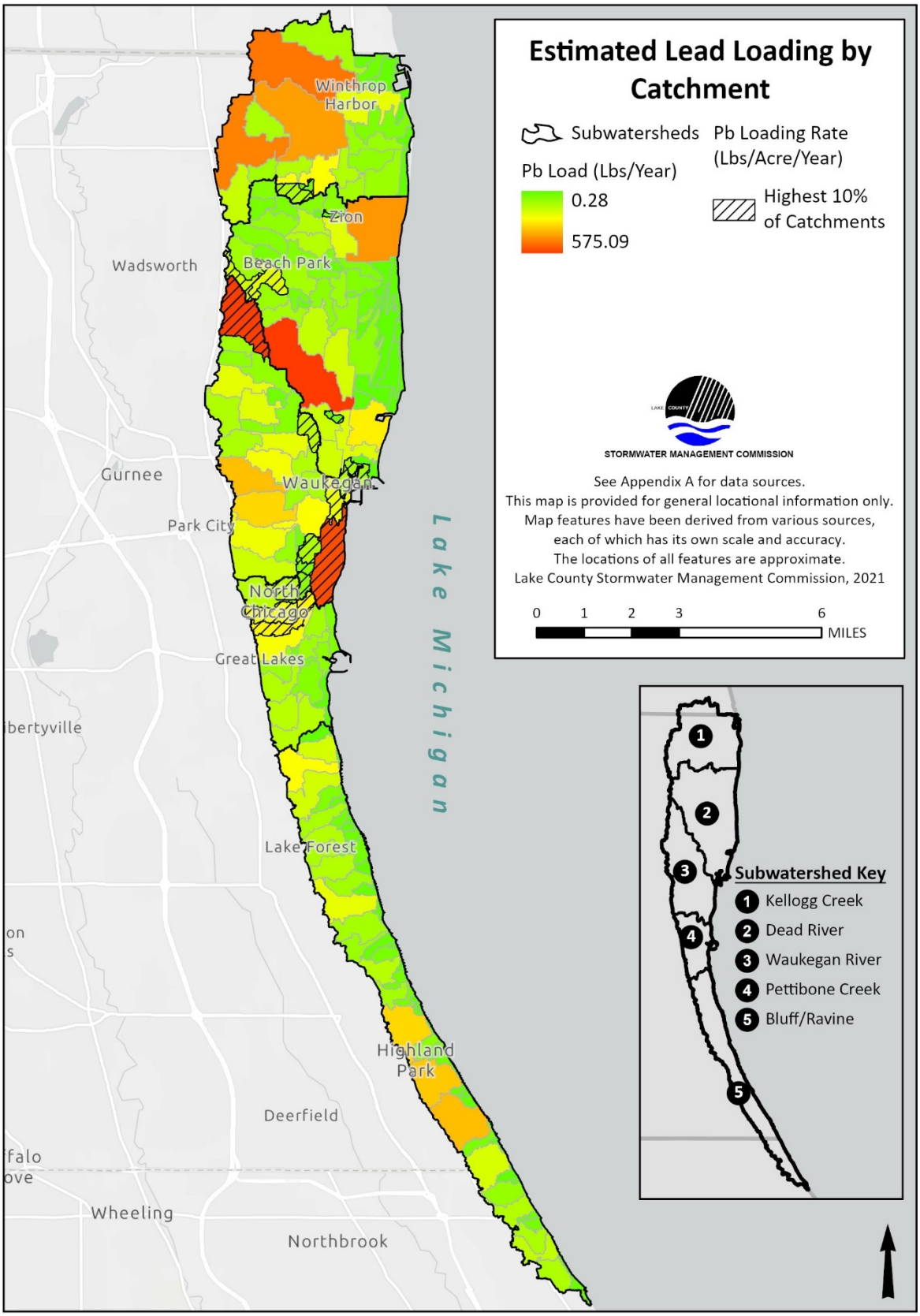


Figure 4-17: Estimated Annual Nonpoint Source Lead Loading

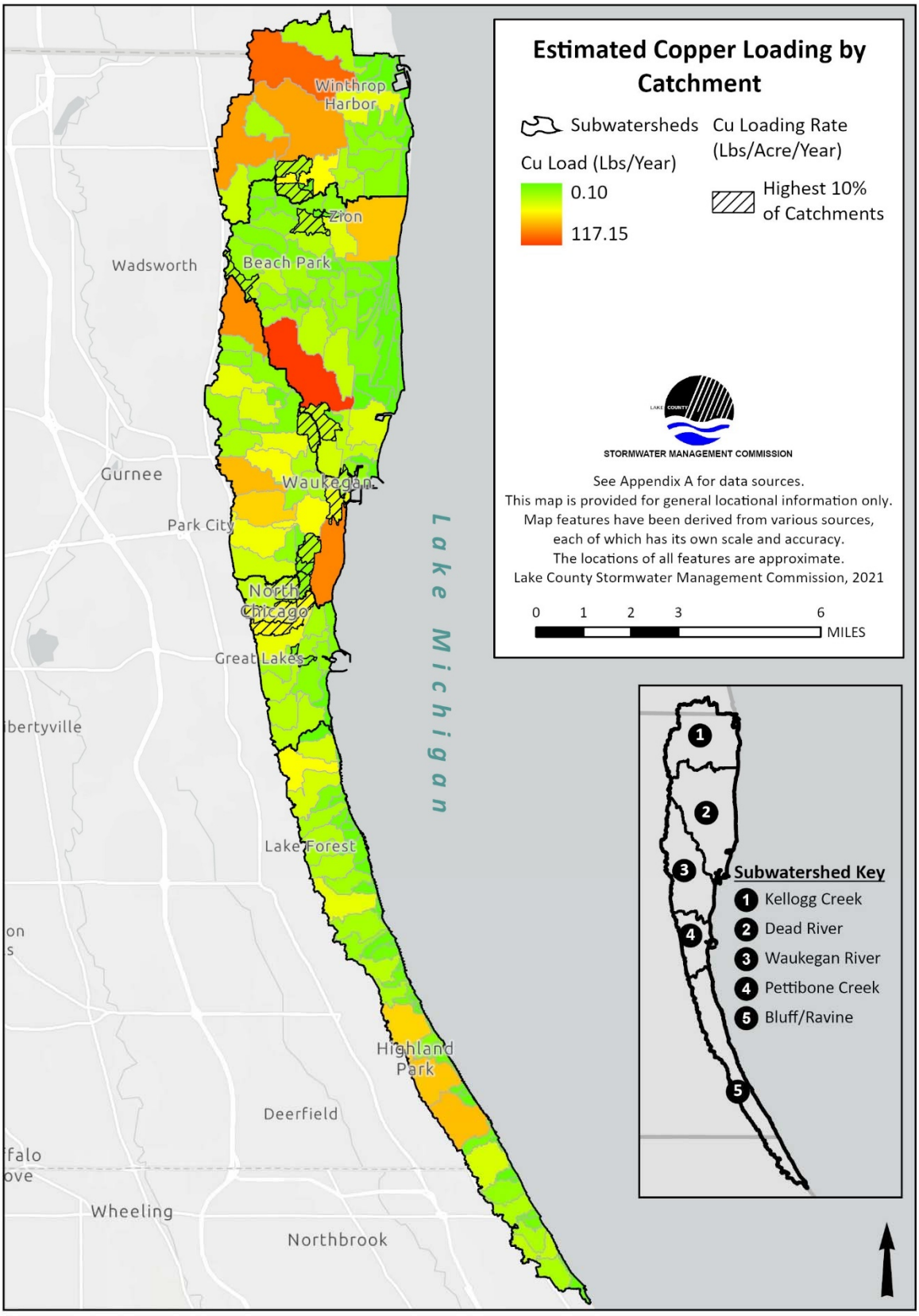


Figure 4-18: Estimated Annual Nonpoint Source Copper Loading

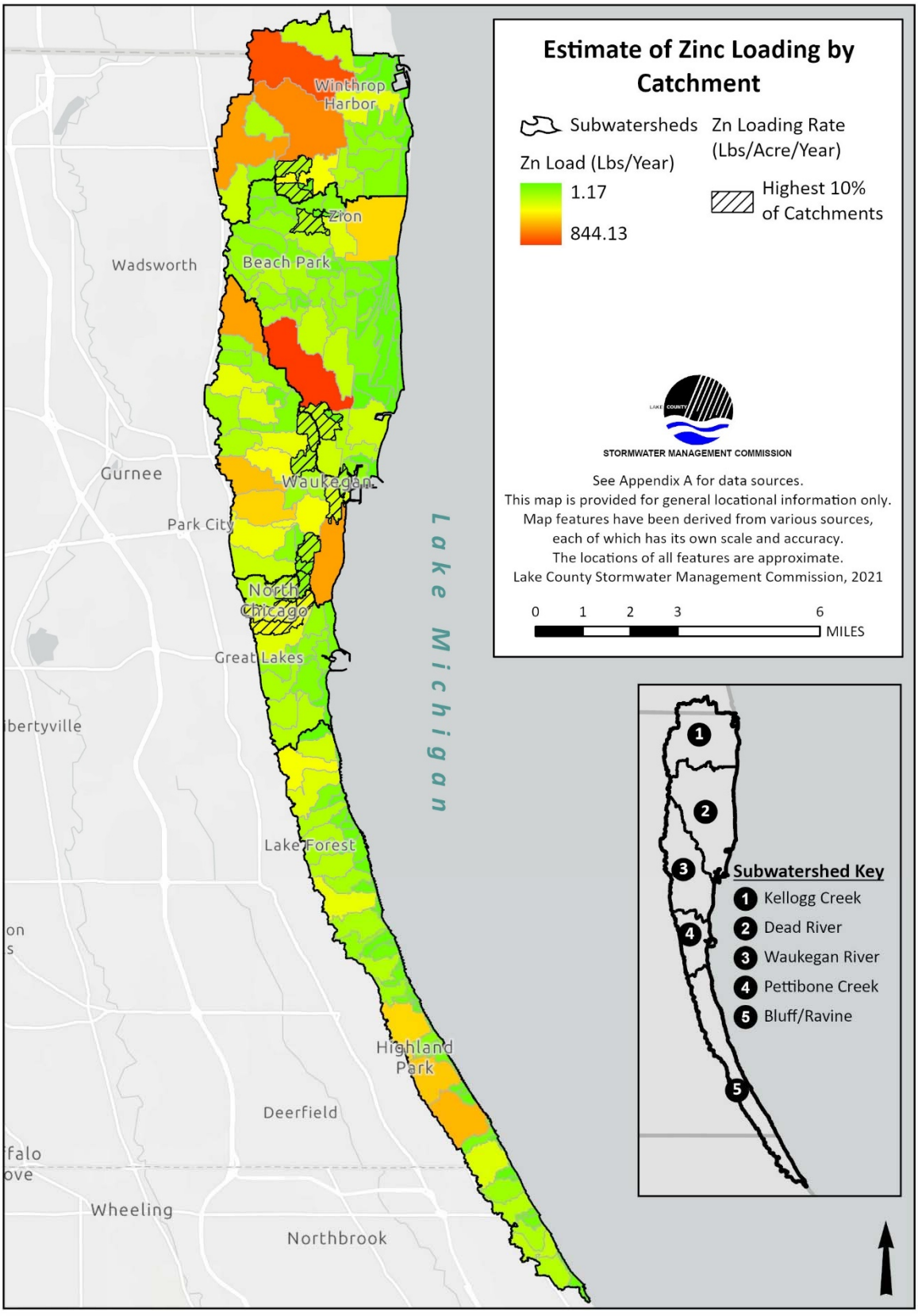


Figure 4-19: Estimated Annual Nonpoint Source Zinc Loading

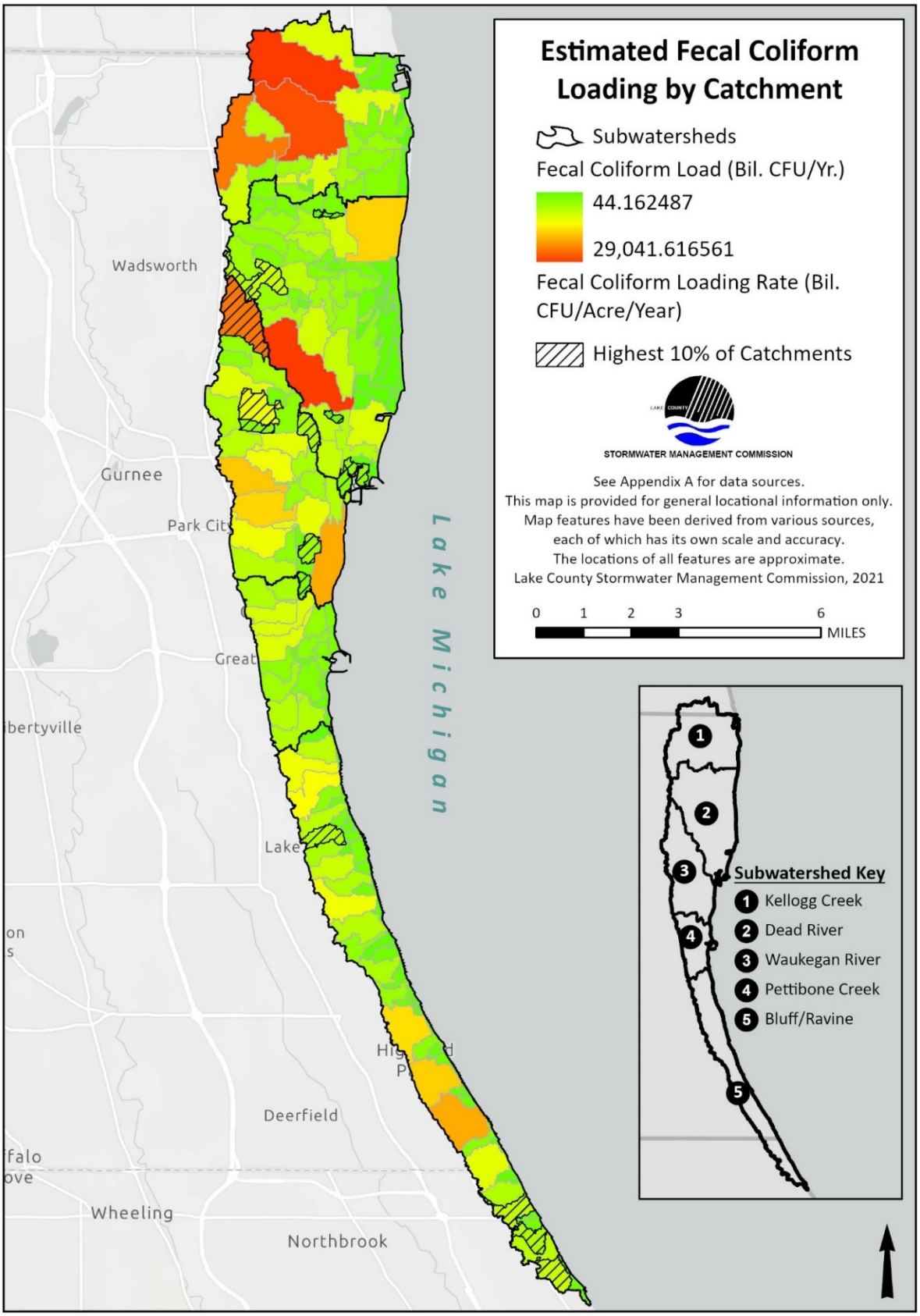


Figure 4-20. Estimated Annual Nonpoint Source Fecal Coliform Loading

Table 4-4: Annual Nonpoint Source Loading Estimates by Subwatershed

POLLUTANT LOAD (lb/YEAR)	BLUFF/RAVINE	DEAD RIVER	KELLOGG CREEK	PETTIBONE CREEK	WAUKEGAN RIVER
Total Suspended Solids	4,544,913	4,655,852	3,363,750	2,600,037	4,981,622
Total Dissolved Solids	10,270,492	10,706,871	7,673,524	4,406,285	10,746,006
Biological Oxygen Demand	152,203	152,524	104,710	87,976	162,278
Chemical Oxygen Demand	1,716,870	1,649,805	1,215,124	843,637	1,777,856
Dissolved Phosphorus	1,435	1,819	1,189	900	1,656
Total Phosphorus	5,634	6,016	4,287	2,880	5,813
Total Kjeldahl Nitrogen	36,459	34,644	26,416	17,427	37,032
Total Nitrogen	39,614	42,248	31,350	20,726	42,661
Cadmium	37	51	30	18	49
Copper	917	936	649	423	1,008
Lead	4,438	4,970	3,226	2,014	5,143
Zinc	6,781	6,630	4,771	2,733	7,021
Fecal Coliform (Billions Colony Forming Units/Year)	249,439	236,439	171,171	84,227	235,792

Table 4-5: Annual Nonpoint Source Loading Rate By Subwatershed

AVG. LOADING RATE (lb/ACRE/YEAR)	BLUFF/RAVINE	DEAD RIVER	KELLOGG CREEK	PETTIBONE CREEK	WAUKEGAN RIVER
Total Suspended Solids	586.08	455.09	419.25	809.62	685.44
Total Dissolved Solids	1324.41	1046.56	956.40	1372.06	1478.58
Biological Oxygen Demand	19.63	14.91	13.05	27.39	22.33
Chemical Oxygen Demand	221.40	161.26	151.45	262.70	244.62
Dissolved Phosphorus	0.19	0.18	0.15	0.28	0.23
Total Phosphorus	0.73	0.59	0.53	0.90	0.80
Total Kjeldahl Nitrogen	4.70	3.39	3.29	5.43	5.10
Total Nitrogen	5.11	4.13	3.91	6.45	5.87
Cadmium	0.00	0.01	0.00	0.01	0.01
Copper	0.12	0.09	0.08	0.13	0.14
Lead	0.57	0.49	0.40	0.63	0.71
Zinc	0.87	0.65	0.59	0.85	0.97
Fecal Coliform (Billions CFU/Acre/Year)	32.16	23.11	21.34	26.23	32.44

4.2.4.3 *Sediment Source Analysis*

The nonpoint source model does not directly account for significant sources of streambank and ravine erosion. Estimates for significant streambank and ravine erosion were made based on information gathered during stream and ravine inventories in 2018-2019. Data was collected by SMC and is described in detail in Chapter 3.

Sediment Loading in the Watershed

- Nonpoint sources: 10,073 tons/yr
- Streambank and ravine erosion: 4,721 tons/yr

4.2.4.4 *Streambank Erosion*

Table 4-6 summarizes the streambank pollutant load estimates. Streambank erosion was estimated using data collected by SMC throughout the LM planning area, specifically lateral recession rates (LRRs) and eroding bank heights. Pollutant load estimates were calculated using the method developed by USEPA Region 5 and Illinois EPA.

Table 4-6: Streambank Pollutant Loading Estimates

SUBWATERSHED	TOTAL NITROGEN (lb/yr)	TOTAL PHOSPHORUS (lb/yr)	TOTAL SEDIMENT (tons/yr)	NOTES
Kellogg Creek	3,785	1,198	1,215	Nitrogen and phosphorus calculated from sediment totals
Dead River	2,258	1,129	1,137	Nitrogen and phosphorus calculated from sediment totals
Waukegan River	958	479	476	Nitrogen and phosphorus calculated from sediment totals
Bluff/Ravine	3,785	1,892	1,892	Nitrogen and phosphorus calculated from sediment totals
TOTALS	**9,396**	**4,698**	**4,721**	

It is estimated that at least 4,721 tons of sediment are delivered to waterways annually as the result of streambank erosion sources in the LM planning area. Areas of significant streambank erosion were identified for further inclusion in the site-specific action plan.

4.2.4.5 *Pollution Loading Hotspots*

Pollution loading hotspots are defined as the catchments with the highest estimated annual nonpoint source load contributions. Nonpoint pollution loading hotspots were determined from each modeled parameter. Using the model results described in section 4.2.4.2, pollutant loading hotspot catchments were chosen as those that had the highest estimated loads for nonpoint source pollutants. The top 10 catchments contributing the greatest estimated nonpoint pollutant load were identified for each modeled pollutant. Seven catchments were among the top 10 in estimated loading for all pollutants. An additional (8^{th}) catchment (BR046) was among the top 10 load contributing catchments for all but one modeled pollutant. These 9 catchments were selected as pollutant loading hotspots. Estimated pollutant load per acre was also evaluated to determine if any catchments contribute high loads per unit area but may not be among the highest total load contributors (likely due to size). One catchment in the Dead River subwatershed (DR054) is among the top 5 highest load contributors per acre for 11 of the 13 modeled parameters and is also included as a hotspot.

Finally, because no catchments in the Pettibone Creek subwatershed were selected by the initial screening, an additional catchment from Pettibone Creek (PC004) was added based on overall estimated pollutant load and load per acre.

Overall, 19% of the LM planning area (7,033 acres) consists of catchments identified as pollutant loading hotspots. The Kellogg Creek subwatershed has, by far the largest area identified as hotspot catchments. Table 4-7 lists nonpoint pollution loading hotspot catchments for each subwatershed, along with their associated acreage.

Table 4-7: Hotspot Catchments for Nonpoint Source Pollution Loading

SUBWATERSHED	HOTSPOT CATCHMENTS	TOTAL ACRES (% OF SUBWATERSHED)
Kellogg Creek	KC003, KC009, KC014	3,433 (43%)
Dead River	DR042, DR054	1,153 (11%)
Waukegan River	WR001, WR016, WR026	1,633 (22%)
Pettibone Creek	PC004	257 (8%)
Bluff/Ravine	BR046	557 (7%)

4.2.5 Critical Areas Analysis

Critical areas are defined as catchments in the watershed best suited to focus implementation efforts to help achieve the goals and objectives of the watershed-based plan. Critical areas represent catchments that likely contribute to water quality impairments and problems in the watershed and present opportunities where project implementation would provide the greatest value and benefit. Critical areas are defined on a catchment or linear basis, and generally meet one of 4 criteria:

1 Pollutant loading critical areas
2 Ravine and stream erosion critical reaches
3 Due to existing TMDLs and erosion issues, the entire shoreline of Lake Michigan is a critical area
4 The Waukegan Harbor Area of Concern (AOC) and Expanded Study Area (ESA)

4.2.5.1 *Pollutant Loading Critical Areas*

Pollutant loading critical areas are the 10 pollutant loading “hotspot” catchments identified in Section 4.2.4.5. These rank highly for sediment, nutrients, metals, and fecal coliform, all of which are identified as causes of water quality impairment in the Lake Michigan watershed planning area. These critical areas represent about 5% of all catchments and about 19% of the planning area acreage. Figure 4-21 shows the pollutant loading critical areas. Chapter 6 outlines recommended actions for the critical area catchments.

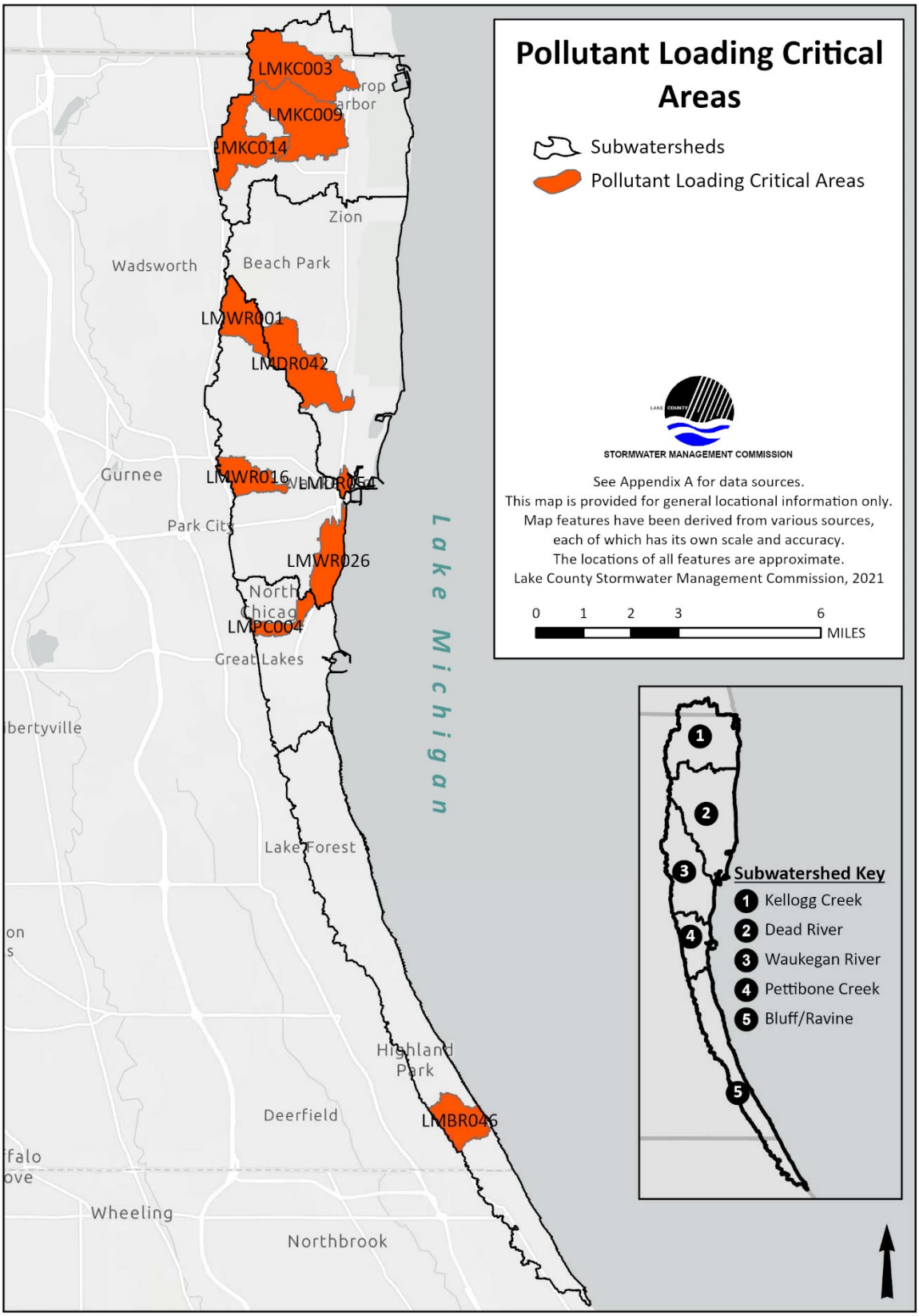


Figure 4-21: Pollutant Loading Critical Area Catchments

4.2.5.2 *Streambank Erosion Critical Areas*

Streambank erosion critical areas are banks exhibiting high rates of failure or those best suited for stabilization efforts to reduce sediment and nutrient loading. Streambank erosion was discussed previously in Chapter 3 and quantified in section 4.2.4.4. Critical areas are reaches with the highest erosion rates per mile, grouped by catchment.

A total of ten miles of streams were selected as critical areas, comprised of segments of 10 streams. These critical areas account for 30% of the total LM planning area sediment load from streambank erosion (Table 4-8 and Table 4-9). The highest loading occurs in Dead River subwatershed (which includes Bull Creek and its tributaries), followed by Kellogg Creek. The Kellogg Creek subwatershed has the highest ratio of total sediment loading to total critical area length. The longest total length occurs in the Dead River subwatershed, followed by the Bluff/Ravine subwatershed (

Table 4-9). Figure 4-22 shows the location of critical streambank erosion areas.

Table 4-8: Streambank Erosion Critical Areas Sediment Loading by Stream

STREAM	TOTAL LENGTH (ft)	SEDIMENT LOAD BY STREAM (tons/yr)
Kellogg Creek	11,960	390
27th Street Tributary (to Bull Creek)	6,620	157
North Branch Bull Creek	7,072	155
Bull Creek	11,395	343
Wilson Avenue Tributary (to Bull Creek)	594	14
Waukegan River	3,785	116
South Ravine	7,555	212
Woodland Road Ravine	801	18
Witchhazel/Seminary Ravine	1,253	39
Stone Gate Road Ravine	2,654	66

Table 4-9: Streambank Erosion Critical Areas by Catchment

SUBWATERSHED	CATCHMENTS	STREAM NAME	STREAM SEGMENT LENGTH (ft)	TOTAL SUB-WATERSHED LENGTH (ft)	STREAM SEGMENT SEDIMENT LOADING (tons/yr)	TOTAL SUBWATERSHED SEDIMENT LOADING (tons/yr)
Kellogg Creek	KC013 KC019	Kellogg Creek Kellogg Creek	8,699 3,261	11,960	245 145	390
Dead River	DR013 DR014 DR017 DR018 DR019 DR020 DR029 DR033	27th Street Trib. N. Br. Bull Creek N. Br. Bull Creek Bull Creek Bull Creek Bull Creek Bull Creek Wilson Ave. Trib.	6,620 5,473 1,599 2,684 2,456 3,640 2,614 594	25,680	157 118 37 79 56 126 81 14	668
Waukegan River	WR014 WR015	Waukegan River Waukegan River	2,869 915	3,785	80 36	116

SUBWATERSHED	CATCHMENTS	STREAM NAME	STREAM SEGMENT LENGTH (ft)	TOTAL SUB-WATERSHED LENGTH (ft)	STREAM SEGMENT SEDIMENT LOADING (tons/yr)	TOTAL SUBWATERSHED SEDIMENT LOADING (tons/yr)
Bluff/Ravine	BR005 BR008 BR014 BR021	South Ravine Woodland Rd. Ravine Witchhazel/ Seminary Ravine Stone Gate Rd. Ravine	7,555 801 1,253 2,654	12,264	212 18 39 66	334
			GRAND TOTAL	53,688	GRAND TOTAL	1,509

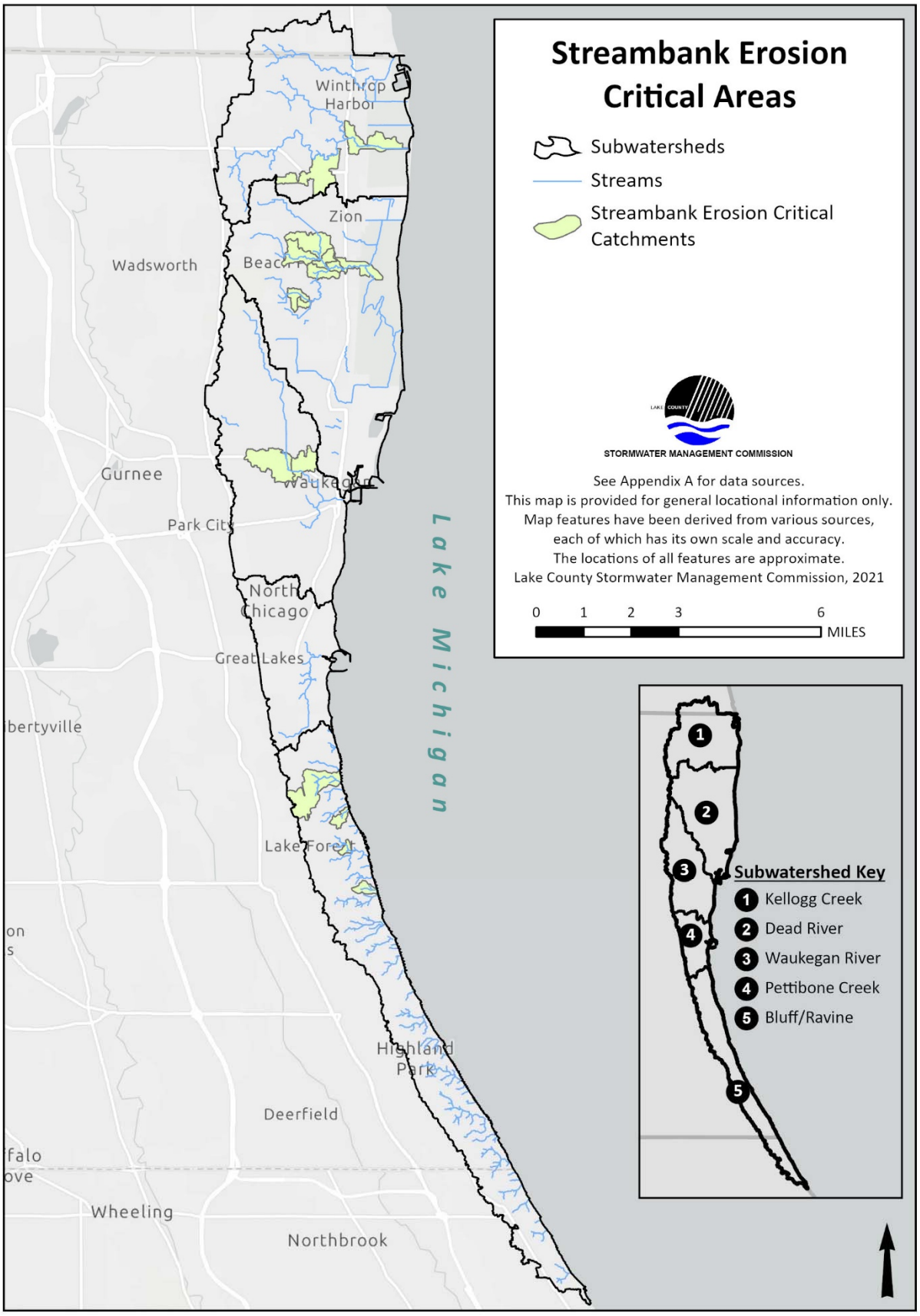


Figure 4-22: Streambank Erosion Critical Areas

4.3 WATERSHED JURISDICTIONAL COORDINATION

Watershed protection, which is a shared responsibility of multiple jurisdictions in the LM planning area, may be problematic because the jurisdictions operate with different policies, practices, and regulations, that is, management practices and development requirements related to land and water resources may vary from place to place. Requirements for and application of BMPs also vary based on local policies, standards, requirements, and incentives. Coordination and consistency of watershed management efforts by the multiple authorities and jurisdictions could (and should) be improved.

While public policies and regulations can significantly influence the prevention of further watershed degradation, private efforts need to be combined with public initiatives to address current watershed issues, such as concentrated areas of flood damage, poor water quality and degraded stream conditions throughout the LM planning area. Private landowners and homeowner groups should voluntarily incorporate BMPs in the landscapes they manage to resolve existing watershed problems and improve conditions. Education and outreach can substantially influence voluntary participation in watershed improvement activities and improve the general public's understanding of the need for jurisdictional projects and programs. For more information on education and outreach strategies and tools, see Chapter 8 Education and Outreach Strategy and Tools.

Because the LM planning area comprises multiple jurisdictions, lack of coordination is a primary limitation in adopting consistent preventative practices. The ability to coordinate also presents challenges in completing BMP projects or instituting programs and policies that may provide broad watershed benefits. The following section describes watershed jurisdictional coordination roles and responsibilities.

4.3.1 ISSUES TO BE ADDRESSED BY COORDINATED JURISDICTIONAL EFFORT

The watershed planning process identified multiple issues that could be effectively addressed at the watershed level through a coordinated effort of watershed jurisdictions, with the support of private stakeholders. Table 4-10 includes a summary of the issues identified in the watershed planning process that would be best addressed through coordinated partnership efforts.

Table 4-10: Issues to be addressed with watershed-level coordination

ISSUE	STRATEGIES TO ADDRESS ISSUE	POTENTIAL ACTIONS	RESPONSIBILITY
Lake Michigan Shoreline Erosion-Stabilization-Management	Coordinated approach among stakeholder organizations, including strategic implementation of projects and management measures	Continue utilizing the IDNR CMP Sand Management working group as forum, develop and implement initial strategies and projects	IDNR, CMP, Municipalities, Park Districts, LCFPD, OL
Lack of Water Quality Data	Establish coordinated monitoring program	Watershed stakeholders collaborate on developing coordinated monitoring program	IDNR CMP, SMC, LCHD-ES, MWRD, USGS, ISGS, INHS, Municipalities, EIGs
	Participate in coordinated monitoring program	Each NPDES community/agency participates	Municipalities, Townships, Counties

ISSUE	STRATEGIES TO ADDRESS ISSUE	POTENTIAL ACTIONS	RESPONSIBILITY
	Determine if there are new or emerging pollutants of concern in the watershed planning area (e.g., PAH, PFAS)	Identify and monitor subject pollutants within coordinated monitoring program	DNR CMP, SMC, LCHD-ES, MWRD, USGS, ISGS, INHS, Municipalities, EIGs
Stormwater Runoff Volume	Enhanced runoff volume reduction standards in watershed	Review regulations and update as needed.	Municipalities, Counties, SMC, MWRD
	Wetland mitigation in the watershed	Future potential watershed-specific policy.	SMC, MWRD, USACE, Certified Communities
	Preserving/restoring landscape scale green infrastructure beneficial to reducing or mitigating runoff	Identify and implement potential restoration/preservation projects	Municipalities, Counties, LCFPD, Park Districts, EIGs
Water Quality Impairment	Utilization of coordinated monitoring program data	Implement targeted projects and programs based on data to reduce the number of water quality impairments	SMC, Municipalities, MWRD, Counties, DOTs, Park Districts, LCFPD, IDNR
	Phosphorus ban	Adopt ban(s).	Municipalities, Counties
	Reduce the prevalence of sanitary sewer discharges to stormwater and waterways	Develop coordinated monitoring, inspection, and maintenance program	Municipalities, NSWRD, MWRD
	Reduce sodium chloride application with alternative practices and chemicals	Form buying consortium to share equipment and reduce cost of alternative products.	Municipalities, County DOTs, Townships
	Calibrate salt application equipment	Document calibration	All applicators
	Consistent snow removal policies and application rates	Determine model policy and application rates as a base from which jurisdictions develop or modify individual policies.	Municipalities, County DOTs, IDOT, Tollway, Townships
	Coordinate geography-based plow routes among jurisdictions for efficiency and reduced travel, equipment and materials storage costs.	Optimize route efficiency recommendations and maintain coordinated effort/standards via Memorandum of Understanding.	County DOTs, IDOT, Municipalities, Townships, Watershed Groups
	Applicator certification/ registration	State requirement. Phase in as a requirement via municipal ordinance, County Township.	Illinois EPA, IDOT, Municipalities, Townships, County DOTs

Table 4-10 continued.

ISSUE	STRATEGIES TO ADDRESS ISSUE	POTENTIAL ACTIONS	RESPONSIBILITY
Habitat Quality	Invasive species management in sensitive natural areas	Develop/continue funding and operation of invasive species strike team	Municipalities, Counties, Park Districts, FPD, IDNR, EIGs
Flood damage and Stormwater Infrastructure	Evaluating Stormwater Infrastructure	Clear, repair, or replace blocked, damaged, and failing stormwater infrastructure to maintain or improve conveyance.	SMC, MWRD, Municipalities, Townships, Counties, IDOT, County DOTs
	Flood Mitigation Projects	Utilizing local and regional partnerships to fund and implement flood mitigation projects such as buy-outs	SMC, MWRD, Municipalities, Townships, Counties, IDNR, IEMA
Public Access to Ravines, Beaches, and Lake Michigan Shoreline	Identify locations where public access to coastal resources is available and where it is limited	Develop coastal resource access plan	Municipalities, Counties, Park Districts, FPD, IDNR, CMP, EIGs

4.3.2 Watershed Roles and Responsibilities

Watershed management in the LM planning area is a shared responsibility of both public and private interests. Watershed protection provided by jurisdictional entities and private stakeholders comes in several forms: policy, regulation, planning, zoning, development and land management standards/incentives, education, outreach, and in-the-ground BMP projects.

Municipal and county governments share the greatest responsibility for watershed protection because they influence and oversee development impacts to the watershed through land use planning, land management and development policies, and regulatory oversight. Transportation infrastructure improvements are necessary to accommodate business and population growth. The operation, maintenance, and construction of roadways can substantially influence water resources. Roadways are constructed and maintained by multiple stakeholders including townships, municipalities, counties, and the Illinois Department of Transportation.

Other agencies and private entities with jurisdictional or potential coordination roles include the Illinois Department of Natural Resources, North Shore Water Reclamation District (NSWRD), MWRD, LCFPD, park districts, Openlands, U of I Extension Service, NCSWCD, and the MLSWCD. The NSWRD operates a wastewater treatment plant that collects wastewater at the lakefront in Waukegan. This plant primarily discharges effluent to the Des Plaines River, but may discharge to Lake Michigan in an emergency. MWRD has stormwater management authority in the Cook County portion of the planning area. The forest preserves and park districts provide important recreation opportunities and protect natural resources such as rare or high-quality

habitat and threatened or endangered species. They protect and manage land that often contains wetlands, lakes, ponds, and streams. SWCDs provide technical resource assistance to the public and other regulatory agencies including soil erosion and sediment control inspections. The U of I Extension Service may provide technical assistance and educational outreach programs to watershed stakeholders.

Importantly, Illinois Department of Natural Resources has important regulatory and coordination roles in the LM planning area. The IDNR Office of Water Resources issues permits for development within Lake Michigan and along the shoreline. The IDNR also manages the Adeline Jay Geo-Karis Illinos Beach State Park, covering more than 4,000 acres and extending along 6.5 miles of the Lake Michigan shoreline in the northern end of the planning area. Finally, the IDNR Coastal Management Program is non-regulatory and works to protect and enhance the environmental, economic, and social value of Illinois' Great Lakes Coastal Region. The program fosters healthy ecosystems and resilient communities by providing expertise, funding, and other resources within a defined coastal zone.

NOTEWORTHY: ILLINOIS COASTAL MANAGEMENT PROGRAM (CMP)

The Illinois CMP was created in 2012 under the authority of the federal Coastal Zone Management Act of 1972 and is funded by the National Oceanic and Atmospheric Administration. The CMP has identified four priority goal areas with a collection of selected strategies to advance coastal management in Illinois: Habitats and Species; Economic Development and Recreation; Coastal Communities; and Program Development.

4.3.2.1 *Watershed Development*

Development practices that affect water resources (rivers, streams, lakes, isolated wetlands, and floodplains) are largely regulated by the Watershed Management Ordinance (WMO) in Cook County and the watershed Development Ordinance (WDO) in Lake County, along with county and municipal ordinances and land use plans. In addition to local regulations, the USACE regulates discharge of "fill" material into WOUS (including adjacent and connected wetlands), and the IDNR has floodplain/floodway regulatory and oversight authority. IDOT designs and constructs roadways in the LM planning area. State and federal projects are not required to meet local regulatory requirements but are governed by state and federal policies and regulations.

In Lake County, the WDO is administered and enforced by SMC or a Certified Community. A community can be fully certified with authority to review and enforce both the standard stormwater and the isolated wetland provisions of the WDO, or partially certified with delegation to review and enforce one aspect of the WDO (either the standard or isolated wetland provisions). SMC retains certain review authorities for all communities, primarily for several specific floodplain and floodway provisions of the WDO. Development practices within unincorporated areas are guided by the Lake County Framework Plan and must meet the requirements of the Unified Development Ordinance. The County Board oversees decisions made by county departments and, therefore, can affect policies and regulations for unincorporated Lake County. Authority for local land use planning and development regulation within municipalities (incorporated areas) within Lake County rests with the municipality and its municipal codes and regulations. All development in Lake County municipalities must meet the minimum standards set forth by the WDO (many municipalities are certified to administer WDO standards). The IDNR has floodplain/floodway regulatory and oversight authority within Cook and Lake counties. IDNR has delegated floodplain/floodway review authority for Lake County to SMC.

In Cook County, the WMO is administered and enforced by MWRD or an Authorized Municipality. MWRD retains certain review authorities, primarily for developments that are tributary to combined sewers;

developments proposing outfalls to the waterways or Lake Michigan within Cook County; and certain modifications and reconfigurations to existing stormwater detention facilities. The WMO allows local municipalities whose corporate boundary lies within both Cook County and an adjacent collar county (such as Lake County) to adopt and enforce the ordinance of the adjacent county in lieu of the WMO. Those municipalities must enter into an IGA with MWRD to follow the indicated ordinance. Municipalities, whether Authorized/Certified or not, can always enforce more stringent provisions for development if they determine there are conditions that warrant stricter requirements for their community. Likewise, authority for local land use planning and development regulation within municipalities in Cook County rests with the municipality and its municipal codes and regulations.

4.3.2.2 *In-the-Ground Watershed Projects*

In-the-ground projects to manage and improve conditions of water resources are encouraged and incentivized when local units of government throughout the county adopt a watershed management plan. Plan adoption should be followed by close coordination and development of funding mechanisms, timelines, and shared responsibilities for implementing the projects prioritized by watershed planning efforts. Implementation of projects identified within the watershed-based plan requires partnerships between stakeholder groups, including homeowner associations, nonprofit organizations, businesses, schools, and community agencies, who must coordinate, fundraise, secure grants, and oversee project implementation. The experience and success that partnerships often gain from working together on a watershed project can improve regulatory efficiency and increase cooperation among policy-makers.

The watershed action plan (Chapter 6 and **Appendix N**) identifies lead and support roles for multiple units of government to assist private landowners and watershed groups. Specific types of aid that governments can provide to private landowners can include BMP project cost-share funding or technical assistance, particularly for studies or plans. Private entities as partners can also provide cost-share for design, consulting, and construction work for projects, and in-kind BMP services, such as seeding, planting, restoration work, trail construction, and interpretive education. Watershed projects benefit from partnerships that share design, permitting, material, and labor costs. Public/private partnerships are also important for securing state or federal funding for in-the-ground projects. Projects with shared costs and benefits often result in more successful project outcomes because of the relationships built among partners who share a vested interest in the success of their projects. Partnership on a first project may establish an institutional relationship that results in implementing projects in the future.

4.3.2.3 *Post-Construction Monitoring and Maintenance*

Opportunities should also be identified for establishing partnerships to improve the effectiveness and efficiency of monitoring and maintenance. Partnerships could share responsibility for stream monitoring and maintenance, stormwater monitoring, road and parking lot deicing, detention basin monitoring and maintenance, and invasive plant management. Additionally, partnerships may be established to share technical expertise; develop maintenance guidelines or standards; share services, equipment, or storage locations; or combine contracts with neighboring jurisdictions for similar activities, such as winter road maintenance and invasive plant management.

Information on work responsibilities for each organization/jurisdiction should be available online to all watershed partners and residents to increase transparency and information availability. Interjurisdictional

coordination may entail doing business in a new or different way; however, it results in watershed goals being achieved in a more efficient, effective, and sustainable manner.

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COMMON ACRONYMS/ABBREVIATIONS USED IN CHAPTER 5

ANHMP - All-Natural Hazards Mitigation Plan
BFE – Base Flood Elevation
DCEO - Department of Commerce and Economic Opportunity
DMA 2000 - Disaster Mitigation Act of 2000
DPR Planning Area – Des Plaines River Watershed Planning Area
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map
FIS – Flood Insurance Study
FPA – Flood Problem Area
FPAI – Flood Problem Areas Inventory
GIS – Geographic Information System
HEC – Hydrologic Engineering Center
HMPC - Hazard Mitigation Planning Committee
IDNR-OWR – Illinois Department of Natural Resources – Office of Water Resources
IEMA – Illinois Emergency Management Agency
ISWS – Illinois State Water Survey
ITR – Independent Technical Review
LiDAR - Light Detection and Ranging
NFIP – National Flood Insurance Program
NRCS – Natural Resources Conservation Service
PB&D – Planning, Building & Development
RVR – Runoff Volume Reduction
SFHA – Special Flood Hazard Areas
SMC – Lake County Stormwater Management Commission
SMU – Subwatershed Management Unit
USACE – United States Army Corps of Engineers
USDA – United States Department of Agriculture
USGS – United States Geological Survey
WDO – Lake County Watershed Development Ordinance
WMO – Cook County Watershed Management Ordinance

5 FLOOD PROBLEM ASSESSMENT

Floodplains and floodways along stream corridors perform a variety of benefits. Some of these benefits include aesthetic value, flood storage, water quality, and plant and wildlife habitat. The capacity of the floodplain to hold water during significant runoff events to minimize flood damage is of primary interest for this discussion. Upland areas outside of the floodplains and floodways can experience urban flooding, which is common in older sections of communities where older storm sewers may not be designed to present-day standards (modern stormwater and floodplain regulations). Urbanization has increased runoff and climate is trending to more frequent and intense storm events (IDNR, 2015; Angel et al., 2020). The historical increase in stormwater runoff, in combination with areas with inadequate and poorly maintained stormwater infrastructure, lead to flash flooding in these urbanized areas. Lastly, shoreline areas along Lake Michigan may be subject to inundation and erosion resulting from periodically high water levels caused by meteorological phenomena (e.g., storm-induced waves, seiches). The effect of these events may be amplified during cyclical periods of high water levels in Lake Michigan such as those experienced in the mid-1980s and in 2019-2020.

5.1 FLOOD EVENTS

Flooding is a problem many Lake Michigan planning area residents have experienced, whether at home, in their yard, in their neighborhood, at work, or on area roadways. As SMC compiled the Lake Michigan Watershed-Based Plan, more information was needed about when and where flooding that impacts residents in the LM planning area occurs. As part of the watershed planning process, SMC identified structures in the watershed that are at risk of flooding so that the watershed plan can include targeted solutions to reduce flood damage in a cost-effective manner. Throughout the watershed, overbank riverine flooding largely occurs where structures and infrastructure are located within ravines. Due to their relatively small size and in some cases perennial nature, most of these streams have no gage record. In cases where gages have been installed, the record is typically short, and therefore it is difficult to assess the relative magnitudes of historic flood events. The description of floods below was obtained primarily through hydrologic atlases, flood hazard mitigation plans and reports, and archived contemporaneous media accounts.

5.1.1 1930s

The USGS Hydrologic Atlas documents floods on Bull Creek upstream (south) of Beach Road in 1934 and along Kellogg Creek in June of 1937. The June 1937 flood also occurred on the forks of the North Branch Chicago River. The July 1938 flood was one of the first notable floods that was recorded in numerous northeastern Illinois watersheds. The flood resulted from as much as 7 inches of rain falling between the evening of June 30 and July 2. This flood was thought to have resulted in about $1 million worth of property damages across Lake County-. The 1938 flood was reported to be the highest on Dead Dog Creek (“Lake Michigan Tributary“) at Sheridan Road since at least 1900 (May and Mycyk, 1967). The stormwater runoff flooded the vetrans hospital in North Chicago and overwhelmed storm sewers in Waukegan causing localized flooding(Sagendorph, 2012). These reports indicate that the 1938 flood was the first well-documented flash flooding and urban flooding event in the planning area.

5.1.2 1950s

In November 1951, flooding occurred along Kellogg Creek and its tributaries, Pettibone Creek, and the Waukegan River. The 1951 flood on the Waukegan River was reported to be the highest in the previous 65 years (May and Mycyk, 1967; Mycyk and May, 1967), and was higher than the April 1960 flood, which resulted in record flood stages at the time for many other northeastern Illinois streams (see below).

5.1.3 1960s

The floods of April 1960 resulted from snowmelt followed by heavy rains. Flooding was widespread in northeastern Illinois and record flood crests occurred on the Fox and Des Plaines Rivers. Flooding occurred at Dead Dog, Kellogg, and Bull Creeks and in the coastal dune/wetland complex in what is now the North Unit of Illinois Beach State Park and Spring Bluff Forest Preserve. While the 1960 flood set records at the time in other parts of northeastern Illinois, it did not surpass the floods of 1937, 1938 or 1951 along Lake Michigan watershed streams (May and Mycyk, 1967; Mycyk and May, 1967). The 1960 flood spurred the first floodplain mapping effort in northeastern Illinois, undertaken by the Northeastern Illinois Planning Commission (now CMAP).

5.1.4 1986

The 1986 flood had greater impacts in nearby watersheds, but nonetheless influenced how stormwater management is addressed in Northeastern Illinois. The flood event was triggered by widespread regional rainfall with varying intensity and duration which had been preceded by two weeks of nearly continuous rain falling across northern regions of the Des Plaines River, North Branch of the Chicago River and Fox River watersheds. As a result, flooding occurred in rivers and streams across Lake, McHenry, northern Cook Counties (Juhl, n.d.).

Northeastern Illinois received almost one inch of rain daily from September 21 through October 4; on some days, as much as three inches of rain fell. A federal disaster declaration was declared by President Ronald Reagan for the region.

The storms of October 2-3, 1986, and August 13-14, 1987, in Illinois, though of contrasting types, both caused record floods and stream discharges. The 1986 floods were scattered throughout northeastern Illinois and were most severe in Lake and Cook Counties in Illinois. The floods of 1987 were localized and confined to the Des Plaines River basin. Flood damages were extensive, leaving many residents and motoring public stranded and without access to services. The 1986 and 1987 floods generated enough public awareness of the continued problems of drainage and flooding for the Illinois General Assembly to pass legislation authorizing the formation of countywide stormwater management programs. Such programs, in conjunction with state and federal programs, are providing stormwater management planning, watershed planning, regulation of construction within floodplain areas, and new sources of funding to manage local drainage and flooding problems.

5.1.4.1 *1986 Lake Michigan Water Levels*

While record flooding occurred along northeastern Illinois rivers in October 1986, Lake Michigan also recorded record high water levels that same month. This was preceded by several years of higher-than-average precipitation, augmented by heavy rainfall in the Lake Michigan and Lake Huron basins in September and October. Many parts of the lower peninsula of the State of Michigan, for example, were devastated by floods during September 1986 along rivers that drain to Lakes Michigan and Huron, with monthly precipitation totals at some locations ranging from 15 to 19 inches. This flooding pushed the already record high levels of Lake Michigan even higher. Much like the 1986 and 1987 river flooding in northeastern Illinois, the period of record high water levels on Lake Michigan and the other Great Lakes in the mid-1980s is well-documented, and many of the structures installed in response to the high lake stages are evident at present.

5.1.5 2008

In 2008, multiple storm events associated with the remnants of Hurricane Ike led to 51 consecutive hours of precipitation in Northeastern Illinois. The largest rainfall accumulations occurred south of Lake County but resulted in a disaster declaration for Lake and other surrounding counties for these storms and flooding.

5.1.6 2013

In 2013, a massive rainstorm on April 17-18, 2013 delivered between 4-7 inches of rainfall to Northern Illinois (NOAA National Weather Service, 2014). The late snow melt and heavy rains in early April combined with the two-day rain event on April 17-18th, 2013 resulted in extended, widespread riverine flooding in nearby watersheds (e.g. Des Plaines and Fox Rivers) and flash flooding and urban flooding in the Lake Michigan Watershed planning area including overwhelmed storm sewers, sanitary sewer backups, localized flooding, and road closures. In response to widespread flooding and severe storms, a presidential disaster declaration was made for the State of Illinois. This declaration made federal disaster assistance available for individuals and public assistance. In Lake County, 1,159 individuals and/or households received upwards of $2.7 million in federal disaster assistance.

5.1.7 2017

Torrential rounds of heavy rain began late on the night of July 11th, 2017 and continued into the morning of July 12th 2017. Multiple rounds of rain continued over the same locations produced 3-7 inches of rain which brought flash flooding by daybreak and continued throughout the entire day and into the next night (Figure 5-1). Flooding occurred, and at times very rapidly, affecting flood-prone areas as well as locations that had not experienced this type of flooding before. The heavy rain

Figure 5-1: Flash flooding in Lake Bluff, July 2017. Photo © Daily North Shore/JWC Media

overwhelmed stormwater infrastructure and led to widespread flash flooding and urban flooding throughout the planning area. Major roads were closed and hundreds of homes and properties reported flooding, more than half of which were reports of basement flooding, including sewer backup. Outside the watershed planning area, record crests were recorded for the Des Plaines and North Branch Chicago Rivers at multiple stream gage locations. Three Illinois counties including Lake County were proclaimed disaster areas by Governor Bruce Rauner, however federal assistance for a major disaster declaration was denied because the total amount of flood damages did not meet the state threshold for federal assistance.

5.1.8 2018-2020

Several intense rainfall events since July 2017 (e.g., May 2018, June 2018, September 2019) have also resulted in urban flooding of streets and basements and flash flooding of urban streams. Of note is the documented September 2019 flash flood along the Waukegan River in the vicinity of Helmholz Avenue.

In addition to urban and flash flooding of local streams, Lake Michigan water levels (and Great Lakes levels generally) transitioned from a below-average water level phase in 2013 to a high-water phase which in 2019 and 2020 approached or exceeded monthly long-term records. According to USACE, above average basin-wide precipitation occurred in 2013, followed by the "polar vortex" winter of 2013-2014, which resulted in record ice cover and reduced lake surface temperatures, both of which reduced overall evaporation, boosting lake levels (USACE, 2020). The following years were relatively wet in terms of basin-wide precipitation. The consistently above-average precipitation resulted in more runoff in the watershed with lake levels ultimately reaching record or near-record levels in 2019 and 2020. High lake levels compounded by storm events have resulted in severe shoreline erosion and damage to property and infrastructure along the entire Lake Michigan shoreline of the planning area. Shoreline retreat in Illinois Beach State Park has been compounded and accelerated by high lake levels at the northern end of the planning area, while bluff failures and damage to property during storms have occurred south of Waukegan in 2019 and 2020.

5.1.9 June 2015 Illinois Urban Flooding Awareness Act Final Report

In August 2014, the Illinois General Assembly through PA98-0858 tasked the IDNR to prepare a report on the extent, cost, prevalence, and policies related to urban flooding (Illinois Urban Flooding Awareness Act, 2015). In addition, IDNR was tasked to identify resources and technology that may lead to mitigating the impacts of urban flooding. Flooding in urban areas has received increasing attention in the last decade, with at least $2.319 billion in documented damages between 2007 and 2014, of which $1.240 billion were private claims that typically represent basement flooding and sewer backup (Illinois Urban Flooding Awareness Act, 2015). The Urban Flooding Awareness Act requires FEMA to direct a study to quantify these facts and develop recommendations to assist federal, state, and local governments in their efforts to prevent and provide relief from urban flooding to homeowners and businesses across the country. The Urban Flooding Awareness Act specifically identifies the following nine topics to be addressed in the report:

1. Prevalence and costs associated with urban flooding events across the state and the trends in frequency and severity over the past two decades.
2. Apparent impact of global climate change on urban flooding.

3. The impact of county stormwater programs on urban flooding over the past two decades, including a list of projects and programs and the flood damages avoided.
4. An evaluation of policies such as using the 100-year storm as the standard for designing urban stormwater detention infrastructure and the 10-year storm for the design of stormwater conveyance systems.
5. Review of technology to evaluate the risk of property damage from urban flooding and whether a property is in or adjacent to a 1% (100-year) floodplain or not, including LiDAR and GIS.
6. Strategies for minimizing damage to property from urban flooding, with a focus on rapid, low-cost approaches such as nonstructural and natural infrastructure, and methods for financing them.
7. The consistency of the criteria for state funding of flood control projects between IDNR, IEMA, and DCEO.
8. Strategies for increasing participation in the NFIP and Community Rating System.
9. Strategies and practices to increase the availability, affordability, and effectiveness of flood insurance and basement backup insurance.

5.1.10 Summary of Flooding History

The flooding history of the Lake Michigan planning area points to a few important trends. Riverine flooding associated with floodplains along waterways is typically of the "flash flood" type. This occurs because the streams in the planning area have relatively small watersheds with a high degree of urban development. Water levels rise relatively quickly in response to runoff and recede relatively quickly as well. Riverine flooding affects the planning area, albeit not to the same magnitude as other nearby watersheds in northeastern Illinois. Urban flooding and local drainage issues impacting structures, roads, and infrastructure pose a comparatively greater risk in the Lake Michigan planning area.

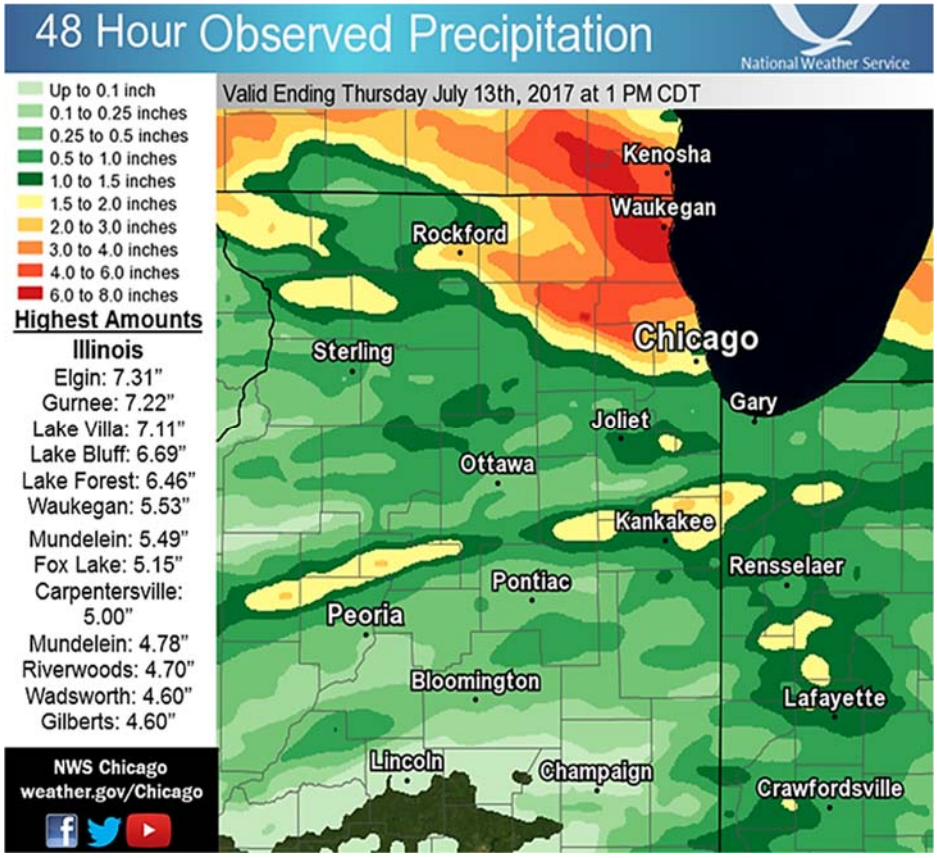

Figure 5-2: Regional 48-hour precipitation totals, July 11-13, 2017. Image courtesy of NOAA NWS Chicago.

This is best exemplified by flooding reports received during the July 2017 flood event. Despite some of the most intense rainfall in the region occurring in Lake Bluff, Lake Forest, and Waukegan (see Figure 5-2), the

majority of flood reports from the Lake Michigan planning area were related to urban flooding and local drainage issues rather than riverine flash flooding.

5.2 FLOOD PROBLEM AREAS INVENTORY

5.2.1 CHARACTERIZATION OF FLOOD PROBLEM AREAS

FLOOD PROBLEM AREA (FPA): One or more structures in a geographical area that are damaged by the same primary source or cause of flooding. Structures include transportation, utility infrastructure, buildings, and well and septic failure caused by flooding. Areas also include locations where road flooding results in damage to infrastructure, loss of critical access, or threatens safety.

SMC conducted the countywide **Flood Problem Areas** Inventory (FPAI) in 1995-1996 and updated it in 2002. The FPAI, and a flood risk assessment based on mapped floodplains, identified structures that have been or may be damaged by flood events that are less than the 100-year event. The FPAI is used to locate flood damage problem areas based on reports of flood damage by residents or communities. The FPAI identifies the primary cause of flood damage for each area and is used to recommend flood mitigation priorities. The flood risk assessment identifies additional locations where structures occur in mapped floodplain areas and are likely at risk of flood damage. The purpose was to identify those structures that are at risk of flooding so that the plan can recommend ways to reduce flood damage.

As part of the watershed planning process, SMC updated the inventory of local FPAs to identify the sources of flooding, improve opportunities for reducing flood damage, aid decision-makers about determining adequate downstream capacity when issuing development permits in proximity to FPAs, and reduce flood damage at existing sites from nearby development projects. In November 2019, SMC contacted the watershed municipalities, townships, and large jurisdictions and invited them to revise the current flood problem area map and information for their jurisdiction with updated or new flood problem information (see **Appendix H**). The FPAI information was collected and summarized throughout 2020; 12 jurisdictions responded to this inventory update with updated and new information.

Before starting the Lake Michigan watershed planning process, 50 FPAs were identified in the LM planning area. As a result of this FPAI update, SMC added 24 new FPAs to the inventory. Currently, there are 74 known FPAs in the LM planning area (see Figure 5-3); this number does not include data collected from the July 2017 flood event. Because the FPAI includes many areas affected by storms less than the 100-year event, the July 2017 flood event data is excluded given the larger magnitude of that particular storm.

5.2.1.1 *5.2.2.1 July 2017 Flood Event FPAs*

From July 11-12, 2017 a major precipitation event resulted in rainfall amounts between 3.4 and 7.2 inches in Lake and Cook Counties causing substantial flooding. SMC, Lake County PB&D, and local municipalities surveyed impacted areas to identify FPAs, impacted properties, and impacted critical facilities using data from resident self-reporting and the IEMA. SMC defined FPAs as areas that experienced flooding during the event. FPAs varied in size, with some impacting one property and others impacting over 100 properties (countywide). Critical facilities are areas that may require a special response because of human needs or potential environmental impacts, including daycares, schools, gas stations, nursing homes, long term care facilities, and similar facilities. SMC identified 255 FPAs that impacted 580 properties within the Lake County portion of the

LM planning area (Figure 5-3). The FPAs identified for the July 2017 flood event overlapped with approximately 26 existing FPAs in the LM planning area.

During the survey, structure damage from flooding and multiple forms of flooding were observed, including sewer backups; street, yard, and driveway flooding; and structure flooding. Table 5-1 summarizes the number of FPAs and impacted properties for each type of flooding. This flood impacted multiple municipalities within the LM planning area, with North Chicago having the largest number and highest density of impacted properties (

Table 5-2). Dozens of properties were also impacted in Zion, Waukegan, Lake Bluff, Lake Forest, and Highland Park. From this event, IEMA received over 3,500 flood damage assessment form entries, and an estimated 9,553 structures were adversely affected by the storm events in Lake County, Illinois.

Table 5-1: LM Planning Area July 2017 FPAs and impacted properties by type of flooding

TYPE OF FLOODING	NUMBER OF JULY 2017 FPAS	NUMBER OF IMPACTED PROPERTIES
Sewer Backup	2	2
Street/Yard/Driveway Flooding	12	38
Structure Flooding	236	535
Structural Damage from Flooding	5	5
Total	**255**	**580**

Table 5-2: LM Planning Area July 2017 FPAs and impacted properties by municipality

MUNICIPALITY	NUMBER OF JULY 2017 FPAS	NUMBER OF IMPACTED PROPERTIES
Beach Park	6	6
Benton Township (uninc.)	1	1
Highland Park	27	34
Highwood	1	1
Lake Bluff	22	43
Lake Forest	34	56
North Chicago	24	209
Shields Township (uninc.)	1	1
Waukegan	106	185
Waukegan Township (uninc.)	2	2
Winthrop Harbor	1	1
Zion	30	41

MUNICIPALITY	NUMBER OF JULY 2017 FPAS	NUMBER OF IMPACTED PROPERTIES
Total	255	580

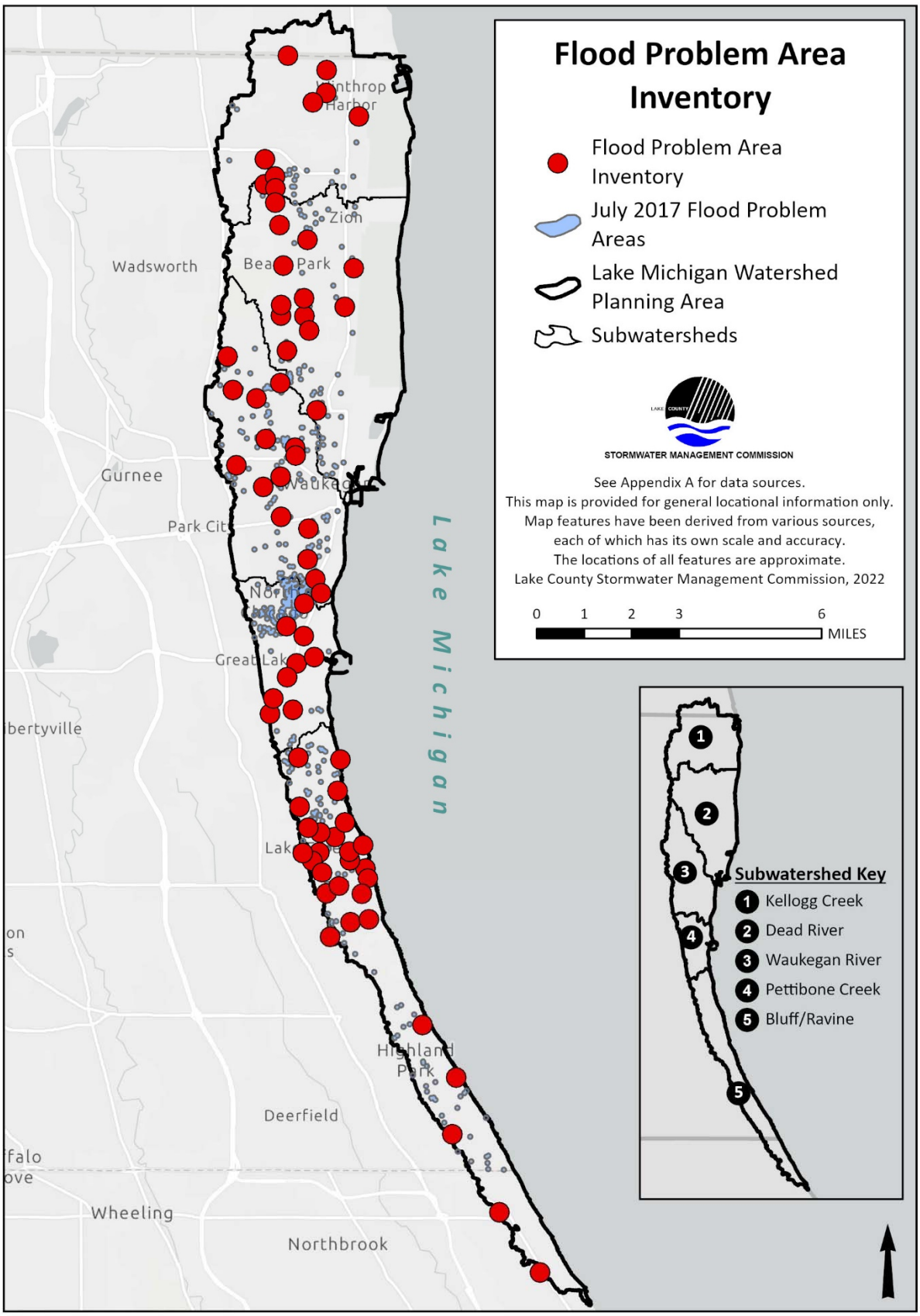

Figure 5-3: Flood Problem Areas

5.3 FLOOD RISK ASSESSMENT – STRUCTURES IN THE FLOODPLAIN

Flood risk areas are Special Flood Hazard Areas (SFHA) where structures have been identified as being at risk for flood damage because they are located in the 1% annual chance floodplain. SMC compared the FEMA Flood Insurance Rate Maps (FIRMs) with planimetric data to locate structures in the SFHA. All structures within the mapped SFHA are shown in Figure 5-4. Many of the identified structures are in or near potential FPAs. It should also be noted that structures within the mapped SFHA may have an associated letter of map revision (LOMR), which substantiates that a structure is protected from the 1% annual chance flood. 453 structures (schools; churches; businesses; and residences, including garages, sheds, and gazebos), are mapped with the SFHA. There are 343 properties (tax parcels) associated with the structures mapped in the SFHA. The lower number of individual parcels compared to structures suggests that some of the structures mapped in the SFHA are accessory buildings such as garages and sheds. FEMA has developed updated FIRMs for the Lake County portion of the planning area which were published in preliminary form in May 2020 (see Section 5.4). Floodplain structure analysis utilizing the preliminary FIRMs for Lake County indicates that the number of structures in the mapped SFHA will increase to 526 within the planning area, affecting 422 properties.

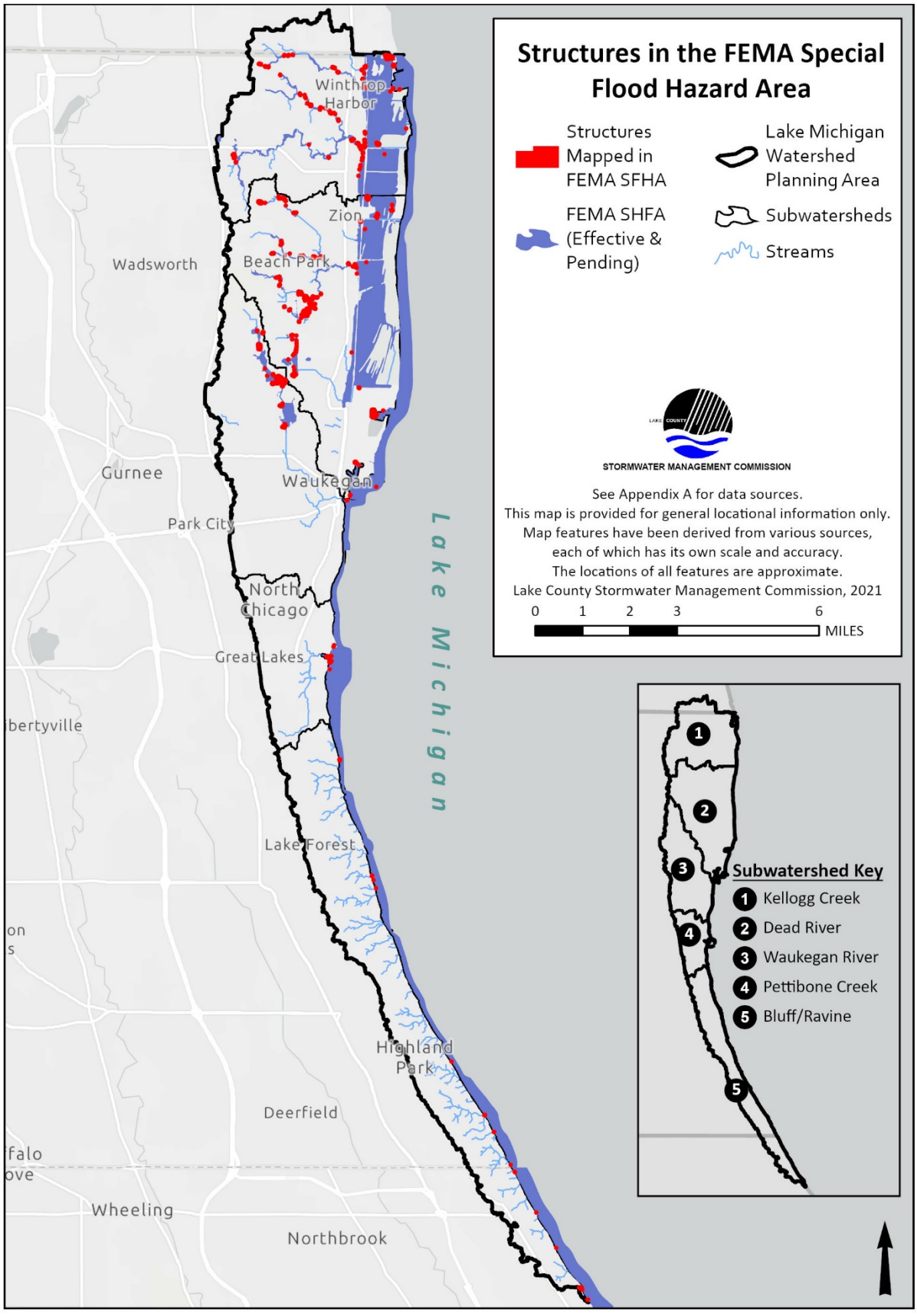

Figure 5-4: Lake Michigan Watershed Structures in the FEMA Special Flood Hazard Area

5.4 FLOODPLAIN STUDY SUMMARY

Hydrologists assign statistical probabilities to different size floods to characterize common, less likely, and severe floods for individual streams. For example, a 2-year flood event has a 50% probability of occurring in any year, and a 100-year flood has a 1% chance of being equaled or exceeded in any year. The 1% annual chance flood event ("100-year flood"), also referred to as the "base flood," is the standard used by the NFIP to determine the need for flood insurance. The 1% annual chance flood has become the accepted national standard for floodplain regulatory purposes and was developed in part to guide floodplain development that lessens the damaging effects of floods. The 1% annual chance floodplain may also include a designated floodway. The floodway is the portion of the stream or river channel that must be reserved to discharge the base flood without increasing the water surface elevation more than 0.1-foot. A graphic representation of a typical floodplain and floodway is shown in Figure 5-5.

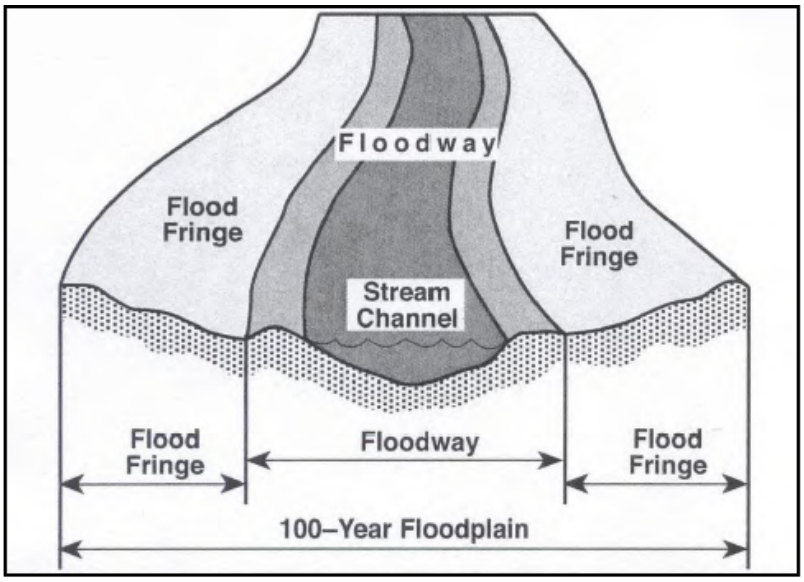

Figure 5-5: Graphical representation of the typical floodplain and floodway

FEMA has conducted **Flood Insurance Studies** (FIS) that assess a watershed's **hydrology**, land use, and drainage characteristics to identify areas that have the highest probability of flooding. FIS are used to produce **Flood Insurance Rate Maps** (FIRM). These maps depict the probable extent of flooding during a 1% annual chance ("100-year") flood. These areas are collectively termed Special Flood Hazard Areas (SFHAs) and are divided into different zones depending on the type of hazard as well as the level of study and modeling employed to map the area. The FIRM are used to determine flood insurance requirements and calculate insurance costs. The maps are also used in concert with local, state, and federal ordinances to regulate development and building protection requirements within and adjacent to floodplain areas. The Lake Michigan planning area covers 36,488 acres, of which 3,680 acres are mapped within the SFHA. An additional 3,142 acres of SFHA are mapped on nearshore open waters of Lake Michigan adjacent to the planning area. Figure 5-6 reflects the regulatory floodplain boundary based on the effective FIRMs. For the Lake County portion of the

FLOOD INSURANCE STUDY (FIS): Studies conducted by FEMA to determine areas that have the highest probability for flooding.

HYDROLOGY: Hydrology is the study of the occurrence, circulation, distribution, and properties (e.g., quality) of Earth's water.

HYDRAULICS: Hydraulics is the study of how water flows over the land surface. This includes flows within sewers, culverts, stream channels, wetlands, lakes, impoundments, etc.

FLOOD INSURANCE RATE MAP (FIRM): A map prepared by FEMA that depicts the SFHA within a community. The FIRM includes zones for the 100-year and 500-year floodplains and may or may not depict Regulatory Floodways.

BASE FLOOD ELEVATION (BFE): The elevation of surface water resulting from the flood having a one percent (1%) probability of being equaled or exceeded in any given year.

SPECIAL FLOOD HAZARD AREA DESIGNATIONS

ZONE A: Flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base flood elevations (BFEs) or depths shown.

ZONE AE: Flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown.

ZONE AH: Flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals.

ZONE AO: Flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown.

ZONE VE: Flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. BFEs derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

planning area, FEMA has published a preliminary FIRM (May 2020), which is expected to become effective in 2022. If the preliminary FIRM is considered, 4,264 acres of the planning area and 3,388 acres of nearshore waters of Lake Michigan are within mapped SFHAs. Much of this additional acreage in the preliminary SFHA is located along the shore of Lake Michigan and within the coastal plain north of Waukegan (primarily in Illinois Beach State Park and Spring Bluff Forest Preserve). The remaining additional SFHA acreage mapped on the preliminary FIRM is located along Dead Dog and Bull Creeks (and their tributaries).

Floodplain studies have been completed for several of the larger stream systems in the northern half of the planning area, dating to the late 1970s. Table 5-3 is an excerpt of data published as part of the preliminary FIS for the Lake County portion of the planning area and the effective Cook County FIS. This table summarizes the methods, age and status of floodplain studies in the Lake Michigan watershed planning area.

In 2017, FEMA and its partners completed flood hazard analyses for the Lake Michigan coastal areas in Lake and Cook Counties. The coastal flood hazard zones are effective as of September 2021 in Cook County and are preliminary in Lake County. The analyses resulted in estimated Base Flood Elevations (BFEs), or 1% annual chance flood elevations, along 86 coastal transects in the planning area (62 transects in Lake County, 24 transects in the Cook County portion of the planning area). BFEs were based on the analysis of several coastal flooding factors and processes, including: 1% annual chance stillwater elevations (for Lake Michigan and low-lying coastal areas), storm surge effects, coastal erosion, and wave hazard conditions (setup, height, runup, and overtopping). The results of these analyses are translated to the FIRMs as AO, AH, and VE zone designations within SFHAs. These are the first coastal flood zones mapped by FEMA in Illinois.

Floodplain studies of sufficient detail to produce BFEs have been used to map SFHAs along There are approximately 21.7 miles of streams in the LM watershed planning area which have been studied in sufficient detail to develop BFEs mapped on effective or preliminary FEMA FIRMs. All of these streams are north of Glen Flora Avenue in Waukegan, and 95% of them are in the Kellogg Creek and Dead River Subwatersheds. No detailed riverine flood hazard analysis exists for the Waukegan River south of Glen Flora Avenue, Pettibone Creek, or any of the ravines south of Pettibone Creek. Additional portions of the Waukegan River north of Sunset Avenue and streams in the Dead River and Kellogg Creek subwatersheds are mapped as Zone A flood hazard areas and lack BFE determinations. Numerous Letters of Map Revision exist in these areas as well and may provide additional data on localized flood elevations.

Table 5-3: Floodplain Studies in the Lake Michigan Planning Area and Status of Data

Zone A SFHAs not included in this table

FLOODPLAIN STUDY	HYDROLOGIC MODEL OR METHOD	HYDRAULIC MODEL OR METHOD	DATE ANALYSES COMPLETED	FLOOD ZONES ON FIRM	STATUS
Dead Dog Creek (Lake Michigan Tributary)	Log Pearson Type III Frequency Analysis	WSP-2	1979	AE w/Floodway	Effective
Dead Dog Creek (Lake Michigan Tributary)	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 4.1.0	3/9/2015	AE w/Floodway	Preliminary
Kellogg Creek (Kellogg Ravine) downstream of Beulah Park	Log Pearson Type III Frequency Analysis	WSP-2	6/1/1979	AE w/Floodway	Effective
Kellogg Creek (Kellogg Ravine) upstream of Beulah Park	Regression Equations (1977)	WSP-2	4/1/1979	AE w/Floodway	Effective
North Branch Kellogg Ravine	Log Pearson Type III Frequency Analysis	WSP-2	6/1/1979	AE w/Floodway	Effective
Bull Creek 27th Street Tributary	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 4.1.0	1/21/2015	AE w/Floodway	Preliminary
Bull Creek	Regression Equations	WSP-2	2000	AE w/Floodway	Effective
Bull Creek	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 4.1.0	1/21/2015	AE w/Floodway	Preliminary
Bull Creek North Branch	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 3.1.1 and up	1/21/2015	AE w/Floodway	Preliminary
Glen Flora Tributary	HEC-HMS 3.0 and up (Dec 2005)	HEC-RAS 4.1.0	5/19/2014	AE w/Floodway	Preliminary
North Shore Ditch	TR-20	FEQ	5/1/1979	AE w/Floodway	Effective
Waukegan River, Glen Flora Ave. to Sunset Ave.	Regression Equations (1974)	WSP-2	5/1/1979	AE w/Floodway	Effective
Lake Michigan/Coastal flood zones	Mulitple	Multiple	8/1/2017	AE, AH, AO, VE	Preliminary in Lake County, Effective in Cook County
North of intersection of Chestnut Street and Blanchard Road	TR-20	FEQ	12/31/2007	AE	Effective
East of intersection of Yeoman Street and Montesano Avenue	TR-20	FEQ	12/31/2007	AE	Effective

* can be recommended for use as regulatory best available (where BFEs are higher than FEMA's)

** can be required for use as regulatory best available (where BFEs are higher than FEMA's)

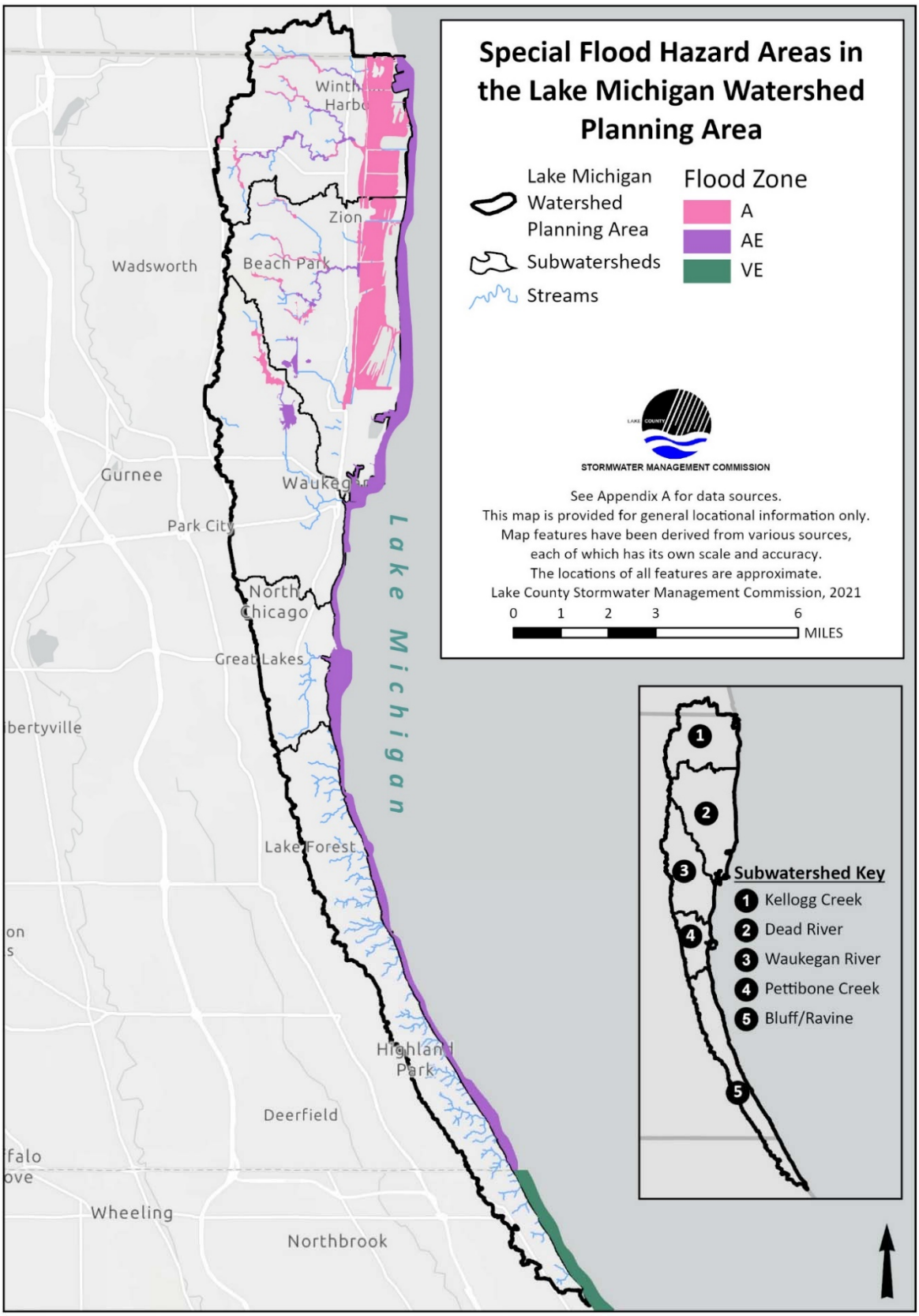

Figure 5-6: Lake Michigan Watershed Planning Area Special Flood Hazard Area Types and Boundaries

5.5 FLOOD DAMAGE REDUCTION

Flooding is an issue in the Lake Michigan watershed planning area because of urban development and a relatively flat regional topography. Urban development has increased impervious surfaces and modified or built in natural storage and floodplain areas, resulting in increased stormwater runoff volumes and rates. The relatively flat topography of the region results in excess water dispersing over a large area. Protection of the existing flood storage capacity of the landscape, including depressional areas, wetlands, and floodplains, is necessary to prevent increased flood risks in the region. Flood damage reduction is necessary to reduce the extent, frequency, and impact of flooding where development has already occurred. Flood damage reduction can be accomplished utilizing preventative or remedial measures.

5.5.1 PREVENTATIVE MEASURES

Flood prevention techniques, including zoning, regulation, land acquisition, and runoff reduction, seek to prevent flooding problems before they occur. Zoning and floodplain regulations seek to prevent flood damages by limiting development in areas where flooding is most likely to occur. Land acquisition maintains open space, preserving rainfall infiltration and natural storage areas. Runoff reduction techniques reduce flood damage potential at the source by decreasing the amount of runoff from a developed site. This is accomplished by reducing on-site drainage, minimizing impervious surfaces, and implementing natural drainage measures.

5.5.1.1 *Floodplain Zoning*

Zoning ordinances regulate development by dividing the community into zones or districts and setting development criteria for each district. Zoning can prevent increased flood risks by controlling where new development or redevelopment occur. Zoning ordinances can establish separate zoning districts or overlay zoning. Separate districts designate floodplains as a special zoning districts that only allow development that is not susceptible to flood damage, such as some recreational uses, conservation, or agriculture. Overlay zoning adds special development limitations to the underlying zoning (i.e., residential, commercial, industrial, etc.) in areas subject to flooding. Special development limitations can include local, state or federal building requirements related to flood safety and can restrict the types of development occurring in overlay zoning districts or require additional permitting or oversight in these districts.

5.5.1.2 *Floodplain Regulations*

Regulations that restrict construction in floodplains are usually found in one or more of the following documents: subdivision ordinances, building codes, and separate stand-alone floodplain ordinances such as the Lake County WDO and Cook County WMO. If the zoning for a site allows a structure to be built, then the applicable subdivision and building regulations impose construction standards to protect buildings from flood damage and will require compensatory storage to prevent the development from aggravating the flooding problem. Subdivision ordinances specifically govern how land will be subdivided into lots and regulate standards for infrastructure provided by the developer, including roads, sidewalks, utilities, stormwater detention, storm sewers, and drainage ways. Both building codes and the countywide and local ordinances establish flood protection standards for all structures. Individual communities can adopt floodplain regulations that are more restrictive than the minimum WDO, WMO, or NFIP requirements.

All development in Lake County floodplains requires a WDO permit. The WDO restricts development in mapped floodways and limits development in the 100-year floodplain. Lowest floor elevations (including basements) must be a minimum of 2 feet above the BFE for residential structures constructed in the floodplain. Nonresidential structures must also meet these lowest floor elevation requirements or be dry-flood-proofed to 2 feet above the BFE, and compensatory storage must be provided for water storage lost due to floodplain fill at a ratio of 1.2:1 for riverine floodplain and 1:1 for depressional floodplain (SMC, 2020).

Cook County communities must adhere to the standards required in the WMO as minimum development requirements for their community. All development in a **Flood Protection Area** requires a Watershed Management Permit. The WMO restricts development in mapped floodways and limits development in the 100-year floodplain. Compensatory storage must be provided for floodplain storage lost due to floodplain fill at a ratio of 1.1:1 (MWRD, 2019).

FLOOD PROTECTION AREA: Regulatory floodplains, regulatory floodways, riparian environments, wetlands, and wetland buffers.

All local floodplain ordinances must meet the minimum requirements of the NFIP. Floodplain ordinances are adopted at the local level in the same manner as any other ordinance. Enforcement of the floodplain regulations is the responsibility of local officials. For most communities, the responsible official is the Zoning Administrator. Every community that participates in the NFIP must have the FIRMs and FIS available for the public. Communities that do not adequately enforce the local floodplain ordinance can be penalized by FEMA through probation or suspension from the NFIP.

5.5.1.3 *Runoff Volume Reduction*

Runoff volume reduction can be accomplished utilizing techniques that improve infiltration, site design, or stormwater regulation. Improved infiltration techniques include natural landscaping with deep-rooted plants, permeable pavers or porous pavement, and bio infiltration devices. Improved site design techniques include preserving natural drainage systems, impervious surface reduction, alternative streetscapes that reduce and infiltrate runoff, alternative parking lot designs, and green roofs. Examples of runoff volume reduction best management practices can be found here: http://www.lakecountyil.gov/2261/Stormwater-Best-Practices.

Stormwater regulations can also reduce the quantity of runoff from developments. Due to a trend of increasing Runoff Volume Reduction (RVR) requirements of the Illinois EPA, both the WDO and WMO have adopted both qualitative and quantitative RVR provisions. The WDO is a credit-based system designed to capture a percent of the annual rainfall event to the maximum extent practicable. The WMO is tied to the first inch of runoff from the impervious area of a development site, defined as the control volume. These measures will decrease the volume and flow rate of stormwater that is discharged off a site thereby preventing future flood damage.

5.5.2 REMEDIAL MEASURES

Flooding problems are reduced or eliminated by both structural and non-structural means. Structural flood mitigation measures focus on reducing the probability of flooding (i.e. removing or reducing the ability of flood waters to reach a property or structure) while nonstructural flood mitigation measures focus on reducing the consequences of flooding (i.e., flood-proofing a structure located in the floodplain). Several common types of structural and nonstructural mitigation measures are described below. Due to the nature of flood problems

and the types of flooding associated with them, some of these measures may have limited applicability in the Lake Michigan Planning Area but are included here to be more comprehensive.

5.5.2.1 *Structural Flood Mitigation Measures*

Structural measures control or contain water and are designed to prevent floodwaters from reaching buildings or property. Structural alternatives include reservoirs, levees and floodwalls, diversions, stream channel conveyance improvements, and drainage and storm sewer improvements. Improved conveyance practices should be designed to ensure that adjacent and downstream properties and waterways will not be negatively impacted by increased flows. Large or complex structural flood mitigation alternative projects are often costly to implement, so local agencies and private landowners often request help from state or federal agencies such as the IDNR-OWR, the USACE, and the USDA NRCS.

Structural flood control is generally the most expensive type of mitigation measure because of installation time and costs, maintenance requirements, and environmental impacts. Thorough assessment of alternatives prior to selecting a structural flood control measure can minimize costs and impacts. The advantages and disadvantages of structural flood control techniques are discussed in Table 5-4 (Association of State Floodplain Managers, 2007).

Table 5-4: Benefits and drawbacks to structural flood control measures

ADVANTAGES	SHORTCOMINGS
May provide the greatest amount of protection for land area used.	They disturb the land and disrupt natural water flow, often destroying wildlife habitat.
Due of potential land limitations, may be the only practical solution in some circumstances.	They require regular maintenance, which if neglected, can have disastrous consequences.
Can incorporate other benefits into structural project design such as water supply and recreational uses.	They are built to a certain flood protection level that can be exceeded by larger floods, causing extensive damage.
Regional detention may be more cost efficient and effective than requiring numerous small detention basins.	Although it may be unintended, in many circumstances they promote more intensive land use and development in the floodplain.
	They can create a false sense of security, as people protected by a project often believe the structure eliminates any flooding risk.
	They can create new flooding problems if improperly designed or built.
	Levees and reservoirs can significantly degrade riparian and aquatic habitat and water quality.

5.5.2.1.1 *Reservoirs and Regional Detention*

Reservoirs and regional detention are large structures that control flooding by holding water behind dams or in storage basins. After a flood peaks, water is released or pumped out slowly at a rate that is equal to or less than the capacity of the downstream channel. Reservoirs that maintain a normal water level may be used for water supply or to provide water-based recreational benefits. Additionally, wet or dry detention basins can serve multiple uses by doubling as parks or other open space uses.

The amount of land needed, coupled with the expense of construction, management, and maintenance, limit the use of reservoirs. Additionally, reservoirs may fail to prevent flood s that exceed their design levels,

eliminate the natural and beneficial functions of the floodplain, and negatively impact water quality and aquatic habitat.

5.5.2.1.2 *Detention Basins*

Some localized flooding problems can be minimized by enlarging or adjusting flows through existing detention basins or by constructing new basins. Detention basins are effective at flood reduction in watersheds of up to 30 square miles. While regional detention is generally more cost-effective than constructing numerous small detention facilities, in some cases there may not be sufficient land available for regional detention. Smaller detention basins may be the most cost-effective solution for localized flood problems (Figure 5-7). Slowing release rates from new and existing detention basins can reduce the downstream flood risk and impacts of short duration-high-velocity events on the stream channel. Retrofitting older detention basins to improve functionality or storage volume or constructing new detention basins are often viable flood mitigation alternatives, especially for smaller tributary areas (less than 100 acres).

Figure 5-7: Detention basin installed in Glenview to help alleviate localized (neighborhood) flood problems

5.5.2.1.3 *Levees and Floodwalls*

Earthen levees or concrete floodwalls are constructed between rivers and at-risk properties to mitigate overbank flooding. Levees and floodwalls confine water to the stream channel by artificially raising the bank. Regulatory levees must meet very strict and onerous design and permitting requirements. A serious concern with levees is that they frequently offer a false sense of security. In some cases, land use behind a levee can change to high intensity, high-value occupation under the false assumption that all future floods will be controlled by the levee, when in reality, large floods may overtop or breach the levee creating more flood damage than would have occurred. Problems also arise when the present runoff volume in the channel exceeds the design capacity of older levees that were constructed for lower flow conditions.

Levees and floodwalls have other limitations, levees and floodwalls are placed along the river or stream edge, where they degrade riparian and aquatic habitat. Levees are expensive to construct, require considerable land and maintenance, and are more likely to push floodwater onto other properties upstream or downstream. In some cases, it may be necessary to include expensive and noisy pumping operations for internal drainage. Levees also act as barriers to river access, block views, and disrupt local drainage patterns.

5.5.2.1.4 *Barriers*

Constructing barriers such as nonregulatory low floodwalls and berms around an individual property can keep floodwaters from reaching the structure. Berms are commonly used in areas subject to shallow flooding; see Figure 5-8 for a diagram of a backyard berm. Not considered engineered structures, berms are made by regrading or filling an area. Low floodwalls may be built around stairwells to protect the basements and lower floors of structures. By keeping water away from the structure walls, the problems of seepage and hydrostatic pressure are reduced. Barriers are commonly referred to as nonregulatory since a barrier typically cannot be used to remove a structure or property from the regulatory floodplain.

As with levees, the use of low floodwalls and berms must also include a plan to install drainpipes or sump pumps to handle leaks and water seepage through or under the barrier, and to remove water that may collect within the barrier. Care must be taken in the design, location, and installation of low floodwalls or berms to ensure that flood waters are not inadvertently pushed onto adjacent properties.

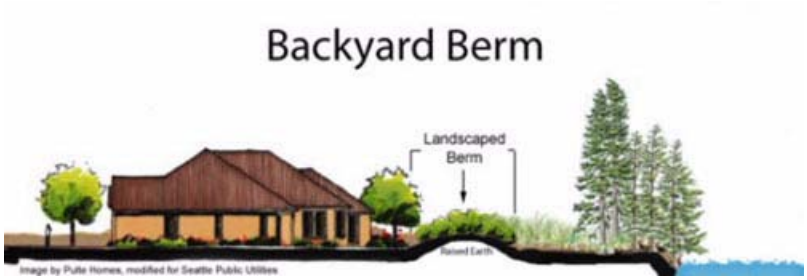

Figure 5-8: Example of a backyard berm
Diagram Courtesy of Seattle Public Utilities (Seattle.gov)

5.5.2.1.5 *Improved Channel Conveyance*

Channel conveyance improvements alter channels to increase drainage rate and volume. Improvements include making channels wider, deeper, smoother, or straighter. Some channels in urban areas have also been lined with concrete or put in underground pipes. Straightening, deepening, or widening a stream or river channel, commonly referred to as channelization, has been traditionally utilized to reduce riverine overbank flooding problems. Channelized rivers and streams drain water faster from areas adjacent to and upstream of the channel but can increase or create new flooding problems downstream as larger volumes of water are transported at a faster rate. Channelized waterways tend to be less stable and more susceptible to streambank erosion; therefore, the need for periodic reconstruction, streambank stabilization, and silt removal becomes cyclic, making stream and channel maintenance extremely expensive. Dredging is another type of conveyance improvement; however, it is frequently cost prohibitive due to dredged material disposal costs. Additionally, dredged areas typically fill in relatively quickly if upstream erosion is not reduced. Channel conveyance improvements (such as channelization and dredging) are environmentally destructive with respect to habitat and water quality and require regular, routine maintenance in perpetuity if the improvements are to be sustainable.

5.5.2.1.6 *Drainage Improvements*

Drainage improvements can include open ditches, swales, or storm sewers. Man-made ditches and storm sewers help drain areas where surface drainage is inadequate or where underground drainageways may be safer or more practical. Drainage and storm sewer improvements can be a quick and relatively cost-effective way to safely convey runoff for a wide range of smaller storm events. Storm sewer improvements may include the installation of new sewer lines or inlets, modifications to existing sewer inlets, installation of larger pipes, construction of better defined or more effective overland flow routes, and the use of mechanical measures, such as pumps or backflow preventers. Since drainage improvements typically result in runoff being more efficiently conveyed to a downstream location, these mitigation measures should only be used when the receiving waterway has sufficient capacity to handle the additional volume and flow of water. To prevent cumulative downstream flood impacts, drainage improvements are often combined with other storage volume creation or runoff reduction measures.

Performing regular maintenance on stormwater infrastructure for drainage improvements, such as channel clearing, dredging, storm sewer cleaning, or clogged debris removal, can be the most cost-effective measure in

reducing future larger, more expensive infrastructure problems. “All stormwater management systems, whether gray or green, require maintenance. Appropriate operation and maintenance activities ensure that green (and gray) infrastructure will continue to function properly and yield expected water quality and environmental benefits, protect public safety, meet legal standards, and protect communities’ financial investment.” (U.S. Environmental Protection Agency - Office of Water, 2013).

5.5.2.2 *Nonstructural Flood Mitigation Measures*

Flooding problems can also be addressed using nonstructural measures. Nonstructural flood control techniques include flood-proofing, and elevation or relocation of a structure. More communities and county-wide agencies could get involved in nonstructural programs such as acquisition by helping to identify repetitively flooded properties. Runoff reduction techniques may also be used by individual homeowners or neighborhood associations in retrofit projects to lessen flooding problems. Nonstructural mitigation alternatives include practices such as acquisition or relocation of flood-prone structures, flood-proofing, or implementation of ordinances and codes.

5.5.2.2.1 *Buyouts and Acquisitions*

Acquisition ensures that structures in a flood-prone area will cease to be subject to flood damage. The major difference is that acquisition is undertaken by a government agency, so the cost is not borne by the property owner, and the land is converted to an appropriate permanent public use such as a park. Acquiring and clearing structures from the floodplain is the best long-term flood protection measure, one which converts a flood problem area into a community asset that can provide environmental and recreational benefits. To achieve maximum benefits from this type of public investment, acquisition and land reuse should be a component of a community’s redevelopment plan, and be incorporated as a strategy in park, greenways, and capital improvement plans.

5.5.2.2.2 *Structure Relocation*

Moving a structure to higher ground is an extremely effective way to protect it from flooding. In many cases structure relocation is cost prohibitive because of the size, condition, and type of structure and the cost of acquiring a relocation site. Structure relocation can be cost effective where flooding is relatively severe or frequent. Structures that have suffered damage or contamination from frequent or long duration flooding should not be considered for relocation. Structure relocations have high initial costs, but they may be more cost-efficient than paying for repetitive flood damages or high flood insurance premiums. Relocation is typically the responsibility of the structure owner; however, government-sponsored loans or grants may be available for cost-share.

5.5.2.2.3 *Structure Elevation*

Raising a structure above the floodplain elevation is the best way to protect a structure that cannot be removed from the floodplain. The structure is elevated on a foundation or piers so that the lowest floor is above the BFE. When flooding occurs, water levels stay below the main floor, causing minimal damage to the structure or its contents. Raising a structure above the flood level is less expensive than moving it and can be less disruptive to a neighborhood. Commonly practiced in flood-prone areas nationwide, this protection technique is required by law for new and substantially damaged residences located in a 100-year floodplain.

Although flood damages can be reduced or eliminated through structure elevation, remaining in a flood-prone location has some limitations. While the structure itself is sufficiently elevated to be protected from flood damage, flooding may isolate the building and make it inaccessible. Flood waters surrounding the structure can also result in a loss of utility service or septic use, making the structure uninhabitable. Additionally, pollutant contamination in flood waters may present health and safety concerns.

5.5.2.2.4 *Flood Proofing*

Flood-proofing measures include dry flood-proofing or wet flood-proofing. In areas where there is shallow flooding, dry flood-proofing measures can be used to prevent water from entering at-risk structures. Dry flood-proofing is a combination of practices that are used to make a building watertight, so flood waters do not enter the structure, including the basement or crawl space. Various FEMA and the USACE publications highlight the range of practices that can be used to dry flood-proof a structure. Figure 5-9 shows an example of dry flood proofing practices.

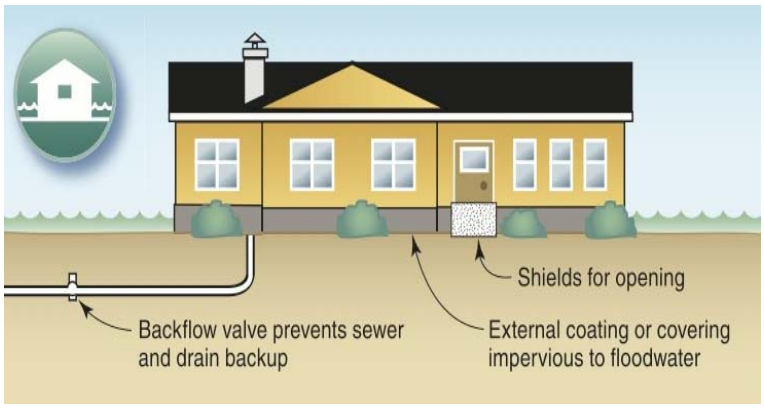

Figure 5-9: Dry flood-proofing

As defined by FEMA, wet flood-proofing includes permanent or contingent measures applied to a structure or its contents that prevent or provide resistance to damage from flooding while allowing flood waters to enter the structure or area. Wet flood-proofing allows water to enter the structure, but minimizes the damage to the structure and its contents. Wet flood-proofing includes some of the least expensive and easiest mitigation practices to install. Generally, this includes properly anchoring the structure, using flood resistant materials below the BFE, protecting mechanical and utility equipment, and using openings or breakaway walls. Several low-cost steps can be taken to wet floodproof a structure. For example, simply moving furniture and electrical appliances out of the flood-prone portions of the structure can prevent thousands of dollars in damages. One strong advantage of wet flood-proofing is that flood damage can be reduced through some common sense, low or no-cost practices. Figure 5-10 shows an example of wet flood proofing practices.

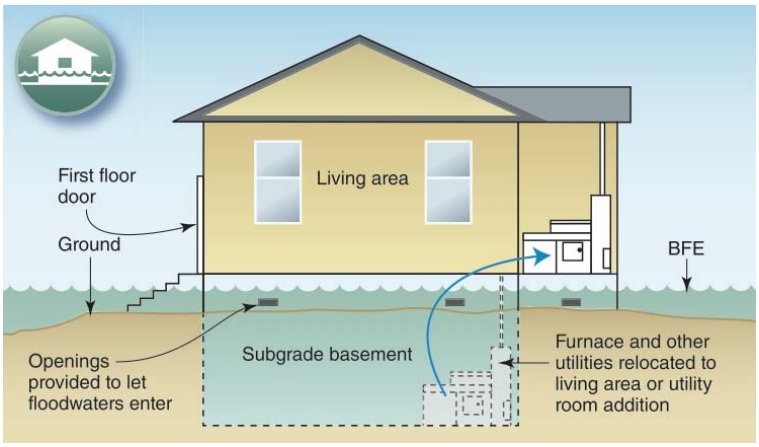

Figure 5-10: Wet flood-proofing

5.5.2.2.5 *Runoff Volume Reduction*

Examples of runoff volume reduction techniques include the use of natural landscaping, permeable pavement, rain gardens and green roofs. These techniques are also considered a preventative measure (Section 5.5.1.3). Implementing these runoff reduction retrofits is generally the responsibility of individual property owners.

These techniques typically do not have a substantial impact when applied on a single site; however, the cumulative effect of runoff reduction techniques at numerous sites throughout the planning area can result in substantial flood reduction benefits. The large scale of individual implementation required to achieve measurable flood reduction benefits makes this flood mitigation measure a long-term complementary mitigation measure rather than an immediate flood mitigation alternative.

5.5.3 ALL-NATURAL HAZARDS MITIGATION PLAN RECOMMENDATIONS

The Lake Michigan watershed planning area is subject to natural hazards that potentially threaten life and property. Flooding, severe summer and winter storms, extreme cold and heat, and tornadoes are the most significant natural hazards that affect the planning area.

To prepare for and mitigate the effects of natural hazards, counties within the Lake Michigan watershed planning area have developed hazard mitigation plans. FEMA, through the Disaster Mitigation Act of 2000 (DMA 2000) and the Stafford Act, requires that each community develop and adopt a FEMA-approved All-Natural Hazards Mitigation Plan (ANHMP) in order to be eligible for hazard mitigation grant funds. DMA 2000 and the Stafford Act require that the mitigation ANHMP be updated and readopted every five years to maintain grant eligibility. An ANHMP assesses the natural hazards that affect counties, sets mitigation goals, considers mitigation efforts currently being implemented, evaluates additional mitigation strategies, and recommends mitigation actions to be implemented over the next five years. The mitigation actions are designed to utilize both public and private sectors to protect the people and assets of the counties. Implementation of all action items is contingent on the availability of staff and funding.

Lake County and the hazard mitigation planning committee (HMPC) developed and adopted the Lake County Countywide ANHMP in 2006 as a multi-jurisdictional plan; the plan was updated in 2012 and 2017 (see Figure 5-11). The 2017 update to the ANHMP was developed by the Lake County HMPC as a multi-jurisdictional ANHMP to meet federal mitigation planning requirements. The 2017 ANHMP is adopted by resolution by the County and each participating municipality. The 2017 ANHMP will be implemented and maintained through both countywide and individual initiatives, as funding and resources become available.

The Cook County Department of Homeland Security and Emergency Management (DHSEM) and expert consultants developed the Cook County Multi-Jurisdictional Hazard Mitigation Plan (Figure 5-12) in 2014 and updated the plan in 2019 with guidance from a steering committee comprised of planning partners and local stakeholders. The plan update was developed in coordination with 121 municipal planning partners and was supplemented by a grant to the

Figure 5-11: Lake County ANHMP

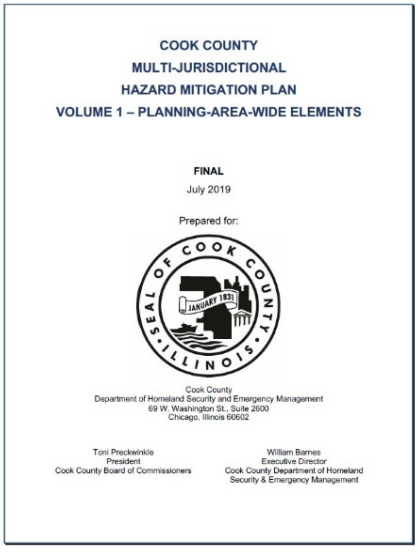

Figure 5-12: Cook County ANHMP

DHSEM from FEMA through the IEMA. That plan incorporated existing local and state plans, studies, reports, and technical information.

5.6 FLOOD STORAGE

5.6.1 EXISTING FLOOD STORAGE

Figure 5-13: Wetland with high flood storage

Existing flood storage is defined as depressional areas and floodplains that are presently storing, or potentially could store, stormwater runoff to decrease flooding in the watershed. Besides flood protection, flood storage areas can be used for the mitigation of wetland losses (wetland restoration), channel protection, and water quality protection. Creating or enhancing storage would provide many benefits including reducing runoff to streams and minimizing channel erosion. Storage areas that are created through wetland restoration would improve water quality and habitat and increase groundwater recharge. The criteria used to identify existing storage locations in the Lake Michigan Watershed-based Plan are:

- Mapped FEMA 100-year Special Flood Hazard Areas (SFHAs) and USGS Flood of Record outside of SFHAs (Lake County only)
- Wetlands with high flood storage function as identified in the Lake County Wetland Restoration and Preservation Plan (WRAPP)
- Stream corridors are included
- Detention Basins
    - The WRAPP was used to identify detention basins in Lake County
    - Cook County hydrology layer was used to identify basins in Cook County
    - Kenosha County hydrology layer used to identify detentions basins in Kenosha County
- Reservoirs are not included, as none are mapped in the planning area

Table 5-5: Existing Flood Storage by Subwatershed

SUBWATERSHED	ACRE FEET OF EXISTING STORAGE
Kellogg Creek	1,544
Dead River	2,794
Waukegan River	1,246
Pettibone Creek	151
Bluff/Ravine	99
TOTALS	**5,834**

The existing flood storage locations are identified in Table 5-5 and Figure 5-14**.** These locations range from 1-364 acre-feet of storage with a mean storage of 5 acre-feet. A total of 1,181 storage areas encompass 5,519 acres (15% of the Lake Michigan planning area) with an estimated potential to store a total of 5,834 acre-feet of water. Existing flood storage areas are compartmentalized into subwatershed catchment areas which are not shown on the map.

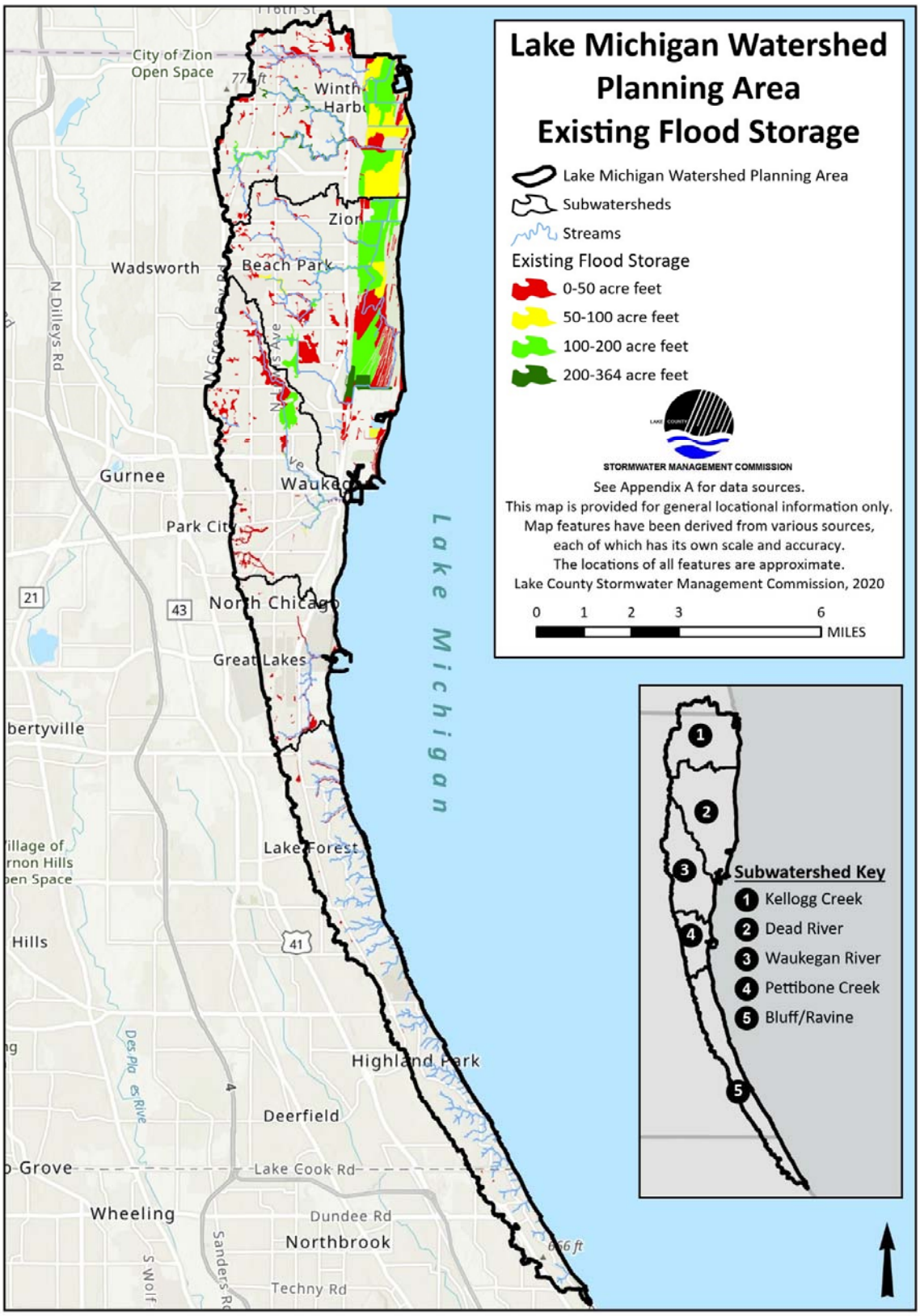

Figure 5-14: Lake Michigan Watershed Existing regional flood storage

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ACRONYMS/ABBREVIATIONS USED IN CHAPTER 6

AG - Agricultural Producers
APMP – Aquatic Plant Management Plan
BMP – Best Management Practices
CBL - Corporate and Business Landowners
CCDPH - Cook County Department of Public Health
CL - Conserve Lake County
CLC – College of Lake County
CMAP - Chicago Metropolitan Agency for Planning
DH - Developers and Homebuilders
DOT - Departments/Divisions of Transportation
EIG - Environmental Interest Groups
EM - State Emergency Management Agencies
EO - Elected Officials
EXT - County Extension Services
FEMA - Federal Emergency Management Agency
FPD - Forest Preserve Districts
GI – Green Infrastructure
GIS – Geographic Information System
HOA - Homeowners Associations
ICMP – Illinois Department of Natural Resources Coastal Management Program
IDNR - Illinois Department of Natural Resources
I-LAST – Illinois – Livable and Sustainable Transportation Rating System
Illinois EPA - Illinois Environmental Protection Agency
ISD - LC Health Department Individual Sewage Disposal Program
ISGS - Illinois State Geological Survey
ISWS - Illinois State Water Survey
LCHD - Lake County Health Department
LCPW - Lake County Public Works Department
LM Planning Area – Lake Michigan Watershed Planning Area
M - Municipalities
MS4 – Municipal Separate Storm Sewer Systems
MWRD - Metropolitan Water Reclamation District
N/L - Nursery and Landscaping Business
NRCS - Natural Resources Conservation Service
OL - Open Lands Project
PAH – Polycyclic Aromatic Hydrocarbons
PB&D - County Planning, Building, and Development (Includes Cook and Lake counties)
PC - Snow Removal and Deicing Private Contractors and Consultants
PD - Parks and Recreation Districts
PO – Property Owner(s)
POTW - Publicly Owned Treatment WorkS
PR - Private Residential
RL - Riparian Landowner
SI - Schools and Institutions
SMC - Lake County Stormwater Management Commission
SWALCO - Solid Waste Agency of Lake County
SWCD - Soil and Water Conservation District
T - Townships
TMDL – Total Maximum Daily Load
TSS – Total Suspended Solids
UDO – Unified Development Ordinance
USACE - U.S. Army Corps of Engineers
USFWS - U.S. Fish and Wildlife Service
USGS - United States Geological Survey
VLM - Volunteer Lake Monitoring
WDO – Watershed Development Ordinance
WPC - Watershed Planning Committee(s)
WRAPP – Wetlands Restoration and Preservation Plan
WWTP - Wastewater Treatment Plants

6 PRIORITIZED ACTION PLAN SUMMARY

A variety of BMPs and programs are discussed in this plan as potential options for the mitigation of watershed issues in the LM planning area. In this chapter, specific ***recommendations*** are made to meet the goals of the watershed plan and previously approved (sub)watershed-based plans, including the identification of specific locations for BMPs in the LM planning area. This chapter presents specific recommended action items developed jointly by watershed stakeholders and the SMC planning team to meet the goals of this watershed-based plan. Due to the size of the planning area and sheer number of site-specific action recommendations developed during the course of the planning process, readers of the plan are encouraged to use the ***online mapping application*** (https://lakecountyil.maps.arcgis.com/apps/webappviewer/index.html?id=eefd51423bdf444e9dcfc110302c4819). The individual recommendations are also listed in tables, organized by jurisdiction, in **Appendix N**. The critical implementation partners for the watershed are identified in Section 6.1.

NOTEWORTHY – ACTION PLAN RECOMMENDATIONS

The action plan recommendations in this Prioritized Action Plan Summary are to be interpreted as guidance recommendations (projects) for watershed stakeholders and not a regulatory document.

There are two primary types of action plan recommendations presented in this chapter: 1) programmatic actions and 2) site-specific project actions including critical area (pollutant load "hotspot") actions. The action plan recommendations identify specific locations for projects and activities recommended for implementation at the watershed-scale.

1. "Programmatic Actions" represent program, policy, regulatory, and project actions that are applicable throughout the watershed. The actions are based on achieving the goals and objectives of the watershed-based plan as outlined in **Chapter 2**.
2. "Site-Specific Actions" address site-specific project opportunities or issues that have been identified throughout the LM planning area. Site-specific projects were identified through the stream, ravine and detention basin inventories, local stakeholders and agency staff, and the planning team. Some of the site-specific practices were identified using existing map data and have not been field verified; however, they do represent actual locations where recommended BMPs are applicable. Overall, these site-specific actions are the result of watershed assessment activities, a detailed analysis of existing watershed data, and stakeholder input.

SITE-SPECIFIC ACTION PLAN ONLINE MAPPING APPLICATION

An online mapping application was developed for stakeholders to view the action recommendations from this plan. Because the planning area covers 57 square miles and there are thousands of individual action recommendations across numerous jurisdictions, it is likely easier for plan users to navigate to their individual areas of interest or browse areas they are familiar with for certain types of project recommendations. Printable maps are included in Appendix N, but due to the scale of the planning area, most users will likely find more utility in the online application, which can be accessed at:
https://lakecountyil.maps.arcgis.com/apps/webappviewer/index.html?id=eefd51423bdf444e9dcfc110302c4819
or via the Lake Michigan Watershed-Based Plan page on the Lake County Stormwater Management Commission website (www.lakecountyil.gov/stormwater).

3. "Critical Area Actions" identify critical catchments, streambanks and shoreline areas based on the "Pollutant Load Hotspot Analysis" to focus actions. These areas include hotspot catchments identified in **Chapter 4**. Actions implemented in these critical areas will provide added value and benefit to the watershed.

For each of the 6 watershed goals identified in **Chapter 2**, there is an action table that describes each recommended action including its 1) priority, 2) cost estimate (if applicable), 3) lead partners and support partners (if applicable) and 4) recommended implementation timeframe.

1. Priority was assigned to each of the recommended actions and classified as H (high), M (medium) or L (low). Priority was based on multiple factors including lead partners, land ownership, cost, and technical requirements based on circumstances and conditions observed at the time the plan was written. These circumstances and conditions will likely change over time resulting in changes to the priority of projects. This watershed-based plan is considered a living document that can be updated and adapted as conditions and priorities change.
2. Cost estimates are provided only for those watershed improvement actions that involve remedial projects, such as planting native vegetation, retrofitting detention basins, etc. Cost estimates are not provided for preventative measures such as education and regulatory action. Cost estimates should not be considered price quotes but used as a way to compare the relative costs of proposed treatments. Furthermore, BMP implementation projects vary drastically by specific technique employed, size of area, access to location, property values, and other factors.
3. Lead and support partners are those organizations or agencies that have the greatest potential to implement each recommended action.
4. Timeframe refers to the period of time in which the recommended action could be implemented. Timeframe is classified into three categories including:
    - S (Short = 1-5 years)
    - M (Medium = 6-10 years)
    - L (Long = 10+ years)

Chapter 7 outlines an implementation and evaluation strategy for the action plan, and **Chapter 8** identifies outreach and education strategies and tools that will provide watershed stakeholders with the knowledge and skills necessary to implement the watershed-based plan.

6.1 IMPLEMENTATION PARTNERS

Throughout the prioritized action plan tables and narrative, responsible parties are suggested for taking the lead partner role or providing a supporting partner role in plan implementation. This section presents the responsible parties as well as a brief description of their role. Table 6-1 provides a concise reference or key of implementation partners for reviewing the programmatic and site-specific action plan tables that follow. Implementation partners do not necessarily have the resources to complete a recommendation, but these recommendations can be implemented through coordination with other partners, grant funding, and more.

LEAD PARTNERS: Identify the lead public or private landowner, agency or other stakeholder with the greatest potential to implement the action.

SUPPORT PARTNERS: Include parties that could be involved in assisting in the action implementation related to regulation, permitting, coordination, technical needs and funding assistance.

Table 6-1: LM Planning Area Implementation Partners

ACRONYM	RESPONSIBLE PARTY	GENERAL RESPONSIBILITY
AG	Agricultural Producers	Management and operation of cropped and other agricultural lands.
C	Counties	Land use and development, technical and financial support, and drainage system management.
CBL	Corporate and Business Landowners	Grounds management and maintenance. Implementation and maintenance of stormwater BMPs.
CCDPH	Cook County Department of Public Health	Permit well and private sewage disposal systems in Cook County. Enforce Cook County and Illinois state laws relating to environmental health issues. Regularly inspect, monitor, regulate, educate, and advise the public on environmental health concerns that adversely impact human health.
CMAP	Chicago Metropolitan Agency for Planning	Technical, planning, training, and funding assistance.
DH	Developers and Homebuilders	Land development, stormwater management system design and construction.
DOT	Departments/Divisions of Transportation	Maintain, design, and construct transportation infrastructure in the watershed including stream, lake, and wetland crossings. *Includes State, Illinois Tollway, County, Municipal and Township Highway and Streets Departments.
EIG	Environmental Interest Groups	Advocate group positions on topics including environmental and land management. *Includes: Sierra Club & League of Women Voters
EM	State Emergency Management Agencies	Flood and disaster planning, emergency response, and hazard mitigation. *Includes Illinois & Wisconsin Emergency Management Agency.
EO	Elected Officials	Decision-making authority for county policies and ordinances [including the Watershed Development Ordinance (WDO) and Unified Development Ordinance (UDO)].
EXT	County Extension Services	Provides education and technical support. *Includes University of Illinois & University of Wisconsin Extension.
FB	Farm Bureaus	Promotes farming practices that promote environmental stewardship. *Includes Cook, Kenosha, and Lake County Farm Bureaus.
FEMA	Federal Emergency Management Agency	National Flood Insurance Program, floodplain mapping and enforcement, and mitigation funding.

ACRONYM	RESPONSIBLE PARTY	GENERAL RESPONSIBILITY
FPD	Forest Preserve Districts	Manage and maintain green infrastructure, natural areas, and open space. *Includes Cook and Lake County Forest Preserve Districts.
HOA	Homeowners Associations (including Property Owners Associations)	Management of common areas and natural and constructed drainage systems.
ICMP	Illinois Coastal Management Program (IDNR)	Management of natural resources in Illinois Lake Michigan Coastal Zone, research, technical, and financial assistanace
IDNR	Illinois Department of Natural Resources	Natural area preservation and management, research, technical, and financial assistance.
Illinois EPA	Illinois Environmental Protection Agency	Water resource monitoring, pollution regulation and control, technical assistance and project funding.
ISD	LC Health Department Individual Sewage Disposal Program	Regulates the use of septic systems in incorporated and unincorporated areas of Lake County where sanitary sewer systems are not yet available. Regulation involves inspecting, planning, and installing septic systems.
ISGS/USGS	Illinois State Geological Survey & United States Geological Survey	Gather and manage geologic and water quality data.
ISWS	Illinois State Water Survey	Flood risk modeling and floodplain mapping
LCHD	Lake County Health Department	Monitor, manage, and provide technical support for water resources. Includes environmental services unit.
LCPW	Lake County Public Works Department	Manages water and wastewater facilities in Lake County.
M	Municipalities	Land use and development, technical and financial support, and drainage system management.
MWRD	Metropolitan Water Reclamation District of Greater Chicago	Controls municipal sewer construction permits outside the city of Chicago. Administers the Watershed Management Ordinance in suburban Cook County.
NRCS/SWCD	Natural Resources Conservation Service Soil and Water Conservation District	Provide technical and financial assistance for natural resource management. *Includes McHenry-Lake, North Cook, & Kenosha County SWCDs.
N/L	Nursery and Landscaping Business	Grow and maintain landscaping plant materials. This includes irrigation or watering and storage of equipment and materials.
OL	Openlands	Landowner of Lakeshore Preserve, provide technical assistance for land acquisition and preservation
PB&D	County Planning, Building, and Development (Includes Cook, Kenosha, and Lake counties)	Land use planning and permitting for unincorporated areas, natural resources and system management.
PC	Snow Removal and Deicing Private Contractors & Consultants	Land and pavement management and maintenance for snow removal and deicing.
PD	Parks and Recreation Districts	Management and maintenance of parks and open space.
PO	Property Owner	The owner on record for a particular tax parcel.
PR/RL	Private Residential/Riparian Landowner	Land management and maintenance including stream channels and riparian corridors.

ACRONYM	RESPONSIBLE PARTY	GENERAL RESPONSIBILITY
RR	Railroad	Land Management in railroad right of way.
SI	Schools and Institutions	Schools and institutions with large properties or campus settings. *Includes College of Lake County and secondary schools
SMC	Lake County Stormwater Management Commission	Technical and financial assistance for flooding, watershed planning, and water quality. Administers the Watershed Development Ordinance in Lake County.
SWALCO	Solid Waste Agency of Lake County	Implements the Lake County Solid Waste Management Plan.
T	Townships	Road maintenance and support for watershed improvement projects.
USACE	U.S. Army Corps of Engineers	Wetland protection and regulation and restoration funding.
USFWS	U.S. Fish and Wildlife Service	Threatened and endangered species protection, technical and financial assistance for habitat restoration.
UT	Utilities	Land Management in utility right of way
WPC	Watershed Planning Committee(s)	Coordinate watershed plan implementation, education and outreach. Planning and support for watershed improvement projects. *Includes Subwatershed Planning Committees (Upper Des Plaines River Ecosystem Partnership, Buffalo Creek Clean Water Partnership, Bull Creek Planning Committee, and Indian Creek Watershed Project).
WWTP	Wastewater Treatment Plants	Maintain wastewater treatment regulatory standards. *Includes privately and publicly owned treatment works

6.2 PROGRAMMATIC ACTION PLAN (BASIN WIDE)

6.2.1 GOAL #1: STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT

GOAL: Restore and manage stream, ravine, shoreline and bluff systems to preserve and enhance stability, hydrology, beneficial functions and conveyance as part of a resilient and natural watershed system.

OUTCOME: Streams, ravines, shoreline and bluff systems are restored and managed to reduce erosion and provide enhanced functions as part of the watershed green infrastructure and drainage system.

Table 6-2: Actions for Goal #1

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
1	Develop a stream restoration plan and cost estimate for moderately and severely eroded stream reaches.	H	SMC, FPD, USACE	IDNR, Illinois EPA, NRCS/SWCD, CCDPH, CMAP, PB&D	S
2	Maintain, expand, or restore high quality native plant buffers along river, streams, lakes, and wetlands.	H	PR/RL, CBL, HOA, LA, SMC, FPD, IDNR, EQ, PD AG	USACE, NRCS/SWCD, CMAP, USFWS	S
3	Restore and manage riparian areas, ravines, bluffs, and beaches (including vegetation and buffers) to enhance beneficial functions and protect property and infrastructure.	H	PO, FPD, PD, IDNR	M, SMC, MWRD, USACE, Illinois EPA, USFWS, EIG	S
4	Stabilize eroding Lake Michigan shoreline and bluffs.	H	PO, USACE, M, PD	IDNR, M, USACE, SMC, MWRD	M
5	Reduce streambank, ravine, shoreline, and construction-related erosion.	H	M, LA PR/RL, PO, MWRD, PD, FPD, HOA	Illinois EPA, SMC, IDNR, DOT, PB&D, USACE, NRCS/SWCD	M
6	Maximize in-stream habitat in conjunction with installation of structures (bridges, culverts, etc.) to minimize negative impacts to streams and aquatic life.	H	DOT, M, PD, T	SMC, Illinois EPA, MWRD, IDNR, USACE, PB&D	M
7	Eliminate yard waste dumping along ravine slopes and streambanks.	H	PO, CBL, HOA, SI, PR/RL	M, PB&D, SMC, FPD, WPC, MWRD	M

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
8	Replace or restore failed hydraulic structures and discharge pipes.	H	PO, DOT, HOA, LA, T, M	FEMA, EM, SMC, USACE	M
9	Modify, retrofit, or eliminate constructed hydraulic restrictions along the stream corridors to promote natural stream morphology.	H	M, C, PR/RL, FPD, DOT, HOA, MWRD	USACE, IDNR, SMC, NRCS/SWCD,	L
10	Address localized erosion related to infrastructure	M	WWTP, M	USACE, SMC, MWRD	M
11	Where appropriate, remove or retrofit impoundments, dams, piped stream conveyance, and weirs in streams to support fish passage and migration, hydraulic connectivity.	M	IDNR, ICMP, USFWS, M, T, PD, PO, FPD, USACE	SMC, WPC, Illinois EPA, NRCS/SWCD, LCHD	M
12	Identify and restore degraded stream banks and beds where possible.	M	SMC, PR/RL, M, T, CMAP, SEWPRC	USACE, IDNR	L
13	Incorporate naturalized stream restoration as part of new developments where applicable.	M	DH, HOA	SMC, CMAP, M, C, PB&D, EO	L
14	Re-establish or improve stream connectivity to Lake Michigan where feasible	M	PO, FPD, IDNR, PD	USACE, M, SMC, MWRD	L
15	Restore historical floodplain function along channelized stream reaches.	L	PR/RL, T, C, M, FPD	NRCS/SWCD, USACE, SMC, MWRD	M

6.2.2 GOAL #2: FLOOD RISK, FLOOD DAMAGE AND STORMWATER MANAGEMENT

GOAL: Mitigate the effects of increased runoff volumes, reduce ravine erosion and flood damage, and prevent flooding from worsening.

OUTCOME*:* To the extent achievable, flood damages and stormwater runoff volumes are managed and/or their effects are abated or mitigated.

Table 6-3: Actions for Goal #2

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
1	Implement projects to reduce damages or mitigate urban flooding.	H	M, C, T, SMC, MWRD, FEMA, IDNR	PB&D, CMAP	S
2	Increase native tree installation for stormwater benefits (ex. reduced erosion and runoff).	H	PO, M, C, T, HOA, LA, PD, OL, DH, SI, FPD, DOT	NRCS/ SWCD, SMC, EIG, CMAP, IDNR	S
3	Identify or install overland flow routes for all detention facilities and flood prone depressional areas where needed.	H	SMC, M, C, T, FPD, PD, MWRD	FEMA, EM, USACE	S
4	Develop and implement a stream inspection and maintenance program throughout the watershed. Remove excessive debris loads in channels to maintain conveyance and reduce streambank erosion.	H	M, C, PB&D, FPD, PR/RL, MWRD, PD, SMC	DOT, WPC, LCPW, IDNR, Illinois EPA, T, CMAP, USACE, CCPW	S
5	Implement projects that reduce runoff to ravine systems either by bypassing high flows or by detaining/retaining runoff on the tableland	H	M, C, FPD, EIG, HOA, PD, PO	SMC, MWRD, PB&D, Illinois EPA, ICMP, IDNR	S
6	Design and install stormwater BMPs to capture and stormwater runoff from roads, parking lots, and other transportation infrastructure.	H	CBL, DOT, M, C, T, DH, SI	SMC, Illinois EPA, MWRD	M
7	Identify and increase additional flood storage at regional wetland restoration or flood storage sites.	H	SMC, MWRD IDNR, FPD, M, T, PD, PO	LCHD, CMAP, PB&D	M
8	Communities adopt and implement "no adverse impact" floodplain management standards.	H	M, C, T, EO, CMAP, SMC, PB&D	FEMA, EIG, Illinois EPA, USACE, EM,	M
9	Support flood hazard map updates, including the FEMA Flood Insurance Study, to accurately identify current flood hazard areas and streams of high concern.	H	FEMA, ISWS, CMAP M, C, T, SMC, MWRD	PB&D, USACE, IDNR, EM	M
10	Develop flood inundation maps to show varying depths of flooding and respective area of inundation, in coordination with the Lake County All Natural Hazards Mitigation Plan and Cook County Multi-Jurisdictional Hazard Mitigation Plan.	H	SMC, M, MWRD, CMAP, C, PB&D	FEMA, EM, M	M
11	Implement floodproofing measures or elevate at-risk structures.	H	PO, M, C, SMC, MWRD, PB&D, CBL	FEMA, EM, DOT, IDNR,	M

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
12	Install porous or permeable surfaces in parking areas.	H	PO, CBL, SI, M, PD	SMC, MWRD, PB&D, M	M
13	Reduce the rate and volume of stormwater runoff from existing or new development by minimizing impervious cover and implementing green infrastructure practices.	H	PO, DH, CBL, M, PB&D, HOA, SI, DOT	SMC, MWRD, CMAP	M
14	Develop a plan and implement projects to reduce the amount of stormwater runoff entering sensitive natural areas of the coastal plain north of Greenwood Ave.	H	IDNR, FPD	SMC, M, C, PO, EIG, COT, WPC	L
15	Maintain and increase local drainage system capacity to improve resiliency for changing precipitation patterns.	H	M, C, T, PD, FPD, DOT	SMC, MWRD	L
16	Evaluate, preserve, and enhance the flood storage functions of existing depressional, floodplain, and riparian areas in open and undeveloped parcels.	H	M, C, T, SMC, MWRD, PD, FPD, PR/RL, PO, DOT	IDNR, WPC, PB&D, CMAP, FEMA, EM, ICMP	L
17	Use infiltration and evapotranspiration provided by green infrastructure to reduce volume of runoff and mitigate flood damage.	H	PO, M, C, DH, SMC, HOA, PD, T, MWRD, DOT	FEMA, EM, DOT, CBL, IDNR, USACE, FPD, PB&D	L
18	Expand funding opportunities including alternative funding mechanisms, technical assistance, and maintenance resources for improving stormwater green infrastructure and best management practices.	H	CMAP, IDNR, USFWS, Illinois EPA, FEMA, ICMP	FPD, PD, WPC, SMC, MWRD, EIG	L
19	Purchase and remove structures that are chronically flood damaged through the voluntary buyout program.	H	PO, SMC, M	EM, MWRD, IDNR, FPD, FEMA, PB&D	L
20	National Flood Insurance Program (NFIP) communities participate in the Community Rating System (CRS) program to mitigate flood damage and reduce flood insurance rates for residents.	M	M, C, PB&D, FEMA	SMC, MWRD	M
21	Maintain infiltration functionality of areas with high infiltration soil types by designating them as undisturbed open space features in developing/ redeveloping sites.	M	M, C, PO, DH, T, HOA	SMC, MWRD,	M
22	Encourage wet or wetland detention basins for new development and retrofit existing dry basins to these types, where feasible.	M	SMC, PB&D, M, C, T, CBL, HOA, DOT, MWRD	CMAP, DH	M

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
23	Create storage to benefit Flood Problem Area Inventory sites where feasible and cost effective	M	SMC, MWRD, M, C, T, FPD, PD	FEMA, EM, USACE	M
24	Develop standards/guidelines for use of green infrastructure for stormwater management in site planning and design including strategically connecting to off-site green infrastructure.	M	PB&D, SMC, CMAP, M	WPC, Illinois EPA	M
25	Restore and enhance under-utilized space at commercial, industrial, and residential developments with stormwater green infrastructure practices.	M	DH, PO, HOA, CBL, SI	Illinois EPA, PB&D, SMC, CMAP, WPC, MWRD	L
26	Increase education and political will to provide funding and technical analysis for improving local and countywide regulations pertaining to impervious surface stormwater runoff and best management practices (BMPs).	M	EO, WPC	IDNR, Illinois EPA, EIG, CMAP, SMC	M
27	Develop and implement a monitoring and maintenance plan for stormwater detention facilities, storm drains, drainageways, and catch basins, that identifies agency responsibilities, a maintenance schedule, budget, and funding source.	L	PO, DH, CBL, HOA, M, T, C	IDNR, SMC, MWRD, FPD, WPC	S
28	Evaluate and implement watershed-specific release rates for the 100-year storm event.	L	SMC, MWRD, C, M, PB&D	EO, USACE, IDNR, EIG	M

6.2.3 GOAL #3: NATURAL RESOURCES AND HABITAT

GOAL: Preserve, restore and enhance a green infrastructure network and system of terrestrial and aquatic natural resources and ecosystems including riparian corridors, wetlands, beaches, bluffs and upland resources to provide for natural hydrology, native plant and wildlife communities and buffers for aquatic and high-quality natural resources.

OUTCOME: Natural resources are identified, managed, restored and protected, including a series of hubs and connections, to enhance beneficial functions, native plants and wildlife, and high quality and/or locally endemic or distinctive natural areas of the watershed.

Table 6-4: Actions for Goal #3

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
1	Avoid development in and installation of gray infrastructure through high priority green infrastructure system parcels wherever possible.	H	M, C, DOT, T, DH, LCPW, CCPW	CMAP, SMC, MWRD, EIG	S
2	Continue support for and operation of the invasive species strike team and removal efforts in and around the Ramsar Wetland of International Importance/Chiwaukee-Illinois beach plain	H	FPD, IDNR, M, USFWS, EIG	ICMP, USEPA, PO, CBL	S
3	Restore degraded terrestrial and aquatic resources (lakes, wetlands and streams) using BMPs to improve habitat. This includes in-stream habitat features, such as natural channel substrates and pools and riffles to improve water quality and aquatic biodiversity.	H	PR/RL, FPD, PD, IDNR	USACE, M, SMC, MWRD, NRCS/SWCD, Illinois EPA, PB&D, ICMP	M
4	Assess current fish population and reduce or eradicate common carp and other invasive aquatic species.	H	LCHD, LA, HOA, PO, IDNR	ISGS/USGS, USFWS, ICMP	M
5	Preserve, restore, and create wetlands in the planning area wherever feasible.	H	SMC, PB&D, Illinois EPA, M, T, IDNR, USACE	EO, CMAP, ICMP	L
6	Identify potential wetland mitigation banking sites in the watershed and encourage private and/or public investment for in-watershed mitigation.	H	SMC, FPD, USACE, PB&D	PD, M, C, T, CMAP, IDNR	L
7	Identify and preserve natural areas that provide important ecological, environmental education, and recreational opportunities.	H	FPD, PD, CMAP, SI, M, T, SMC, IDNR	Illinois EPA, MWRD, ICMP	L

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
8	Protect existing healthy trees and plant and maintain a diversity of tree species in both natural and developed areas	M	FPD, M, C, T, PD, PO, EIG, OL	WPC, PB&D	M
9	Develop resource conservation and management plans, especially for ADID wetlands and other biodiversity sites.	M	SMC, FPD, IDNR, PD, AG, M, T	USACE, NRCS/SWCD, CMAP, USFWS	M
10	Develop green infrastructure protection strategies for natural communities, using acquisition, conservation easements, and other techniques.	M	M, C, T, OL, IDNR, WPC, FPD, AG	CMAP, USFWS, ICMP	M
11	Identify high quality areas for protection, acquisition, wetland protection, and habitat enhancement.	M	PR/RL, FPD, PD, PB&D, IDNR	USACE, M, C, MWRD, SMC NRCS/SWCD Illinois EPA, ICMP	M
12	Maximize buffers, habitat and natural areas in golf courses.	M	GC, M, PD, FPD	SMC, EIG, MWRD	M
13	Identify, map and restore environmental corridors across community, county and state lines, and trail connections between new and existing parks and forest preserves where appropriate.	M	FPD, PD, M, T, PB&D, CMAP	HOA, OL, IDNR, SMC, WPC, ICMP	M
14	Develop an aquatic plant management plan for lakes and streams that targets the reduction of invasive species, promotes native plant diversity and recreational use.	M	LA, IDNR, LCHD	Illinois EPA, FPD, USACE, USFWS, IDNR, WPC, ICMP	M
15	Remove invasive species.	M	PO, FPD, IDNR, OL, PD, CBL, DOT, EIG, HOA, LA, PC, SI, EIG	SMC, CMAP, WPC, Illinois EPA	L
16	Reintroduce extirpated native species as water resources or ecosystem improve (such as Blanding's turtle)	M	USFWS, IDNR, FPD	Illinois EPA, WPC, PD, LA, OL	L

6.2.4 GOAL #4: WATERSHED EDUCATION AND COMMUNICATION

GOAL: Watershed stakeholders (residents, property owners, students, non-profit organizations and public agencies) have adequate knowledge, skills, resources, motivation and stewardship opportunities to implement the watershed plan and associated programs.

OUTCOME: Stakeholders have adequate information, knowledge and opportunity to implement the watershed plan.

Table 6-5: Actions for Goal #4

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
1	Conduct a watershed outreach campaign to inform and engage the public about watershed issues, landowner responsibilities, available resources and the benefits of implementing the watershed plan.	H	WPC	SMC, CMAP, OL, LCHD, HOA, M, C, T, ICMP, EIG	S
2	Continue to educate local municipalities, landowners, and public works staff on road salt alternatives and application BMPs to minimize the use of road salt by public and private snow removal providers.	H	SMC, LCHD, LCPW, DOT	Illinois EPA, MWRD, CCDPH, M, C, T, WPC	S
3	Inform the public and distribute educational materials on the importance of watershed health (water quality, flood prevention/mitigation, soil conservation and agricultural production, green infrastructure, water-based recreation) to the economy of watershed communities.	H	WPC	LCHD, M, C, T, SI, HOA, IDNR, EIG, CMAP, MWRD, SMC, EXT, OL, FPD	S
4	Inform developers, municipalities, and residents about the negative impacts that untreated or unmitigated impervious surface coverage has on water resources.	H	WPC, OL	SMC, LCHD, MWRD,	S
5	Inform municipalities, businesses, and homeowner associations about detention basin and stormwater inlet maintenance practices that improve water quality and reduce flooding.	H	LCHD, WPC LCPW, SMC, CCPW	HOA	S
6	Provide outreach and workshops for the public affected by flood damage to inform them about the causes of flooding, flood mitigation practices, and ways to prevent local and regional flood damage.	H	SMC, PB&D, MWRD	IDNR, EM, FEMA, LCPW, CCPW	S
7	Incorporate watershed signage and information at public properties such as forest preserves, public parks, and public lake boating areas.	H	M, C, T	SMC, MWRD, PD, FPD, LA, LCHD	S

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
8	Promote invasive species awareness at public boat launches regarding boat transport, live-well water, and use of live bait.	H	LA, IDNR, LCHD	M, PD, FPD, HOA, WPC, EIG	S
9	Inform communities about the benefits of adopting the "no adverse impact standard" and maintaining floodplain as open space in reducing flood damage.	H	SMC, PB&D, MWRD	IDNR, EM, FEMA, EIG	M
10	Provide watershed residents with a 5 and 10-year report card that illustrates the ecological health of the watershed and reports progress towards watershed goals.	H	WPC	Illinois EPA, M, C, T, LCHD, SMC, MWRD	M
11	Continue to support rain barrel distribution and sale programs within the watershed.	H	SWALCO, MWRD	SMC, FPD, SWCD	L
12	Provide information and training to riparian landowners on best practices for stream and lake shoreline restoration and maintenance that will reduce erosion and increase water quality.	M	SMC, WPC, NRCS/SWCD, MWRD, LA, LCHD, HOA	M, C, T, PD, OL, PR/RL, CMAP	S
13	Encourage public and private landowners to utilize trees as a stormwater management BMP. Outreach efforts should partner with established initiatives such as the Chicago Region Trees Initiative and Conservation@Home when practical.	M	FPD, M, C, T, PD, PO, EIG, OL	WPC, PB&D	M
14	Educate landowners along streams and ravines regarding the negative impacts of yard waste dumping and potential illegality of dumping trash in stream channels and ravines.	M	WPC	SMC, M, C, T, PD, EIG	M
15	Offer and provide technical assistance to the public and local government for funding and cost-share opportunities and support with project development to implement the watershed plan.	M	WPC, SMC, NRCS/SWCD WPC, CMAP,	MWRD, LCHD, M, Illinois EPA, T, C	M
16	Inform local government, consultants and contractors, landscapers, and landowners on best practices related to Lake Michigan shoreline and bluff maintenance/management and ravine management.	M	WPC, ICMP, M, C, SMC, MWRD, FPD, EIG, OL	Illinois EPA, IDNR, PO, HOA, LCHD	M
17	Support and promote programs such as Conservation@Home and Rain Ready to reduce stormwater runoff, protect their property from flooding, and protect natural resources.	M	WPC, FPD, OL, NRCS/SWCD, EIG	SMC, MWRD	M
18	Facilitate public training and engage the public, schools, youth groups, and HOAs to volunteer for stream, beach and natural area stewardship and maintenance.	M	WPC, LA, HOA, LCHD, SI, CMAP	SMC, Illinois EPA, MWRD, OL, LS, ICMP	M

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
19	Include stream name signs at all stream crossings.	M	DOT, T, PD, FPD, M, WPC	SMC, LA, MWRD, PD	M
20	Promote the removal of invasive plants by providing trainings aimed at species identification/control (species such as: phragmities, teasel, garlic mustard, buckthorn).	L	OL, SI, EXT, EIG, HOA	LCHD, SMC, CCDPH, MWRD, CMAP, N/L, WPC, FPD, PD	S

6.2.5 GOAL #5: WATER QUALITY

GOAL: Improve water quality and address modified hydrology.

OUTCOME: Water quality improves and water bodies support their designated uses (are not impaired).

Table 6-6: Actions for Goal #5

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
1	Develop and implement a watershed monitoring program to collect, assess and report physical, chemical, and biological water quality data on streams and applicable areas of Lake Michigan on a regular basis.	H	ICMP, WPC, M, LCHD, CCDPH, ISWS, USGS	Illinois EPA, FPD, IDNR, SMC, WPC, MWRD	S
2	Reduce the quantity of road salt (sodium chloride) needed for safe and cost-effective winter maintenance to address rising chloride levels in local water bodies.	H	DOT, M, CBL, N/L, EO, PR/RL, PC, HOA, PD	SMC, LCHD, T, CCDPH, MRWD, Illinois EPA	S
3	Prepare pollution prevention plans to address emergency response for potential catastrophic environmental events such as pipeline leaks and flooding.	H	SMC, MWRD, PB&D, M, PO, CBL	M, FEMA, EM	S
4	Use Stormwater Treatment Train concepts wherever possible to infiltrate and clean stormwater runoff.	H	PO, M, PB&D, CBL, DOT, DH, HOA	SMC, Illinois EPA, MWRD, NRCS/SWCD	S
5	Identify opportunities for wetland protection and enhancement on high priority parcels identified to maintain or improve water quality.	H	M, T, FPD, PD, SMC, PO, IDNR	USACE, Illinois EPA, WPC, ICMP	S
6	Install stormwater green infrastructure BMPs in new or existing developments.	H	DH, PD, CBL, M, C, HOA, SI	SMC, MWRD, WPC, PB&D,	M
7	Establish and publish watershed-wide recommended guidance for winter de-icing BMPs including road salt application rates and alternatives.	H	DOT, SI, LCHD, M, T, SMC	Illinois EPA, PC, WPC, ICMP, IDNR, PB&D, PR/ RL, CMAP, CBL	M
8	Remediate, repair and/or bury aging and failing sanitary sewer lines that have been exposed by erosion, eliminate illicit connections and discharges, and regularly inspect sanitary sewer infrastructure.	H	M, C, T, PO, LCPW, PB&D, CCPW	DOT	M

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
9	Implement projects identified by monitoring and studies that reduce or remove causes of impairment and/or help to attain the aquatic life use standard for impaired waters.	H	PO	Illinois EPA, IDNR, ICMP, USEPA	M
10	Implement projects that restore, support or enhance the beneficial uses of the Waukegan Harbor Area of Concern.	H	USEPA, M, PO	Illinois EPA, ICMP, IDNR, USACE, USFWS	M
11	Implement BMPs that reduce pollutants with a TMDL.	H	C, CBL, FPD, PD, HOA, M, PO, PR/RL, T	CMAP, DH, DOT, IDNR, IL/WI DOA, Illinois EPA, LCHD, LCPW, NRCS/SWCD, PB&D, SI, SMC, WPC	L
12	Implement projects to remediate sites with legacy contaminants/pollutants and to stop migration of those substances beyond their current extent.	H	USEPA, Illinois EPA, PO	M, C, IDNR, USACE	L
13	Marina operators continue to participate and maintain certification in the Clean Marina Program.	H	Marina Operators, ICMP	Boaters, M, C, IDNR	L
14	Monitor for and minimize use of Per- and Polyfluoroalkyl Substances (PFAS), including in aqueous film-forming foam fire suppression system when minimization of use is in the best interest of public safety and allowable by law.	H	M, IDNR, Illinois EPA	ICMP, MWRD	L
15	Continue to support (and improve) Lake County Health Department and Illinois EPA's Volunteer Lake Monitoring Programs, as applicable to inland lakes in the planning area	M	LCHD, IDNR, Illinois EPA, FPD	SMC, M, SI, CMAP, ICMP	S
16	Implement effective leaf cleanup and composting programs.	M	M, T, EO, CL, C, DOT, OL, LCHD, HOA, SWALCO	PB&D, PR/RL, CBL, CMAP, SMC	S
17	Reduce or ban the use and direct discharge of substances known to be sources of PAHs, including coal tar sealants.	M	PR/RL, PO, M, T, C, CBL, PD, AG, HOA	WPC, SMC, LCHD, CCDPH, Illinois EPA	S
18	Pass ordinances that restrict the use of lawn fertilizer with phosphorus.	M	M, T, C, EO, HOA	PB&D, CBL Illinois EPA, CMAP, PR/RL, CL, LCHD, SMC	S

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
19	Evaluate existing data to identify areas that are impacted by toxic sediment. If toxic sediment is found, identify contaminants of concern, human and ecological health risks and potential responsible parties. Pursue investigation and remediation if human or ecological risks are likely.	M	LCHD, Illinois EPA	ICMP, ISWS, ISGS/USGS	M
20	Continue to conduct intensive basin surveys for Illinois Integrated Water Quality Report on five-year rotational basis.	M	Illinois EPA, IDNR	LCHD, SMC, WPC, ICMP	M
21	Maintain golf courses using BMPs that minimize nutrient loads and impacts to water quality.	M	GC, M, PD, FPD	SMC, EIG, MWRD	M
22	Minimize runoff volumes, velocities, and pollution to waterways by creating/restoring wetlands, natural landscapes, and stormwater best management practices such as infiltration and pollutant filtration systems.	M	AG, PR/RL, PD, FPD, WPC, M, T	NRCS/SWCD, Illinois EPA, USACE, OL, SMC, IDNR, MWRD, CMAP, ICMP	M
23	Where feasible, retrofit existing swales and open drainage-ways to infiltrate runoff with natural landscaping.	M	PO, HOA/ POA, EQ, CBL, DOT, AG, PD	DH, SMC, MWRD, OL, Illinois EPA, NRCS/SWCD	M
24	Install bioretention BMPs to capture rooftop runoff	M	DH, CBL, C, M, SI, T, PO	SMC, PB&D, Illinois EPA, MWRD	M
25	Relocate and/or place storm drain inlets away from areas with potential land use impacts to water quality (direct or indirect discharge).	M	PO, DH, M, C, PB&D, DOT, CBL, HOA	SMC, MWRD	M
26	Initiate sanitary surveys at beaches impaired for fecal coliforms and implement projects and management plans to reduce the impact of sources of contamination.	M	PO, PD, M, IDNR	Illinois EPA, ICMP	M
27	Create and enforce ordinances requiring proper cleanup and disposal of pet waste.	L	M, C, EO, FPD, PD	SMC, WPC, PB&D, CCDPH, LCHD, Illinois EPA	M
28	Conduct routine well and septic evaluations and repairs.	L	PO, AG, HOA	ISD, LCHD, CCDPH	M
29	Disable drain tiles to restore wetland hydrology.	L	AG, PO, PD, FPD, M, T	USACE, NRCS/SWCD, PB&D, SMC	L

6.2.6 GOAL #6: WATERSHED COORDINATION AND PARTNERSHIPS

GOAL: Improve coordination, engagement and decision-making between public, private and non-profit stakeholders to implement the watershed plan.

OUTCOME: Stakeholders coordinate and utilize available resources to implement watershed improvement projects.

Table 6-7: Actions for Goal #6

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
1	Watershed communities adopt the Lake Michigan Watershed Based Plan.	H	SMC, M, C, WPC, EO	T, OL, PB&D, FPD, CMAP, MWRD, ICMP, Illinois EPA, PD, SI	S
2	Establish a watershed organization or committee with funding and support to guide watershed plan implementation, provide technical assistance to watershed stakeholders, and coordinate multi-partner projects, and determine the roles of existing watershed communities, councils, organizations, and groups.	H	WPC	Illinois EPA, ICMP, LCHD, SMC, M, T, C, MWRD, PB&D, FPD, CMAP, PD, IDNR	S
3	Incorporate watershed plan recommendations or green infrastructure protection into community and county comprehensive land use plans.	H	M, C, PB&D, CMAP, FPD, T	SMC, WPC, IDNR, ICMP, MWRD	M
4	Watershed committee annually assesses progress on plan implementation and updates the watershed-based plan no less frequently than every 10 years.	H	WPC	Illinois EPA, WPC Members	M
5	Coordinate watershed committee activities and plan implementation through the hire of a coordinator or the use of shared personnel services among members of the WPC.	H	WPC	Illinois EPA, ICMP, LCHD, SMC, M, T, C, MWRD, PB&D, FPD, CMAP, PD, IDNR	M
6	Municipalities and County review development standards and policies and adopt changes as needed to implement the watershed-based plan and preserve and protect healthy aquatic life and good water quality.	H	M, C, PO, MWRD, PD, FPD	USACE, Illinois EPA, SMC, ICMP, IDNR, DOT, PB&D, NRCS/SWCD	M
7	Develop, fund, and execute a water quality monitoring program for the streams and ravines in the watershed planning area	H	ICMP, Illinois EPA, ISWS, IDNR	M, C, T, PB&D, FPD, CMAP, MWRD, Illinois EPA, PD, SMC, WPC	L
8	Develop a model or template for an intergovernmental agreement for participation in cooperative watershed projects.	M	SMC, WPC, M, C, CMAP	FPD, DOT, MWRD, HOA, CBL	M

ACTION #	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS	TIME FRAME
9	Land use planning jurisdictions consider LM watershed-based plan recommendations when developing local comprehensive plans and making land use decisions.	M	WPC, PB&D, M, C, T, FPD	CMAP, SI	M
10	Identify a watershed champion in each subwatershed or local area to promote and coordinate water resource management.	M	SMC, WPC	M, C, T, PD, FPD, EIG	S
11	Adopt tree preservation ordinances to preserve tree quantity and quality	L	M, C, T, EO	CMAP, Illinois EPA, PB&D	L

6.2.7 Regulatory and Policy Programmatic Actions

This watershed-based plan does not include land use recommendations because land use planning and development decisions are the right and responsibility of watershed municipalities and counties. This plan does consider the health of LM planning area lakes, streams and wetlands, which is a direct reflection of land use and management. Therefore, municipal and county consideration of land management and development impacts is necessary for effective watershed planning. Modifications and changes to local regulations and policy can have a significant influence on improving the ecological, environmental, safety and economic conditions of the watershed. Design standards, ordinances, codes and other regulatory tools are key mechanisms for implementing a vision for the watershed that will prevail into the future. The way that many codes and ordinances are written may encourage or require design approaches that unintentionally neglect preserving and enhancing watershed health. Local regulating entities are encouraged to provide incentives for design approaches, development and redevelopment standards, codes and ordinances that allow innovative watershed development that reduces flood damage, improves water quality and preserves or includes green infrastructure.

An excellent source of information on model development principles and a sample code and ordinance review worksheet can be found in *Better Site Design: A Handbook for Changing Development Rules in Your Community* (Center for Watershed Protection, 1998).

Recommended opportunities for policy and regulatory review and modification are based on stakeholder input during watershed planning meetings and specific watershed issues identified through the watershed assessment process. Issues to be addressed and opportunities include:

6.2.7.1 Development and Stormwater Runoff

Local land development standards should:

1. Allow, incentivize, and/or credit Low Impact Development standards/practices, infiltration BMPs, and maintaining pre-development hydrology.
2. Offset the impact of future impervious cover to ensure that additional impervious cover does not degrade catchments
3. Reduce the rate and volume of stormwater runoff from areas that are already developed.
4. Protect ravine and bluff slopes from activities that cause or exacerbate erosion.

6.2.7.2 Pollution Prevention

1. Reduce the quantity of road salt (sodium chloride) needed for safe and cost-effective winter maintenance to reverse the current trend of rising chloride levels in water bodies. Adopt standards for the use of deicing chemicals/practices.
2. Regulate and limit the use of lawn chemicals, such as fertilizers and pesticides, and tar for seal coating asphalt surfaces.
3. Reduce phosphorus loads by watershed municipalities and the county by passing an ordinance that bans the use of fertilizer with phosphorus unless a soil test indicates it is needed.

6.2.7.3 Monitoring and Stream Maintenance

1. Develop and implement a watershed monitoring program to collect and monitor water quality and biological data on a regular basis.
2. Establish institutional stream maintenance program and standards using the American Fisheries Society standards as guidelines.

6.2.7.4 Wetlands and Floodplains

1. Maintain riparian and depressional floodplain and wetlands to maximize flood storage and conveyance.
2. Restore and create wetlands where feasible with a minimum target of 10% wetland per subwatershed.

6.2.7.5 Green Infrastructure

1. Identify and preserve open space as green infrastructure or greenways to promote flood damage reduction, water quality improvement, natural resource protection and wetland restoration.

6.2.7.6 Transportation Sustainability Practices

1. Use I-LAST Scoring System for all new roadway expansion and extension projects.
2. Use practices that reduce and treat runoff volumes from roads and parking lots (reduce pavement extent, use porous pavement where appropriate, infiltrate runoff where appropriate).
3. Transportation design should consider wildlife crossings and avoid waters and wetlands where possible.
4. Include environmentally friendly stream crossings that protect aquatic habitat.
5. Monitor and maintain BMPs post-construction.
6. Conduct street sweeping and inlet cleaning.

Table 6-8: Regulatory/Policy Action Recommendations

ID	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS
RP-1	Review and modify land and transportation development standards, practices, codes and ordinances for new development and redevelopment to allow and incentivize low impact development design and green infrastructure practices to reduce runoff volumes and rates and mitigate water quality impacts..	H	M, PB&D, DOT	SMC, MWRD, Illinois EPA
RP-2	Encourage the use of stormwater green infrastructure BMPs for detention credit.	M	M, PB&D	SMC, MWRD, Illinois EPA
RP-3	Require downspout and sump pump discharges be disconnected from the storm sewer system and be directed to rain gardens, lawns, drywells or other practices for infiltration.	M	M, PB&D	HOA, MWRD, CMAP, SMC

ID	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS
RP-4	Regulatory agencies and units of government determine if current enforcement supports existing regulations	M	M, PB&D, DOT, SMC, MWRD, Illinois EPA, IDNR, USACE	EO
RP-5	Jurisdictions with transportation maintenance authority should have an adopted winter maintenance/snow and ice removal policy that includes snow removal priorities, practices and products used. Municipalities should require that all chemical applicators whether public or private must be registered with the jurisdiction and have appropriate training.	H	M, DOT, T, FPD	SMC, LCHD, CCDPH, MWRD, Illinois EPA, CCPW, LCPW
RP-6	Ban the use of fertilizer with phosphorus unless a soil test indicates it is needed.	H	M, PB&D	LCHD, CCDPH
RP-7	Ban the use of coal tar seal-coating products.	H	M, PB&D	LCHD, CCDPH
RP-8	Investigate limiting or banning the use of lawn pesticides known to runoff and pollute waters.	M	M, PB&D	LCHD, CCDPH
RP-9	In compliance with Illinois EPA, establish total suspended solids (TSS) or other numerical water quality performance standard for new developments and redevelopment in LM planning area.	M	SMC, MWRD	M, PB&D
RP-10	Participate in a coordinated watershed monitoring program to collect and monitor water quality and biological data on a regular basis.	M	M, C, ICMP	SMC, LCHD, CCDPH, T, PD, Illinois EPA
RP-11	Cooperatively establish, adopt and implement stream maintenance standards in conformance with American Fishery Society guidelines.	M	SMC, M, MWRD, IDNR	LCHD, FPD, CCDPH
RP-12	Review effectiveness of wetland regulations and develop watershed-specific provisions if needed.	L	SMC, MWRD, USACE, IDNR	M, PB&D
RP-13	Require in-watershed (LM planning area) mitigation for all floodplain wetland impacts.	H	SMC, MWRD, USACE, IDNR	M, PB&D
RP-14	Map depressional wetlands/floodplain and investigate flood damage in these areas to determine if floodplain development in depressional areas should be restricted for safety reasons.	H	SMC, MWRD, M, PB&D,	FEMA

ID	ACTION	PRIORITY	LEAD PARTNERS	SUPPORTING PARTNERS
RP-15	Develop and implement roadway design standards that include environmentally friendly stream crossings that protect aquatic habitat, route roadways away from sensitive waters and wetlands where possible and consider and incorporate wildlife crossings.	H	M, DOT, T	IDNR, SMC
RP-16	Implement street-sweeping and inlet clearing programs, particularly during autumn months	H	DOT, M, T	LCHD
RP-17	Consider impervious surface coverage regulations at appropriate scales such as parcels or catchments to reduce runoff volumes new development and redevelopment.	M	M, PB&D, WPC, SMC, CMAP	USACE, IDNR, Illinois EPA, EIG, OL
RP-18	Require that developers demonstrate measures taken to minimize impervious surfaces (i.e. parking ratios, multi-level parking, permeable surface parking, reduced street widths, and sidewalks on one side of street, etc.).	M	CBL, DOT, M, T, SI, EO	SMC, Illinois EPA, MWRD
RP-19	Identify, repair, or disconnect all illegal discharges (illicit storm drain and/or sump pump hookups).	H	M, T, PR/RL, CBL, HOA, ISD	SMC, LCHD, CCDPH, MWRD, Illinois EPA
RP-20	Expand opportunities to reduce vehicular traffic and increase alternative modes of transportation.	M	M,T,DOT	SI

See Section 6.1 Implementation Partners for descriptions of the Lead/Support Partners.

6.3 SITE-SPECIFIC ACTION PLAN

Project or site-specific action items and recommendations are tied to a particular location or locations in the watershed. As with the programmatic actions, these site-specific recommendations were developed to address watershed problems, to improve watershed resources and to achieve goals and objectives. Due to the size of the planning area and sheer number of site-specific action recommendations developed during the course of the planning process, readers of the plan are encouraged to use the ***online mapping application*** (https://lakecountyil.maps.arcgis.com/apps/webappviewer/index.html?id=eefd51423bdf444e9dcfc110302c4819). The individual recommendations are also listed in tables, organized by jurisdiction, in **Appendix N**. Maps showing the action recommendations are included in **Appendix N**, but users are encouraged to use the online mapping application.

NOTEWORTHY: PROJECT SPECIFIC ACTIONS

Site-specific watershed projects/actions include BMPs, detention basin retrofits, problem hydrologic/hydraulic structure modification, flood mitigation solutions, streambank and ravine stabilization, and wetland preservation/restoration and creation priorities.

During development of the watershed-based plan, many methods were used to identify specific project sites, which are outlined below:

- Direct stakeholder input.
- Detention basin inventory.
- Stream inventory and assessment.
- Ravine assessment
- Lake shoreline inventory and assessment.
- Flood problem area inventory.
- Lake County Wetland Restoration & Preservation Plan (WRAPP).
- GIS analysis and water quality monitoring data.
- Previously planned projects.

The identification of specific sites suited for watershed improvement projects has been ongoing during past planning efforts in subwatersheds of the LM planning area. Specifically, Kellogg Creek, Dead River, and Waukegan River have current watershed-based plans that should be considered jointly with this regional plan. This chapter is not a comprehensive inventory of all possible projects in the LM planning area; it is only intended to provide guidance on where to "kick start" implementation.

For the purposes of this plan, wetland enhancement includes only existing wetlands and restoring their natural function, efficiency and biodiversity whereas wetland restoration and creation includes creating wetlands where they do not currently exist. Opportunity sites for flood mitigation and regionally significant storage site action recommendations are also highlighted.

NOTEWORTHY: SITE-SPECIFIC ACTIONS VS. BASIN-WIDE SITE-SPECIFIC ACTIONS

SITE-SPECIFIC ACTIONS:
Recommendations for a specific geographic location in the planning area. Sites may be represented by single points, linear features (such as stream banks), or polygons (specific areas, such as a wetland).

BASIN-WIDE SITE-SPECIFIC ACTIONS:
Recommendations that can be applied to a specific geographic location but which are generally identified across the planning area based on land use/land cover or some other "mappable" geographic characteristic. Opportunities for runoff volume reduction are an example of basin-wide site-specific actions.

This section outlines and summarizes **site-specific actions** and **basin-wide site-specific actions**. Where applicable, the action recommendations are coded by jurisdictions and project type category (Table 6-9). Individual site-specific actions and their attributes and details are available through the online web application hosted by SMC and in detailed jurisdictional tables located in **Appendix N**. Chapter 7 includes overall cost estimates, pollutant load reductions, and implementation strategies. There are over 4,000 site-specific and basin-wide site-specific action recommendations. These actions are summarized in Tables 6-10, 6-11, 6-18 and 6-19. If implemented, the actions would benefit nearly 10,000 acres and more than 27 miles of streambank/lake shoreline.

Table 6-9: Site-Specific Action Categories

PROJECT SPECIFIC ACTION CATEGORY	DESCRIPTION
Beach Management	Actions related to improving water quality, access, and public safety at bathing beaches. Actions include recommendations from the Lake Michigan TMDL, local beach management plans, and input from local beach managers.
Critical Infrastructure	Actions that protect infrastructure that is essential for the normal function of society (ex. water treatment facilities).
Debris Jam	Debris jams are any notable issues that impede the conveyance and function of the waterway. These locations were identified by SMC staff during the stream and ravine inventories.
Detention Basin Retrofit	Detention basin retrofit recommendations are based on a basin survey completed by SMC. These projects include maintenance and actions to improve basin function.
Filter Strip	Filter strip recommendations in areas with poor or nonexistent riparian zones.
Flood Risk Reduction	Actions that reduce probability of flooding in a specific area.
Golf Course Management	Actions that reduce water quality impacts at golf courses.
Green Infrastructure	Actions that preserve stormwater green infrastructure benefits and wetlands within open space areas.
Road Salt Management	De-icing practices that reduce water quality impacts while maintaining transportation safety.
Runoff Volume Reduction	Recommendations for installation of runoff volume reduction BMPs such as rain barrels, rain gardens, green roofs, curb and gutter cuts, permanent vegetation cover, bioswales and tree installation practices.
Shoreline Stabilization	Site-specific lakeshore recommendations include severely eroding lake banks identified during community outreach meetings.
Stabilization	Site-specific erosion control recommendations, including severely eroding streambanks and ravines identified from inventories.
Stream/Ravine Restoration	Actions that improve the condition of streams and ravines such as erosion control and habitat improvements.
Water Infrastructure	Recommendations for non-critical infrastructure that conveys, restricts, treats, or stores water. Does not include detention basin recommendations. These locations were identified by SMC staff during various stream inventories.
Wetland Enhancement	Recommendations to enhance wetlands.
Wetland Restoration	Recommendations to create wetlands.

Table 6-10: Summary of Site-Specific Actions by Priority.

BMP TYPE	# OF PROJECTS				UNIT OF PRACTICE			
	H	M	L	TOTAL	H	M	L	TOTAL
Beach Management	9	8	5	22	0.7 ac, 8 ea	8 ea	5 ea	0.7 ac, 21 ea
Critical Infrastructure	2	1	0	3	2 ea	1 ea	0	3 ea
Debris Jam	16	0	0	16	16 ea	0	0	16 ea
Detention Basin Retrofit	3	22	38	63	3 ea	22 ea	38 ea	63 ea
Filter Strip	0	3	0	3	0	5.1 ac	0	5.1 ac
Flood Risk Reduction	20	8	4	32	8.4 ac, 18 ea	1.3 ac, 6 ea	4 ea	10.3 ac, 28 ea
Golf Course Management	0	0	2	2	0	0	2 ea	2 ea
Runoff Volume Reduction	3	1	0	4	1.3 ac, 2 ea	0.2 ac	0	1.5 ac, 2 ea
Shoreline Stabilization	1	4	1	6	895.6 lf	1,386.7 lf, 0.1 ac, 1 ea	410.2 lf	2,692.5 lf, 0.1 ac, 1 ea
Stabilization	22	20	10	52	1,757 lf	1,482 lf	666 lf	3,905 lf
Stream/Ravine Restoration	25	33	53	111	55,585.0 lf	27,605.4 lf, 14.5 ac	52,343.2 lf, 49.4 ac, 1 ea	25.7 ln mi, 63.9 ac, 1 ea
Water Infrastructure	50	27	24	101	949.9 lf, 48 ea	1,889.5 lf, 26 ea	24 ea	2,839.4 lf, 98 ea
Wetland Enhancement	8	29	44	81	112.5 ac	169.7 ac	171.4 ac	453.6 ac
Wetland Restoration	207	420	256	883	200.4 ac	348.1 ac	210.3	758.8 ac
Totals	366	576	437	1,379	323.3 ac, 11.2 ln mi, 97 ea	539.0 ac, 6.1 ln mi, 64 ea	431.1 ac, 10.1 ln mi, 74 ea	1,293.4 ac, 27.4 ln mi, 235 ea

ac = Acres, ea = Each, lf = linear feet, ln mi = linear miles

Table 6-11: Summary of Acres of Recommended Basin-Wide Site-Specific Actions by Priority

BMP TYPE	ACRES OF PRACTICE			
	HIGH PRIORITY	MEDIUM PRIORITY	LOW PRIORITY	TOTAL
Green Infrastructure (GI)	0	2,555	0	2,555
Road Salt Management (RSM)	3,357	0	0	3,357
Runoff Volume Reduction (RVR)	0	0	14	14
Wetland Enhancement (WLE)	0	262	2,507	2,769
Total	**3,357**	**2,817**	**2,521**	**8,695**

6.3.1 Critical Area Actions

Critical areas are defined in Chapter 4. Actions addressing these critical areas will have added value and benefit to the LM planning area. Table 6-12 summarizes the critical area categories, relevant jurisdictions, and relevant actions. Jurisdictions can reference this table to review which critical areas are relevant. Figure 6-1 illustrates the critical areas in map format with jurisdictional boundaries. Site specific actions that fall within critical areas and the categories listed in Table 6-12 are considered high priority.

Table 6-12: Critical Area Categories, Jurisdictions, and General Actions

CRITICAL AREA CATEGORY	JURISDICTIONS	GENERAL RELEVANT ACTIONS
Critical Catchments (Pollutant Hotspot)	**Townships:** Benton, Waukegan **Municipalities:** Winthrop Harbor, Zion, Beach Park, Waukegan, North Chicago, Highland Park **State/Forest Preserve:** Lyons Woods	Urban BMPs, enhance and expand green infrastructure, wetland restoration restoration/creation and enhancement, maintain infiltration and hydrology of catchment, stream maintenance, detention basin retrofits, monitoring
Critical Catchments (Streambank Erosion)	**Townships:** Benton **Municipalities:** Winthrop Harbor, Zion, Beach Park, Waukegan, Lake Bluff, Lake Forest **State/Forest Preserve:** Adeline Jay Geo-Karis Illinois Beach State Park	Stream restoration and bank/channel stabilization
Lake Michigan Shoreline Segments	**Townships:** Benton, Waukegan, Shields, Moraine **Municipalities:** Winthrop Harbor, Zion, Waukegan, North Chicago, Lake Bluff, Lake Forest, Highland Park, Glencoe, Winnetka **State/Forest Preserve:** Adeline Jay Geo-Karis Illinois Beach State Park, Fort Sheridan Forest Preserve	Stabilize severely eroding lake shorelines Perform sanitary surveys to determine likely sources of bacteria pollution and implement projects/programs to remedy
Waukegan Harbor Area of Concern and Expanded Study Area	**Townships:** Waukegan **Municipalities:** Waukegan, North Chicago **State/Forest Preserve:** Adeline Jay Geo-Karis Illinois Beach State Park	Actions to restore/preserve beneficial uses

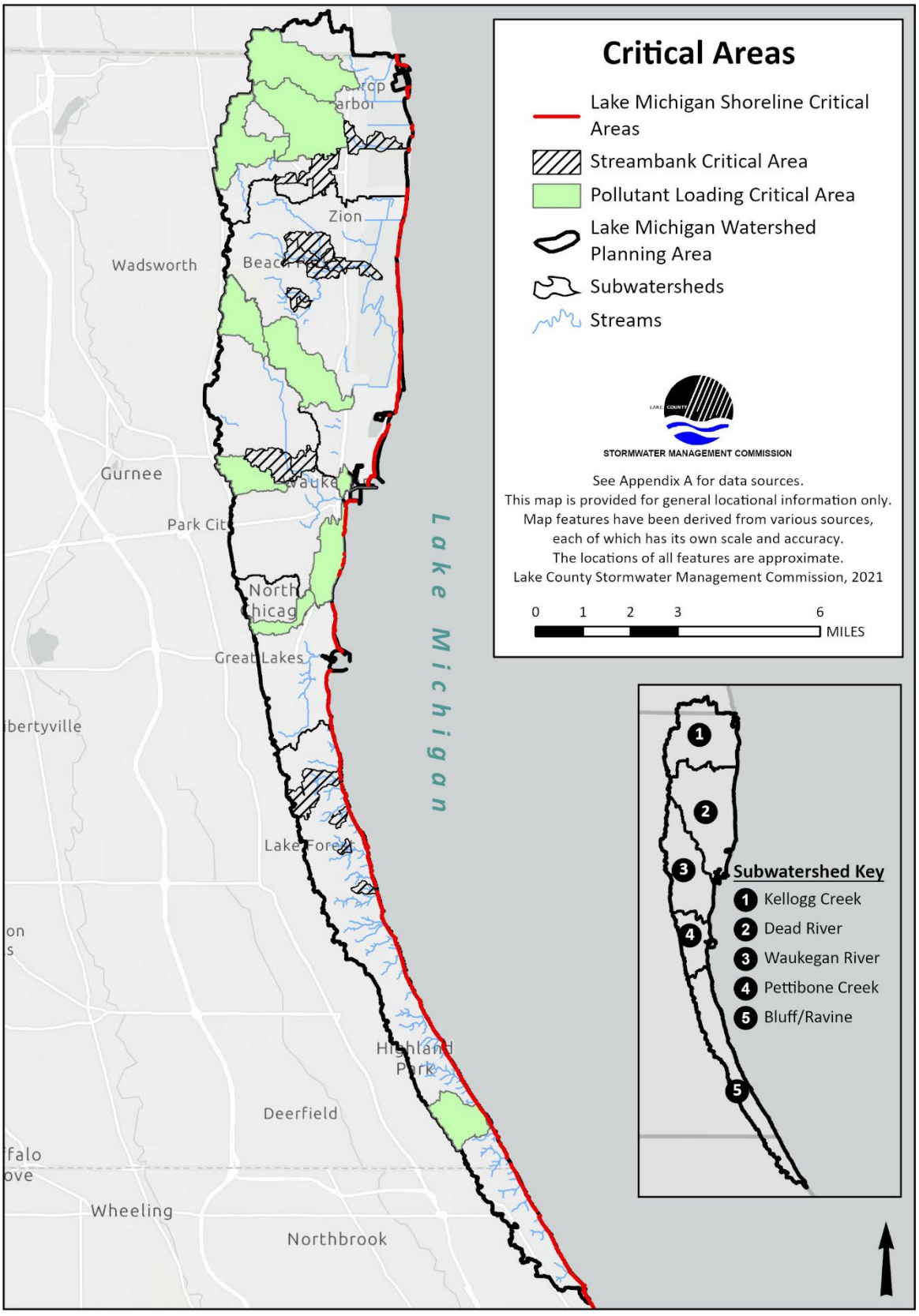

Figure 6-1: Lake Michigan Planning Area Critical Areas

6.3.2 Flood Problem Area Mitigation Actions

Lake County SMC has advanced progress towards flood mitigation efforts by inventorying and maintaining a database of flood problem areas as reported by watershed residents and stakeholders. Maps and summary information of the flood problem areas are included in **Chapter 5**, and this chapter intends to guide and direct actions to address the problems. There are 74 flood problem areas in the LM planning area and 255 locations were identified as impacted by the July 2017 flood event (Chapter 5). The Bluff/Ravine subwatershed has the most reported problem areas (Table 6-13). It is not within the scope or objectives of this plan to assess each individual problem and propose specific mitigation actions, however it is important to enable jurisdictions and stakeholders to better understand the problems to address and prioritize actions. The flood problem area data was reviewed, and a planning-level GIS analysis was applied to guide and focus actions.

The action recommendations and priorities were developed primarily from discussions with municipalities and other stakeholders. In some cases, concept plans and budget estimates have been developed for these actions by stakeholders. Based on the number of flood problem area inventory sites and the number of locations affected by other storm/flood events, there are clearly additional remedial actions needed in the planning area.

Table 6-13: Summary of Flood Action Priorities by Subwatershed

SUBWATERSHED	FLOOD PROBLEM AREA INVENTORY SITES	JULY 2017 FLOOD INCIDENTS	# ACTIONS		
			H	M	L
Kellogg Creek	7	18	4	3	--
Dead River	15	51	3	1	2
Waukegan River	15	84	2	1	--
Pettibone Creek	9	23	5	1	1
Bluff/Ravine	28	79	6	2	1

6.3.2.1 Approach to Flood Mitigation Actions

Field reconnaissance is necessary to first evaluate sites; this would be followed by a detailed flood study or drainage analysis in combination with some level of engineering design and property owner(s) input to define alternatives and the most feasible mitigation measures for a specific problem area.

Flood problems are often complex and require specialized expertise; numerical modeling is sometimes necessary to adequately understand and diagnose the problem and design solutions. Flood mitigation activities also require a comprehensive understanding of regulations, local ordinances, and floodplain management. Professional engineers, certified floodplain managers and stormwater managers need to be engaged in addressing flooding problems and the design of mitigation solutions.

An important action recommendation is to avoid a strict focus of directly addressing flood problems alone; a more holistic approach should be adopted to consider the flood problem locations and integrating these issues in all planning, permitting, development, and infrastructure processes so that the issues can potentially be addressed, and precautions can be taken so the problems do not worsen. It is also important to consider the toolbox of programmatic recommendations, preventative mitigation strategies and industry standard structural and non-structural flood mitigation best practices which are discussed in Chapter 5.

Section 6.3.4 defines actions based on jurisdictions, and **Appendix N** includes supporting details for each of the sites.

6.3.3 Potential Wetland Enhancement and Restoration Sites

As described in Chapter 3, the Wetland Restoration and Protection Plan (WRAPP) identified specific opportunities for the enhancement of existing wetlands and the restoration or creation of wetlands or those that are potentially restorable. These wetlands were evaluated, based on priority and developed into site-specific and basin-wide site-specific actions; the WRAPP provided scoring totals from which to select high priority sites. Existing wetlands, suitable for enhancement are summarized below based on their priority. As with restoration/creation, the WRAPP dataset provided scoring totals from which to select high priority enhancement sites.

6.3.3.1 Wetland Enhancement

Wetland enhancement can be described as those existing wetlands that could benefit from remedial actions that enhance their extent or function. Existing wetlands include those that are on publicly owned open space parcels identified as farmed, excavated, ditched, drained, channelized, or spoil/disposal areas. A total of 3,476 acres of existing wetland in the Lake Michigan Planning area are identified in the WRAPP. While nearly all wetlands in the LM planning area would likely benefit from some enhancement or management activity, 112 acres can be considered high priority for enhancement; this represents 3% of the total acreage. In general, wetland restoration (section 6.3.3.2) was considered a higher priority within the plan than wetland enhancement. High priority wetland enhancement recommendations are found in the Site-Specific action recommendations and are transferred from previous watershed plans. Wetland enhancement in the Basin-Wide Site-Specific action recommendations are limited to medium and low priority, with medium priority recommendations limited to those located in critical catchments. Wetland enhancement sites are also located within critical area catchments. A total of 544 recommended wetland enhancement acres are contained within critical areas; this represents 16% of all existing wetland acres. The greatest percentage and total area of wetland enhancement recommendations are found within the Dead River subwatershed (Table 6-14). Also of note, relatively few potential enhancement acres are located in the Pettibone Creek and Bluff/Ravine subwatersheds.

Table 6-14: Wetland Enhancement by Subwatershed

SUBWATERSHED	WETLAND ENHANCEMENT (acres)
Kellogg Creek	1,259
Dead River	1,686
Waukegan River	289
Pettibone Creek	62
Bluff/Ravine	180
TOTAL	**3,476**

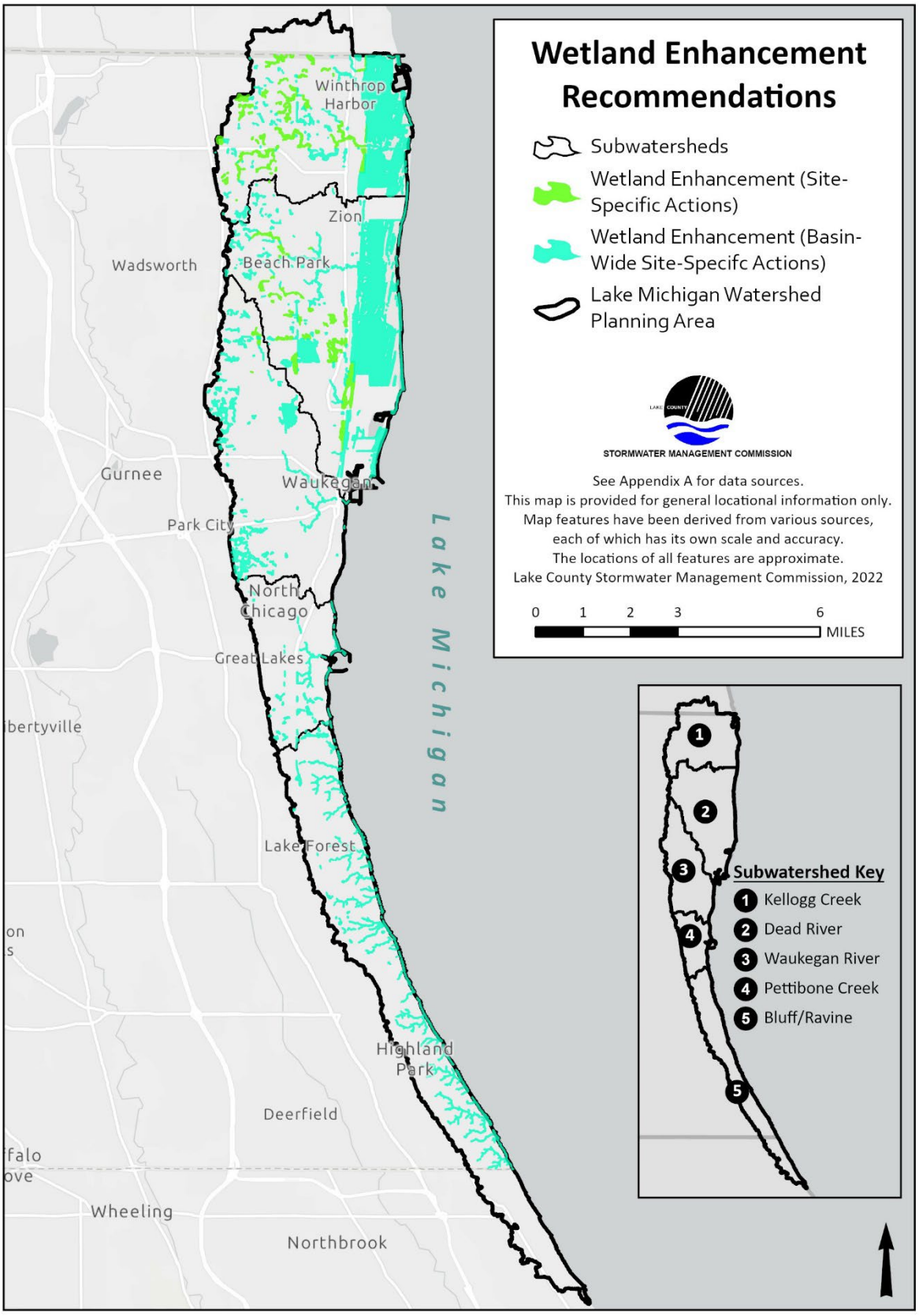

Figure 6-2: Wetland Enhancement Recommendations

6.3.3.2 Wetland Restoration

Wetland restoration locations are predictors of the best places to attempt wetland restoration based on historic wetland conditions and existing land use/land cover; although not necessarily specific land management practices or behaviors. Due to the limited number and acreage of wetland restoration opportunities within the planning area, all potentially restorable wetlands identified in the Lake County WRAPP are included in the site-specific action plan. Expected annual load reductions were generated for the footprint of each location.

The LM planning area contains a total of 759 acres of potentially restorable wetlands. Prioritization was determined by weighting the estimated functional significance ratings for each wetland. The weighting criteria are enumerated in **Appendix I**. More than 75% of wetland restoration opportunities are located in the Kellogg Creek and Dead River subwatersheds, a result of the difference in the density of urban development in the subwatersheds in the planning area. Nearly all high priority wetland restoration recommendations are located in these two subwatersheds. However, due to the limited amount of wetland restoration opportunities in the Lake Michigan watershed planning area compared to other watersheds in the region, any wetland restoration opportunity in the planning area should be pursued as a priority. Table 6-15 and Figure 6-3 show the distribution of potential wetland restoration sites.

Table 6-15: Wetland Restoration/Creation by Subwatershed

SUBWATERSHED	WETLAND RESTORATION RECOMMENDATIONS (Acres)			
	High Priority	Med. Priority	Low Priority	Total
Kellogg Creek	112	115	61	288
Dead River	87	155	64	306
Waukegan River	<1	55	61	116
Pettibone Creek	<1	16	12	28
Bluff/Ravine	<1	8	12	21
TOTAL	**200**	**349**	**210**	**759**

Potential wetland restoration/creation sites are also distributed within critical area catchments. A total of 189 acres of potential wetland restoration are in critical area catchments; representing 25% of total potential restoration/creation acres. The Kellogg Creek Subwatershed has the most acreage of potential wetland restoration in critical catchments (Table 6-16).

Table 6-16: Wetland Restoration by Critical Area Catchments

SUBWATERSHED	RESTORATION IN CRITICAL CATCHMENTS (acres)
Kellogg Creek	128
Dead River	38
Waukegan River	22
Pettibone Creek	<1
Bluff/Ravine	0
TOTAL	**189**

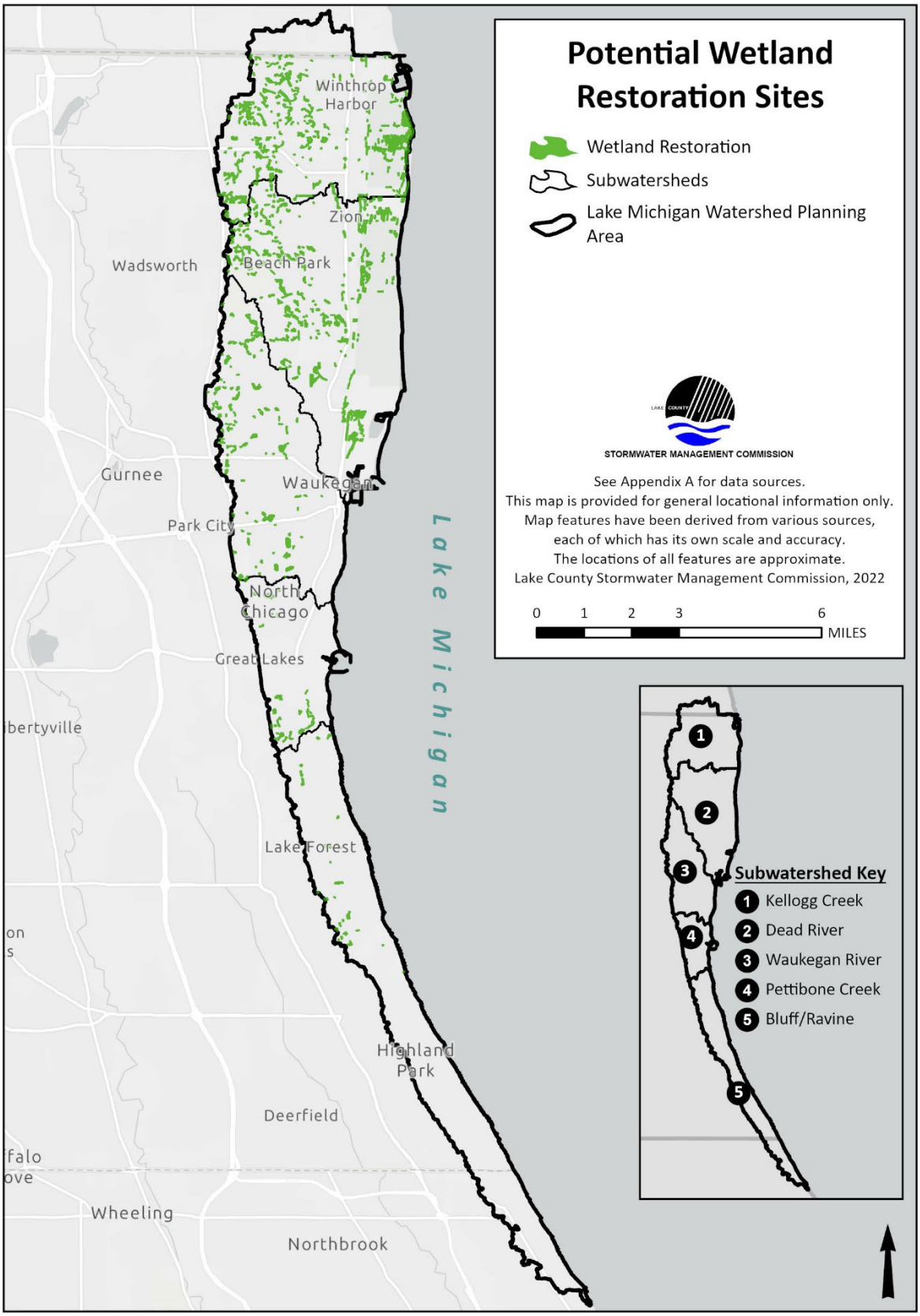

Figure 6-3: Potential Wetland Restoration/Creation Recommendations

6.3.4 SITE-SPECIFIC ACTIONS BY JURISDICTION

The following section summarizes site-specific actions and basin-wide site-specific action recommendations for each jurisdictional area within the LM planning area. Due to the large number of practices, specific details on individual actions are included in **Appendix N** and available through the Lake County SMC web application. **Appendix N** includes tables containing specific actions by jurisdiction and include unique action item codes, BMP type, description, subwatershed, quantities and units, cost estimates (if applicable), implementation priority and timeline, critical catchment status, plan goals addressed, lead and supporting partners and load reductions, if applicable.

6.3.4.1 Site-Specific Actions

Site-specific actions are comprised of project recommendations and are based on lake, ravine and stream inventories, and coordination with stakeholders. The practice applies to a single specific geographic location. This section also includes stakeholder recommendations tied to a physical location. Table 6-17 summarizes all actions by jurisdiction; a detailed table of each individual action item, complete with all applicable attributes is located in **Appendix N**. Figure 6-4 shows the location of all site-specific practices.

Table 6-17: Number of Site-Specific Actions by Jurisdiction.

JURISDICTION	Beach Management	Bluff/Ravine Stabilization	Critical Infrastructure	Debris Jam	Detention Basin Retrofit	Filter Strip	Flood Risk Reduction	Golf Course Management	Runoff Volume Reduction	Shoreline Stabilization	Stabilization	Stormwater BMP	Stream/Ravine Restoration	Water Infrastructure	Wetland Enhancement	Wetland Restoration
MUNICIPALITY																
Beach Park	--	--	--	1	3	--	3	--	--	--	17	--	17	14	16	131
Glencoe	1	--	1	1	--	--	2	--	--	--	--	--	8	5	--	--
Highland Park	3	--	--	2	--	--	1	--	--	3	11	--	19	13	--	--
Highwood	--	--	--	--	3	--	4	--	--	--	--	--	1	--	2	--
Lake Bluff	1	--	--	--	--	--	2	--	--	1	--	--	5	--	--	40
Lake Forest	1	--	--	5	1	--	1	--	--	3	2	--	21	15	--	23
North Chicago	--	--	--	--	4	--	5	--	--	--	--	--	--	--	--	13
Pleasant Prairie	--	--	--	1	4	1	--	--	--	--	--	--	3	2	--	--
Waukegan	10	--	2	3	--	--	4	1	--	--	5	--	14	11	15	179
Winnetka	3	--	--	--	--	--	--	--	--	--	--	--	1	2	--	--
Winthrop Harbor	1	--	--	1	7	1	4	--	1	--	10	--	13	10	24	82
Zion	--	--	--	2	23	1	4	1	1	--	3	--	12	18	23	159

JURISDIC-TION	Beach Management	Bluff/Ravine Stabilization	Critical Infrastructure	Debris Jam	Detention Basin Retrofit	Filter Strip	Flood Risk Reduction	Golf Course Management	Runoff Volume Reduction	Shoreline Stabilization	Stabilization	Stormwater BMP	Stream/Ravine Restoration	Water Infrastructure	Wetland Enhancement	Wetland Restoration
TOWNSHIP																
Benton	--	--	--	--	--	--	1	--	--	--	2	--	8	4	10	43
Moraine	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Shields	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	8
Waukegan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18
OTHER																
Lake County Forest Preserve District	--	--	--	--	--	--	--	--	--	--	--	--	2	1	9	47
Open Lands	--	--	--	--	--	--	--	--	--	--	2	--	2	--	--	1
State of Illinois	2	--	--	--	--	--	--	--	--	--	--	--	2	4	--	183
Dept. of Navy	--	--	--	--	1	--	--	--	--	--	--	--	1	--	--	--
Dept. of Army	--	--	--	--	--	--	1	--	2	--	--	--	--	2	--	--

Site-Specific Actions that Span Multiple Jurisdictions are Included in Project Counts for Each Jurisdiction in Project Area

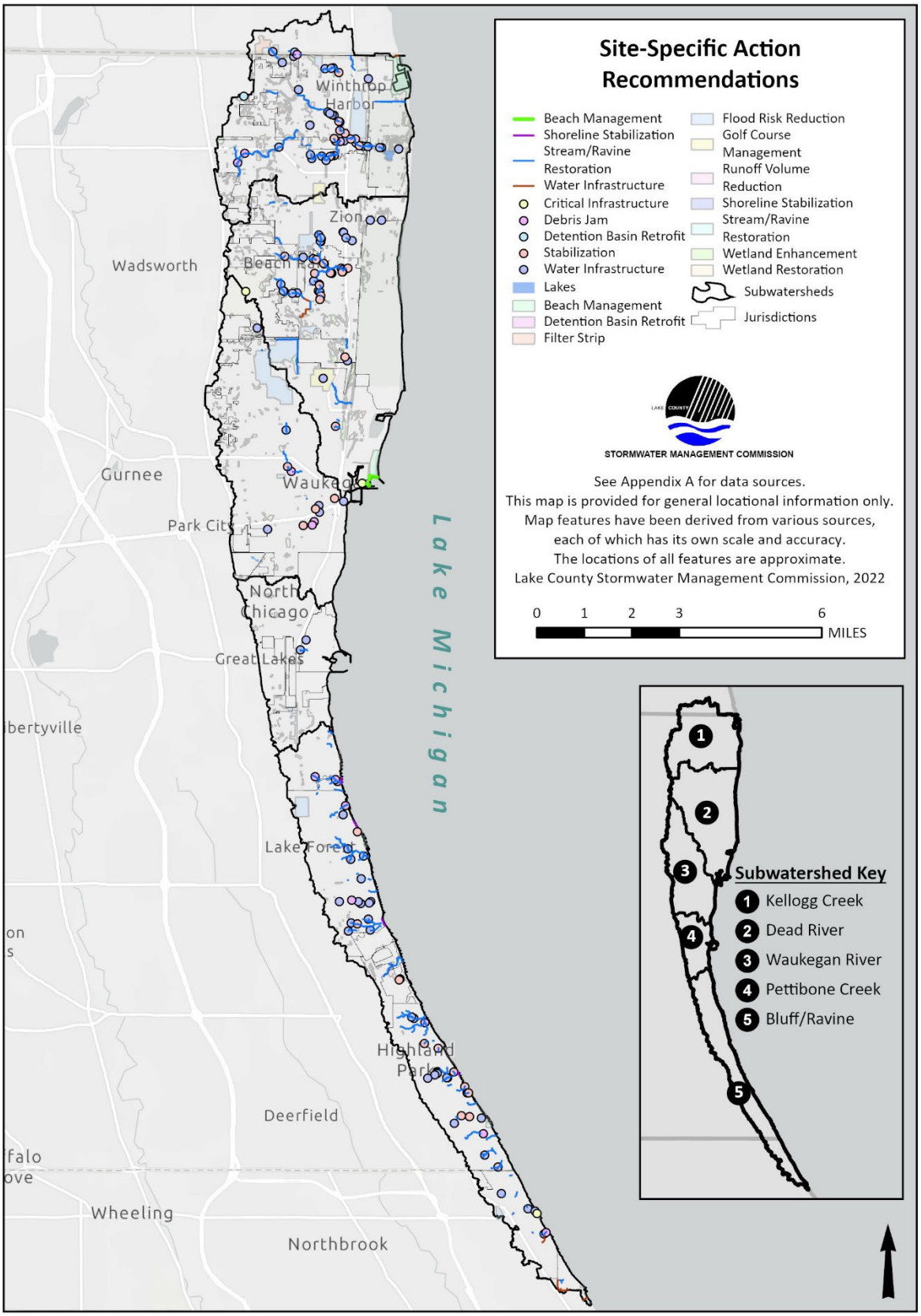

Figure 6-4: Lake Michigan Watershed Site-Specific Action Recommendations

6.3.4.2 Basin-Wide Site-Specific Actions

Basin-wide site-specific actions are comprised of project recommendations can be applied to a specific geographic location but which are generally identified across the planning area based on land use/land cover or some other mapped geography. Thus the recommended practice applies to any site within the mapped geography. Table 6-18 summarizes all actions by jurisdiction; a detailed table of each individual action item, complete with all applicable attributes is located in **Appendix N**. Figure 6-5 shows the location of all basin-wide site-specific action recommendations.

Table 6-18: Acres of Basin-Wide Site-Specifc BMPs by Jurisdiction

JURISDICTION	Green Infrastructure	Road Salt Management	Runoff Volume Reduction	Wetland Enhancement
MUNICIPALITY				
Beach Park	246	171	<1	378
Glencoe	101	76	--	--
Highland Park	209	204	<1	148
Highwood	5	40	<1	16
Lake Bluff	111	91	<1	461
Lake Forest	222	177	<1	410
North Chicago	34	370	2.5	23
Pleasant Prairie	201	6	--	--
Waukegan	334	1,264	8	170
Winnetka	47	7	--	--
Winthrop Harbor	288	160	--	131
Zion	448	497	2	29
TOWNSHIP				
Benton	129	22	<1	18
Moraine	--	--	--	26
Shields	3	6	--	--
Waukegan	69	10	--	49
OTHER				
Lake County Forest Preserve District	--	17	--	766
Open Lands	--	2	--	--
State of Illinois	--	66	--	76
Dept. of Navy	1	135	<1	47
Dept. of Army	107	37	<1	20

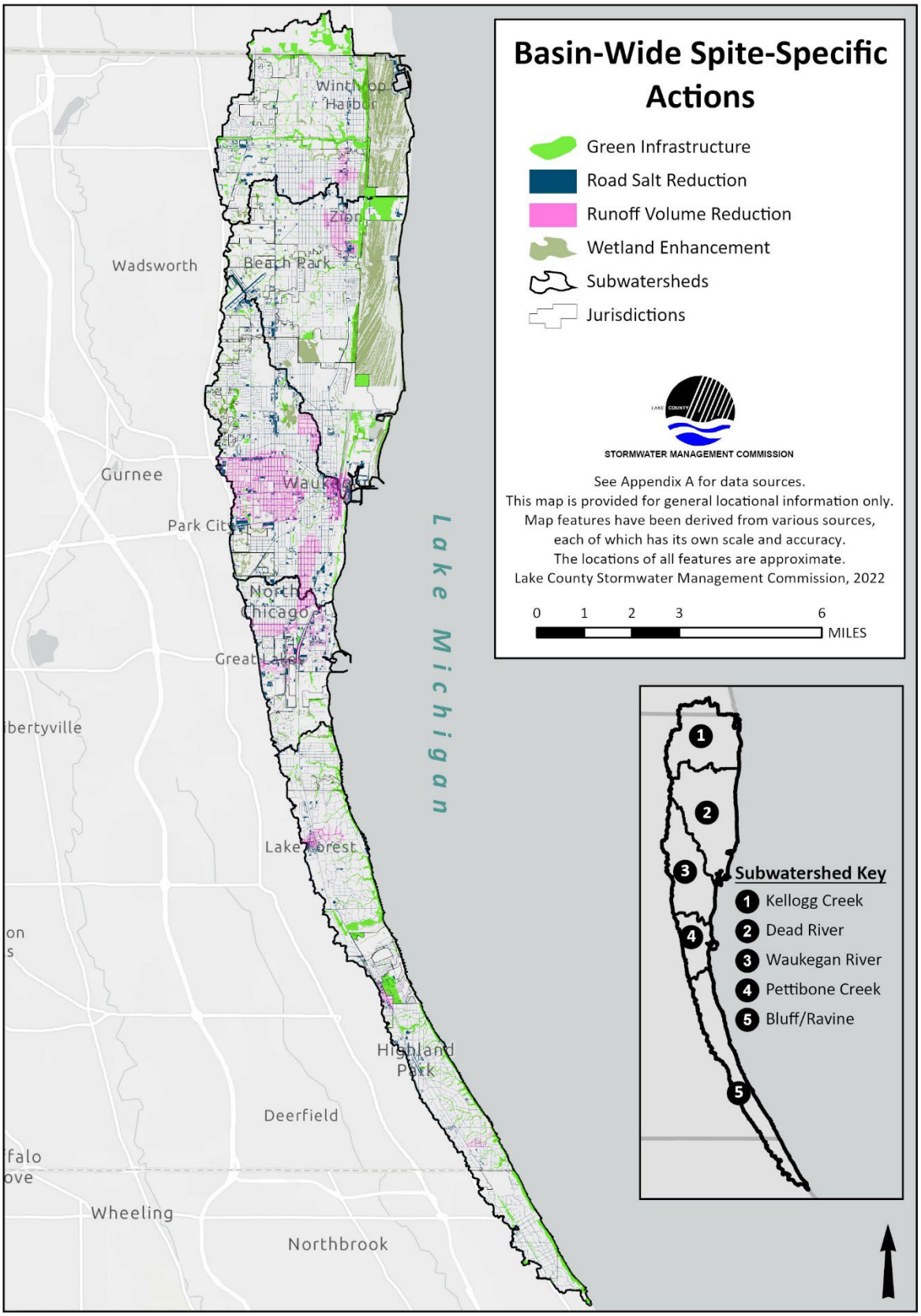

Figure 6-5: Lake Michigan Watershed Basin-Wide Site-Specific Action Recommendations

6.3.5 Lake Actions

This section identifies actions for Sand Pond and Dugdale Lake and is largely based on data and recommendations identified in Lake County Health Department Lake Reports dating back to 2000 (Table 6-19). In fact, both lakes have not been assessed by the Health Department in more than 10 years. Lake-specific actions include programmatic, planning, and BMP recommendations. In the cases of both lakes, the primary recommendation is to determine if the lakes are still impaired for aesthetic quality, as the most recent lake reports from the Lake County Health Department indicate that all other designated uses are fully supported. Similar to the other types of action recommendations in this plan, lake actions have been given a unique ID, priority, time frame for implementation, lead partners are identified, and estimated cost is provided. Lakes with action recommendations are shown in Figure 6-6 and actions are listed in Table 6-20. Lake action recommendations are also included in the online mapping application for the Lake Michigan Watershed-Based Plan.

Table 6-19: Summary of Lake Action Recommendations

Priority	Number of Actions	Estimated Cost
High	3	$30,000
Medium	3	$29,000
Low	4	$3,900-$5,900
Total	**10**	**$62,900 - $64,900**

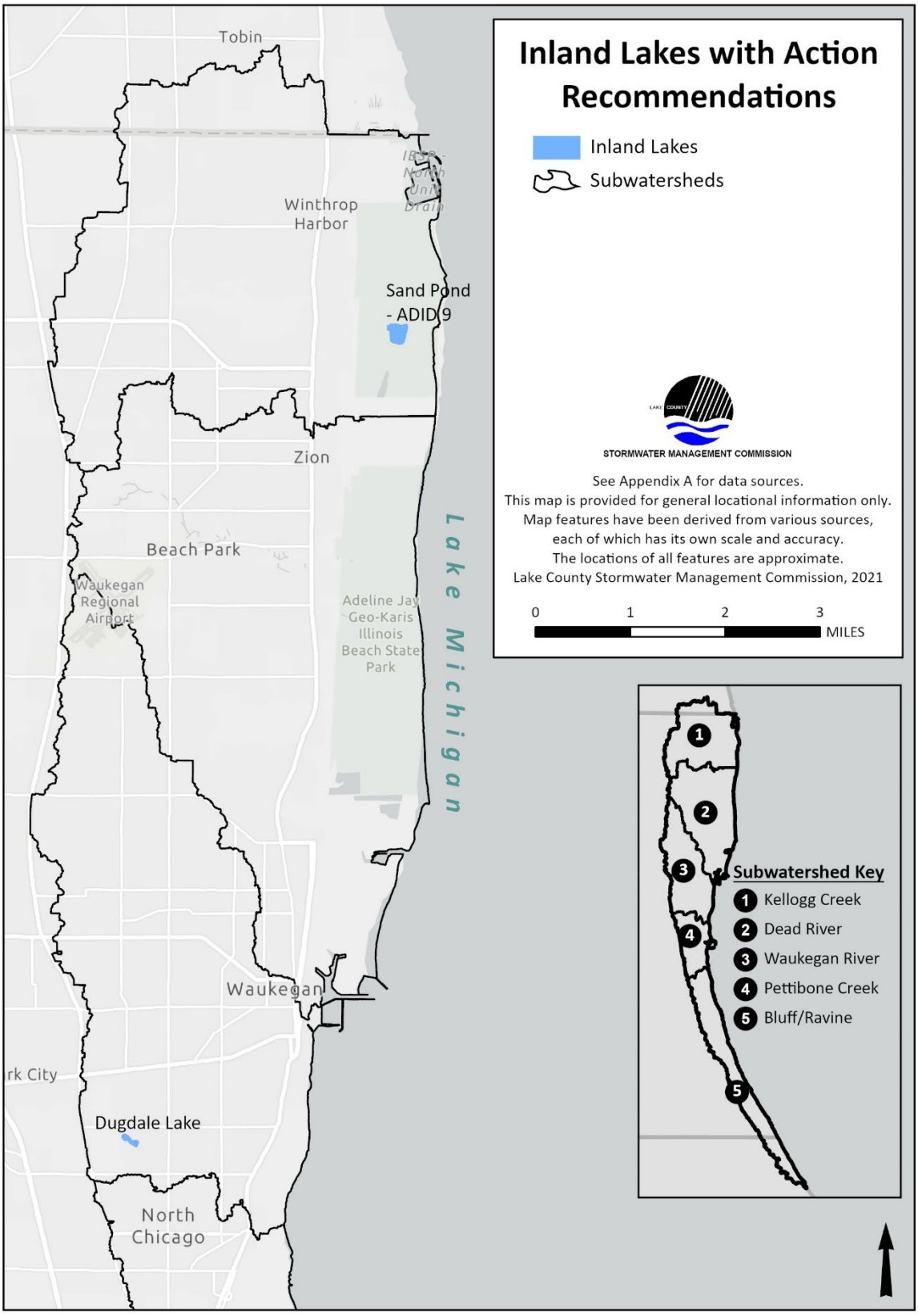

Figure 6-6: Inland Lakes with Recommended Actions

Table 6-20: Recommended Lake Actions

Lake Name	Plan ID	Recommended Actions	Priority	Time Frame	Lead Partner(s)	Cost
Dugdale Lake	LK1	Participate in the VLMP.	L	L	FPD	$200
	LK2	Install staff gage.	L	L	FPD	$500
	LK3	Develop lake management plan for all lakes in Forest Preserves.	M	M	FPD	$12,000
	LK4	Assess lake to determine if aquatic plants remain an impairment to aesthetic quality.	H	S	Illinois EPA, FPD, LCHD	$2,500
	LK5	Develop and implement APMP if plants remain an impairment.	H	S	FPD	$25,000
	LK6	Conduct fishery survey.	L	L	IDNR, FPD	$3,000 - $5,000
	LK7	Manage Eurasian watermilfoil.	M	S		$12,000
Sand Pond	LK8	Participate in the VLMP.	L	L	IDNR	$200
	LK9	Assess lake to determine if aesthetic quality remains impaired and if so, what the causes are.	H	S	Illinois EPA, IDNR, LCHD	$2,500
	LK10	If aesthetic quality is impaired, develop and implement a lake management plan to address the cause/source of impairment.	M	M	IDNR	$5,000

6.4 REFERENCES

Center for Watershed Protection, (1998). Better Site Design: A Handbook for Changing Development Rules in Your Community.

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ACRONYMS/ABBREVIATIONS USED IN CHAPTER 7

BMP – Best Management Practices
CFU – Colony Forming Unit
DRWW – Des Plaines River Watershed Workgroup
FEMA – Federal Emergency Management Agency
ICMP – Illinois Department of Natural Resources
IDNR – Illinois Department of Natural Resources
Illinois EPA – Illinois Environmental Protection Agency
INLRS – Illinois Nutrient Loss Reduction Strategy
LCFPD – Lake County Forest Preserve District
LCHD – Lake County Health Department
LMU – Lakes Management Unit
NGRREC – National Great Rivers Research and Education Center
QAPP – Quality Assurance Project Plan
SMC – Lake County Stormwater Management Commission
TKN - Total Kjeldahl Nitrogen
TMDL – Total Maximum Daily Load
TSS – Total Suspended Solids
US EPA – United States Environmental Protection Agency
USDA – United States Department of Agriculture
VLMP – Illinois Volunteer Lake Monitoring Program
WRAPP – Wetlands Restoration and Preservation Plan

7 PLAN IMPLEMENTATION AND EVALUATION

This chapter identifies a strategy and provides guidance to support transition from planning to implementation and to evaluate the effectiveness of implementation toward the goals and objectives of the plan. The primary components of this chapter include:

- Pollution load reduction estimates of action recommendations
- Estimated costs of plan implementation
- Leaders and supporters for plan implementation
- Initial steps for plan implementation
- Funding resources and opportunities
- Implementation schedule
- Evaluating plan performance
- Indicator and milestone grading system
- Water quality monitoring strategy
- Updating the watershed plan

How readily this plan is used and implemented by LM planning area stakeholders is a major indicator of its success and is easily measured by tracking the actions taken. Improvement in watershed resources or water quality are other indicators of success achieved through monitoring. Successful plan implementation will require significant cooperation and coordination among lead and support partners to secure and allocate resources and apply them to actions in the LM planning area. The watershed-based plan can be considered a living document and has the flexibility for stakeholders to make revisions over time that reflect shifts in local priorities or watershed conditions.

7.1 ESTIMATE OF POLLUTANT LOAD REDUCTIONS AND TARGETS

Pollution load estimates were made using the nonpoint source model described in Chapter 4. The purpose of estimating pollutant load reductions and targets in the LM planning area is to present a general idea of BMP implementation benefits and to outline the practices that result in the greatest benefit to the watershed and achieve plan goals.

Load reduction estimates were **not** performed for all actions identified in Chapter 6; estimates were made for projects with specific on-the-ground locations, where project information was collected and reduction efficiencies are available in literature sources. Many actions presented in Chapter 6 are planning level actions, and do not have the detail of information at this time to support load reduction estimates; estimates are calculated for individual implementation projects during the design stage of the project as site information is generated. Table 7-1 includes the categories of projects for which load reduction estimates are made and Table 7-2

Table 7-2 outlines the average expected reduction efficiencies that were applied.

Table 7-1: Project Categories Inclusive of Load Reduction Estimates

PROJECT SPECIFIC ACTION CATEGORY	INCLUDED IN LOAD REDUCTION ESTIMATES
Beach Management	Yes[1]
Critical Infrastructure	No
Debris Jam	No
Detention basin retrofit	No
Filter Strip	Yes
Flood Risk Reduction	Yes[1]
Golf Course Management	No
Green Infrastructure	No
Road Salt Management	Yes
Runoff Volume Reduction	Yes[1]
Shoreline Stabilization	No
Stabilization	Yes
Stream/Ravine Restoration	Yes[1]
Water Infrastructure	No
Wetland Enhancement	No
Wetland Restoration	Yes

[1]Load reductions are not calculated for action recommendations that lack sufficient information to calculate load reductions or may not result in directly measurable reductions. These practices can include: education, planning, invasive species removal, general flooding issues etc.

Table 7-2: Best Management Practice Average Expected Load Reduction Efficiencies

BEST MANAGEMENT PRACTICE	NITROGEN REDUCTION	PHOSPHORUS REDUCTION	CHLORIDE REDUCTION	SEDIMENT REDUCTION	BACTERIA REDUCTION
Beach Management	10%-25%[1]	40%-55%[1]	15%-45%[1]	60%[1]	45%[1]
Filter Strip	25%	35%	15%	53%	35%
Flood Risk Reduction	10%[1]	55%[1]	45%[1]	65%[1]	45%[1]
Road Salt Management	0%	0%	25%	0%	0%
Runoff Volume Reduction	25%	40%	15%	60%	45%
Stabilization	100%	100%	0%	100%	0%
Stream/Ravine Restoration	100%[1]	100%[1]	0%	100%[1]	0%
Wetland Restoration	33%	35%	5%	40%	15%

[1]Load reductions are not calculated for action recommendations that lack sufficient information to calculate load reductions or may not result in directly measurable reductions. These practices can include: vegetation management, maintaining hydraulic connectivity, debris removal etc.

7.1.1 Reduction Estimates for Site Specific Actions

Load reduction estimates are provided for the majority of project/site-specific recommendations throughout the LM planning area that are summarized in the action plan (Chapter 6) and detailed in **Appendix N**. Load reductions also include basin-wide site-specific BMPs, streambank, and lake shoreline stabilization BMPs. Table 7-3 summarizes the annual load reduction estimates by project type for all new BMPs identified for the LM planning area during the planning process. This inventory includes projects throughout the entire LM planning area, including subwatersheds with previously approved watershed-based plans. Estimates also do not account for load reductions from programmatic, education and outreach, and policy and regulatory actions since direct impacts are not easily determined at this stage of the planning process.

Based on the review of reduction estimates, project/site-specific actions identified in the watershed-based plan are effective for addressing water quality problems and impairments in the watershed such as sediment, nitrogen, and phosphorus. Those actions are moderately effective in addressing bacteria and chloride, and programmatic and regulatory actions will be more effective at addressing these pollutants throughout the watershed.

Table 7-3: Estimated Annual BMP Load Reductions. Table only includes actions with pollutant load reduction estimates.

BMP	QUANTITY (area / number / length)	NITROGEN REDUCTION (lb/yr)	PHOSPHORUS REDUCTION (lb/yr)	SEDIMENT REDUCTION (tons/yr)	CHLORIDE REDUCTION (lb/yr)	BACTERIA REDUCTION (BILLION CFU/YR)
Beach Management	1 acre, 8 each	9.3	2.4	1.3	1,904	126
Filter Strip	5 acres	74.3	13.9	8.1	10,637	596
Flood Risk Reduction	10 acres	6.7	5.3	2.7	7,672	146
Road Salt Management	3,357 acres	0	0	0	1,184,125	0
Runoff Volume Reduction	15 acres	27.6	6.5	4.3	5,113	269

BMP	QUANTITY (area / number / length)	NITROGEN REDUCTION (lb/yr)	PHOSPHORUS REDUCTION (lb/yr)	SEDIMENT REDUCTION (tons/yr)	CHLORIDE REDUCTION (lb/yr)	BACTERIA REDUCTION (BILLION CFU/YR)
Stabilization	3,905 linear feet	195.8	97.9	96.9	0	0
Stream/Ravine Restoration	2.56 acre, 134,929 linear feet	2,234	1,117	1,106	0	0
Wetland Restoration	759	1,110	164	73	39,869	2,748
TOTAL REDUCTION		**3,658**	**1,407**	**1,292**	**1,249,320**	**3,885**

7.1.1.1 Load Reduction Targets

Water quality targets were established based on review of the Lake Michigan shoreline (E. coli) TMDL report, review of targets from watershed-based plans in other regional watersheds, and coordination with LM planning area stakeholders. Pollutant load reduction targets for nitrogen, phosphorus, sediment, chlorides and bacteria are shown in Table 7-4. Load reductions based on BMPs for which expected load reductions were estimated are included in Table 7-5.

Table 7-4: Nonpoint and Point Source Load Reduction Targets

POLLUTANT	REDUCTION TARGET (%)	NOTES
Nitrogen	**45%**	Based on the INLRS
Phosphorus (lb/yr)	**50%**	Based on regional watershed plans and the INLRS.
Sediment (tons/yr)	**50%**	Based on INLRS target for phosphorus and desire to reduce erosion of streambanks and ravine slopes
Chloride (lb/yr)	**50%**	Based on regional watershed plans
Bacteria (billion CFU)	**50%** for streams in the planning area; beaches have specific TMDL targets that apply.	Streams in the planning area may be affected by sewage from aging infrastructure and 50% reduction target was chosen based on TMDLs for other regional streams. Beach TMDL reduction targets were used for beaches (see Section 3.16.2).

Table 7-5: Estimated Nonpoint Source (NPS) Pollutant Load Reductions from BMPs

POLLUTANT	TOTAL ESTIMATED NPS POLLUTANT LOADING	ESTIMATED ANNUAL NPS POLLUTANT LOAD REDUCTIONS (total)	ESTIMATED ANNUAL NPS LOAD REDUCTIONS (%)
Nitrogen (lb/yr)	176,601	**3,658**	**2.1**
Phosphorus (lb/yr)	24,630	**1,407**	**5.7**
Sediment (tons/yr)	10,073	**1,292**	**12.8**
Chloride (lb/yr)	43,803,178	**1,249,320**	**2.9**
Bacteria (billion CFU)	977,069	**3,885**	**0.4**

7.2 COST ESTIMATES

Actions recommended in this plan will be implemented by numerous lead and supporting partners (as indicated in Chapter 6 and Appendix N) and the estimated costs of plan implementation are spread across various watershed stakeholders. The summary of cost estimates that follows is intended to provide a general idea of the scope of all projects considered in the plan but is not to be construed as a single "project cost" to be borne by a lone watershed entity. The cost estimates are for direct implementation projects and not the administrative, project management, and watershed coordinator costs. For all BMPs, an additional 20% should be considered to account for engineering/permitting and annual maintenance.

Cost estimates are generated from a combination of technical experience, previous subwatershed plans, and the USDA's average practice cost list. Cost estimates are generalized for watershed-scale planning purposes and these estimates should not be used to calculate costs for individual projects, as costs may range significantly depending on site conditions. Appendix K includes criteria and assumptions used to develop the cost estimates listed in

Table 7-6. Potential funding sources are included in Appendix L.

The total estimated cost among all stakeholders to implement all action recommendations in this plan is approximately $216 - $253 million. It is important to consider that there are many complimentary benefits in addition to water quality improvements that are not necessarily quantified in this estimate. When evaluating implementation strategies, it is important to consider the benefits such as green infrastructure enhancement, improved habitat, increased recreational value, and reduced flooding issues.

Table 7-6: Cost Estimates for Site-Specific Action Recommendations

TYPE	UNITS OF PRACTICE	# OF PROJECTS/ACTIONS	ESTIMATED TOTAL COST
Beach Management	0.7 acres, 21 each	22	$3,749,900-$14,293,900
Critical Infrastructure	3 each	3	$150,000
Debris Jam	16 each	16	$176,000
Detention Basin Retrofit	63 each	63	$2,612,000
Filter Strip	5 acres	3	$106,000
Flood Risk Reduction	10 acres, 28 each	32	$38,760,000
Golf Course Management	2 each	2	$0
Green Infrastructure	21,921 acres	597	$0
Road Salt Management	3,357 acres	1,043	$0
Runoff Volume Reduction	15 acres, 2 each	35	$4,756,000-$23,243,000
Shoreline Stabilization	2,693 linear feet, 0.1 acre, 1 each	6	$5,694,000
Stabilization	3,755 linear feet	52	$312,000-$1,716,000
Stream/Ravine Restoration	135,534 linear feet, 64 acres, 1 each	112	$48,061,000-$49,506,000
Water Infrastructure	2,839 linear feet, 98 each	101	$3,437,000-$7,513,000
Wetland Enhancement	3,223 acres	1,214	$42,767,000
Wetland Restoration	759 acres	883	$66,002,000
Inland Lake Actions	10 each	10	$62,900 - $64,900
Total		**4,194**	**$216,645,800-$252,603,800**

7.3 NEXT STEPS FOR PLAN IMPLEMENTATION

Often, the greatest challenge of any watershed management process is its coordinated implementation. Successful implementation requires widespread coordination, effective partnerships and support, local leadership, financial and technical resources, time, and a genuine willingness to translate planning to action on-the-ground. The LM planning area includes many implementation partners and supporters that will have to coordinate efforts to implement the recommendations in the action plan. No single partner has the financial or technical resources to accomplish the plan goals and objectives; partners working together are necessary to achieve meaningful results. Responsible entities are defined as jurisdictions; these entities have primary responsibility over actions or practices within their boundaries. Jurisdictions include municipalities, townships, counties, forest preserve districts, and the State of Illinois. Supporting partners are described in Section 6.1 Implementation Partners. Responsible entities or lead jurisdictions as well as supporting partners are further detailed in the individual action item tables located in Appendix N.

Combining and coordinating resources, funding, effort, and leadership will be the most efficient and effective means of maintaining watershed health. Implementation of this plan will also require the development of partnerships with local, state, and federal organizations for implementation, technical assistance, and funding. These efforts require the investment of a significant amount of time and resources.

Table 7-7 below shows five immediate, year-one priorities. The following subsections describe the key components of successful and sustainable plan implementation.

Table 7-7: Year One Plan Implementation Priorities

RECOMMENDED ACTION/PRIORITY
1. Work with ICMP and watershed stakeholders to determine specific year-1 implementation actions and short term monitoring priorities and develop a Watershed Planning Committee.
2. Research funding and technical assistance to implement recommendations identified in the action plan.
3. Submit grant applications, if applicable, and secure additional funding sources for plan implementation.
4. Coordinate available programs, policy changes, and other local initiatives and programs where private landowners are responsible for participation or implementation.
5. Promote and adopt the plan; prioritize and incorporate plan recommendations into existing programs, activities, and budgets.

7.3.1 PLAN ADOPTION

Support of the goals, objectives and recommendations of the Lake Michigan Watershed-Based plan should be formalized through its adoption by primary implementation entities (jurisdictions) and lead and support partners. Jurisdictions should adopt the watershed-based plan so that there is a basis for the incorporation of plan recommendations into the operations and procedures of the organization and its pursuit of project funding and implementation relevant to the LM planning area. Chapter 6 outlines the LM planning area jurisdictions and lead and support partners responsible for implementing the action recommendations of the watershed-based plan.

7.3.2 Establish, Support and Maintain a Watershed Planning Committee

One important step for plan implementation will be continued support for existing watershed organizations to lead, organize, and coordinate plan actions. An active group of stakeholders has coalesced around Lake Michigan watershed issues pre-dating the development of this plan, participated in development of this plan, and will continue to be active in Lake Michigan watershed issues in the future. This group (or a subset of it) should continue to provide input and support as a watershed planning committee. Responsibilities of the committee include administration, coordination of stakeholders to support individual watershed projects, and working with regulatory partners on recommended policies and programs.

Throughout the watershed planning process, the stakeholders have provided valuable input regarding issues, resources, priorities, and actions. The committee can continue to hold regular meetings, take a lead in facilitating plan recommendations, organize watershed field trips, host educational workshops and forums, and bring watershed stakeholders and multiple units of government together to discuss issues and opportunities. The supporting partners can consider whether staff positions are needed or merging with existing collaborative organizations would be beneficial in the future. The watershed planning committee is encouraged to generate stakeholder interest and involvement with implementation. As projects are initiated, the positive environmental, aesthetic, and community benefits will lead to additional participation.

7.3.3 Stakeholder Participation and Engagement

There are tangible benefits to stakeholder participation in watershed activities, from positive media attention to improved quality of life for residents. Increased involvement also can yield and leverage significant local, state, and federal funding opportunities to help share the cost of project implementation. Some actions can be added to existing capital improvement and maintenance plans, budgets, and schedules. This is a fairly quick and easy approach to implementing recommendations within the purview of specific jurisdictions. In other cases, an action recommendation will require the involvement of multiple stakeholders, such as residents, a municipality, and a county, state, or federal agency to provide financial and technical support. Some actions require interjurisdictional coordination for issues; for example, establishing a green infrastructure corridor along a stream channel, or natural area preservation and restoration often require interjurisdictional cooperation and may require a longer time frame for implementation. Other actions will require the cooperation of individual or groups of landowners, whether they are residents, homeowners' associations, businesses, or institutions.

7.3.4 Identify Implementation Champions

Implementation actions require a leader or a single champion for the project, to organize resources and keep the project(s) moving forward. This champion may be a watershed organization, or a single entity such as a landowner, a subwatershed group, or a municipality. In some cases, actions recommend the adoption of new policies, plans, or standards that modify the form, intensity, or type of development or redevelopment in the watershed in a way that better protects resources. These actions will require some effort on the part of municipalities to understand how plans and policies can be modified and to discuss and adopt new, or modify existing, policies, plans, and standards.

7.3.5 Resources and Funding

Funding implementation and watershed coordination actions is a priority. Securing sources of funding engages contract-level accountability and performance requirements that stakeholders are often more responsive to. There are numerous sources of funds available to help support projects or provide cost-share to match other sources of funds. A list of numerous local, regional, state, and federal funding sources is identified in Appendix L. Most of the programs require a local match of funds or in-kind services. Although these funding sources can provide a good source of revenue, significant local investment of time and money will be required to move this plan forward. These soft costs must be evaluated and incorporated into the operating strategies of the individual partners.

Many federal, state, local, and private programs are available. There are numerous sources of funding available to support projects or provide cost-share to match other sources of funds. Appendix L outlines the most common and available potential sources of funding for the technical assistance and actions identified in the plan; most BMPs recommended **are** eligible for some form of funding. Information regarding potential funding sources is readily available online and applicants should research available programs ahead of time to understand the funding cycles, conditions, and terms. Most grant programs require financial or labor match, thus applications that leverage multiple sources also have the highest probability of being successful.

7.3.6 Implementation Partners

Parties who are key potential partners whose support will lead to the realization of identified goals for the LM planning area are listed in Chapter 6 and in the detailed action plan tables in Appendix N as implementation partners. These organizations are listed as such because they are expected to fulfill one or more of the following functions:

- Oversee or implement watershed protection, restoration, and remediation strategies
- Acquire funding for watershed plan implementation
- Organize or participate in data collection
- Provide regulatory or technical guidance and issue permits
- Monitor the success of the watershed plan
- Acquire land for green infrastructure restoration or protection purposes
- Develop education strategies

Because implementation of the watershed-based plan will largely rest with local units of government, it is critical that they be involved from the beginning. They usually have the most to gain by participating and the most up-to-date information on the structure, needs, and available resources of the community. In addition, some of the most powerful tools for implementation, such as planning, controlling development standards, and zoning reside at the local, jurisdictional level.

7.4 EVALUATING PLAN PERFORMANCE

An important component of any watershed planning initiative is the ability to monitor performance towards goals and objectives. This section focuses on the administrative-based monitoring that tracks the activities of stakeholders and the range of actions that are implemented. Section 7.5 discusses direct monitoring of quantitative criteria such as water quality and aquatic health that indicate the effectiveness of implementation actions.

7.4.1 EVALUATING PLAN IMPLEMENTATION PERFORMANCE

It is necessary to monitor the progress towards achieving the seven goals of this watershed-based plan outlined in Chapter 2. Tracking progress relevant to these is as simple as an organized system in each jurisdiction to keep track of what is happening in their portion of the watershed. Communicating and reporting progress towards goals is equally as important as tracking them in the first place.

The following recommendations are included to help track progress and achieve the goals with plan implementation.

- In the early stages of the plan implementation process, stakeholders should establish a sustainable and active watershed committee that will meet at least quarterly to discuss activities and progress towards goals. A list of completed actions, proposed, and in-progress actions should be tracked for each jurisdiction.
- The plan should be evaluated every five years to assess the progress made as well as to revise the plan, if appropriate, based on the progress achieved. The plan should also have a comprehensive review and update after 10-years (section 7.7). Amendments and changes may be made more frequently as laws change or new information becomes available that will assist in providing a better outlook for the watershed. As goals are accomplished and additional information is gathered, efforts may need to be shifted to issues of higher priority.
- The watershed planning committee should request each major jurisdiction and project partner in the watershed to provide an annual update, which could be in the form of a scorecard that tracks progress towards goal objectives via measurable milestones. The scorecard system is presented in section 7.4.2 and Appendix M. It is an easy and effective way to compile and track progress in a measurable way and evaluate the effectiveness of achieving short, medium, and long-term goals. Scorecards are an effective way to identify what needs attention and what stakeholders should focus on in the next year.
- Other opportunities for evaluating the status of plan implementation include the completion of quarterly project reports or group meeting minutes. Since this plan is a flexible tool, changes/modifications are anticipated based on usability and changes in priority throughout implementation.

7.4.2 MEASUREABLE MILESTONES AND SCORECARD SYSTEM

Interim measurable milestones are directly tied to the LM planning area performance indicators. Milestones are essential when determining if management measures are being implemented and how effective they are

at achieving plan goals and objectives over given time periods. This allows for periodic plan updates and changes that can be made if milestones are not being met.

Watersheds are complex systems with varying degrees of interaction and interconnection between physical, chemical, biological, hydrological, habitat, and social characteristics. Indicators that reflect these characteristics may be used as a measure of watershed health. Goals and objectives in the plan determine which indicators should be monitored to assess success. Physical indicators could include amount of sediment entering a steam reach or presence or lack of adequate stream buffers, whereas chemical and biological indicators could include nitrogen loads or macroinvertebrate health. Social indicators can be measured using demographic data or, for example, the number of landowners adopting conservation practices.

LM planning area scorecards were developed for each of the watershed-based plan goals and are located in **Appendix M**. Table 7-8 provides an example indicator and associated milestones for each goal as taken from the complete scorecards in **Appendix M**.

Table 7-8: Example Indicators and Milestones for Each Goal

GOAL	EXAMPLE INDICATOR	SHORT TERM MILESTONE (1-5 YRS)	MEDIUM TERM MILESTONE (6-10 YRS)	LONG TERM MILESTONE (10+ YRS)
1. Stream, Ravine and Coastal Restoration and Management	Feet of stabilization projects implemented	5,000 ft	10,000 ft	25,000 ft
2. Flood Risk, Flood Damage and Stormwater Management	Number of flood problem areas positively affected by mitigation projects	5	10	25
3. Natural Resources and Habitat	Acres of wetlands enhanced/restored	25 acres	50 acres	100 acres
4. Watershed Education and Communication	Number of people reached by outreach campaign.	Establish outreach campaign	5,000	10,000
5. Water Quality	Number of waterbodies meeting water quality standards.	1 stream segment	1 Lakes / 2 stream segments	2 Lakes / 5 steam segments/1 harbor
6. Watershed Coordination and Partnerships	Number of municipalities, counties, and natural resource agencies that adopt the Lake Michigan Watershed-Based Plan.	25 Agencies	All Agencies	All Agencies

This scorecard system should serve as an organizational monitoring plan and a tool for tracking progress toward meeting plan goals and specific recommendations and action items. Realistic short, medium, and long-term milestones are included for each indicator in the scorecards (Table 7-8). Each milestone is a specific action recommendation and is intended to fulfill plan objectives if executed. Indicators are to be used as measurement tools when determining if each milestone has or has not been met. If the measurement of each indicator becomes problematic, the watershed planning committee should revisit and adjust where needed. It is up to local stakeholders to determine the priority of each milestone based on their ability to follow through

with them. Scorecard evaluation on an annual basis is an effective way to identify priorities and what stakeholders should focus on in the next planning year.

Milestones in the scorecards can be graded based on the following criteria: A = Met or exceeded milestone(s); B = Milestone(s) 75% achieved; C = Milestone(s) 50% achieved; D = Milestone(s) 25% achieved; F = Milestone(s) not achieved

7.4.3 Plan Implementation Schedule

Implementing actions should occur immediately where specific projects and willing stakeholders have been identified. A general implementation schedule is presented in Table 7-9. Short (1-5 years), medium (5-10 years) and long-term (10+ years) timeframes are included in **Appendix N** for each site-specific action.

Table 7-9: General Implementation Schedule

TASK	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10
Promote and adopt the plan	X									
Determine specific year-1-5 implementation actions; establish short term monitoring priorities.	X	X								
Research funding and technical assistance to implement priority recommendations identified in the action plan.	X	X	X	X						
Submit grant applications if applicable and secure additional funding sources for plan implementation.	X	X	X	X	X	X	X	X		
Coordinate available programs, policy changes and other local initiatives and those programs where private landowners are responsible for signing up.	X	X	X	X	X	X	X	X	X	
Project planning, site surveys and project design and budget development		X	X	X	X	X	X	X	X	
Prioritize and incorporate plan recommendations into existing programs, activities, and budgets.	X	X	X	X	X	X	X	X	X	X
Implementation and construction of projects			X	X	X	X	X	X	X	X
Report and monitor progress	X	X	X	X	X	X	X	X	X	X
Communicate success stories		X	X	X	X	X	X	X	X	X
Evaluate accomplishments			X			X				X
Update Watershed-Based Plan										X

7.5 WATER QUALITY MONITORING STRATEGY

The need for water quality-monitoring has clearly been defined and communicated by stakeholders. A monitoring effort should be established and financed to support further characterization of problems and to monitor conditions and health of the watershed through time. Watershed monitoring will support a quantitative means to assess the effectiveness of plan implementation and the cumulative contribution towards goals and objectives.

Section 3.16.3 identifies the location of monitoring sites that provided data utilized in this plan. Water quality monitoring data has proven valuable throughout the planning process to characterize the watershed and prioritize actions. The feedback and recommendations summarized below are the result of analyzing the data identifying data gaps:

1. A scientific and use case analysis of this data should be performed to determine what type of environmental monitoring should be continued. Indicator parameters could also be evaluated and considered.
2. Pairing flow data with physical, chemical, and biological data is important and paired stations should be identified, established and maintained.
3. Data from intermittent (ravine) streams is important as it can potentially affect nearshore and beach water quality in Lake Michigan. However, it is not recommended that these streams be assessed by Illinois EPA for support of beneficial uses.
4. Installing staff gages at or near the monitoring sites should be considered and stage readings recorded during sampling events. This will allow flow to be attributed to sampling events in the future with a stage/discharge relationship.
5. Several stream segments are impaired due to contaminants found in sediments at a particular station or stations. Additional sediment sampling should occur to determine the geographic extent of sediment contamination in streams, the feasibility of removing these sediments and their effect on aquatic biota.
6. From a watershed planning standpoint, the important parameters to monitor are:
    a. Nitrogen, Kjeldahl, Total
    b. Nitrogen, Ammonia
    c. Nitrate, Total
    d. Nitrite, Total
    e. Phosphorus, Total
    f. Chloride, Total
    g. Total Suspended Solids
    h. E. Coli
    i. Total Dissolved Solids
    j. Conductivity
    k. pH
    l. Diel Dissolved Oxygen
    m. Temperature
    n. Polycyclic aromatic hydrocarbons (PAHs)
    o. Fish Community, Fish Index of Biotic Integrity (fIBI)
    p. Aquatic macroinvertebrate Community, Macroinvertebrate Index of Biotic Integrity (mIBI)
7. Future monitoring should consider additional sediment sample collection methods to collect a more representative sample for estimating sediment yields.

Section 7.4 tracks progress through achievement of actions, while this section outlines a strategy to directly monitor the effectiveness of the actions from a water quality perspective. Table 7-10 summarizes the proposed monitoring categories and associated recommendations.

Table 7-10: Summary of Monitoring Categories and Recommendations

MONITORING CATEGORY	SUMMARY OF RECOMMENDATIONS
Streamflow	Establish/develop baseline hydrographs and continue streamflow measurements.
Ambient water quality (streams)	Develop and implement a robust, regular ambient water quality monitoring program
Physical and biologic assessment (streams)	Include physical and biological assessments in baseline reporting for ambient water quality monitoring.
BMP effectiveness	Monitoring BMP effectiveness of specific practices or clusters of practices.
RiverWatch program	Partner with National Great Rivers Research and Education Center (NGRREC) to enhance the volunteer monitoring program in the watershed.
LCHD Lake monitoring	• Incorporate monitoring for algal toxins. • Sample and assess Dugdale Lake and Sand Pond in the same year and on the same schedule. • Collect storm-event water quality samples from all lake inlets as part of program; install staff gages. • Determine if data suggest full support of aesthetic quality designated use
Illinois Volunteer Lake Monitoring Program (VLMP)	
Storm event runoff monitoring	Need additional data on wet weather flows of pollutants due to rapid hydrologic response of many streams in the planning area.

7.5.1 BMP Effectiveness Monitoring

As funding allows, BMP effectiveness monitoring should be performed on projects to assess if actions are achieving the watershed-based plan goals and objectives. It is recommended to incorporate monitoring into the budget of BMP projects. Monitoring should be conducted by environmental consultants or independent agency staff experienced in sampling and monitoring methods.

Monitoring can be used to determine the overall effectiveness of individual or multiple spatially clustered BMPs on achieving the watershed-based plan goals. It is usually necessary to collect and analyze water quality and perform bioassessment sampling if the BMP is directly addressing a stream reach. This can be accomplished by monitoring prior to the practice (inflow) and downstream of the practice (outflow) or monitoring baseline and post-implementation conditions. It is also important to monitor the hydraulic performance and channel changes. Urbanized areas typically increase the total volume and rate of stormwater runoff that enters receiving streams and storm sewer systems. This causes changes in both hydrology and morphology. A goal of BMPs is usually to attenuate these flows and morphological impacts.

Table 7-11 includes minimum parameters that can be used as guidelines in designing and evaluating a monitoring program to evaluate BMP effectiveness. Benchmark indicators are based on water quality criteria

and standards or expert examination of water quality conditions to identify values representative of conditions that support designated uses and biological integrity and quality. The monitoring strategies of local watershed workgroups (such as the DRWW (MBI, 2017)) should also be referenced prior to initiating a monitoring program in order to maintain consistency.

Evaluation of the progress toward meeting targets indicates whether implemented BMPs are effective. If implemented BMPs are determined to be ineffective, the approach should be reconsidered or changed altogether.

Table 7-11: Baseline Water Quality Analysis Parameters

PARAMETERS	BENCHMARK INDICATORS
Total Phosphorus	0.05 mg/L for lakes (Illinois criteria) / 0.072 mg/L (regional reference non-effect benchmark; DRWW report)
Total Suspended Solids (TSS)	28 mg/L (regional reference non-effect benchmark; DRWW Report)
Total Dissolved Solids (TDS)	296 mg/L (regional reference non-effect benchmark; DRWW report)
Ammonia-N	15 mg/L (Illinois general use criteria)
Total Kjeldahl Nitrogen (TKN)	0.7 mg/L (regional reference non-effect benchmark; DRWW Report)
Nitrate-N	10 mg/L (Illinois drinking water standard)
Chloride	500 mg/L (Illinois criteria)
Fecal Coliform Bacteria	126 cfu/100 ml (US EPA geometric mean criteria; recreational use standard)
Dissolved Oxygen	No less than 5.0 mg/L (Illinois criteria)
Temperature	Less than 90° F (Illinois criteria)
pH	Between 6.5 – 9.0 (Illinois criteria)
Conductance, Specific	751 µS/cm (regional reference non-effect benchmark; DRWW report)
Flow	--
Fish	Fish Index of Biotic Integrity (fIBI) 41 or greater
Aquatic Macroinvertebrates	Macroinvertebrate Index of Biotic Integrity (mIBI) 41.8 or greater

7.5.2 RIVERWATCH VOLUNTEER PROGRAM

The National Great Rivers Research and Education Center (NGRREC) administers the RiverWatch program, which educates and trains volunteers to collect data from Illinois streams. The NGRREC holds open labs and workshops throughout the state to train volunteers. The RiverWatch program was previously called EcoWatch and was administered by the IDNR.

While the RiverWatch monitoring program collects basic information about macroinvertebrates and aquatic habitat, it provides a real opportunity to engage stakeholders and volunteers to actively participate in the watershed in a meaningful way. A continuous and consistent monitoring program under RiverWatch would be a valuable tool to supplement the monitoring program, evaluate the evolving condition of the watershed, and monitor the effectiveness of watershed-based plan implementation. A RiverWatch program, however, is not be a replacement for physical and biologic assessments performed under the water quality monitoring strategy outlined in previous sections.

It is recommended that the watershed planning committee work with ICMP to select several designated RiverWatch stream reaches in the watershed. The reaches are typically 200-300 feet in length, depending on the type of macroinvertebrate habitat. The designated reaches should either be on public land or private lands with landowner permission. Stream reaches within Forest Preserve District and park district properties should be evaluated. The designated reaches should be communicated to the NGRREC so that volunteers in the area are focused to the designated stream reaches.

The watershed planning committee may want to consider a public relations program to educate the public regarding the RiverWatch program and enlist volunteers. Funding opportunities should be considered to reimburse travel expenses for volunteers to attend the necessary training provided by NGRREC.

7.5.3 LAKE MONITORING

Dugdale Lake and Sand Pond are the inland lakes in the LM planning area that are characterized as part of Chapter 3. The lakes are a located on public land and are resource for watershed residents and visitors. Lake monitoring should be considered a priority to maintain and manage the lake systems and their value as an ecological and recreational resource. Currently the Illinois EPA and LCHD administer lake monitoring programs in the LM planning area. These programs should be supported and enhanced by the watershed stakeholders and implementation partners.

7.5.3.1 LCHD Lake Monitoring

The Lakes Management Unit (LMU) of the LCHD has been collecting water quality data on Lake County lakes since the late 1960s. Starting in 1999, approximately 32 lakes per year are monitored, equating to about a 5-year period between lake monitoring for major lakes in the County. Smaller lakes, such as the inland lakes in the LM planning area, are monitored less frequently. Data collection includes temperature, dissolved oxygen, phosphorus, nitrogen, suspended solids, pH, alkalinity, conductivity, water clarity, plant community, and shoreline characteristics. Detailed reports are written for each lake and include data analyses, a list of problems specific to each lake, and recommendations on how to reduce or eliminate those problems. Reports are available online, although the information is not readily available in a database format. It is recommended that the watershed planning committee continue support of this existing lake monitoring program and track the results of each of the monitored lakes in the watershed to monitor the effectiveness of plan implementation. Both Dugdale Lake and Sand Pond have not been monitored in more than 10 years and therefore should be monitored in the first 5 years following completion of this plan.

7.5.3.2 Illinois Volunteer Lake Monitoring Program (VLMP)

The Illinois EPA established the VLMP program in 1981 to engage and educate the public about lake health and lake management while developing a means to collect data and observations about lakes throughout Illinois. The program funds volunteer training programs, technical and administrative support to volunteers, and laboratory analysis costs. As volunteers gain experience, they can graduate to higher tiers of data collection and lake assessment as shown in Table 7-12.

The LCHD LMU works directly with the Illinois EPA and the VLMP volunteers relative to Lake County. The VLMP program does not include quantity or spatial-based monitoring of aquatic invasive species, although the volunteers are free to provide narrative descriptions about aquatic invasive species.

Table 7-12: Monitoring Tiers of the Illinois VLMP

TIER LEVEL	DESCRIPTION OF VLMP MONITORING TIERS
Tier 1	Volunteers perform Secchi disk transparency monitoring and field observations only. Monitoring is conducted twice per month from May - October, typically at 3 in-lake sites. Field observations include the presence of invasive species including installation and monthly observations of zebra mussel plate installed near boat launch.
Tier 2	In addition to the tasks of Tier 1, volunteers collect water samples for nutrient and suspended solid analysis at the representative lake site (site 1). Water quality samples are taken only once per month, May - August, and October in conjunction with one Secchi transparency monitoring trip.
Tier 3	In addition to tasks of Tier 1 and 2, volunteers collect water samples at up to three sites on their lake. Their samples are analyzed for nutrients and suspended solids. They also collect and filter their own chlorophyll samples. Dissolved oxygen and temperature profiles may also be performed, depending on equipment availability. Data collected in Tier 3 is used in the category 5 Integrated Report and is subject for use in designating state impaired waters.

7.5.3.3 Lake Monitoring Recommendations

In addition to efforts currently being performed by LCHD, the following recommendations should be considered to enhance current monitoring activity, as resources allow:

1. Incorporate quantifiable and spatial monitoring of aquatic invasive species in lakes.
2. Sample and assess Dugdale Lake and Sand Pond lakes within a 10-year rotation (or shorter) and on the same schedule.
3. Install staff gages.
4. Gather sufficient data to determine if the aesthetic quality designated use is supported or remains impaired.

7.5.4 Ravine Monitoring and Strategic Subwatershed Identification Process

Numerous efforts, particularly in the past 20 years, have focused on monitoring, restoring, and managing the ravine systems in the planning area. Recent efforts are documented and/or utilized in developing this watershed-based plan. Additional data on the vegetation and aquatic fauna of ravines was collected during the compilation of this plan but was not available for use in the analysis herein. Steps should be taken to catalog this data as part of the Strategic Subwatershed Identification Process (SSIP) that was initiated in the late 2000s by Illinois DNR, the Alliance for the Great Lakes, the Lake Michigan Watershed Ecosystem Partnership and other stakeholders, including SMC and is referenced in more detail in section 3.12.3. The following recommendations relate to the periodic collection and update of data for the SSIP and this plan:

1. Develop a strategy to create a repository for long-term storage of SSIP (ravine) data.
2. Make the data readily available to stakeholders and the public (through a website or other online solution).

3. Incorporate recommendations based on new SSIP data into this watershed-based plan. The most convenient ways would likely be through addenda or during periodic revisions/updates to the plan.

7.6 PLAN IMPLEMENTATION MILESTONES

This section includes goals, objectives, indicators, and milestones, consistent with implementation scorecards found in Appendix M. Table 7-13 through **Error! Reference source not found.** list all milestones established for the watershed plan. The "Objective ID" columns in Table 7-13 through Table 7-18 references Chapter 2, Section 2.4 goals (number) and objectives (letter).

7.6.1 WATERSHED GOAL #1 MILESTONES: STREAM, RAVINE AND COASTAL RESTORATION AND MANAGEMENT

Restore and manage stream, ravine, shoreline and bluff systems to preserve and enhance stability, hydrology, beneficial functions and conveyance as part of a resilient and natural watershed system. Timeframe: Short (**S**): 1-5 years, Medium (**M**): 6-10 years, Long (**L**): 10+ years.

Table 7-13: Stream, Ravine and Coastal Restoration and Management Milestones

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE
1a	Feet of stabilization projects implemented.	**S**	5,000
		M	10,000
		L	25,000
1b	Feet of stream and ravine restoration/naturalization projects implemented.	**S**	5,000
		M	10,000
		L	25,000
1c	Feet of stream addressed by management/maintenance program.	**S**	5,000
		M	10,000
		L	25,000
1d	Acreage of ravine, bluff and beach restoration and management.	**S**	1,000
		M	5,000
		L	15,000
1e	Miles of Lake Michigan shoreline protected from variable water levels	**S**	1
		M	2
		L	3
	Number and cost of projects implemented to restore natural hydrology and improve climate resilience as a targeted outcome.	**S**	3, cost variable
		M	5, cost variable
		L	10, cost variable

7.6.2 Watershed Goal #2 Milestones: Flood Risk, Flood Damage and Stormwater Management

Mitigate the effects of increased runoff volumes, reduce ravine erosion and flood damage, and prevent flooding from worsening. Timeframe: Short (**S**): 1-5 years, Medium (**M**): 6-10 years, Long (**L**): 10+ years.

Table 7-14: Flood Risk, Flood Damage, and Stormwater Management Milestones

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE
2a	Number of flood problem areas positively affected by flood mitigation projects implemented.	**S**	2
		M	5
		L	10
	Number/value of claims filed each year per community in the watershed.	**S**	Reduce by 5%
		M	Reduce by 10%
		L	Reduce by 25%
2b	Runoff volume reduction and mitigation measures implemented.	**S**	Increase 2% from baseline (2022)
		M	Increase 5%
		L	Increase 10%
2c	Number of local drainage system improvement projects implemented.	**S**	5
		M	10
		L	25
2d	Number of updated Federal Emergency Management Agency (FEMA) floodplain maps and local stormwater ordinances (less than 10 years old) and area impacted by them.	**S**	2
		M	4
		L	Entire Planning Area
2e	Number of Voluntary Floodplain/Hazard Mitigation Buyouts.	**S**	5
		M	10
		L	25

7.6.3 Watershed Goal #3 Milestones: Natural Resources and Habitat

Preserve, restore and enhance a green infrastructure network and system of terrestrial and aquatic natural resources and ecosystems including riparian corridors, wetlands, beaches, bluffs and upland resources to provide for natural hydrology, native plant and wildlife communities and buffers for aquatic and high-quality natural resources. Timeframe: Short (**S**): 1-5 years, Medium (**M**): 6-10 years, Long (**L**): 10+ years.

Table 7-15: Natural Resources and Habitat Milestones

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE
3a	Number of waters from which Illinois EPA removes the aquatic life use impairment.	**S**	1
		M	2
		L	5
	Acres of invasive species removal/management projects.	**S**	500
		M	1,000
		L	2,500
3b	Acres of wetlands enhanced and/or restored.	**S**	10
		M	50
		L	100
3c	Number of regional green infrastructure projects.	**S**	1
		M	2
		L	3
3d	Acres of coastal lake plain preserved, managed and/or restored.	**S**	500
		M	1,500
		L	4,000
3e	Acres of protected natural areas (outside the coastal plain) preserved, managed and/or restored.	**S**	200
		M	500
		L	1,000
3f	Area of tree canopy.	**S**	1% above baseline (2022)
		M	2% increase
		L	5% increase

7.6.4 Watershed Goal #4 Milestones: Watershed Education and Communication

Watershed stakeholders (residents, property owners, students, non-profit organizations and public agencies) have adequate knowledge, skills, resources, motivation and stewardship opportunities to implement the watershed plan and associated programs. Timeframe: Short (**S**): 1-5 years, Medium (**M**): 6-10 years, Long (**L**): 10+ years.

Table 7-16: Watershed Education and Communication Milestones

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE
4a	Number of people reached by watershed outreach campaign.	**S**	Establish outreach campaign
		M	5,000
		L	10,000
4b	Number of public agencies and local private contractors attending the annual Lake County De-icing Workshop.	**S**	20 public agencies; 100 local private contractors
		M	35 public agencies; 150 local private contractors
		L	All public agencies with winter maintenance responsibilities; 200 local private contractors
	Number of public agencies with winter maintenance responsibilities that use alternative de-icing products.	**S**	20
		M	35
		L	All
4c	Number of people that receive information about shoreline, bluff, and ravine management.	**S**	500
		M	1,000
		L	2,000
4d	Number of property owners implementing recommendations made through such programs (as Conservation@Home and Rain Ready) and/or number certified by the program(s).	**S**	50
		M	100
		L	250
4e	Number of landowners that receive information about watershed programs and projects.	**S**	2,000
		M	5,000
		L	10,000
	Number of workshops.	**S**	10
		M	20
		L	30
4f	Number of volunteers for stream, beach and natural area stewardship and maintenance.	**S**	500
		M	500
		L	1,000

7.6.5 Watershed Goal #5 Milestones: Water Quality

Improve water quality and address modified hydrology. Timeframe: Short (**S**): 1-5 years, Medium (**M**): 6-10 years, Long (**L**): 10+ years.

Table 7-17: Water Quality Milestones

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE
5a	Number of water bodies meeting applicable standards.	**S**	2
		M	5
		L	10
5b	Site remediation projects completed.	**S**	1
		M	3
		L	5
5c	Implementation and support of watershed monitoring program.	**S**	Develop monitoring program
		M	Implement program
		L	Continued implementation and adaptation of program
	Regular reports on water quality monitoring to community and stakeholders	**S**	Develop monitoring program
		M	Collect data, baseline report
		L	Subsequent reporting
5d	Monitoring data trends for common nonpoint source pollutants	**S**	Develop monitoring program
		M	Collect data, baseline report
		L	Nonpoint source pollutant trends decreasing
5e	Winter Maintenance Program establishment including: policy and manual development, de-icing workshop attendance and certification.	**S**	20% of municipal programs
		M	40% of municipal programs
		L	100% of municipal programs
5f	Number of beach closures.	**S**	5% below baseline 10-year avg. (2022)
		M	10% below baseline
		L	20% below baseline
5g	Number of projects implemented to mitigate modified hydrology.	**S**	3
		M	5
		L	10

7.6.6 Watershed Goal #6 Milestones: Watershed Coordination and Partnerships

Improve coordination, engagement and decision-making between public, private and non-profit stakeholders to implement the watershed plan. Timeframe: Short (**S**): 1-5 years, Medium (**M**): 6-10 years, Long (**L**): 10+ years.

Table 7-18: Watershed Coordination and Partnerships Milestones

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE
6a	Number of municipalities, counties, agencies and organizations that adopt the Lake Michigan Watershed-Based Plan.	**S**	20 Agencies
		M	All Agencies
		L	All Agencies
6b	Establishment of watershed planning committee with budget and executive committee.	**S**	1 lead organization
		M	
		L	
	Number of projects advanced/undertaken with the support of the watershed planning committee.	**S**	25 recommendations/projects
		M	100 recommendations/projects
		L	250 recommendations/projects
6c	Number of communities and organizations that have designated a representative to participate on the watershed planning committee.	**S**	10 communities/organizations
		M	15 communities/organizations
		L	All communities
6d	Number of projects with alternative or multiple sources of sufficient funding.	**S**	5
		M	10
		L	25
6e	Number of watershed stakeholders providing feedback for the watershed report cards.	**S**	25
		M	50
		L	100
	Number of action recommendations completed.	**S**	50
		M	150
		L	300

7.7 UPDATING THE WATERSHED-BASED PLAN

Watershed-based plans are required by the Illinois EPA to be updated every 10 years. Furthermore, the watershed-based plan should be revised, as necessary, as new information is received, and progress is made. For example, as additional data becomes available, it can be used to revise loading estimates and determine if implementation efforts are achieving stated goals, milestones, and reduction targets. Plan updates do not require an entire rewrite; typical elements that will likely require a major update or revision are summarized in Table 7-19.

Table 7-19: Plan Update Elements and Responsibilities

MAJOR PLAN ELEMENT REQUIRING UPDATE	ELEMENT COMPONENT REQUIRING UPDATE	LEAD RESPONSIBLE ENTITY (S)	PRIMARY SUPPORTING PARTNERS
Watershed Characterization	• Land use information • Water quality data/analysis • Stream/lake impairments • Climate • Demographics • Jurisdictions • Pollution loading • Ravine Inventory	Lake County SMC	• Jurisdictions (Chapter 6) • ICMP • Watershed Planning Committee and subwatershed planning groups
Action and Implementation Plan Components	• Project recommendations • Expected load reductions • Milestones, timeframes, and priorities • Responsible parties and support partners • Monitoring plan	Lake County SMC	• Jurisdictions (Chapter 6) • Watershed Planning Committee and subwatershed planning groups • ICMP

7.8 REFERENCES

Midwest Biodiversity Institute (MBI). 2017. Biological and Water Quality Assessment of the Upper Des Plaines River and Tributaries 2016. Lake County, Illinois. Technical Report. MBI: Columbus, OH

CHAPTER EIGHT: EDUCATION & COMMUNICATION STRATEGY & TOOLS

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COMMON ACRONYMS/ABBREVIATIONS USED IN CHAPTER 8

BMP – Best Management Practices

CMAP – Chicago Metropolitan Agency for Planning

HOA – Homeowners Association

IDNR – Illinois Department of Natural Resources

Illinois EPA – Illinois Environmental Protection Agency

ILMA – Illinois Lakes Management Association

LCHD – Lake County Health Department

MWRD – Metropolitan Water Reclamation District of Greater Chicago

NRCS – Natural Resources Conservation Service

PSA- Public Service Announcement

SMC – Lake County Stormwater Management Commission

SWCDs –Soil & Water Conservation Districts (McHenry-Lake & North Cook)

USEPA – U.S. Environmental Protection Agency

USGS – United States Geological Survey

WWTPs – Wastewater Treatment Plants (including publicly owned treatment works)

YCC – Youth Conservation Corps

8 EDUCATION AND COMMUNICATION STRATEGY AND TOOLS

This chapter provides a strategy for all watershed stakeholders for information, education, and public involvement to address watershed topics and issues. The education and communication strategy provides messaging and motivation for each target audience (Section 8.3) to help achieve watershed goals and objectives in order to ultimately realize the goals and objectives for the Lake Michigan Watershed Planning Area.

8.1 WATERSHED INFORMATION AND EDUCATION NEEDS

Community engagement, outreach, and education are essential components of the Lake Michigan Watershed-Based Plan. The education and communication strategy is designed to:

- Raise public awareness about watershed issues and foster support for solutions;
- Educate stakeholders, the public, and other identified target audiences to increase awareness and encourage behavioral changes (see **Error! Reference source not found.** for a Work-In-Progress sign);
- Provide engaged stakeholders the knowledge and skills they need to become watershed stewards and implement the watershed action plan;
- Leverage public and private partnerships to implement action items.

8.2 RECOMMENDED PROGRAMS

Development of an education and communication program begins by defining the education and communication goal and objectives. During the June 2019 Lake Michigan watershed planning meeting, stakeholders discussed and approved the following goal and objectives related to education and communication.

WATERSHED EDUCATION & COMMUNICATION GOAL: Watershed stakeholders (residents, property owners, students, non-profit organizations and public agencies) have adequate knowledge, skills, resources, motivation and stewardship opportunities to implement the watershed plan and associated programs.

OUTCOME: *Stakeholders have adequate information, knowledge and opportunity to implement the watershed plan.*

OBJECTIVES:

a) Conduct a watershed outreach campaign to inform and engage the public about watershed issues and solutions, landowner responsibilities and opportunities, available resources and the benefits of implementing the watershed plan recommendations.

b) Educate local government officials and agencies, consultants and contractors working in the watershed, landscapers and nurseries, property managers and landowners on road salt alternatives and application BMPs to minimize the use or impact of road salt by public and private snow removal providers.

c) Educate local government officials and agencies, consultants and contractors working in the watershed, landscapers and nurseries, and landowners on best practices related to Lake Michigan shoreline and bluff maintenance/management and ravine management.

d) Educate property owners and caretakers through outreach programs such as Conservation@Home or Rain Ready on ways to improve the quality and quantity of water leaving their property, protect their property from flooding, protect rare or high-quality natural resources that might exist on their property, and contribute to resilient ecosystems.

e) Utilize trainings, workshops, public meetings, personal site visits, newsletters, websites, media, campaigns, and stakeholder word of mouth to provide watershed stakeholders opportunities to participate in watershed programs and projects.

f) Facilitate and engage the public, schools and youth groups (students), and homeowner associations to volunteer for stream, beach and natural area stewardship and maintenance.

Additionally, stakeholders felt that the education and communication strategy should also include an objective related to the impact of impervious surfaces in the Lake Michigan watershed. Therefore, an additional objective of the strategy is to:

g) Educate the watershed's local government officials, agencies, consultants, contractors, and landowners on the impact of impervious surfaces and best methods and resources for reducing impacts via green infrastructure and other best management practices.

8.3 TARGET AUDIENCES

The audiences for specific education and communication activities and topics include public and private organizations, watershed residents and landowners, the general public, and professionals within the watershed community. These audiences have a wide range of understanding of watershed issues and needs for further education and communication. Education and communication aim to be responsive to existing partners, attract stakeholders that have not previously participated in watershed improvement activities, and align messages with audience knowledge levels and motivations. Education and communication partners include the entities listed and discussed below.

8.3.1 LOCAL GOVERNMENT OFFICIALS AND AGENCIES

Continued support from local governments and public landowners will be critical to implementing the education and communication strategy. These officials and agencies develop policies and regulations and manage the land and projects within the watershed. They will need to commit to projects on public lands and communicate with and motivate residents to participate in watershed improvements. The local government target audience includes:

- Municipalities

- Townships
- County agencies
- Elected officials and policy makers
- Drainage districts
- Park districts & forest preserve districts
- Public works agencies
- Transportation agencies (including Highway Commissioners)

8.3.2 Residents and Businesses

Numerous residents and landowners in the Lake Michigan watershed have participated in one or more watershed plan meetings or subwatershed committee meetings. The target audience includes the following groups or residents:

- All residents and landowners
- Not-for-profit and environmental interest groups
- Businesses and institutions (i.e., golf courses, shopping centers, churches and chambers of commerce)

8.3.2.1 Riparian, Ravine and Lakeshore Landowners

Riparian landowners may have a disproportionate impact on stream, ravine, lakeshore bluff and wetland areas, and often have a vested interest in improving watershed conditions to protect their property, comply with regulations, or enhance property values. These areas are critical locations because they contribute to watershed problems or hold the key to solutions. Therefore, this subset of property owners should be targeted for special attention in the education and communication strategy. The target audience includes the following groups of landowners:

- Homeowner associations (HOAs)
- Single family residences
- Commercial and multifamily residential properties
- Owners of undeveloped land
- Railroads
- Utility companies located in floodplains or along streams, lakes, and wetlands
- Golf courses
- Public landowners

8.3.3 Schools and Youth Groups

Communication and education programs and messages are targeted towards students in schools and youth groups which are needed in to set a foundation in order to achieve long-term sustainable improvements. Youth involvement in activities such as stream clean-ups and habitat restoration days or even smaller tasks such as not littering and recycling is an effective way to engage groups in learning about and acting to improve watershed conditions. The student target audience includes the following schools and youth groups:

- Primary and secondary schools
- Colleges and universities
- Youth groups (e.g., Boy Scouts, Girl Scouts)

8.3.4 Developers & Homebuilders

The land development process has the potential to adversely affect watershed conditions, but development interests can be balanced with watershed goals if identified prior to or early in the design and development process. Developers and homebuilders should adopt a variety of best development standards and comply with regulations, codes, and ordinances to protect watershed resources.

8.3.5 Consultants and Contractors Working in the Watershed

Several engineering, environmental and other consultants have participated in stakeholder meetings and provided their expertise towards the watershed planning process. The watershed-based plan will provide consultants and contractors with resources to share with their clients and support for prioritization of future projects. Consultants and contractors can communicate messages to their clients to motivate BMP adoption for watershed improvements. The target audience of consultants and contractors includes:

- Engineering, landscape architectural and environmental consulting firms
- Restoration contractors
- Legal counsel
- Insurance companies
- Winter maintenance product/equipment suppliers
- Winter maintenance (snow removal) contractors

8.3.6 Landscapers & Nurseries

Landscapers, lawn and garden centers, nurseries, hardware stores, large retail establishments, and snow removal contractors can make a huge impact by learning and following watershed-friendly lawn care and winter maintenance practices, especially by reducing their use of pollutants such as chloride and phosphorus. Communities can support education by maintaining registries for lawn care, nurseries, and winter maintenance providers.

- Landscapers and property managers/caretakers
- Lawn & garden centers

8.4 PARTNER ORGANIZATIONS

Organizations that will be responsible for implementing the watershed plan recommendations can assist in education and communication and can also be one of the targeted audiences. Each partner should couple plan implementation efforts with parallel efforts to inform and educate. Several educational programs are currently being implemented by other organizations that watershed stakeholders may take advantage of for the Lake Michigan watershed education and communication strategy. See Table 8-1 below for a list of potential partner organization for implementing the watershed plan recommendations.

Table 8-1: Partner Organizations

PARTNER ORGANIZATIONS	
Watershed Residents & Landowners	Municipalities (including Public Works Depts.)
Businesses and Institutions	MWRD
CMAP	NRCS/SWCDs
Cook County	Openlands
Environmental Interest Groups	Park Districts
Forest Preserve Districts	Schools and Colleges/Universities
HOAs	SMC
IDNR	Townships
Illinois EPA	Transportation Departments
ILMA	USEPA
Kenosha County	USGS
Lake County (including Planning, Bldg. & Development)	Watershed Planning Committee
LCHD	WWTPs
LFOLA	YCC
Master Gardeners, Garden Clubs	Youth Groups

8.5 GUIDANCE FOR IMPLEMENTATION

The following list provides general guidance for implementing the education and communication strategy. More detailed recommendations for addressing specific watershed issues are included in Table 8-3.

- Use words that the general public can understand and speak to their existing values and priorities.
  - Basic watershed science education (e.g., biology, the water cycle, and stream ecology) may be needed when the audience has little knowledge about streams, ravines, wetlands, Lake Michigan or watersheds.
  - Identify and provide for different levels of understanding and the needs of various audience groups. When interacting with a group, stress the dimensions of the project that apply most to them. For example, when interacting with homeowners, focus on items such as rain gardens, lawn care, pollution prevention and restoration, and management of riparian areas/ravines. Develop a similarly targeted menu of topics land look for opportunities to “cross train” target audiences.
  - Inform the audience about actions they can take and behaviors they can change to help address watershed problems and issues.
- Develop multiple messages and update existing messages as needed; use one broad message for the general public and a series of more specifically targeted messages for specific audiences (e.g., landowners, business owners, and municipalities).
  - Keep the message simple and straightforward with only two or three take-home points at a time, use graphics and photos to illustrate the message, and repeat it frequently. Keep messages positive.

  - Emphasize the connections between the message and watershed stakeholder issues. For example, connect the message to Lake Michigan, beaches, ravines, storms, streams, land management, the urban landscape, and streets.
- Coordinate the education and communication strategy with partner organizations to combine efforts, achieve economies of scale, tap into one another's networks, share costs, and ensure consistent messages.
- Use websites and other social media, as well as public places, such as libraries and village halls, to post and promote your message.
  - All materials and messages should promote the local watershed groups, with contact information and information on how to get involved.
  - Develop materials and messages that anyone can use.

8.6 MESSAGE FORMATS AND DELIVERY MECHANISMS

Numerous existing programs, tools, and materials are available that can be used or customized to accelerate education and communication efforts. See Table 8-2 below for examples of education and communication through print, electronic, visual and personal contact communication efforts.

Table 8-2: Examples of Education & Outreach Efforts

PRINT	ELECTRONIC	VISUALS	PERSONAL CONTACT
Brochures	Social Media	Displays/Exhibits	Demonstrations, field trips, watershed tours
Fact sheets	Websites/Interactive Maps	Signage	Presentations (meetings, seminars, etc…)
Newsletters	E-News/Emails	Posters/ Bulletin boards	Interviews
News releases	Videos/local cable channel	Presentations	Surveys
Manuals or plans; Technical resources	Public Service Announcements (PSA)		Targeted/one-on-one discussions and technical assistance
Inserts/Utility bills	Bulletin Boards		
Flyers	Surveys		
Direct mail			
Feature articles			
Media kit			
Curricula			

8.7 EVALUATING PLAN OUTREACH

Watershed plan evaluation provides a feedback mechanism for ongoing improvement of a communication effort and for assessing whether the effort is successful support for further activities and funding. It also builds support for further funding. The entity or persons responsible for implementing the education and information campaign should customize the following ideas.

For a number of these evaluation strategies, collect baseline information or survey current knowledge before the activities begin and check periodically throughout the campaign to help measure progress and effectiveness. Evaluations conducted early in the effort will help determine which programs are working and which ones are not. Based on this information, money and time can be saved by focusing on the programs that work and discarding those that do not. Indicators to evaluate, monitor, and provide a timeframe for each watershed goal are listed in **Chapter 7 & Appendix M Evaluation Scorecards**.

8.8 WATERSHED INFORMATION AND EDUCATION RESOURCES

Watershed education and outreach is not new, there are many resources already available that include effective education and outreach messages, delivery techniques, watershed management planning, media relations, and strategies to assist with developing an outreach campaign. Although larger educational activities, such as training workshops and demonstration projects, may require public or private grant sources, many of SMC's Stormwater Best Practices (http://www.lakecountyil.gov/2261/Stormwater-Best-Practices) can be established into partner work activities, projects, and education programs.

Table 8-3 provides educational messages, outreach vehicles and methods, target audiences, and partner leads to implement the Lake Michigan watershed education and communication strategy. It is important to note that it is based on the Lake Michigan Watershed-Based Plan issues, opportunities, goals, and objectives (see Chapter 2). The vehicles and methods, partner leads, and messages columns listed below are not comprehensive, but are noted most effective means of disseminating education and outreach topics to that target audience. This table (and Chapter 8) were created to act as an education and outreach strategy and roadmap for watershed stakeholders and to help guide partner leads (identified below) for their own education and outreach strategies and activities. Although partner leads are identified below, there could be other appropriate partner and support leads not listed.

Table 8-3: Educational Topics, Messages & Partners

TARGET AUDIENCE (SECTION 8.3)	WATERSHED GOALS	VEHICLE/ METHOD	PARTNER LEADS	MESSAGES (TOPICS/ACTIONS)
8.3.1 Local Government Officials & Agencies	1, 2, 3, 4, 5, 6	Emails, newsletters, websites, social media, targeted/one-on-one discussions and technical assistance, manuals or plans, technical resources	Watershed Planning Committee, CMAP, Forest Preserve Districts, SMC, MWRD, IDNR, Illinois EPA	Adoption and implementation of the Lake Michigan Watershed-Based Plan
				Road salt application BMPs and alternatives
				Impact of impervious surfaces and benefits of green infrastructure
				Implement best practices related to the management/maintenance of ravines and Lake Michigan shoreline and bluffs
8.3.2 Residents & Businesses	1, 2, 3, 4, 5	Social media, brochures, newsletters, factsheets, inserts/utility bills, education signage at demonstration sites	SMC, MWRD, Counties, Municipalities	Economic/Quality of Life benefits of water quality improvement and flood mitigation
		Social media, brochures, newsletters, factsheets, demonstrations and trainings	SMC, MWRD, Counties, Municipalities, LFOLA, Openlands, Environmental Interest Groups	Role and Responsibility of landowners and best management practices related to runoff reduction; shoreline, bluff, ravine, and riparian management; and protection from flooding
		Targeted/one-on-one discussions and technical assistance, specific outreach programs (e.g. Conservation@Home, RainReady), social media, brochures, newsletters, factsheets	LFOLA, Openlands, Environmental Interest Groups	Have a beneficial impact on runoff quantity/quality, protect property from flooding, protect natural resources
		Social media, brochures, newsletters, factsheets	Municipalites, Counties, Forest Preserve Districts, LFOLA, Openlands, Environmental Interest Groups	Participate in stream, beach, and natural area stewardship and maintenance opportunities

TARGET AUDIENCE (SECTION 8.3)	WATERSHED GOALS	VEHICLE/ METHOD	PARTNER LEADS	MESSAGES (TOPICS/ACTIONS)
8.3.3 Schools and Youth Groups	1, 3, 4, 5	Social media, emails, newsletters, education signage at demonstration sites, targeted/one-on-one discussions	Schools, MWRD, CMAP, LFOLA, Openlands, Forest Preserve Districts, Environmental Interest Groups	Participate in stream, beach, and natural area stewardship and maintenance opportunities
8.3.4 Developers & Homebuilders	2, 3, 4	Manuals or plans, technical assistance and resources, development planning and permitting process	Counties, Municipalities, SMC, MWRD	Implement designs that reduce impervious areas and include green infrastructure and BMPs to reduce runoff beyond current development requirements
8.3.5 Consultants and Contractors Working in the Watershed	1, 2, 3, 4, 5, 6	Presentations (meetings), emails, newsletters, websites, targeted/one-on-one discussions	Watershed Planning Committee, Illinois EPA, SMC, MWRD, Municipalities	Advocate for and implement best practices related to the management/maintenance of ravines and Lake Michigan shoreline and bluffs, reducing impervious surface, and green infrastructure and BMPs to reduce runoff Participation in Watershed Planning Committee and/or public meeting forums Road salt application BMPs and alternatives
		Manuals or plans, technical assistance and resources	SMC, MWRD, CMAP, Openlands, LFOLA, Environmental Interest Groups, Municipalities	Implement watershed-based plan action recommendations
8.3.6 Landscapers & Nurseries	1, 3, 4, 5	Brochures, newsletters, social media, websites, education signage at demonstration sites, targeted/one-on-one discussions	Master Gardeners, Forest Preserve Districts, Park Districts, SMC, MWRD, CMAP, LFOLA, Openlands, Environmental Interest Groups	Best practices related to shoreline, bluff, and stream/ravine maintenance and management Road salt application BMPs and alternatives

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9 GLOSSARY OF TERMS

ADID SITES: Aquatic sites that have been determined to provide biological value by the USACE, Chicago District and the USEPA.

BASE FLOOD ELEVATION (BFE): The elevation of surface water resulting from the flood having a one percent (1%) probability of being equaled or exceeded in any given year.

BEACH RIDGE: Wave-deposited or wave swept ridge running parallel to the shoreline.

CATCHMENTS: Small unit of a watershed or subwatershed delineated and used in watershed planning efforts because the effects of impervious cover are easily measured, there is less chance for confounding pollutant sources, boundaries have fewer political jurisdictions, and monitoring/mapping assessments can be done in a relatively short amount of time.

CHANNEL: Any river, stream, creek, brook, ditch, gully, ravine, swale or wash, into which surface or groundwater flows, either perennially or intermittently.

CLIMATE NORMALS: 30-year averages of climatological variables including temperature and precipitation.

DEFINED CHANNEL: Clearly discernable bed and banks of a flowing watercourse.

DENDRITIC STREAM SYSTEMS: In a dendritic system, there are many contributing streams (similar appearance to the branches of a tree), which are then joined together into the tributaries of the main river. They develop where the river channel follows the slope of the terrain.

DIGITAL ELEVATION MODELS (DEMS): A digital cartographic/geographic dataset of elevations in x, y, z coordinates. DEMs are derived from hypsographic data (contour lines) and/or photogrammetric methods using USGS 7.5-minute, 15-minute, 2-arc-second (30- by 60-minute), and 1-degree (1:250,000-scale) topographic quadrangle maps.

DISCHARGE POINTS: The location where all sanitary, storm sewer and agricultural drainpipes surface or stormwater flows back into a lake or stream channel. Discharge points also include open channels, swales, gullies and other significant tributaries.

DRAINAGE BASIN: Synonymous with “watershed,” though often used to describe the watersheds of larger rivers or hydrologic systems (e.g., the “Mississippi River drainage basin” or “Great Lakes drainage basin”).

DRY DETENTION BASINS: Basins that temporarily stores water before discharging to river or lake and usually dry up following large rainstorms or snow melt events. Typically, not effective at removing pollutants.

ENDANGERED SPECIES: A species in danger of extinction throughout all or a substantial portion of its range.

EROSION: The process by which the surface of the earth is worn away by the action of water, glaciers, winds, waves.

FARMED WETLANDS: Agricultural cropped areas on hydric soil that have been cleared, partially drained, or filled.

FLOOD INSURANCE RATE MAP (FIRM): A map prepared by FEMA that depicts the SFHA within a community. The FIRM includes zones for the 100-year and 500-year floodplains and may or may not depict Regulatory Floodways.

FLOOD INSURANCE STUDY (FIS): Studies conducted by FEMA to determine areas that have the highest probability for flooding.

FLOOD PROBLEM AREA (FPA): One or more structures in a geographical area that are damaged by the same primary source or cause of flooding. Structures include transportation, utility infrastructure, buildings, and well and septic failure caused by flooding. Areas also include locations where road flooding results in damage to infrastructure, loss of critical access, or threatens safety.

FLOOD PROTECTION AREA: Regulatory floodplains, regulatory floodways, riparian environments, wetlands, and wetland buffers in Cook County.

FLOODPLAINS: Floodplains are lowlands, adjacent to rivers, streams and creeks that are subject to recurring floods. Mapped regulatory floodplains are defined as the area of land, which is inundated with water during 100-year flood events.

FLOODWAY: A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

GEOGRAPHIC INFORMATION SYSTEM (GIS): A computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface.

GLOBAL POSITIONING SYSTEM (GPS): A system of earth-orbiting satellites, transmitting signals continuously towards the earth that enables the position of a receiving device on or near the earth's surface to be accurately estimated from the difference in arrival times of the signals.

HUMMOCKY: Extremely irregular surface.

HYDRAULICS: Hydraulics is the study of how water flows over the land surface. This includes flows within sewers, culverts, stream channels, wetlands, lakes, impoundments, etc.

HYDRAULIC STRUCTURES: Bridges, culverts, dams, weirs, or other structures spanning or crossing the stream channel.

HYDRIC SOILS: A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. These conditions alter the physical, biological and chemical characteristics of the soil, thereby influencing the species composition or growth, or both, of plants on those soils.

HYDROLOGY: Hydrology is the study of the occurrence, circulation, distribution, and properties (e.g., quality) of Earth's water.

HYDROPHYTIC VEGETATION: Plants that tolerate or require saturated soil or standing water.

IMPARIED WATERS: The Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with current pollution control technologies alone.

IMPERVIOUS SURFACES: A surface that does not allow water to infiltrate to the soil layer, including pavement, rooftops, and roads.

INFILTRATION: That portion of rainfall or surface runoff that moves downward into the subsurface soil.

INSTREAM HABITAT: Within a stream, the environment in which an animal or plant normally lives or grows.

LEAD PARTNERS: Identify the lead public or private landowner, agency or other stakeholder with the greatest potential to implement the action.

LOW OR HIGH FLOW CONDITIONS: Typically measured as a 7-day average of the lowest or highest water flow rates annually.

MARL: A loose or crumbling earthy deposit that contains a substantial amount of calcium carbonate.

MARSH: Low-lying land area that is usually saturated or inundated with surface or ground water that is dominated by herbaceous plants.

MITIGATION BANKING: A system of credits and debits to offset environmental impacts associated with site development and achieve no net loss, typically accomplished via restoration, creation, enhancement, or preservation of similar wetland, stream, or natural habitats near the area of impact with the specific goal of compensating for unavoidable impacts to aquatic resources.

MORAINE: Low ridge formed by till deposited at the margin of a stagnant or retreating glacier.

NATURAL COMMUNITY: An assemblage of plants and animals interacting with one another and their physical environment.

NONPOINT SOURCE POLLUTION: The cumulative effect of rainfall runoff that flows over or through the land and collects pollutants and nutrients prior to entering waterways. The cumulative effect of this pollution throughout the watershed represents the contribution of nonpoint source pollution.

OUTWASH: Deposits of sand and gravel carried by running water from the melting ice of a glacier and laid down in stratified deposits.

POST- AND PROGLACIAL LAKE DEPOSITS: Layers of silt and clay deposited on the beds of lakes that formed along the retreating face of the ice sheet or within landforms left by its retreat.

PRAIRIE: An extensive flat or rolling area dominated by grasses. Prairie grasslands once covered much of central North America.

SAVANNA: A type of woodland characterized by open spacing between trees and intervening grassland.

SEDIMENT DEPOSITION: The geological process in which sediments, soil and rocks are added to a landform or land mass.

SOIL PHASE: A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

STORMSEWERSHED: The land area drained by a stormsewer or stormsewer network.

SUBWATERSHED: The area within a larger watershed that drains to a single point, such as a tributary stream or lake. Large watersheds are comprised of smaller subwatersheds.

SUPPORT PARTNERS: Include parties that could be involved in assisting in the action implementation related to regulation, permitting, coordination, technical needs and funding assistance.

THALWEG: the line of lowest elevation within a valley or watercourse.

THREATENED SPECIES: A species likely to become endangered in the near future.

TILL: Unsorted glacial sediment.

TOTAL MAXIMUM DAILY LOAD (TMDL): An estimation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. It assesses contributing point and nonpoint sources and identifies pollution reductions necessary for designated use attainment.**WATERSHED:** Land area that drains water to a given point, usually a river, stream or lake. The land area above a given point on a waterbody (river, stream, lake, wetland) that contributes runoff to that point is considered the watershed.

WATERSHED PLANNING COMMITTEE: A committee comprised of SMC staff and watershed stakeholders with a goal of creating an umbrella watershed-based plan for the Lake Michigan Watershed planning area and reducing nonpoint source pollution.

WET DETENTION BASINS: A stormwater control structure that provides both retention and treatment of contaminated stormwater runoff. It contains a perennial pool of water, which holds runoff from one rainfall event until displaced by a new rainfall event.**WETLAND:** Areas with a high potential for exhibiting hydric soil, hydrophytic vegetation, and required hydrologic conditions, often low-lying land that is saturated or inundated with water to an extent that plants that are adapted to living in wet conditions grow there. Marshes, swamps, bogs, sloughs, wet prairie, rivers, streams, ponds and the edges of lakes are typically classified as wetlands.

WETLAND ENHANCEMENT: Augmenting wetland functions beyond the current conditions; enhancement of one function sometimes can occur at the expense of other functions.

WETLAND PRESERVATION: Actions taken to maintain the size and functions of an existing wetland or water body.

WETLAND RESTORATION: The re-establishment of wetlands in areas where they previously existed and were altered by drainage activities or landscape modifications.

WOODLANDS: Land that is mostly covered with trees and shrubs.

APPENDIX A:
MAP DATA SOURCES

Figure Number	Title	Data Sources
1-2	Lake Michigan Watershed Planning Status	Lake County SMC, MWRD, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
1-3	Lake Michigan Watershed & Planning Area	Lake County SMC, MWRD, Lake County Department of Information Technology, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
1-4	Lake Michigan Watershed Planning Area Location Map	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
1-5	Lake Michigan Watershed Planning Area HUC 12 Watersheds	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
1-6	Lake Michigan Watershed 2018 303(d) Impaired Waters	Lake County SMC, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-1	Tributary Drainage Area to the Great Lakes and St. Lawrence River Basin	Lake County SMC, USGS, ESRI
3-4	Pre-European Settlement Plant Communities	INHS, WDNR, LCFPD, Lake County SMC, MWRD, ISGS, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Census Bureau, SEWRPC, Intermap and the GIS user community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
3-6	Lake Michigan Watershed Planning Area Location	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-7	Lake Michigan Watershed Planning Area Glacial Moraines	Lake County SMC, ISGS, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-8	Lake Michigan Watershed Planning Area HUC 12 Watersheds	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-9	Water Resources in the Lake Michigan Watershed Planning Area	Lake County SMC, Lake County Department of Information Technology, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-10	Lake Michigan Watershed Planning Area Topography	Lake County SMC, Lake County Department of Information Technology, Kenosha County, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community

Figure Number	Title	Data Sources
3-11	Hydric Soils in the Lake Michigan Watershed Planning Area	Lake County SMC, Lake County Department of Information Technology, USDA-NRCS, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-12	Highly Erodible Soils – Lake Michigan Watershed Planning Area	Lake County SMC, Lake County Department of Information Technology, USDA-NRCS, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-13	Hydrologic Soil Groups – Lake Michigan Watershed Planning Area	Lake County SMC, Lake County Department of Information Technology, USDA-NRCS, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-14	Lake Michigan Watershed Planning Area Subwatershed Map	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-16	Lake Michigan Watershed Planning Area and Catchment Map	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-18	Lake Michigan Municipalities and Townships	Lake County SMC, Lake County Department of Information Technology, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-19	Population	Lake County SMC, CMAP US Census Bureau, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-20	Population Change (2015-2050)	Lake County SMC, CMAP US Census Bureau, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-21	Forecasted Household Change (2015 – 2050)	Lake County SMC, CMAP US Census Bureau, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-22	Forecasted Employment Change (2015 -2050)	Lake County SMC, CMAP US Census Bureau, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-23	Median Age in 2010	Lake County SMC, CMAP US Census Bureau, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-24	Median Household Income	Lake County SMC, CMAP US Census Bureau, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-25	Employment in 2015	Lake County SMC, CMAP US Census Bureau, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community

Figure Number	Title	Data Sources
3-26	Current Land Use	Lake County SMC, CMAP, Lake County Department of Information Technology, Kenosha County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-27	Planimetric Imperviousness of Table 3 11	Lake County SMC, NLCD, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-28	NLCD 2016 Imperviousness of Table 3 12 Data	Lake County SMC, Lake County Department of Information Technology, Kenosha County, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-29	Future Land Use Projections in the LM Planning Area, Lake and Kenosha Counties	Lake County SMC, SEWRPC, Lake County Department of Information Technology, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-30	Roadway Jurisdictions	Lake County SMC, Lake County Department of Information Technology, Kenosha County, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-32	Existing & Proposed Trails	Lake County SMC, Lake County Department of Information Technology, Kenosha County, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-33	Planned and Potential Roadway Improvements	Lake County SMC, Lake County Department of Information Technology, Kenosha County, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-35	Hubs and Functional Connections	Lake County SMC, Lake County Forest Preserve District, CMAP, SEWRPC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-36	Protected and Managed Lands	Lake County SMC, Lake County Forest Preserve District, CMAP, SEWRPC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-37	Restoration Opportunities	Lake County SMC, Lake County Forest Preserve District, CMAP, SEWRPC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-39	Parks & Open Space	Lake County SMC, Lake County Department of Information Technology, Kenosha County, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community

Figure Number	Title	Data Sources
3-40	Golf Courses	Lake County SMC, Lake County Department of Information Technology, Kenosha County, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-43	Forest and Nature Preserves	Lake County SMC, Lake County Department of Information Technology, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-44	Lake Michigan Planning Area Wetland Locations	Lake County SMC, Lake County Department of Information Technology, Kenosha County, Cook County, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-45	Lake Michigan Watershed Stream Inventory Reaches	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-46	Channelization by Stream Reach	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-52	Problem Hydraulic Structures	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-54	Problem Discharge Locations	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-56	Riparian Buffers by Stream Reach	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-60	Lakes in the Lake Michigan Planning Area	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-61	Stormsewersheds in the Lake Michigan Watershed Planning Area	Lake County SMC, Village of Pleasant Prairie, MWRD, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-62	Inventoried Detention Basins in the Lake Michigan Watershed Planning Area	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-63	Lake Michigan Watershed 2018 303(d) listed Streams, Lakes, Harbors & Shores	Lake County SMC, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-64	Water Quality Monitoring Locations in the Kellogg Creek and Dead River Subwatersheds	Lake County SMC, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community

Figure Number	Title	Data Sources
3-65	Water Quality Monitoring Locations in the Waukegan River Subwatershed	Lake County SMC, LCHD, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-76	North Point Marina Harbor Monitoring Locations	Lake County SMC, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-77	Waukegan Harbor Monitoring Locations	Lake County SMC, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-78	Lake Michigan Watershed Planning Area Inland Lake and Lake Michigan Shoreline Monitoring Locations	Lake County SMC, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-80	Lake Michigan Watershed Planning Area Active WWTPs	Lake County SMC, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-81	Lake Michigan Planning Area Pesticide Application Point Source Discharge Permit	Lake County SMC, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
3-82	Lake Michigan Planning Area Industrial Activity Point Source Discharge Permits	Lake County SMC, Illinois EPA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-5	Impervious Cover by Catchment in the Lake Michigan Watershed Planning Area	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-6	Estimated Impervious Cover by Catchment Based on Future Land Use Mapping	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-7	Estimated Percent Change in Catchment Impervious Cover Based on Future Land Use Mapping	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-8	Estimated Annual Nonpoint Source Total Suspended Solids Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-9	Estimated Annual Nonpoint Source Total Phosphorus Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-10	Estimated Annual Chemical Oxygen Demand Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-11	Estimated Annual Nonpoint Source Biological Oxygen Demand Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community

Figure Number	Title	Data Sources
4-12	Estimated Annual Nonpoint Source Total Dissolved Solids Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-13	Estimated Annual Nonpoint Source Total Nitrogen Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-14	Estimated Annual Nonpoint Source Total Kjeldahl Nitrogen Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-15	Estimated Annual Nonpoint Source Dissolved Phosphorus Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-16	Estimated Annual Nonpoint Source Cadmium Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-17	Estimated Annual Nonpoint Source Lead Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-18	Estimated Annual Nonpoint Source Copper Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-19	Estimated Annual Nonpoint Source Zinc Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-20	Estimated Annual Nonpoint Source Fecal Coliform Loading	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-21	Pollutant Loading Critical Area Catchments	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
4-22	Streambank Erosion Critical Areas	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
5-3	Flood Problem Areas	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
5-4	Lake Michigan Watershed Structures in the FEMA Special Flood Hazard Area	Lake County SMC, Lake County Department of Information Technology, FEMA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
5-6	Lake Michigan Watershed Planning Area Special Flood Hazard Area Types and Boundaries	Lake County SMC, Lake County Department of Information Technology, FEMA, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community

Figure Number	Title	Data Sources
5-14	Lake Michigan Watershed Existing regional flood storage	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
6-1	Lake Michigan Planning Area Critical Areas	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
6-2	Wetland Enhancement Recommendations	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
6-3	Potential Wetland Restoration/Creation Recommendations	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
6-4	Lake Michigan Watershed Site-Specific Action Recommendations	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
6-5	Lake Michigan Watershed Basin-Wide Site-Specific Action Recommendations	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community
6-6	Inland Lakes with Recommended Actions	Lake County SMC, Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, HERE, Garmin, FAO, NOAA, OpenStreetMap contributors, and the GIS User Community

APPENDIX B:
STREAM INVENTORY REPORT

LAKE COUNTY STORMWATER MANAGEMENT COMMISSION

2019

LAKE MICHIGAN WATERSHED

Stream Inventory Summary

Lake Michigan Watershed

INTRODUCTION

The Lake County Stormwater Management Commission (SMC) conducted a stream inventory of the Lake Michigan watershed during the summer through winter of 2019. The purpose of this assessment was to record quantitative and qualitative stream information, including the capture of visual information on the stream conditions in the Lake Michigan watershed. The information collected will provide a baseline of the overall stream conditions, which can be further extrapolated to indicate the conditions of the stream network of the watershed. The results will be incorporated into the watershed-based plan and provide a framework for prioritizing and implementing watershed management strategies.

TABLE LM-01: STREAM REACHES

SUBWATERSHED	12-DIGIT HUC(s)	NUMBER OF REACHES	ASSESSED MILES
Bluff/Ravine	040400020501 040400020502	79	24.95
Dead River	040400020501	41	3.19
Kellogg Creek	040400020501	39	16.54
*Pettibone Creek	040400020501	N/A	N/A
Waukegan River	040400020501	33	7.80
WATERSHED TOTAL		**192**	**52.47**

**Pettibone Creek subwatershed was not assessed as part of the stream or ravine inventory because the streams were wholly located within Naval Station Great Lakes property in North Chicago and SMC did not have access to those areas.*

THE STREAM INVENTORY ASSESSMENT

The stream assessment includes the geomorphic characterization of the channel by identifying erosion, evaluating discharge points and hydraulic structures, obstructions, areas of deficient buffer zones, and areas with significant detrimental impact on the stream. Visual observations regarding vegetation, water quality conditions, habitat assessments, and aquatic and terrestrial life are included in the stream inventory and allow for a more comprehensive assessment of the stream conditions. Also, information captured during the inventory process includes notes and comments about the stream that may not be well represented in the other forms, such as specific restrictions to streams, restoration efforts or conversations with local residents. The stream inventory data is captured through a uniform and standard process to ensure it is accurate and reproducible.

DATA COLLECTION AND METHODOLOGY

The stream network within the watershed was divided into reaches, smaller geographically-defined segments, for which data is aggregated. Data was collected by teams of two observers who walked the tributaries and canoed the mainstem for the entire length of every reach assessed. At representative points within each reach, the observers measured the channel dimensions and relative velocity (at the surface) of the stream, noted streambank and riparian conditions, and documented hydraulic structures and discharge points using a standardized database. For the purpose of determining bank erosion (lateral recession) additional measurements were obtained, including bank height, lateral recession rate, severity, and lateral recession characteristics. The Rapid Assessment Point Method (RAP-M) was used for observing lateral recession rates. The observers used an iPad along with ESRI's Collector Application to take photos and record data. Data collected includes points of erosion, significant sediment deposition and debris jams, hydraulic structures and discharge points, and photos of the stream channel that are representative of the conditions throughout the reach. Then the data is transferred to

a geographic information system (GIS) which then manipulates, analyzes, and presents the data geographically. This combined method and technology allows for analysis and mapping of the collected data.

CHANNEL CONDITIONS

TABLE LM-02: CHANNEL CONDITIONS

SUBWATERSHED	BANK HEIGHT (FT.)		CHANNEL WIDTH TOP (FT.)		CHANNEL WIDTH BOTTOM (FT.)	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
Bluff/Ravine	0	35	0	60	0	15
Dead River	0	17	1.75	32	1.5	25
Kellogg Creek	0	10	2	45	1	40
Waukegan River	0.5	40	4	50	3	40

CHANNELIZATION

Stream channelization describes any activity that moves, straightens, shortens, cuts off, diverts, or fills in a stream channel. These activities, which include widening, narrowing, or lining a stream channel, alter the discharge and velocity of water flowing through it. Consequently, modifications aimed to address a problem in one area of the watershed or stream channel is shifted to another area upstream, downstream or within the immediate area.

For instance, shortening the reach of a stream moves flooding from the channelized reach to a downstream reach. The degree of channelization is ranked according to the percent of channelization. Reaches with channelization of 1%-33% are ranked “Low”, 33%-66% are ranked “Moderate”, and >66% are ranked “High”. Reaches ranked as “None” have no indication of channelization. Table LM-03 summarizes the degree of channelization in the Lake Michigan watershed stream reaches. The Lake Michigan watershed was predominantly composed of reaches with no (none) or low degrees of channelization (67%). Approximately 9% were moderately channelized and 8% were highly channelized.

TABLE LM-03: DEGREE OF CHANNELIZATION

SUBWATERSHED	DEGREE (# OF REACHES)				
	NONE	LOW	MODERATE	HIGH	TOTAL
Bluff/Ravine	39	33	4	3	79
Dead River	14	13	3	7	37
Kellogg Creek	8	19	7	5	39
Waukegan River	16	6	3	1	26
TOTAL	**77**	**71**	**17**	**16**	**181**

POOL/RIFFLE DEVELOPMENT

Under baseflow conditions, pools are low-gradient areas of deeper water with slower velocity and riffles are high-gradient areas of shallow water with higher velocity. In general, pools represent localized deeper areas, whereas riffles represent localized shallow areas. During baseflow conditions, sediment erodes from riffles and is deposited into pools. During bankfull conditions, the relationship of relative velocity in riffles and pools is reversed and sediments along with substrate material are scoured from pools and the channel bed, then are deposited on riffles or bars. During periods of elevated flow when the velocity in pools exceeds that over riffles, deposition and

bar formation tend to occur in areas adjacent to pools. Channelization often reduces the extent of pool-riffle sequences in a stream. Most channels in the Lake Michigan watershed exhibit little to no pool-riffle development (see Table LM-04).

TABLE LM-04: POOL/RIFFLE DEVELOPMENT

REACHES WITH POOL/RIFFLE DEVELOPMENT	WATERSHED TOTAL	
	POOL REACHES (#)	RIFFLE REACHES (#)
0-10%	105	94
11-30%	56	53
31-50%	18	25
51-75%	2	7
75%+	0	2
Total	**181**	**181**

STREAMBANK EROSION

Streams are dynamic systems, in a perpetual state of flux, therefore, all banks exhibit some form of erosion. Streambank erosion in the Lake Michigan watershed tends to occur in developed areas, particularly residential neighborhoods and urban areas. Surface runoff to streams contributes to streambank erosion and is dependent upon key factors such as storm events (the duration, timing, and amount of precipitation that falls and subsequently runs off). Other key factors include the type and condition of the soil, land use, and vegetative buffers. In some reaches there is severe streambank erosion due to increased runoff from urban development, channelization, sediment "starvation" caused by dams, local changes in stream gradient, and soil type. The qualitative assessment criterion for each rating is slight, moderate, and severe which can be found in Table LM-05. Table LM-06 summarizes streambank erosion points in the Lake Michigan. The results of the stream inventory indicate 82.2% of all erosion points noted in the stream reaches were low to moderately eroded, and 16.4%% of stream reaches were severely eroded.

TABLE LM-05: BANK EROSION CRITERIA

CATEGORY	DESCRIPTION
Low (1% - 33%)	Some bare bank but active erosion not readily apparent. Some rills but no vegetative overhang. No exposed tree roots.
Moderate (33% - 66%)	Bank is predominantly bare with some rills and vegetative overhang.
Severe (66% - 100%)	Bank is bare with rills and severe vegetative overhang. Many exposed tree roots and some fallen trees and slumps or slips. Some changes in cultural features such as fence corners missing and realignment of roads or trails. Channel cross-section becomes more U-shaped as opposed to V-shaped.

TABLE LM-06: EXTENT OF EROSION (POINTS)

EXTENT OF EROSION	# OF POINTS	PERCENTAGE OF WATERSHED
None	21	1.4%
Low	617	41.9%
Moderate	593	40.3%
Severe	242	16.4%

LATERAL RECESSION

The lateral recession rate is a qualitative way to assess width or thickness of eroding surfaces of a channel. The Rapid Assessment Point Method (RAP-M) for assessing lateral recession was employed to determine the degree of streambank erosion in the Lake Michigan watershed. Lateral Recession Rate (LRR) evaluates streambanks along the right and left bank (facing upstream) for each assessed reach. Within each reach, a segment of the channel with specific LRR characteristics is identified. Measurements include bank height/width and the lateral recession rate in feet per year, while several criteria including undercutting, bare bank, overhanging vegetation, fallen trees, exposed roots, and slips or slides are noted. This is repeated up the left and right side of each bank, connecting each segment to the end of the reach. For the Lake Michigan watershed, LRR was predominantly low (slight category). About 60% of the watershed had slight LLR and 33.5% moderate LRR, while about 6.5% of the reaches had severe LRR. No "very severe" LRR were observed during this stream inventory.

SEDIMENT ACCUMULATION

Typically, a stream generates, suspends, and transports sediment through high-gradient reaches and deposits sediment in low gradient reaches and/or in areas where velocity decreases. These low-velocity areas may be naturally occurring areas such as pools or sloughs. They may also occur behind debris jams, beaver dams, or upstream of channel constrictions (such as culverts). Decreasing discharge in the downstream direction thus promotes a stepwise movement of deposition and storage of sediment within a stream network. The effect results in sediment movement that does not always reach the watershed outlet but is instead remobilized during the next flow and redistributed within the watershed's channel network. The amount of sediment transported downstream during storm events will increase sedimentation rates in downstream channels. This increased sediment load can have negative effects on channel stability, fish, invertebrates, and overall stream productivity. When small or headwater streams are replaced with paved floodways during land development, sediment production may decrease, causing an increase in downstream erosion as sediment starved waters move through the watershed. The majority of reaches in the Lake Michigan watershed exhibit a low to moderate degree of sediment accumulation (see Table LM-07).

TABLE LM-07: SEDIMENT ACCUMULATION

DEGREE OF SEDIMENT ACCUMULATION	MAINSTREAM REACHES	
	NUMBER	*PERCENT OF REACHES
Not Assessed	5	2.8%
None	3	1.6%
Low	50	27.6%
Moderate	89	49.2%
High	34	18.8%

None = 0%; Low = 1-33%; Moderate = 34-66%; and High = 67-100% of the reach had sediment accumulations.
**Percent based on total number of reaches*

STREAM DEBRIS LOAD

Like sediment, all streams transport some amount of debris. Large organic debris such as tree limbs and branches can provide habitat, divert currents to create pools, bars, and slow-water habitat for aquatic organisms, and provide allochthonous energy inputs to the ecosystem that are not produced within the stream. Allochthonous inputs are those that enter the stream from some outside source, such as organic matter like leaves from terrestrial plants and trees that are washed into the stream. However, too much debris can be problematic and may result in debris jams. These debris jams may cause backwater flooding and sediment deposition and can divert current into one or both banks, leading to streambank erosion.

Table LM-08 summarizes the debris loading in the Lake Michigan watershed. A reach that has failed the debris loading test has a level of debris higher than 33%.

TABLE LM-08: DEBRIS LOADING

FAILED TEST*	WATERSHED REACHES	
	#	%
Instream	56	30.5%
Overbank	76	43.0%

**Reaches that failed the test for debris accumulation.*

HYDRAULIC STRUCTURES

Hydraulic structures are any bridges, culverts, dams, weirs, levees, and fences in or across the stream channel. These structures modify the pattern or amount of flow and may act as constriction points causing backwater flooding. Culverts may act as temporary or permanent barriers if a plunge pool develops, causing the bottom of the culvert to become elevated above the water level of the pool. Additionally, dams and weirs can impede the movements of fish and other aquatic organisms within the stream network. On average, the Lake Michigan watershed contained approximately 9.3 hydraulic structures per mile. Overall, culverts were the most common type of hydraulic structure in this watershed, with bridges being close behind as second most common hydraulic structure. 18.5% percent of hydraulic structures in the watershed were described as problematic and needing maintenance.

TABLE LM-09: HYDRAULIC STRUCTURES

HYDRAULIC STRUCTURES	WATERSHED TOTAL
Bridges	215
Culverts	293
Dams	39
Weirs	1

Other	35
Total	**583**
Hydraulic structures per stream mile	9.3
Problem* hydraulic structures	108 structures (18.5% of all structures)

** Problem structure indicates maintenance was recommended.*

DISCHARGE POINTS

Discharge points include sanitary, storm sewer, agricultural drain tile, and sump pump pipes. They also include open channels, swales, gullies, and other significant tributaries. In the Lake Michigan watershed, there were 2,664 discharge points, of which1,883 were pipes, storm sewers, culverts or drain tiles (see Table LM-10). Problem discharge points in the watershed contribute to streambank erosion and/or transport excess sediment to the stream channel. Another problem noted during the stream inventory is the state of disrepair of some drain tiles, particularly those constructed of clay and concrete. As the streambank erodes, longer sections of the tile become exposed and eventually collapse under their own weight. This effectively shortens the pipe, causing the point at which runoff discharges from the pipe to retreat from the channel, further eroding the streambank.

TABLE LM-10: DISCHARGE POINTS

DISCHARGE POINTS	WATERSHED TOTAL
Swales, gullies, and tributaries	781
Pipes, storm sewers, and culverts	1,883
Total Discharge Points	2,664
Discharge Points (per stream mile)	42.6

VEGETATION & LAND USE

TABLE LM-11: LAND USE

TYPE OF LAND USE	0-10%		11-30%		31-50%		51-75%		75%+	
	Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank
Agriculture	180	179	1	2	0	0	0	0	0	0
Open Space	2	4	18	11	23	24	47	46	91	96
Recreational	178	179	2	1	0	0	0	1	1	0
Commercial/ Industrial	167	166	10	10	2	3	0	1	2	1
Residential	72	81	54	47	28	29	23	18	4	6
Other	0	0	0	1	0	0	0	0	0	0

The percentages refer to the percentage of the stream reach with the specific land use category. There are a total of 181 stream reaches that were assessed.

FLOODPLAIN VEGETATION

Floodplain vegetation serves as an important function in protecting the physical, biological, and chemical integrity of water. Vegetation acts as a natural barrier by dissipating the energy of flowing water and provides protection from flooding and erosion. Vegetation filters sediments originating from land while slowing overland flows and surface run-off into water bodies, and filters incoming floodwaters from materials scoured from the channel bank and bed. This filtering process can add nutrients to the floodplain soil. Slowed runoff across the floodplain allows additional time for infiltration and groundwater recharge. The slowing of runoff provides the additional benefit of natural purification of water as local runoff or overbank floodwater infiltrates through the floodplain alluvium. Vegetation provides habitat and nutrients for a wide variety of terrestrial and aquatic organisms in, adjacent to, and for downstream ecosystems. The floodplain vegetation (land cover) is vegetation within 100 feet of the stream bank and summarized in Table LM-12. Land cover refers to the number of stream reaches occupied by the given land cover, broken out by the percentage of the stream reach. Each reach in the watershed was assessed for land cover and percentages are represented in Table LM-12. In the Lake Michigan watershed, trees, lawn, and wetlands were the predominant land cover. Shrubs and impervious surfaces were also present, but are not as common. Throughout the watershed, trees were the main type of land cover found on both right and left banks.

TABLE LM-12: LAND COVER

Land Cover	0-10%		11-30%		31-50%		51-75%		75%+	
	Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank
Tree	6	10	20	16	34	35	76	71	45	49
Lawn	112	122	50	43	14	11	4	3	1	2
Wetland	151	151	13	15	5	4	7	7	5	4
Crop	179	178	1	2	1	1	0	0	0	0
Shrub	88	86	77	77	11	14	5	4	0	0
Herbaceous	181	180	0	1	0	0	0	0	0	0
Impervious	77	82	74	75	23	19	5	3	2	2
Water	168	170	12	11	1	0	0	0	0	0
Other	None	None	None	None	None	None	None	None	None	None

The percentages refer to the percentage of the stream reach with the specific land cover category. There are a total of 181 stream reaches that were assessed.

VEGETATED BUFFER (RIPARIAN ZONE)

The riparian zone is the area extending 100 feet from the stream channel on both the left and right side of the stream channel. Riparian vegetation also provides beneficial shading to streams and lakes which helps to avoid temperature stress on fish and aquatic organisms. The quality of the riparian zone, the width, and land use characteristics were visually assessed during the Lake Michigan Stream Inventory. Table LM-13 summarizes the assessment criterion for the width of the riparian zone and is a visual representation of the quality of the riparian zone observed in 2019.

TABLE LM-13: RIPARIAN ZONE ASSESSMENT CRITERIA

Riparian Zone	None	Low	Moderate	High
Buffer Width	<20 feet	20-40 feet	40-60 feet	>60 feet
Description	Zone contains little or no riparian vegetation due to human activities	Zone is impacted a great deal by human activities	Zone is impacted minimally by human activities	Zone is not impacted by human activities (i.e., no parking lots, roadbeds, lawns, crops)

Throughout the Lake Michigan watershed, the width of the riparian zone is impacted by anthropogenic changes in land use resulting in two types of riparian buffers. In wide riparian buffer zones ("High" buffer width) the stream flows through open space areas with minimal to no impact and in narrow buffer zones ("Low" buffer width) the stream flows through developed areas. Generally, the stream network has wider riparian buffers and flows through more open space areas, with the exception of neighborhoods. The majority of the stream reaches has low to moderate riparian buffer widths, comprising about 48.1 miles of the total watershed. Table LM-14 summarizes the Riparian Zones assessed along the Lake Michigan watershed.

TABLE LM-14: RIPARIAN ZONE WIDTH CONDITIONS

BUFFER WIDTH	MILES OF WATERSHED	% OF WATERSHED
None	1.0	1.7%
Low	25.7	41.2%
Moderate	22.4	35.8%
High	13.3	21.3%

BANK VEGETATION

Bank Vegetation (Predominant Vegetation) is vegetation existing within 10 feet of the stream bank. The most significant role of bank vegetation is its ability to control erosion, which in turn prevents sediment and other forms of pollution from entering the stream. Sedimentation is a very significant problem and though erosion is a natural process, it is often sped up through human activities, directly or indirectly. The increased rate of erosion and sedimentation affects the geomorphology of the stream channel, water quality, and aquatic life in the stream channel and throughout the watershed. Streams surrounded by vegetated riparian zones, have intricate root systems that help to stabilize the bank and prevent erosion. Woody stemmed plants, sedges, and grasses help physically trap sediment by slowing water runoff from the surrounding areas, allowing the sediment to settle out instead of entering the stream. Additionally, vegetated banks tend to lead to deep and narrow channels as a result of their stability and lack of heavy sedimentation. In the Lake Michigan watershed, the streambank vegetation is predominantly unmowed grass, trees and no bank vegetation. Streams with no bank vegetation on the banks are likely in reaches that possess higher rates of erosion. The least common type of bank vegetation was crops, herbaceous, wetlands and lawns (See Table LM-15).

TABLE LM-15: PREDOMINANT BANK VEGETATION

Bank Vegetation	0-10%		11-30%		31-50%		51-75%		75%+	
	Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank	Left Bank	Right Bank
Unmowed Grass	61	61	70	69	31	32	14	14	5	5
Lawn	163	161	14	15	2	2	1	1	1	2
Wetland	147	147	18	17	5	6	8	8	3	3
Trees	22	22	82	86	65	63	11	10	1	0
Shrubs	37	37	87	90	49	48	8	6	0	0
Crops	181	181	0	0	0	0	0	0	0	0
Herbaceous	180	180	1	1	0	0	0	0	0	0
None	38	38	29	32	67	68	46	40	1	3

INSTREAM COVER FOR FISH

A diverse habitat with regard to instream cover is essential for diverse fish assemblages and other aquatic organisms. Instream fish cover availability was evaluated based on the presence of a number of structural elements and habitats, consisting of undercut banks, aquatic macrophytes, logs, overhanging vegetation, rootwads, boulders, and backwaters. The presence of woody debris (logs and rootwads) in streams is a significant component of fish habitat which they utilize for spawning, rearing, and foraging. Woody debris creates areas of low flow, providing a refuge for fish during periods of high flow.

Woody debris also provides cover for fish, lowering the risk of predation. Overhanging vegetation and canopy cover provide two important benefits: providing shade to the stream helps keep the temperature in the stream cool, and leaf litter and organic material provide nutrients to macroinvertebrates and other aquatic organisms. These aquatic organisms in turn, become an important source of food for fish and other animals in the ecosystem.

For the Lake Michigan watershed, overhanging vegetation, undercut banks and boulders were the most abundant instream cover type, appearing in a large number of stream reaches, whereas backwaters and rootwads are least abundant. Logs and other large woody debris (LWD) in stream systems and habitat restoration efforts is a matter of consideration. The presence of logs and other LWD divert flow, provide habitat and play an important role in pool, riffle, and bar development. The attenuation of flood flows, drainage of riparian wetlands, land use changes, management of beaver populations, and invasive species are all factors that can contribute to the reestablishment of the riparian forest. Backwater areas have decreased over time and presently occur in wetlands and low-lying areas behind dams and debris jams.

TABLE LM-16: INSTREAM COVER

COVER TYPE	REACHES		
	Not Collected	#	%
Undercut banks	4	109	60.22%
Macrophytes	1	79	43.65%
Overhanging vegetation	2	138	76.24%
Rootwads	1	32	17.68%
Boulders	2	108	59.67%
Backwaters	3	69	38.12%

Reach percentage are based on number of cover types collected.

AQUATIC INSTREAM VEGETATION

Aquatic instream vegetation is an important part of the watershed ecosystem. Plants in the stream are important in food webs. Each organism has characteristic feeding preferences and patterns, and can itself be prey to other consumers. Plants provide habitat and shelter for fish, waterfowl, and other wildlife. Since all plants, including those that grow underwater, produce oxygen as they photosynthesize, they are the major source of oxygen for aquatic animal life. Rooted plants stabilize shorelines and stream beds. They also absorb nutrients and filter pollutants from runoff, which improves water quality.

Certain non-native plant species such as milfoil can be extremely aggressive, taking over large areas of aquatic habitat. Invasive plant species can completely destroy stands of native vegetation. An overabundance of aquatic plants and algae can reduce oxygen levels in the water, which can contribute to fish kills. Decomposing of dead fish and algae also contributes to oxygen depletion. Too much vegetation can impede water flow in stream channels, drainage ditches, and culverts or back up water completely. These areas can trap sediment and debris, and over time lead to a gradual filling in of lakes and channels.

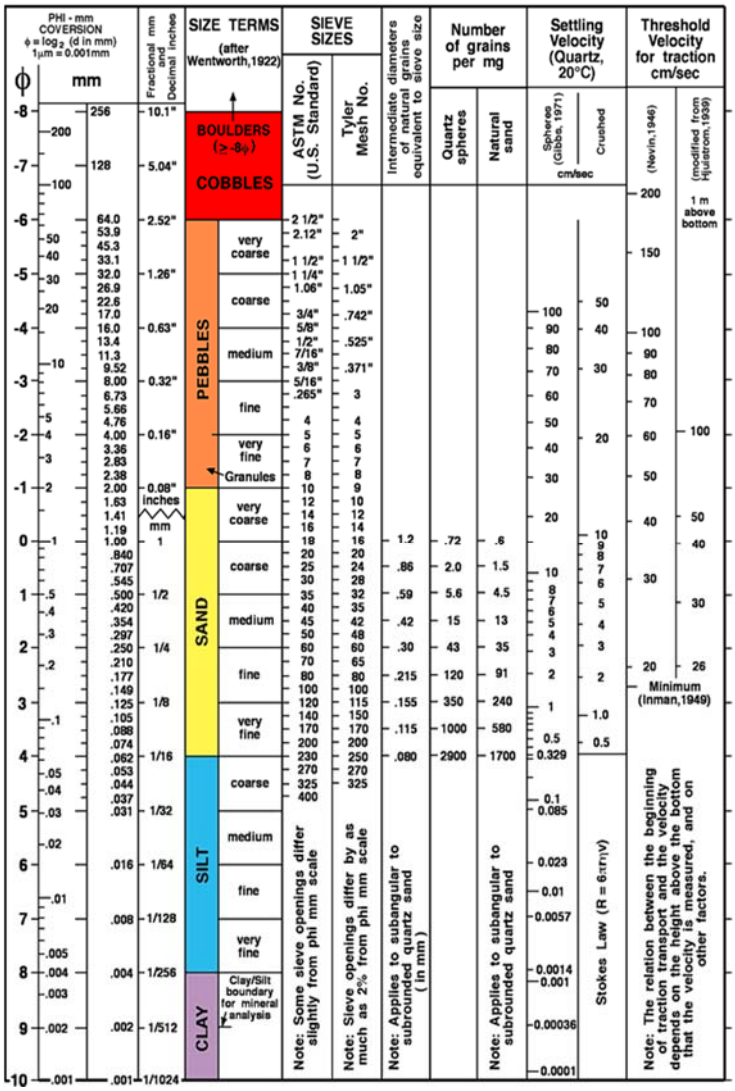
The Aquatic Instream Vegetation assessed in the Lake Michigan watershed show a majority of reaches with rooted submergent and emergent vegetation and attached algae present. The Lake Michigan watershed exhibits adequate vegetation diversity (See Table LM-17).

TABLE LM-16: INSTREAM AQUATIC VEGETATION

INSTREAM AQUATIC VEGETATION	Not Collected	None (0%)	Low (1%-33%)	Moderate (33%-66%)	High (66%-100%)
Rooted Emergent	2	134	27	15	3
Rooted Submergent	3	105	46	18	9
Rooted Floating	2	174	5	0	0
Free Floating	2	169	9	1	0
Floating Algae	2	149	21	4	5
Attached Algae	4	18	107	48	4

SUBSTRATE COMPOSITION AND WATER QUALITY

The Lake Michigan streambeds are composed of a variety of sediment grains that range in diameter from extremely fine clays (<1/1000th of an inch) to relatively coarse cobbles and boulders (>1 foot). Generally, fine sediments are transported in suspension until velocity slows enough that they are deposited on the streambed. Larger sediments are not transported as readily and may only move during increased flows. Clays are typically regarded as cohesive sediments that naturally adhere to one another (and are therefore more difficult to erode) while silts are more easily eroded. Sands and larger sediments (e.g., gravels and cobbles) are less cohesive. Clay and silt-dominated banks and beds, therefore, tend to be associated with narrow, incised channels while sand, gravel, and cobble-dominated channels are more often shallow and wide. These relationships, however, are also contingent upon a number of other contributing factors such as gradient, bank slope, and bank vegetation.



Substrate is also an important measure of habitat quality. Extremely fine sediments, such as clays, adhere closely to one another and may bury the streambed. Coarse-grained sediments like gravels present abundant interstices, allowing water, oxygen, and other dissolved and suspended materials to infiltrate the hyporheic zone. The hyporheic zone refers to the area surrounding the stream channel that is saturated and through which there is some percolation or flow.

Essentially, the hyporheic zone is the area where the surface water and groundwater interface and mix. These interstitial pores also provide habitat to benthic (bottom-dwelling) macroinvertebrates, which play important roles in both aquatic food webs and ecosystem functioning.

Excessive deposition of clays, silts, and fine particulate organic matter reduces the potential for infiltration and accessibility to the hyporheic zone. Excessive deposition also negatively affects filter feeders such as mussels and may cause oxygen depletion in the streambed as organic materials decompose.

In the Lake Michigan watershed, most reaches contain one or two predominant substrates. Table LM-18 summarizes the relationship of these substrate types in the river. Across the entire watershed silt, cobble, and sand are the predominant substrate types recorded. Concrete and boulders were the least common substrate types in the watershed.

TABLE LM-18: SUBSTRATE COMPOSITION

SUBSTRATE COMPOSITION	Not Collected	Not Visible	None (0%)	Low (1%-33%)	Moderate (33%-66%)	High (66%-100%)
Claypan	4	2	35	92	41	7
Silt	4	2	4	90	64	17
Sand	4	2	6	103	55	11
Gravel	4	2	20	92	56	7
Cobble	4	0	34	67	62	14
Boulder	4	2	76	98	0	1
Concrete	4	8	123	43	1	2
Organic Matter	4	0	28	101	37	11

WATER QUALITY

Turbidity

Visual inspections of several water quality indicators were made during the stream inventory. Turbidity, water color, and the presence of grease and oil in the sediment or water column were assessed. Turbidity is the measure of relative clarity of water. Material that causes water to be turbid includes clay, silt, fine inorganic and organic matter, algae, organic compounds, and plankton and other microscopic organisms. During periods of low flow, water in streams is clear, and the turbidity is low. During high flow events, sediment and material from the surrounding surfaces are washed into the stream. As the velocity and volume of water increases, sediments and other materials are stirred up causing the water to become muddy, brown, and turbid. Low to moderate turbidity in the Lake Michigan was very common. Only two reaches in the watershed were recorded to have little to no turbidity recordings. Otherwise, around 98.9% of the reaches possessed some degree of turbidity (See Table LM-19).

TABLE LM-19: WATER QUALITY

WATER QUALITY	PERCENTAGE OF WATERSHED	
	# OF REACHES	% OF TOTAL REACHES
Turbidity		
None	2	1.10%
Low	87	48.07%
Moderate	66	36.46%
High	20	11.05%
Not Collected	6	3.31%
Grease & Oil (Water)		
None	81	44.75%
Low	66	36.46%
Moderate	20	11.05%
High	10	5.52%
Not Collected	4	2.21%
Grease & Oil (Sediment)		
None	108	59.67%
Low	51	28.18%
Moderate	15	8.29%
High	3	1.66%
Not Collected	4	2.21%

Grease & Oil

Grease and oil in water and sediments are mainly not present in the watershed, but are low t moderately present in water and sediment (47.5% & 36.5%, respectively). There were 100 reaches that had some degree of grease and oil in the water and 73 reaches that contained grease and oil in sediment. The presence of grease and oil in the water was more common than the presence of grease and oil in the sediment. The origination of the grease and oil does not relate to any one particular site or land use and therefore is likely due to non-point source run-off. An additional note: iron bacteria are present in many soils in Illinois and can cause yellow, orange, red, or brown stains and colored water. It can also cause a rainbow colored, oil-like sheen on the water or in soil and sediments. Simple water testing is available to determine if the oil-like substance present is iron bacteria.

Grease and oils enter the stream during storm events as oil and grease from surrounding parking lots, roads, and bridges flush into the storm sewer system, often overflowing directly into the stream. Other potential sources of oil and grease results from illegal dumping that originate from automotive and transportation related services. Grease and oil in the water column and sediment will degrade the water quality of receiving streams by adding biological and chemical oxygen demand to the stream. Table LM-19 summarizes the turbidity, grease and oil in the Lake Michigan watershed.

Algae

Algae are an indicator of high nutrient loads. Generally, algae were not a significant problem in the Lake Michigan watershed; however, attached algae was quite common in the majority of the watershed. Excessive algae growth can negatively impact aquatic organisms and habitat. Algae are photosynthetic and therefore take up carbon

dioxide during the day and release oxygen into the water column and the air. At night, algae respire, taking oxygen out of the water column and releasing carbon dioxide. Therefore, larger populations of algae have greater potential to cause large daily oxygen fluctuations. In addition, abundant algae populations are often aesthetically undesirable and typically detract from the visual quality of water resources.

AQUATIC AND TERRESTRIAL ORGANISMS

Stream aquatic integrity in urban settings is directly affected by physical changes in the watershed, some of which result in the degradation of the chemical and/or physical condition of the stream. Habitat information is extremely important for discriminating between physical and chemical effects. The inventory addressed aquatic and riparian life where possible or identifiable. Organisms were not specifically sampled during the stream inventory, but some animals were observed during the inventory. A wide variety of aquatic and terrestrial organisms were observed during the stream inventory of the Lake Michigan watershed. Species of fish present included carp, bluegill, bass, fathead minnows, salmon, creek chub, and miscellaneous minnows. Snails, sow bugs, leeches, worms, water striders, ticks, mosquitos, butterflies, slugs, and dragon and damsel fly nymphs were visible in the Lake Michigan watershed. Mallard ducks, Canadian geese, herons, hawks, blue birds, sparrows, and cardinals, amongst other amphibians and mammals were also encountered during the inventory.

APPENDIX A

Stream Inventory Procedures and Form Guide

Stream Inventory Procedure

The Lake County Stormwater Management Commission conducts stream inventories in as part of the overall watershed planning process. Water quality sampling is not performed as part of the stream inventory, but the sources and causes of water quality impairment in the streams were investigated. An important component of the assessment process is the evaluation of current hydraulic, geomorphic, and aquatic stream characteristics. The major stream characteristics assessed and noted include:

- channel conditions such as bank height, erosion problems and bank vegetation
- hydraulic structures such as bridges and culverts in the river or floodplain
- point discharges into the river
- land use and vegetative cover in the riparian corridor
- channel substrate and degree of sedimentation.
- lateral recession rates

These characteristics are identified for each stream reach using the stream inventory procedure described below. Several procedures were considered self-explanatory and were therefore not described. The discussion below is organized in the same order as the data was collected on the stream inventory report form.

Stream Inventory Report Form

Reach Boundaries

A stream reach is defined as a stream segment having fairly homogenous hydraulic, geomorphic and riparian cover and land use characteristics (such as all ditched agriculture or all natural and wooded). Reaches generally should not exceed 2,000 feet in length. Where possible, beginning and end stations should be established along the stream using permanent physical landmarks such as bridges that are readily recognized.

Channel Flow Status (Stream Stage)

The degree to which the channel is filled with water. The flow status will change as the channel enlarges (e.g., aggrading stream beds with actively widening channels) or as flow decreases as a result of dams and other obstructions, diversions for irrigation, or drought. When water does not cover much of the streambed, the amount of suitable substrate for aquatic organisms is limited. In high-gradient streams, the decrease in water level exposes logs and snags, thereby reducing the areas of good habitat. Channel flow is especially useful for interpreting biological condition under abnormal or lowered flow conditions. This parameter becomes important when more than one biological index period is used for surveys or the timing of sampling is inconsistent among sites or annual periodicity.

Channel Conditions

Channelization

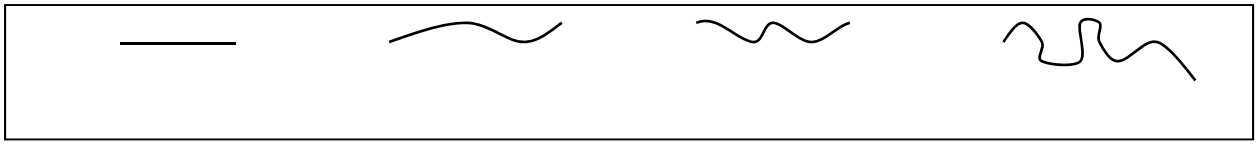
Channelization refers to channel modifications performed by humans. 'The one-third rule should be applied again where low means < 33% of the reach is channelized, moderate means 33 to 66% and high means > 66% of the reach is channelized. The presence of a pilot channel should be noted under 'Pilot Channel Formed' for channelized streams. A narrow, meandering pilot channel may develop within the wide and flat trapezoidal ditch that was excavated during channelization. A pilot channel is indicative of recovery from channelization.

Sinuosity

Sinuosity is dependent on the stream stage in many channelized reaches. For instance, in many cases a narrow, highly sinuous pilot channel has developed during low stream stage within a wider, non-sinuous channel that was excavated during channelization. Therefore, sinuosity should be estimated for both baseflow conditions (describing sinuosity in the pilot channel) and for the bankfull-flow events. However, if the stream inventory report form is completed during bankfull flow, then sinuosity during baseflow conditions will be difficult to estimate. Figure 1 should be used for estimating the degree of sinuosity.

Figure 1

Sinuosity Estimation Guide



Pool/Riffle Development

The proportion represented by riffles, runs, and pools should be noted to describe the morphological heterogeneity of the reach. Pools should be well-defined areas of deeper than average water. Pools generally do not extend in length more than three or four times the stream width. Pools should almost immediately be followed by a riffle environment for the stream to be characterized as having high pool/riffle development. A riffle is characterized by shallower water and higher velocities with rippling or disturbances to the surface water tension that allow turbulence and mixing to occur. Many streams in Lake County will have low or no pool/riffle development.

Bank Erosion

Severe bank erosion is a significant concern for Lake County's stream and rivers. Severely eroded banks have exposed soil on nearly vertical banks extending from the top of bank to the low water mark so erosion is constantly occurring. Highly eroded streambanks contribute heavy loads of sediment and erode during times of higher flows. Active slumping and sloughing may be apparent where fresh, moist,

loose soil and other signs of recent bank movement such as exposed tree roots or suspended fences extending into the stream are found. Eroded areas are most prevalent in the outer edges of bends and meanders. All cases of severe erosion should be photographed and noted on the form and the map or aerial photo. If the photo is taken looking up/down stream the aspect should be noted. Structures that are present and threatened by slumping should also be recorded. Right and left bank are determined by facing upstream. On impounded areas of streams, the absence of bank or littoral vegetation along the normal water mark resulting in constant erosion would also be considered severe.

Lateral Recession Rates

This rate is a qualitative way to assess width or thickness of eroding surface on a channel. It is used to estimate an actual quantitative measurement. Recession rates of eroding banks for Illinois streams and gullies typically range from 0.05 feet 0.5 feet per year. Values in the range of 0.05 feet to 0.40 feet are the most typical in perennial streams and rates of 0.05 feet to 0.3 feet most typical in intermittent flow channels. Stream banks with retreat rates of 1 or more feet per year do occur, but are uncommon and not usually widespread within a given watershed. Apply the rates as uniformly and consistently as you can along both sides of each channel. Remember, these numbers are used to obtain *average annual rates*, not those that occur after a 4-inch rain that washes out a bridge abutment. Rates in the "Very Severe" category of 0.5+ feet of bank recession per year generally only occur in Illinois on segments of channels scattered throughout steep watersheds.

If these rates were applied throughout the entire watershed, so much sediment would be produced that the current stream systems could not move it through; it would pile up as huge sediment bars that would block the actual flow of water. Bottom scour of some channels also occurs in some watersheds. Usually this is not as noticeable or as severe as bank erosion for a given channel. Rates of 0.05 feet to 0.4 feet are typical where the scour is occurring. Include any scour erosion totals with the bank erosion on the Channel Inventory Form. See RAP-M Rapid Assessment, Point Method – Inventory and Evaluation of Erosion and Sedimentation for Illinois R.D. Windhorn 12/00.

Armoring

Armoring refers to the placement of gabions, wood, metal, riprap or other similar artificial materials along the streambank to reduce bank erosion. The one-third rule should be applied again where low means < 33% of the reach is armored, moderate means 33 to 66% and high means > 66% of the reach is armored. Portions of armoring that are failing should be noted.

Sediment Accumulations

Sediment accumulations that affect the channel capacity and flow conveyance should be described. Sediment deposition measures the amount of sediment that has accumulated in pools and the changes that have occurred to the stream bottom as a result of deposition. Deposition occurs from large-scale movement of sediment. Sediment deposition may cause the formation of islands, point bars (areas of increased deposition usually at the beginning of a meander that increase in size as the channel is diverted toward the outer bank) or shoals, or result in the filling of runs and pools. In some cases, sediment accumulations may not impact channel conveyance.

Mid-Stream Bars and Islands

Record whether exposed mid-stream bars or islands are present. Although these structures may increase habitat availability for organisms, they also reduce the unobstructed stream width and may enhance the debris-accumulating potential of the stream reach.

Mean Water Depth

Water depth should be measured at the deepest portion of the channel cross section (known as the thalweg) with a sturdy 4- to 5-foot rod inscribed with depth marks in inches. The range of water depths should reflect the variation between the deepest and shallowest portions of the channel cross-section in the reach.

Mean Bank Height, Top Mean Channel Width and Bottom Mean Channel Width

Mean bank height should be measured from the top to the bottom of the streambank. The top of the bank occurs where there is a convex-shaped transition in bank slope between the stream bank and the outlying floodplain. The bottom of the bank occurs where there is a concave-shaped transition in slope between the stream substrate and the stream banks, and it may be below the water level.

Top and bottom mean bank widths refer to the mean bank-to-bank width across the top and across the bottom of the banks. If the top of one bank is higher in elevation than the top of the opposite bank, the top mean channel width should be measured from the elevation of the lowest bank. In estimating these and other values, the investigator should be conscious of longitudinal changes in bank dimensions in order to arrive at estimated values.

Beaver Activity

Low beaver activity includes an occasional bank slide or chewed stump within the reach. These features must become progressively more apparent to rate as moderate activity. High activity is characterized by almost constant activity in the wooded areas with felled trees in excess of 12 inches; slides and beaver cut brush being common in the stream. All dams and lodges should be noted and indicate high beaver activity.

Stream Debris Load

1. Instream Debris Load

Stream debris load refers to natural and man-made debris including leaves, sticks, logs, lumber, trash and sediment. The one-third rule should be applied again where low means < 33% of the reach contains debris obstructing or deflecting flow, moderate means 33 to 66% and high means > 66% of the reach is characterized by large accumulations of lodged and partially compacted debris spanning the entire stream width.

2. Overbank Debris Load

The overbank debris load refers to loosened, floatable materials that are prevalent enough to potentially cause debris jams at culverts and bridges during high flows events. The locations and types

of debris as well as how it may impact the reach should be noted. Similarly to the instream debris load section, the one-third rule should be applied.

Hydraulic Structures

Hydraulic structures include low head dams, weirs, bridges, levees, and culverts. Dimensions as well as construction materials should be measured and recorded. Structures should be photographed and their locations should be recorded by taking a GPS waypoint. Elevations will be determined from existing data or field survey dependent upon the approved scope of work. Notes should include condition, drop or change in elevation, blockages and other characteristics.

Point Discharges

Point discharges include all sanitary, storm sewer and agricultural drainpipes greater than 4 inches in diameter. They also include open channels, swales, gullies and other significant tributaries. Locations of all point discharges should be recorded by taking a GPS waypoint. Check the problem column if the condition of the discharge point is blocked, cracked, etc. The volume of flow should be noted in the appropriate column using the following categories: none, trickle, moderate, substantial, other. Notes should include comments on odors, sheens or high turbidity if present.

Vegetation and Land Use

Floodplain Vegetation (within 100 ft of stream)

For the respective banks the land use and vegetative cover should be noted as percentages of the floodplain surface area (note: percentages should total 100%). The vegetated buffer is given a score from 0-10.

Predominant Bank Vegetation (%) and Predominant Tree/Shrub Species

These measurements provide an indication of bank stability and the potential for the development of debris blockages in the channel. For the respective banks the predominant vegetation type should be noted as percentages of the bank surface area (note: percentages should total 100%). Due to the rapid colonization capabilities of some tree and shrub species, the presence or absence of tree and shrub types should be documented even if trees or shrubs were uncommon in the stream reach. Also, where possible, tree and shrub species included in the 'Other' category should be identified. Canopy cover should be estimated as a percentage of shaded coverage of the channel.

Aquatic Vegetation

The general type and relative dominance of aquatic plants are documented in this section. Besides being an ecological assemblage that responds to perturbation, aquatic vegetation provides a refuge and food for aquatic fauna. Filamentous algae can grow in fast or slow flowing streams over solid surfaces within the stream channel. Extensive filamentous algae coverage is indicative of excessive nutrient levels. Submergent, emergent, free floating, rooted floating or no vegetation should also be considered when estimating percentage of aquatic vegetation over the total area of the reach.

Substrate and Water Quality

Substrates

The substrate in the stream channel should be classified using the following definitions:

Claypan (Hardpan): Claypan is made up of particles less than 0.0002 inches in diameter, which forms a dense, gummy surface that is difficult to penetrate.

Silt: Silt particles are between 0.0002 to 0.002 inches in diameter. Silt is a fine material that generally feels "greasy" when rubbed between fingers.

Sand: Sand is made up of materials from 0.002 to 0.08 inches in diameter. Sand exhibits a gritty texture when rubbed between fingers.

Grave: Gravel is a mixture of rounded coarse material from 0.08 to 2.5 inches in size.

Cobble: Cobble is made up of stones from 2.5 to 10 inches in diameter.

Boulder: Boulders are defined as rounded stones over 10 inches in diameter or large "slabs" over 10 inches in length.

Organic: Organic substrate refers to living or decaying plant material.

Concrete: Channels lined with concrete or other man-made materials should be noted.

Substrate Stability

Substrate stability will be assessed according to how well the stream substrate supports the weight of the observer walking within the stream. Assessing substrate stability requires that the observers walk through representative lengths of the stream channel in the reach. To help ensure the safety of the observers, waders should be worn at all times to prevent cuts and infections, and at least two observers should walk each reach together. Stream channels should not be walked if the safety of the recorder is in jeopardy at any time because of strong current, deep-water sections, soft substrate, or any other potential danger. Substrate stability classified as 'None' indicates that the substrate can't support the observer's weight and the observer quickly sinks into the substrate. These substrate types are usually deep silts that for obvious safety reasons must not be walked in. 'Low' substrate stability can be walked over, but the observer will sink several inches into the substrate if he stands for an extended time period. These substrates may include silts and loose sand or gravel. 'Moderate' substrate stability would describe substrate that can be walked over without sinking more than an inch or two into the substrate and may include coarse gravel, cobble, perhaps mixed with some boulders. 'High' substrate stability can be readily walked on without sinking into the substrate. 'High' substrate stability often occurs when cobble, boulders, shale or claypan covers the stream bottom.

Substrate Embeddedness

Substrates should be considered embedded if more than 50% of the surface of the substrates are surrounded, impacted in or covered by unnatural accumulations of fine material such as sand or silt.

Embedded substrates can't be easily dislodged. Naturally silty or sandy streams are not considered embedded; however, if sedimentation has buried the natural coarse substrates with sand or silt then the stream reach should be considered embedded. The degree of embeddedness can often be determined by jabbing a sturdy rod into the stream bottom to determine whether the underlying stream substrate is coarse material, or sand and silt. Embeddedness is the extent to which cobbles, gravel, and boulder substrates are embedded. High embeddedness would occur if over 66% of the site area was embedded (as defined above), moderate embeddedness would occur if from 33 to 66% of the site area was embedded and low means less than 33% of the area was embedded. 'N/A' ratings should be applied to stream channels that are naturally composed of silt and sand, because in such channels embeddedness of coarse substrates is 'not applicable.'

Instream Cover

All types of cover present should be noted. Cover should not be counted when it is in areas of the stream with insufficient depth. General comments on perceived abundance of various cover types should be reported.

Aquatic and Terrestrial Organisms

Some measurements for the Aquatic and Terrestrial Organisms section (Section G) require that riffles be distinguished from runs and pools. Pools and riffles were defined in section D.1.2.3. Runs are deeper than riffles, have relatively rapid, non-turbulent flow and are generally located downstream from riffles where the stream narrows. The streambed is often flat beneath a run and therefore the water surface is not visibly broken.

Biological information (versus chemical or physical information) is widely regarded as the most reliable type of data collection for evaluating the ecological conditions of stream reaches. Although SMC does not sample for fish, macroinvertebrates or birds, their presence will be noted when they were encountered in a stream reach.

Macroinvertebrates

NOTE: SMC only observes and notes the presence of macroinvertebrates and DOES NOT sample based on the procedures outlined below. This section has been left in as a placeholder in the event sampling is required in the future.

If sufficient flow exists, macroinvertebrates should be sampled by kick net (approximately 3' x 3' screens) in riffle areas at least once per reach. The observer should stand upstream of the kick net and use one or both feet to disrupt the substrate and dislodge macroinvertebrates from the substrate so that they drift downstream into the kick net screen. If sufficient flow does not exist for the effective use of kick nets, macroinvertebrates should be handpicked from rocks in riffle areas. The presence should be noted of major groups of macroinvertebrates such as stonefly, mayfly and caddisfly larvae, snails, water pennies, riffle beetles, damselfly and dragonfly nymphs, isopods and sowbugs, leeches, and worms. If riffle areas and rocks do not exist such as in recently channelized streams, impounded streams, or under low-flow conditions, then macroinvertebrates should be sampled from vegetation, debris or other instream material.

Fish

NOTE: SMC only observes and notes the presence of fish and DOES NOT sample based on the procedures outlined below. This section has been left in as a placeholder in the event sampling is required in the future.

Fish sampling should be performed with a seine (or ideally, electroshocking equipment) at three or more stream locations. The types and relative abundances (percent composition of the catch by species) should be noted for each fish species captured. However, high flow may in some circumstances not permit safe and effective seining. In such instances, visual observations of types of fish present should be made where water clarity permits. Based on past experience, some species or groups that can be tentatively identified by visual observation alone without sampling gear include carp, goldfish, minnows, panfish and bass. In all biological evaluations, presence of rare or threatened and endangered animal and plant species is of great interest.

Birds

During the field investigation, types and numbers of birds that utilize streams and adjacent aquatic habitat should also be noted. Such birds that are common to Lake County include ducks, geese, herons, kingfishers, sandpipers, plovers, gulls, terns, swifts and some swallows.

Note: Any reptiles, amphibians or mammals observed should be noted as specific as possible.

Additional Comments

Additional notes or comments should include any irregularities such as cars in the stream, floodplain construction activity, presence of livestock in the stream, foul smelling discharges, errors in existing mapping or other peculiarities. Opportunities and obstacles to access should also be noted on each form.

Suggested Equipment List

- Stocking foot pants/waders (2 pairs)
    - *Hip length recommended with "stocking foot" that slip into wading boots*
- Wading boots
    - *SMC recommends NOT using the boots with felt bottoms*
- digital GPS camera, waterproof recommended
- tablet (iPad, MS Surface, or comparable device for GIS feature collect and data entry)
- Paper copies of the Stream Inventory Report Form in the event of technical difficulties
- Pens, pencils, notepads
- polarized sunglasses
- 100+ foot tape measure
- 4-foot wood rod with depth marks or metal yard stick
- watch with second hand

Access

Approval for access on private property is important. It is also important as a common courtesy to inform public landholders (park districts, forest preserve districts, etc.) that an inventory is taking place and field crews may be present on their property.

Golf courses present a unique hazard. Call beforehand and stop in and visit with golf course pro shop personnel before entering these properties. Stay in the stream, move quickly through these areas and do not disrupt play on the course.

Access to any sensitive areas such as nature preserves, military installations, and power plants cannot be assumed and MUST be coordinated in advance. These entities must grant permission in writing before field crews can gain access to sites within these areas.

Be kind and courteous when approached by citizens or property owners. Introduce yourself and let them know you are with the Lake County Stormwater Management Commission and if they are interested, explain what you are doing. For the most part, people are just curious as to what you are doing and many times, may provide information important to the inventory.

The Lake County Stormwater Management Commission will notify watershed stakeholders in advance of an inventory. A letter and watershed map will be mailed out to riparian landowners owner equal to or greater than 5 acres along the stream corridor. See Figure 2 and Figure 3. Each member of the field crews will also carry the same letter granting authority to conduct the inventory at all times.

In addition, an email containing a letter and watershed map (similar to Figure 2 and Figure 3) will be sent out to officials within the watershed. Field crews will also carry a letter signed by the Executive Director of the Lake County Stormwater Management Commission granting the crews authority to conduct the inventory.

Figure 2 Sample letter to RIPARIAN LANDOWNERS

Dear Lake Michigan Watershed Community Official/Resident:

The Lake County Stormwater Management Commission (SMC) is developing a Lake Michigan watershed plan in Lake County that includes updates to watershed plans completed in 2008/2009. As part of this process, SMC will be completing a detailed stream inventory throughout the watershed. The inventory will assess channel conditions such as bank height, erosion problems, bank vegetation, lateral recession rates, hydraulic structures such as bridges, culverts, and dams, pipes and swales draining to the stream, land use and vegetative cover along the stream corridor, available habitat in the stream, and channel substrate and degree of sedimentation.

Two Stream Inventory Interns, Matthew Sullivan and Allie Donaldson, will perform the stream inventory during the summer of 2019. The above individuals are allowed to gain reasonable access to Lake Michigan streams to perform the inventory. I wanted to make you aware that these staff members will be in the field this summer in case you see them on your property or receive calls or questions from your staff or constituents regarding the purpose of their work. They will carry a copy of an introductory letter similar to this letter while they are in the field. SMC is also sending this notice to other jurisdictions and several property owners along the ravines to make them aware of SMC's presence for the assessment. Local authorities will be notified in advance of site visits, so they are aware of staff presence.

The information collected in the stream inventory will be used in the development of the management plan for the Lake Michigan Watershed. This plan will address water quality impairments, flooding problems and natural resource protection along with other problems and opportunities identified by watershed stakeholders. The anticipated completion date of the stream inventory is September 2019. The watershed plan is expected to be completed in 2020.

If you would like additional information on the stream, detention basin, and ravine assessments, please contact Jeff Laramy, GIS Analyst at 847-377-7709 or jlaramy@lakecountyil.gov. If you are interested in participating in the watershed planning process as a stakeholder, please contact Mike Prusila mprusila@lakecountyil.gov 847-377-7713.

Thank you for your cooperation.

Sincerely,

Mike Warner

Executive Director

Sample Stream Inventory Report Form

STREAM NAME:_____REACH ID:_____ DATE:_____

REACH BOUNDARY- DOWNSTREAM:_____ GPS Photo. #_____

REACH BOUNDARY-UPSTREAM:_____ GPS Photo #_____

APPROX. LENGTH (ft):_____ TEMP. (°F)_____ TIME:_____

INVESTIGATORS:_____ RECENT RAIN: (Now, 12, 24, 48 hours, week)_____

GAGE READING:_____

LOOKING UPSTREAM

WATER DEPTH	DEPTH (FT)	GPS PHOTO#	AVERAGE	RANGE
1				
2				
3				
MEAN WATER DEPTH				
BOTTOM CHANNEL WIDTH (FT)	WIDTH (FT)	GPS PHOTO#	AVERAGE	RANGE
1				
2				
3				
MEAN BOTTOM CHANNEL WIDTH (FT)				
TOP CHANNEL WIDTH (FT)	WIDTH (FT)	GPS #	AVERAGE	RANGE
1				
2				
3				
MEAN TOP CHANNEL	WIDTH (FT)	GPS #	AVERAGE	RANGE

WIDTH (FT)				
BANK HEIGHT	**HEIGHT (FT)**	**WIDTH**	**SLOPE RUN/RISE**	**PHOTO #**
1 LEFT				
1 RIGHT				
2 LEFT				
2 RIGHT				
3 LEFT				
3 RIGHT				
MEAN BANK LEFT				
MEAN BANK RIGHT				
VELOCITY (FT/S)				
1				
2				
3				
MEAN VELOCITY (FT/S)				

A. BANK EROSION

***Photos of Moderate to Very Severe will be taken**

LRR (ft./yr.)	Category	Description
0.01 - 0.05	Slight	Some bare bank but active erosion not readily apparent. Some rills but no vegetative overhang. No exposed tree roots.
0.06 - 0.2	Moderate	Bank is predominantly bare with some rills and vegetative overhang.
0.3 - 0.5	Severe	Bank is bare with rills and severe vegetative overhang. Many exposed tree roots and some fallen trees and slumps or slips. Some changes in cultural features such as fence corners missing and realignment of roads or trails. Channel cross-section becomes more U-shaped as opposed to V-shaped
0.5+	Very Severe	Bank is bare with gullies and severe vegetative overhang. Many fallen trees, drains and culverts eroding out and changes in cultural features as above. Massive slips or washouts common. Channel cross-section is U-shaped and streamcourse or gully may be meandering.

Lateral Recession Assessment

PHOTO #	L=left R=Right C=Center Looking Upstream	Aspect U=Up D=Down	Bank Height (ft.)	LRR Category Slight, Moderate, Severe, VerySev., ExtremelySev.	LRR (ft/yr)	LRR Characteristics (circle those that apply)	Notes (Use "many"or "some" where appropriate)
	L C R	U D		SL Mod Sev VerySev ExtSev		undercutting-bare bank overhanging veg.-fallen trees exposed roots-(fine or woody) rotational slips or slides	
	L C R	U D		SL Mod Sev VerySev ExtSev		undercutting-bare bank overhanging veg.-fallen trees exposed roots-(fine or woody) rotational slips or slides	
	L C R	U D		SL Mod Sev VerySev		undercutting-bare bank	

PHOTO #	L=left R=Right C=Center Looking Upstream	Aspect U=Up D=Down	Bank Height (ft.)	LRR Category Slight, Moderate, Severe, VerySev., ExtremelySev.	LRR (ft/yr)	LRR Characteristics (circle those that apply)	Notes (Use "many"or "some" where appropriate)
				ExtSev		overhanging veg.-fallen trees exposed roots-(fine or woody) rotational slips or slides	

B. DISCHARGE POINTS:

(Pipes, ditches, swales, tributaries; note numbers, sizes and locations of discharges with diameters of 4 inches or more.)

TYPE & MATERIAL	DIMENSIONS (inches)	PHOTO #	L/R or Center of Channel	P♣	FLOW•	NOTES

NOTES (ex: suspicious effluent etc.):_____

♣P= Problem (check for Yes)

***None, Trickle, Moderate, Substantial, Other**

C. HYDRAULIC STRUCTURES:

(Note sizes & locations in channel or adjacent floodplain.

TYPE & MATERIAL	**DIMENSIONS L/W (INCHES)**	**L/R or Center of Channel Looking upstream**	**P ***	**PHOTO #**	**NOTES:**

♣P= Problem (check for Yes)

D. CHANNEL CONDITIONS:

CHANNEL FLOW (STREAM STAGE):

NONE	LOW	MODERATE	NORMAL	HIGH
Very little water in channel and mostly present as standing pools	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed	Water fills > 75% of the available channel; or <25% of channel substrate is exposed	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed	Water levels are higher than the base of both banks
0 1	2 3 4	5 6	7 8	9 10

CHANNELIZATION: NONE____ LOW____ MODERATE____ HIGH_____

PILOT CHANNEL FORMED (YES / NO)

SPOILS PILES ON BANKS (Left / Right / Both)

BANKFULL SINUOSITY: NONE____ LOW____ MODERATE____ HIGH____

BASEFLOW SINUOSITY: NONE____ LOW____ MODERATE____ HIGH____

POOL/RIFFLE DEVELOPMENT: % POOL ____ % RIFFLE ____ % RUN ____

DEGREE OF BANK EROSION:

NONE	MODERATE	*SEVERE	*VERY SEVERE
Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems; less than 5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over; 5-33% bank has areas of erosion.	Moderately unstable; 33-66% of bank has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 66-100% of bank with erosional scars.
Left Bank 10 9	8 7 6	5 4 3	2 1 0
Right Bank 10 9	8 7 6	5 4 3	2 1 0

***Photos of Moderate to Very Severe Erosion will be taken**

DEGREE OF ARMORING: NONE____ LOW____ MODERATE____ HIGH____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

E. SEDIMENT ACCUMULATIONS:

NONE	LOW	MODERATE	HIGH
Little or no enlargement of islands or point bars and less than 20% of the bottom affected by sediment depositions	Some new increase in bar formation, mostly from gravel, sand, or fine sediment; 20-50% of the bottom affected; slight deposition in pools	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected, sediment deposits at obstructions, constrictions and bends; moderate deposition of pools prevalent	Heavy deposits of fine material, increase bar development; more than 80% bottom changing frequently, pools almost absent due to substantial sediment deposition
10 9	8 7 6	5 4 3	2 1 0

TYPES OF HIGH CASES: _____GPS PHOTO #_____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

TYPES OF HIGH CASES: _____GPS PHOTO #_____

COMMENTS:

_____

_____

_____

MID-STREAM BARS AND ISLANDS: YES:_____ NO:_____

GPS PHOTO #_____

GPS PHOTO #_____

GPS PHOTO #_____

GPS PHOTO #_____

BEAVER ACTIVITY: NONE_____ LOW_____ MODERATE_____ HIGH_____

DAM/LODGE: YES (NUMBER OF DAMS)_____ NO_____

STREAM DEBRIS LOAD (as defined in methodology):

INSTREAM: LOW _____ MODERATE _____ HIGH _____

OVERBANK: LOW _____ MODERATE _____ HIGH _____

NOTES:_____

F. DEBRIS JAM: PHOTO #: _____ LENGTH: _____ WIDTH: _____HEIGHT: _____

PHOTO #: _____ LENGTH: _____ WIDTH: _____HEIGHT: _____

PHOTO #: _____ LENGTH: _____ WIDTH: _____HEIGHT: _____

IMPOUNDED: YES:_____ NO:_____

COMMENT:_____

SOURCE:_____

G. FLOODPLAIN VEGETATION(within 100 ft of stream)

DOMINANT LAND USE (%):

LEFT: AGRICULTURAL:_____ OPEN SPACE:_____ RECREATIONAL: _____

COMMERCIAL/INDUSTRIAL:_____RESIDENTIAL:_____ OTHER:_____

RIGHT: AGRICULTURAL:_____ OPEN SPACE:_____ RECREATIONAL:_____

COMMERCIAL/INDUSTRIAL:_____ RESIDENTIAL:_____OTHER:_____

LAND COVER (%):

LEFT: TREES: _____ LAWN:_____ WETLANDS:_____ CROPS:_____ SHRUBS:_____

HERBACEOUS: _____ IMPERVIOUS:_____ WATER:_____OTHER: _____

RIGHT: TREES:_____ LAWN:_____ WETLANDS:_____ CROPS:_____ SHRUBS:_____

HERBACEOUS:_____ IMPERVIOUS:_____ WATER:_____OTHER:_____

WIDTH OF VEGETATED BUFFER:

NONE	LOW	MODERATE	HIGH
Width of riparian zone <20 feet; little or no riparian vegetation due to human activities	Width of riparian zone 20-40 feet; human activities have impacted zone a great deal	Width of riparian zone 40-60 feet; human activities impacted zone minimally	Width of riparian zone >60 feet; human activities (parking lots, roadbeds, lawns, crops) have not impacted zone
Left Bank 0 1 2	3 4 5	6 7 8	9 10
Right Bank 0 1 2	3 4 5	6 7 8	9 10

Notes_____
_____

_____

H. BANK VEGETATION (within 10 ft of stream):

PREDOMINANT VEGETATION (%)

LEFT BANK: UNMOWED GRASS:___ LAWN:___ WETLAND:___ TREES:___ SHRUB:___

CROP:___ HERBACEOUS: ___ NONE:___ OTHER:_____

RIGHT BANK: UNMOWED GRASS:___ LAWN:___ WETLAND:___ TREES:___ SHRUB:___

CROP:___ HERBACEOUS: ___ NONE:___ OTHER:_____

PREDOMINANT TREE/SHRUB SPECIES ON BANKS (CHECK ALL PRESENT)

WILLOWS_____ BOX ELDER_____ HONEYSUCKLE_____

BUCKTHORN_____ HARDWOODS_____ OTHER_____

CANOPY (PERCENT SHADED COVERAGE OF CHANNEL):_____

I. AQUATIC/INSTREAM VEGETATION

VEGETATION (%): ROOTED EMERGENT:_____ ROOTED SUBMERGENT:_____

ROOTED FLOATING:_____ FREE FLOATING:_____ FLOATING ALGAE:_____

ATTACHED ALGAE:_____ NO VEGETATION:_____

J.SUBSTRATE AND WATER QUALITY:

SUBSTRATE COMPOSITION (%): CLAYPAN_____ SILT_____ SAND_____ GRAVEL_____

COBBLE_____BOULDER_____ CONCRETE_____ ORGANIC MATTER_____

CATEGORIZE AS "NONE", "LOW", "MODERATE", OR "HIGH" (Locate worst cases.):

SUBSTRATE STABILITY OF ENTIRE REACH:_____

SUBSTRATE EMBEDDEDNESS OF ENTIRE REACH:_____

GREASE & OIL IN WATER COLUMN_____ GREASE & OIL IN SEDIMENT_____

TURBIDITY (including tributaries, point discharges; LOW, MODERATE, HIGH):_____

WATER COLOR: CLEAR_____ BROWN_____ GREEN_____ GRAY_____

COMMENTS/PROBABLE CAUSES:_____

K. INSTREAM COVER FOR FISH:

(Check all that apply.)

UNDERCUT BANKS_____ POOLS OVER 28" DEEP_____ MACROPHYTES_____ LOGS_____

OVERHANGING VEGETATION_____ ROOTWADS_____ BOULDERS_____ BACKWATERS_____

COMMENTS:_____

_____

L. AQUATIC AND TERRESTRIAL ORGANISMS:

(Check or note all that were observed.)

MACROINVERTEBRATES:

MAYFLIES:_____ CADDISFLIES:_____ DRAGONFLY/DAMSELFLY NYMPHS:_____

SNAILS:_____ SCUDS:_____ SOWBUGS:_____ LEECHES:_____ WORMS: _____

WATER PENNIES:_____ BEETLES:_____ OTHER:_____

FISH:

CARP:____ BLACK BULLHEADS:____ CREEK CHUBS:____ GREEN SUNFISH:____ BLUEGILL: ____
LARGEMOUTH BASS:____ JOHNNY DARTERS:___ FATHEAD MINNOWS:____ GOLDEN SHINERS:

OTHERS:_____

BIRDS:

DUCKS:___GEESE:___ HERONS:___ KINGFISHERS:___ SANDPIPERS/PLOVERS:
GULLS/TERNS:_____ OTHERS:_____

REPTILES:_____

AMPHIBIANS:_____

MAMMALS:_____

MUSSEL BEDS: NO ___ YES ___ IF YES: GPS #'S ____ ____ ____

APPENDIX B: Stream Reach Mileages

**Missing information because reach was not assessed*

Reach	Stream Miles	Completed	Date Completed	Staff	Comments
BL28	0.481654	Y	6/26/2019	CS/CW	
BL23	0.624931	Y	10/23/2019	AD/MS	
BL22	0.238125	Y	8/7/2019	CS/JL	Stopped reach at wetlands- west part needs to be inventoried
BL21	0.577982	Y	8/1/2019	CS/MP	Heavy vegetative overhang prevented us from walking the last third of the reach
BL24	0.402112	Y	10/16/2019	AD/MS	Was unable to finish the last part of the reach because of fenced in private property that had beware of dog and 24 hour surveillance signs posted.
BL20	0.666242	Y	8/7/2019	CS JL	
BL25	0.291536	Y	8/9/2019	CS	This reach is a ravine with no consistent water flow.
BL27	0.316979	Y	7/29/2019	CS	
BL26	0.282248	Y	7/29/2019	CS	
BL19	0.235897	Y	7/31/2019	CS/MP	A lot of sand bars
BL07	0.417924	Y	8/9/2019	CS	Recent restoration work evident in the lack of buckthorn and honeysuckle
BL08	0.407877	Y	7/31/2019	CS/MP	Very high amount of debris in stream, lots of debris jams
BL10	0.145761	Y	7/25/2019	CS	Just a ravine, no flowing water
BL09	0.380631	Y	7/26/2019	CS	
BL11	0.409586	Y	7/25/2019	CS	
BL12	0.312794	Y	7/30/2019	CS	
BL13	0.439003	Y	7/30/2019	CS	
BL14	0.137319	Y	7/25/2019	CS	Mostly just a ditch
BL15	0.424095	Y	8/12/2019	CS	
BL18	0.150895	Y	7/24/2019	CS	

Reach	Stream Miles	Completed	Date Completed	Staff	Comments
BL17	0.418861	Y	7/24/2019	CS	
BL31A	0.756362	Y	10/16/2019	AD/MS	A lot of this reach had very dense vegetation that made it difficult to pass through. Thus, much of the reach was observed as best as possible from the bank.
BL03	0.462937	Y	8/15/2019	CS	High amounts of algae in the water, grounds manager said the club applied for a grant to help maintain their stream but did not receive it. He also noted that every time it rains hard, a couple of dead possums float down into their streams.
BL02	0.698506	Y	10/17/2019	AD/MS	Residents of homes near the stream brought up that broken discharge points have caused flooding.
BL06	0.188441	Y	8/14/2019	CS/MP	
BL05	0.47517	Y	8/14/2019	CS/MP	Lots of overhanging vegetation and thorns
BL16	0.277323	Y	7/24/2019	CS	
KC019	0.484431	Y	10/15/2019	AD/MS	Last portion downstream was too deep. We also collected from upstream to downstream.
KC020	0.594623	Y	7/5/2019	CS/DM	
KC021	0.61985	Y	7/1/2019	CS/CW	
KC023	0.437438	Y	7/10/2019	CS/CW	
KC024	0.347196	Y	7/10/2019	CS/CW	
KC025	0.607555	Y	7/16/2019	CS	
KC026	0.304327	Y	7/11/2019	CS/CW	Dealing with debris jams may reduce stagnant water and alleviate nearby resident's mosquito concerns
KC028	0.15355	Y	7/5/2019	CS/DM	
KC027	0.380977	Y	7/5/2019	CS/DM	
KC030	0.736761	Y	6/21/2019	CS/CW	
KC032	0.665781	Y	6/25/2019	CS/CW	Unusually high number of tires
KC033	0.486204	Y	7/12/2019	CS	

Reach	Stream Miles	Completed	Date Completed	Staff	Comments
KC036	0.465333	Y	7/17/2019	CS	
KC038	0.310395	Y	6/19/2019	CS/CW	
KC037	0.646477	Y	7/22/2019	CS/CW	
KC003	0.366551	Y	7/16/2019	CS	
KC005	0.289765	Y	7/22/2019	CS/CW	
KC009	0.345206	Y	7/16/2019	CS	
KC010	0.878592	Y	10/10/2019	AD/MS	Trees resting on power line, and trees in danger of falling down
KC014	0.506325	Y	7/3/2019	CS/CW	
KC016	0.412483	Y	10/14/2019	AD/MS	A section of the reach was inaccessible between the two miscellaneous points.
KC017	0.345034	Y	7/3/2019	CS/CW	Overgrown
KC015	0.52605	Y	6/19/2019	CS/CW	Lots of overhanging vegetation, reach polygon extends past IL/WI border.
KC007	0.337003	Y	7/23/2019	CS/CW	
KC002	0.355248	Y	7/15/2019	CS/CW	
KC001	0.431787	Y	7/15/2019	CS/CW	
KC011	0.426628	Y	6/17/2019	CS/CW	Lots of pollen coming of off tall grasses, much of the reach cannot be waded through because of overhanging/fallen trees
KC012	0.143322	Y	6/17/2019	CS/CW	No consistent flow
KC013	0.362018	Y	6/17/2019	CS/CW	
KC008	0.315793	Y	10/14/2019	AD/MS	Part of the reach was inaccessible due to wetlands. Many different streams paths have formed due to fallen trees and debris.
KC006	0.239173	Y	7/23/2019	CS/CW	
KC004	0.362039	Y	7/22/2019	CS/CW	
KC018	0.512108	Y	12/16/2019	AD/MS	Reach was frozen over and observed from the shoreline. Could not make accurate observations of sediment composition, turbidity, etc.
KC029	0.533304	Y	6/20/2019	CS/CW	

Reach	Stream Miles	Completed	Date Completed	Staff	Comments
KC031	0.113563	Y	6/20/2019	CS/CW	
KC034	0.370042	Y	7/12/2019	CS	
KC035	0.451852	Y	7/17/2019	CS	
BL04	0.488787	Y	10/16/2019	AD/MS	There was a great deal of debris/garbage in the stream as well as on the banks. The stream sediment was very organic rich and unstable.
BR19-1	0.408643	Y	12/9/2019	AD/MS	
BR18-1	0.518509	Y	12/5/2019	AD/MS	
BR16-4	0.447982	Y	12/5/2019	AD/MS	Half of the stream is draining into a manhole making the downstream almost completely dry. Also, the stream is a neon green color to it. We are unsure of the cause.
BR15-1	0.437735	Y	11/26/2019	MS	
BR14-8	0.412557	Y	12/4/2019	AD/MS	
BR13-3	0.505711	Y	12/2/2019	AD/MS	
BR12-7	0.217543	Y	11/14/2019	AD/MS	Stream was frozen over, so some fields could not be completed
BR12-4	0.159504	Y	11/6/2019	AD/MS	
BR11-2	0.400592	Y	11/18/2019	AD/MS	
BR10-3	0.314435	Y	11/19/2019	AD/MS	
BR10-9	0.258677	Y	11/14/2019	AD/MS	Had to come back to reach on 11/21/2019 because of snow cover
BR10-5	0.348728	Y	11/20/2019	AD/MS	
BR10-6	0.250523	Y	11/20/2019	AD/MS	
BR10-7	0.321122	Y	11/20/2019	AD/MS	
BR9-3	0.418772	Y	11/21/2019	AD/MS	
BR8-1	0.408719	Y	12/9/2019	AD/MS	
BR7-2	0.35621	Y	12/17/2019	AD/MS	Inventoried 2 separate times, once during snow cover and once with no snow cover.
BR6-7	0.411402	Y	11/7/2019	AD/MS	

Reach	Stream Miles	Completed	Date Completed	Staff	Comments
BR6-1	0.409164	Y	11/4/2019	AD/MS	Possible sewage draining into Lake Michigan.
BR6-6	0.307072	Y	11/7/2019	AD/MS	
BR4-2	0.410514	Y	11/1/2019	AD	Snow cover made it difficult at times to take clear photos and make observations.
BR4-1	0.320687	Y	11/4/2019	AD/MS	Most of the reach closest to Lake Michigan was channelized.
BR5	0.276503	Y	11/1/2019	AD	Snow cover made it difficult at times to take photos of features. Reach also could not be completed from Lake Rd to Lake Michigan because of fenced-in property and inaccessibility.
BR3	0.090304	Y	12/12/2019	MS	reach is much longer than it shows.
BR2-3	0.312451	Y	10/29/2019	AD/MS	
BR2-5	0.239164	Y	10/30/2019	AD/MS	
BR1-1	0.43898	Y	10/28/2019	MS	
BR1-4	0.183634	Y	10/25/2019	AD/MS	
SWR6	0.234914	Y	10/23/2019	AD/MS	Lots of debris jams.
SWR3	0.232913	Y	10/24/2019	AD/MS	
WR21	0.211524	Y	8/16/2019	CS	
WR20	0.308835	Y	8/16/2019	CS	
BL39	0.255561	Y	7/19/2019	CS/CW	
BR17-2	0.380038	Y	12/6/2019	AD/MS	
BL32	0.376274	Y	10/15/2019	AD/MS	Partly observed from the shore because of water depth.
BL31	0.163091	Y	10/15/2019	AD/MS	Was observed from the shore because water was too high.
BL34	0.204132	Y	8/8/2019	CS/MP	
BL35	0.204343	Y	8/8/2019	CS/MP	
BL36	0.214013	Y	8/8/2019	CS/MP	
BL37	0.35056	Y	8/8/2019	CS/MP	
BL38	0.240171	Y	7/19/2019	CS/CW	

Reach	Stream Miles	Completed	Date Completed	Staff	Comments
BL16A	0.072042	Y	7/24/2019	CS	
SWR2	0.226368	Y	10/24/2019	AD/MS	
BR1-2	0.267693	Y	10/25/2019	AD/MS	
BR1-3	0.191286	Y	10/25/2019	AD/MS	
BR2-1	0.303072	Y	12/12/2019	MS	
BR2-2	0.275896	Y	10/29/2019	AD/MS	
BR2-6	0.222801	Y	12/12/2019	MS	
BR2-4	0.217596	Y	10/29/2019	AD/MS	
BR6-8	0.34127	Y	11/7/2019	AD/MS	
BR7-4	0.262845	Y	11/12/2019	AD/MS	Was inventoried twice
BR9_1	0.418386	Y	11/21/2019	AD/MS	
BR9-2	0.358888	Y	11/21/2019	AD/MS	
BR10-2	0.281049	Y	11/18/2019	AD/MS	
BR11-1	0.297744	Y	11/18/2019	AD/MS	
BR12-2	0.336558	Y	11/6/2019	AD/MS	
BR12-3	0.293761	Y	11/6/2019	AD/MS	
BR12-1	0.202669	Y	11/5/2019	AD/MS	
BR12-8	0.354617	Y	11/18/2019	AD/MS	
BR12-9	0.188304	Y	11/6/2019	AD/MS	
BR12-5	0.367673	Y	11/5/2019	AD/MS	Possible broken sewage pipe discovered in stream. Sample was taken and sent to the lab for analysis.
BR12-6	0.212861	Y	11/6/2019	AD/MS	
BR13-1	0.325661	Y	11/21/2019	AD/MS	
BR13-2	0.346807	Y	11/22/2019	AD/MS	

Reach	Stream Miles	Completed	Date Completed	Staff	Comments
BR13-5	0.330157	Y	12/2/2019	AD/MS	Discharge at upstream is discharging gray water, which could quite possibly be raw sewage. Further action should be taken to find the source of the contamination. The entire length of the reach is affected.
BR13-4	0.27581	Y	11/21/2019	AD/MS	Possible sewage contamination towards the center of the reach. Further investigation is needed.
BR14-2	0.47191	Y	11/25/2019	MS	Had to come back because of snow cover
BR14-1	0.464228	Y	11/18/2019	AD/MS	Had to come back to see erosion because of snow cover.
BR14-3	0.496313	Y	12/3/2019	AD/MS	
BR14-5	0.377688	Y	12/2/2019	AD/MS	Discharge at upstream is discharging gray water, causing a large portion of the stream to be gray and cloudy. Might want to look into that.
BR14-4	0.546639	Y	12/3/2019	AD/MS	
BR14-7	0.094573	Y	12/3/2019	AD/MS	
BR14-9	0.102329	Y	12/4/2019	AD/MS	
BR14-6	0.239536	Y	12/4/2019	AD/MS	
BR15-2	0.267451	Y	11/26/2019	MS	
BR16-1	0.485846	Y	12/5/2019	AD/MS	
BR16-2	0.230262	Y	12/4/2019	AD/MS	
BR16-3	0.35654	Y	11/25/2019	MS	
BR17-1	0.260914	Y	12/6/2019	AD/MS	
BR18-2	0.241284	Y	11/26/2019	MS	
BR4-3	0.329256	Y	10/30/2019	AD/MS	
BR6-5	0.118068	Y	11/8/2019	AD/MS	
BR6-4	0.584202	Y	11/8/2019	AD/MS	
BR6-3	0.429168	Y	11/4/2019	AD/MS	

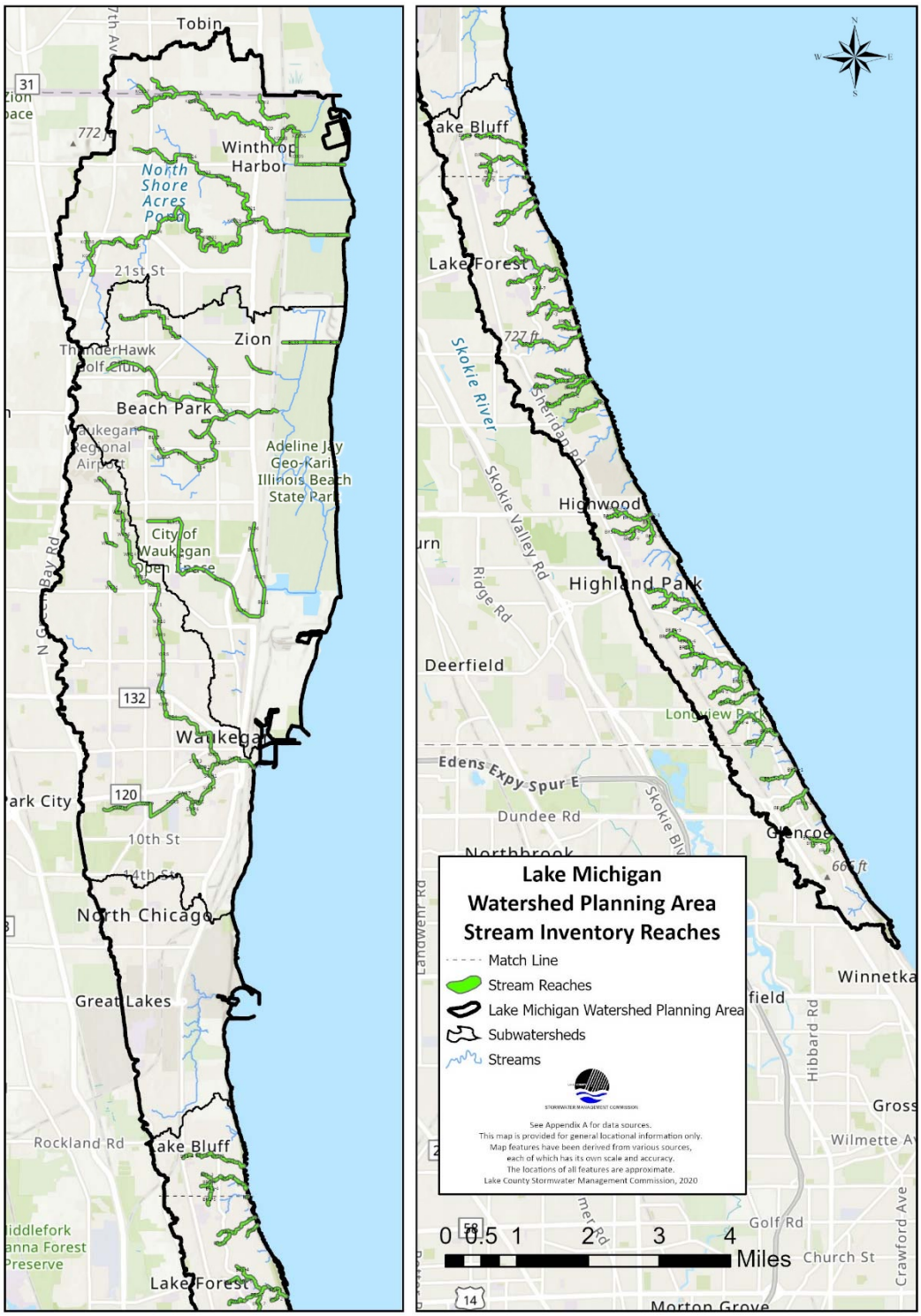
Reach	Stream Miles	Completed	Date Completed	Staff	Comments
BR6-2	0.188664	Y	11/4/2019	AD/MS	Raw sewage was present near the start of the reach, which flowed directly into Lake Michigan. Samples will be taken.
BR7-1	0.298271	Y	11/27/2019	MS	
BR7-3	0.26338	Y	11/8/2019	AD/MS	
BR8-2	0.156438	Y	11/14/2019	AD/MS	May need second inventory with no snow cover
BR10-4	0.309271	Y	11/19/2019	AD/MS	
BR10-1	0.361063	Y	11/18/2019	AD/MS	
BR10-8	0.317579	Y	11/19/2019	AD/MS	
BR19-2	0.204937	Y	12/9/2019	AD/MS	
BR19-3	0.113886	Y	12/9/2019	AD/MS	
WR1B	0.217867	Y	10/23/2019	AD/MS	
WR2	0.269629	Y	10/22/2019	AD/MS	
WR1C	0.178526	Y	10/15/2019	AD/MS	Worked upstream to downstream.
SWR1	0.332099	Y	10/24/2019	AD/MS	
SWR4	0.365541	Y	10/24/2019	AD/MS	
SWR5	0.220029	Y	10/24/2019	AD/MS	
SWR7	0.242525	Y	10/25/2019	AD/MS	
SWR10	0.518012	Y	10/25/2019	AD/MS	Was unable to complete a portion of this reach due to a dense wetland a dense vegetation overhang. The last little section of this reach was also done backwards starting from Willow Street.
WR3	0.718201	Y	10/22/2019	AD/MS	
WR4	0.424418	Y	10/18/2019	AD/MS	
WR5	0.236057	Y	10/18/2019	AD/MS	
WR6	0.194937	Y	10/18/2019	AD/MS	
WR8	0.274627	Y	10/18/2019	AD/MS	

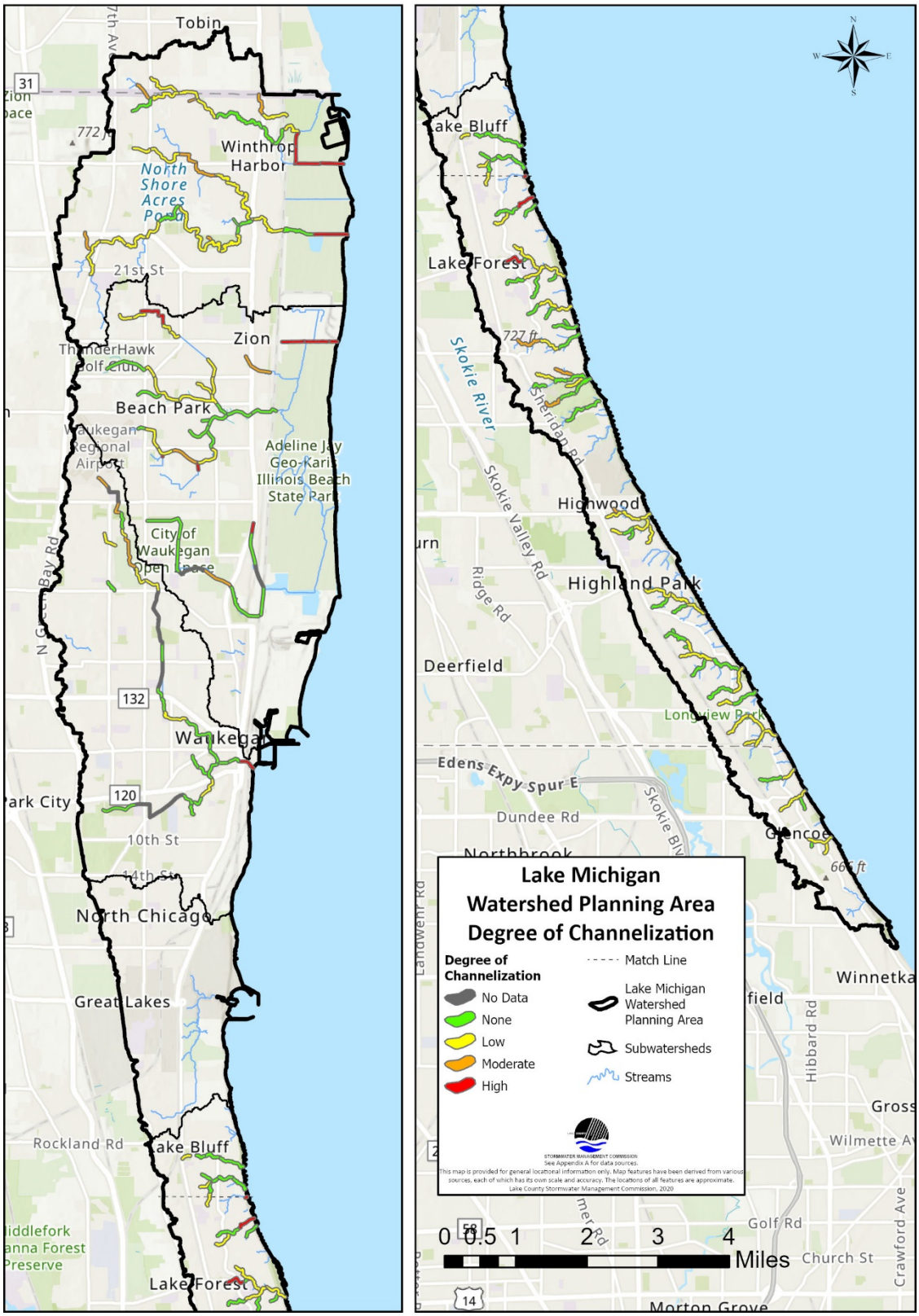
Reach	Stream Miles	Completed	Date Completed	Staff	Comments
WR12	0.309566	Y	8/16/2019	CS	Some fields are left blank because most of this reach is an instream pond, and could not be walked
WR13	0.326431	Y	8/13/2019	CS/MP	Some dry areas at the beginning of the reach
WR14	0.528989	Y	8/13/2019	CS/MP	
WR15	0.173484	Y	8/12/2019	CS	Reach had no flow because some parts of the stream had no water
WR16	0.285924	Y	8/12/2019	CS	Very dense vegetation overgrowth
WR17	0.23461	Y	8/8/2019	CS/MP	Recent mowing along stream has put grass clippings into stream
WR19	0.255158	Y	8/15/2019	CS	Could not walk the whole reach because of the dense vegetative overhang, but it all looked pretty similar to the cross-section pictures. Probably a few more minor debris jams that could not be accessed
WR1A	0.275124	Y	10/22/2019	AD/MS	The part of the reach closest to Lake Michigan was inaccessible. The reach was also observed from the shoreline; thus some fields are left blank.
KC022	0.393239	Y	7/9/2019	CS/CW	
KC039	0.280053	Y	7/2/2019	CS/CW	
BL01*	0.427329	N	10/17/2019	AD/MS	Not completed because this is not a part of the system
BL29*	0.356973	N		CS	Could not be completed because there is no stream here
BL30*	0.411867	N	8/15/2019	CS	Entire reach is culverted.
BL33*	0.353353	N	10/15/2019	AD/MS	Inaccessible because of water was too deep and it then turned into a dense wetland.
SWR8*	0.42597	N	6/24/2019	CS/CW	Entire reach is culverted under streets.
SWR9*	0.545804	N	6/24/2019	CS/CW	Entire reach is culverted. The culvert entrance on the west side needs maintenance.
WR10*	0.127427	N	10/18/2019	AD/MS	Could not pass through reach because of inaccessibility, deep water, and unstable substrates.

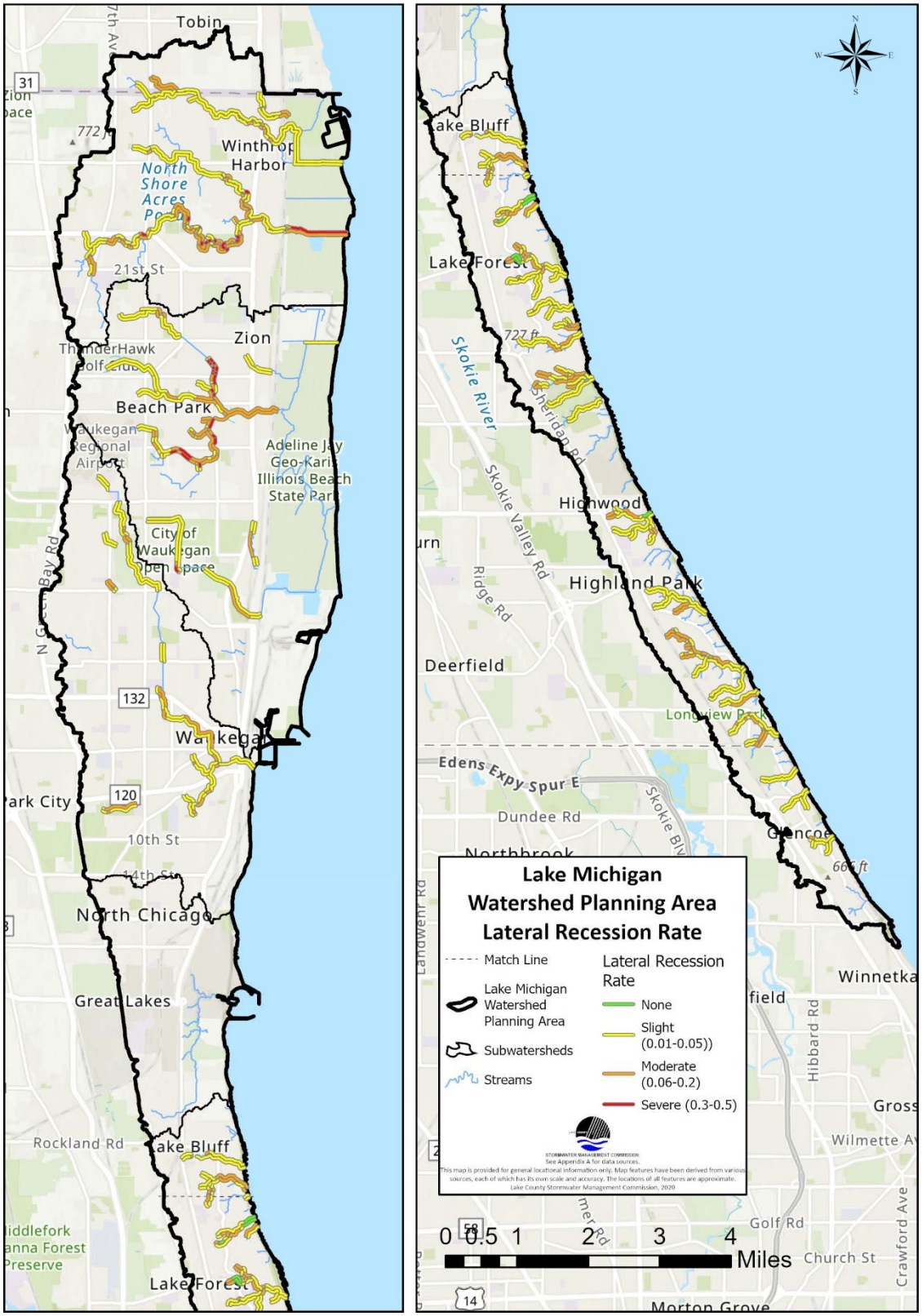
Reach	Stream Miles	Completed	Date Completed	Staff	Comments
WR11*	0.428523	N	10/17/2019	AD/MS	Was unable to inventory most of the stream because of hazardous area warnings, dense vegetation and wetlands. Large amount of dumping is happening in the stream and on the banks.
WR18*	0.371286	N		CS	Majority of the reach is culverted, and the part that is not in a culvert is fenced off.
WR7*	0.389949	N	10/18/2019	AD/MS	Whole stream is culverted under the street.
WR9*	0.32268	N	10/18/2019	AD/MS	Could not pass through the reach because of unstable stream bottom and too deep of water depths.

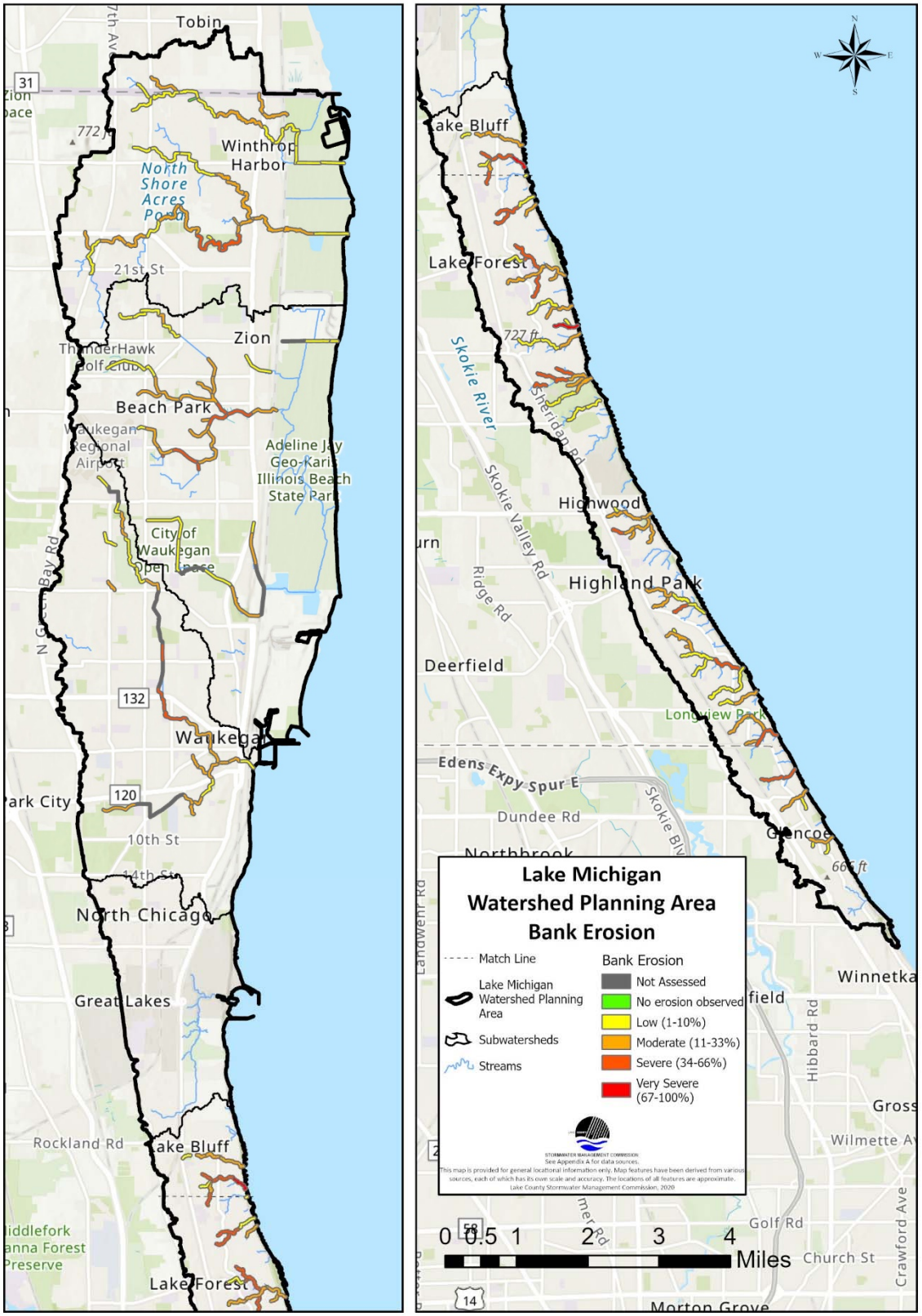
APPENDIX C

STREAM MAPS




Lake Michigan
Watershed Planning Area
Degree of Channelization
Degree of Channelization
No Data
None
Low
Moderate
High
Match Line
Lake Michigan Watershed Planning Area
Subwatersheds
Streams
0 0.5 1 2 3 4
Miles
Tobin
Winthrop Harbor
North Shore Acres Pond
21st St
Zion
ThunderHawk Golf Club
Beach Park
Waukegan Regional Airport
Adeline Jay Geo-Karis Illinois Beach State Park
City of Waukegan Open Space
Waukegan
North Chicago
Great Lakes
Rockland Rd
Lake Bluff
Lake Forest
Skokie River
Skokie Valley Rd
Highwood
Highland Park
Deerfield
Ridge Rd
Edens Expy Spur E
Dundee Rd
Northbrook
Glencoe
Winnetka
Hibbard Rd
Golf Rd
Church St
Crawford Ave
Wilmette
Morton Grove


Tobin
Winthrop Harbor
North Shore Acres
21st St
Zion
Beach Park
Adeline Jay Geo-Karis Illinois Beach State Park
City of Waukegan Open Space
Waukegan
North Chicago
Great Lakes
Rockland Rd
Lake Bluff
Lake Forest
Skokie River
Skokie Valley Rd
Highwood
Highland Park
Deerfield
Ridge Rd
Edens Expy Spur E
Dundee Rd
Northbrook
Glencoe
Winnetka
Hibbard Rd
Golf Rd
Church St
Crawford Ave
Morton Grove
Lake Michigan Watershed Planning Area Lateral Recession Rate
Match Line
Lake Michigan Watershed Planning Area
Subwatersheds
Streams
Lateral Recession Rate
None
Slight (0.01-0.05))
Moderate (0.06-0.2)
Severe (0.3-0.5)
0 0.5 1 2 3 4
Miles


Tobin
Winthrop Harbor
North Shore Acres Pond
21st St
Zion
ThunderHawk Golf Club
Beach Park
Waukegan Regional Airport
Adeline Jay Geo-Karis Illinois Beach State Park
City of Waukegan Open Space
N Green Bay Rd
132
Waukegan
Park City
120
10th St
14th St
North Chicago
Great Lakes
Rockland Rd
Lake Bluff
Middlefork Savanna Forest Preserve
Lake Forest
Lake Bluff
Lake Forest
727 ft
Skokie River
Sheridan Rd
Skokie Valley Rd
Highwood
Ridge Rd
Highland Park
Deerfield
Edens Expy Spur E
Dundee Rd
Skokie Blvd
Northbrook
Glencoe
665 ft
Landwehr Rd
Winnetka
Hibbard Rd
Wilmette Ave
Golf Rd
Church St
Crawford Ave
Morton Grove
Lake Michigan Watershed Planning Area Bank Erosion
Match Line
Lake Michigan Watershed Planning Area
Subwatersheds
Streams
Bank Erosion
Not Assessed
No erosion observed
Low (1-10%)
Moderate (11-33%)
Severe (34-66%)
Very Severe (67-100%)
See Appendix A for data sources.
This map is provided for general locational information only. Map features have been derived from various sources, each of which has its own scale and accuracy. The locations of all features are approximate.
Lake County Stormwater Management Commission, 2020
0 0.5 1 2 3 4
Miles

APPENDIX D

Miscellaneous points

In 2019 inventory of the Lake Michigan watershed some points were collected as miscellaneous points. These included incidences that were not classified as channel characteristics but were considered worthy of being noted in the inventory. Below is a table of different miscellaneous points. These contributed to things such as debris jams, bank erosion, water quality and water levels.

MICELLANEOUS POINTS		
Armoring needing repair	Gray colored water	Possible oxbow lake
Armoring stakes	Green water.	Possible raw sewage contamination
Backwater	Inaccessible stream reach	Power lines downed by fallen tree
Barbed wire fence	Instream debris	RCP (reinforced concrete pipe)
Beaver activity.	Iron in sediment	Reach becomes a ditch
Broken and failed manhole structure	Large quantities of oil and iron oxides in the sediment	Reach becomes a wetland
Broken Pipes	Lots of rooted emergent vegetation	Reaches are fenced off
Car in the stream	Manhole cover in stream	Red/orange algae in water
Carp	Metal debris in stream	Riprap
CMP culvert in stream	Metal posts in stream	Sewer pipe runs through stream
Concrete debris	Monitoring well	Silt fence in stream
Concrete structure in stream	No clear point into next reach	Silt fence in stream.
Deep scourhole caused by culvert	No flow	Small pond
Dense vegetation impeding access	Oil observed	Stone and metal embedded in bank
Disconnected pipe	Old bridge in stream	Stone pieces in stream
Due to severe erosion, parking lot structure has fallen into stream.	Open manhole	Strange color discharge coming out of discharge
Electrical pole and downed wires.	Overflow of swale back into culvert	Stream in private property
Evidence of dumping in stream	Paritally torn out weir	Stream enter Lake Michigan here.
Exposed cable	Partially removed weir	Stream enters basin
Failed concrete wall	Path hanging over ravine	Tires in stream
Failing bridge	Pipes (description)	Water discoloration and oil sheen
Fallen Tree	Plastic debris	Water level gauge
Fence in stream	Plywood	Water sample taken
Fire hydrant on stream bank	Pond with aerator	Water too deep to cross
Flooding due to debris jam	Possible culvert	Well

APPENDIX C:
RAVINE INVENTORY REPORT

Lake Michigan Watershed Ravine Inventory, Lake and Cook Counties, Illinois

Summary Report

March 2019

STORMWATER MANAGEMENT COMMISSION

Funding for this project provided, in part, by the Illinois Department of Natural Resources Coastal Management Program and the Lake County Stormwater Management Commission.

Data provided by the City of Lake Forest and MGP inc

Overview

Thirty-three ravines in Lake County and seven ravines in Cook County were assessed in the late fall of 2018 and the early winter of 2019 by Lake County Stormwater Management Commission (SMC). An additional thirteen ravines in Lake County were assessed by the City of Lake Forest in the summer of 2017. Appendix A contains an index map of all the ravines inventoried. It is accompanied by a set of maps with one map for each individual ravine inventoried. This report updates previous summaries produced in 2009 ("Stresses and Opportunities in Illinois Lake Michigan Watersheds: Strategic Sub-Watershed Identification Process Report (SSIP) for the Lake Michigan Watershed Ecosystem Partnership") and in 2013 (Addendum #1).

In 2008 the Alliance for the Great Lakes and Northwater Consulting assessed 33 ravines in Lake and Cook counties. In the spring of 2011 SMC assessed the following 7 ravines: Bull Creek, Dead Dog Creek, Kellogg Creek, Pettibone Creek, Ravine 7L, Spring Bluff Ravine and Waukegan River. In addition to the 2008 and 2011 assessments, Pettibone Creek was also surveyed in 2008. All ravines were assessed according to the guidelines outlined in the 2009 Strategic Sub-Watershed Identification Process (SSIP), therefore the analyses presented in this 2019 report may be used to show changes that have occurred since 2008/2011. Ravines were assessed to determine the location of high erosion areas with regard to ravine bed and bank characteristics, density of discharge point outlets (concentrated discharge points), and distance/acreage of homes and roads to/within the ravine banks.

Indicators

For the 2019 study ravines were assessed by SMC as well as the City of Lake Forest using criteria from the SSIP for the Lake Michigan Watershed Ecosystem Partnership. The indicators used are detailed on page 67 of the October 2009 SSIP final report "Stresses and Opportunities in Illinois Lake Michigan Watersheds Strategic Sub-Watershed Identification Process Report (SSIP) for the Lake Michigan Watershed Ecosystem Partnership".

Data Collection Equipment and Methodology

Geographic location data was collected in the field with an IPad using the ArcGIS Collector application. An IPad is a portable tablet computer with a touch screen which allows users to easily collect data. The Collector Application was downloaded onto the IPad to capture field data while simultaneously uploading this data to ArcGIS Online, an online, cloud-based mapping and analysis software. Collector uses an aerial basemap in combination with a Global Positioning System (GPS) location so users can ensure they are collecting accurate data based on their visual observations.

Data was collected for each ravine beginning at the most downstream end and then moving upstream. The four categories of field data collected were: ravine bed properties, ravine bank properties, ravine bed rank, and discharge points (discharge points may be stormwater pipe outfalls, or individual sump pump and other pipes discharging directly to the ravine). The field observer established a data point at each location where the properties of a section of the ravine bed or bank changed markedly. The criteria for making this determination are outlined in the following section. For discharge points, data points were established wherever the field observer noted a discharge point (generally, all discharge point data indicates the location of concentrated flow into a ravine). The locations, descriptions, and photos of each data point were then downloaded into ArcGIS as geodatabases for further analyses. ArcGIS is a cartographic software program that enables mapping, analysis and sharing of geographic data. Geodatabases are the standard electronic collection of files in a folder format of geographic data used by ArcGIS. Files are typically represented by shapefiles such as points, lines, or polygons on a map and attachments include photos or geographic locations.

Table 1: Ravines surveyed in 2019

Ravine Name	County	Surveyed by
Spring Bluff Ravine	Lake	SMC
Dead Dog Ravine	Lake	SMC
Kellogg Creek	Lake	SMC
Carmel Park Ravine	Lake	SMC
Bull Creek	Lake	SMC
Ganster Ravine	Lake	SMC
Glen Flora Tributary	Lake	SMC
Terrace and Harding Avenue Ravine	Lake	SMC
Stanley Ravine	Lake	SMC
Upton Park Ravine	Lake	SMC
Waukegan River	Lake	SMC
Pettibone Creek	Lake	SMC
Crabtree Ravine	Lake	SMC
Lillian Dells Ravine	Lake	SMC
Ravine Park Ravine	Lake	SMC
South Ravine	Lake	SMC
Cemetery Ravine	Lake	City of Lake Forest (2017)
Spruce Avenue Ravine	Lake	City of Lake Forest (2017)
Clark's Ravine	Lake	City of Lake Forest (2017)
Woodland Road Ravine	Lake	City of Lake Forest (2017)
Woodbine Lane Ravine	Lake	City of Lake Forest (2017)
Westminster Road Ravine	Lake	City of Lake Forest (2017)
Witchhazel/Seminary Ravine	Lake	City of Lake Forest (2017)
Maplewood Road Ravine	Lake	City of Lake Forest (2017)
Mayflower Ravine	Lake	City of Lake Forest (2017)
Stone Gate Road Ravine	Lake	City of Lake Forest (2017)
Walden Ravine	Lake	City of Lake Forest (2017)
McCormick/Janes Ravine	Lake	City of Lake Forest (2017)
Hutchinson Ravine	Lake	City of Lake Forest (2017)
MacArthur and Scott Loop Ravine	Lake	SMC
Scott Loop Ravine	Lake	SMC
Bartlett Ravine	Lake	SMC
Van Horne Ravine	Lake	SMC
Schenck Ravine	Lake	SMC
Ravine 10L	Lake	SMC
Ravine 9L	Lake	SMC
Ravine 9L2	Lake	SMC
Ravine 8L	Lake	SMC
Ravine 7L	Lake	SMC
Ravine 6L	Lake	SMC
Ravine 5L	Lake	SMC
Ravine 4L	Lake	SMC
Ravine 3L	Lake	SMC
Ravine 2L	Lake	SMC
Lakeview Terrace Ravine	Lake	SMC
Ravine 1L	Lake/Cook	SMC
Ravine 7C	Cook	SMC
Ravine 6C	Cook	SMC
Ravine 5C	Cook	SMC
Ravine 4C	Cook	SMC
Ravine 3C	Cook	SMC
Ravine 2C	Cook	SMC
Ravine 1C	Cook	SMC

Field Assessment Criteria

Ravine beds and banks were qualitatively assessed to evaluate the stability of each channel. A qualitative evaluation simply means the ranking is based on the visual condition of a channel rather than an absolute numerical measurement. Observations of the bed and banks were ranked using an ordinal scale: most unstable bed, unstable, moderate, stable, and most stable bed. A rank of most unstable bed represents a channel that is actively eroding, and a rank of most stable bed represents a stable channel that is not visibly eroding. The ranks were determined based on the observed bed and bank properties. A more detailed explanation of this ranking system can be found on page 68 of the SSIP report. Data points were collected on the IPad as changes were observed in bed or bank stability. The resulting rank applies to the stretch of bed or bank in between the downstream point and ending at the next point collected upstream.

Table 2. Criteria collected in the field using ArcGIS Collector (explanation in following sections)

Category	Type
Bank Properties	Gully
	Scarp
	Other
Bed Properties	Existing Project
	Failing Structure
	Log Jam
	Natural Knickpoint
	Other
Discharge points	Exposed Pipe
	Residential
	Sanitary Sewer
	Storm Sewer
	Other

Bank Properties

Bank properties are separated into two types: gullies and scarps. Each bank property type was ranked with the aforementioned ordinal scale to evaluate the stability of the banks and severity of erosion. “Gully” refers to a deep v-shaped channel cut into the slopes as a result of concentrated surface water flow (Figures 1 & 2). Gully data is collected as a single point and does not reflect the distance or length of a gully, merely the stability of the channel. “Scarp” refers to an area of land eroded away from the ravine bank, leaving behind a concave area exposed with a slump of the eroded sediment moving down slope (Figures 3 & 4). It is rare for scarps to receive a rank higher than moderate, because a scarp is already severely eroded by definition.

Figure 1. Gully rated 'most unstable' in Ravine 7L.

Figure 2. Gully rated 'unstable' in Ravine 10L.

Figure 3. Scarp rated 'most unstable' in Ravine 3L.

Figure 4. Scarp rated 'unstable' in Ravine 3L.

Bed Properties

Bed properties are separated into five types: existing project, failing structure, log jam, natural knickpoint, and other. Existing, failed, and other types of projects and structures commonly include features such as manholes, revetments, gabions, culverts, and retaining walls. Existing projects and structures are features that have clearly been constructed in the ravine and are in a functioning state at the time of observation. Failing structures are those which have been compromised, broken, or are otherwise no longer functioning as intended. If these projects or structures span a significant distance of the bank, a data point is collected at both the downstream and upstream ends to note the extent of the structure. Log jams are collections of woody debris in the ravine bed. They are common features and are considered a jam if it blocks or alters the flow of the channel. A natural knickpoint is a change in channel slope caused by differing rates of erosion above and below the knickpoint. Figures 5-8 are photographic examples of bed property features.

Figure 5. Failed structure, concrete head wall

Figure 6. Existing project in Ravine 10L.

Figure 7. Log jam in South Ravine.

Figure 8. Natural knick point in Bull Creek.

In addition to observing and inventorying the location of bed properties, ravine beds were also ranked using the ordinal (most unstable bed to most stable bed) scale to evaluate stability. Please refer to Chapter 4, "Lake Michigan Ravines" in the SSIP Report for a detailed explanation of the ravine bed rank criteria and methodology. Bed material was also recorded in the comment field of the bed rank shapefile. Bed material refers to the type of sediment composing the ravine bed and may consist of clay, silt, sand, gravel, cobble, or a combination thereof. This information is recorded as a comment in the shapefile, or the electronic file containing the bed rank data. The information is then accessible using ArcGIS software (discussed above) or can be provided by one of the custodians of this data (Alliance for the Great Lakes or Lake County Stormwater Management Commission).

Discharge point

Discharge points are separated into five different types: exposed pipe, residential, storm sewer, sanitary sewer, and other. Exposed pipes are discharge points that are visible, but could not be clearly identified as residential, storm sewer, or sanitary sewer. The "other" field was not commonly used in this study, but when used referred to pipes that appeared inactive but have the potential to become a discharge point. Pipes without an outfall, such as sanitary lines exposed in the bed of the ravine, were classified under 'bed properties' as an 'existing project' since they do not

discharge into the ravine. Figures 9 and 10 are photographic examples of this difference. Figure 9 is a pipe that was classified as an existing project. It is an exposed sanitary pipe that while visible has no outlet into the ravine and therefore cannot be classified as a discharge point. Figure 10 is a disconnected metal pipe that could potentially be a source of discharge and was therefore classified as a discharge point rather than an existing project. In addition to classifying each discharge point by type, pipe material, diameter, and a picture of the pipe were recorded in the comment field of the shapefiles.

Figure 9. Sanitary pipe as an 'existing project'.

Figure 10. Disconnected metal pipe as a 'discharge point'.

Results Summary

Various assessment criteria were considered when calculating the final erosion risk score. Based on the field data collected in 2019, some of the more dynamic criteria were updated to calculate new erosion risk scores. For the 2019 scores, data were updated for the following categories: total number of discharge points, number of failing structures, number of log jams, number of natural knick points, and number of gullies ranked 'most unstable' or 'unstable'. However, data were not updated for criteria that were determined to have experienced negligible or no change, such as the average distance from ravine bank to roads or buildings. In these cases, data from 2009 and/or 2011 were used. These criteria were used to calculate an "erosion risk score". A score of 100 represents the most unstable ravine with the highest risk of erosion, and a score of 0 represents the most stable ravine with the lowest potential for erosion. The table below lists the 2019 erosion risk scores, the 2009 rank, the 2011 rank, and the new 2019 rank. A more detailed explanation of the erosion risk calculation can be found in the "Scoring Methodology" and "Lake Michigan Ravines" chapters of the SSIP report. More information can be found in the web mapping application at the following link:

https://lakecountyil.maps.arcgis.com/apps/webappviewer/index.html?id=e27d8207042a4b38bd9b36e26a39b632.

Ravines appear in the web application under the names listed above. Ravine names can be searched in the search bar.

Table 3: Erosion risk scores, previous rankings, and current rankings. Ravines are ranked *0-100, with 100 = highest risk*

Ravine Name	2019 Erosion Risk Score	2009 Rank (of 47)	2011 Rank (of 52)	2019 Rank (of 53)
Bartlett Ravine	36.4025	36	31	29
Bull Creek	95.4780	-	7	5
Carmel Park Ravine	37.6722	45	50	28
Cemetery Ravine*	30.5509	26	30	31
Clark's Ravine*	65.4665	7	8	16
Crabtree Ravine	31.6545	33	42	30
Dead Dog Creek	21.6208	-	24	41
Ganster Ravine	29.3873	47	52	34
Glen Flora Tributary	13.1136	46	51	50
Hutchinson Ravine*	8.3467	44	49	53
Kellogg Creek	77.1480	-	10	12
Lakeview Terrace Ravine	21.9636	35	39	40
Lillian Dells Ravine	26.8267	28	32	37
MacArthur & Scott Loop Ravine	23.5530	32	37	39
Maplewood Road Ravine*	14.2019	30	35	49
Mayflower Ravine*	44.5753	16	20	24
McCormick/Janes Ravine*	71.0427	9	12	13
Pettibone Creek	27.0273	13	14	36
Ravine 1C	39.2507	25	28	26
Ravine 1L	96.4222	5	6	4
Ravine 2C	64.9932	11	15	17
Ravine 2L	48.1216	21	23	22
Ravine 3C	39.1825	41	46	27
Ravine 3L	99.2185	3	3	2
Ravine 4C	84.8882	8	11	10
Ravine 4L	68.9440	14	18	15
Ravine 5C	90.4108	10	13	8
Ravine 5L	50.5204	20	25	21
Ravine 6C	44.4253	24	27	25
Ravine 6L	51.8553	23	29	20
Ravine 7C	57.0019	17	21	18
Ravine 7L	99.0875	2	1	3
Ravine 8L	30.1252	19	22	32
Ravine 9L	69.6556	15	17	14
Ravine 9L2	45.9710	38	40	23
Ravine 10L	99.3350	1	2	1
Ravine Park Ravine	53.4768	18	19	19
Schenck Ravine	16.0442	27	33	48
Scott Loop Ravine	21.0759	29	36	42
South Ravine	90.8078	6	9	7
Spring Bluff Ravine	16.6455	-	45	47
Spruce Avenue Ravine	12.3410	-	-	51
Stanley Ravine	30.1129	39	43	33
Stone Gate Road Ravine*	27.8021	22	26	35
Terrace&Harding Avenue Ravine	26.4702	37	41	38
Upton Park Ravine	17.2771	43	47	45
Van Horne Ravine	12.1992	42	48	52
Walden Ravine*	86.8474	12	16	9
Waukegan River	83.0202	-	5	11
Witchhazel /Seminary Ravine*	91.7993	4	4	6
Westminster Road Ravine*	16.7804	31	34	46
Woodbine Lane Ravine*	17.3948	34	38	44
Woodland Road Ravine*	19.6086	40	44	43

**Ravines assessed by the City of Lake Forest in 2017 Larger sections of Kellogg Creek, Ravine 3L, and Ganster Ravine and a smaller section of Pettibone Creek were surveyed in 2019.*

Results Summary Discussion

Ravines with the Highest Erosion Risk Scores

With the addition of the 2019 field data, the highest ranked ravines for erosion potential are: Ravine 10L, Ravine 3L, Ravine 7L, Ravine 1L, and Bull Creek Ravine. These ravines have the highest overall scores, all scoring above 95. When compared with the 2011 data the three highest ranking ravines remained unchanged, however; the order of these ravines compared against one another shifted slightly. Ravine 10L was bumped to the top from second, and Ravine 7L shifted down from first to third. Despite this reordering the actual numerical scores did not change significantly from 2011 to 2019. This also holds true for ravines ranked outside the top three: Witchhazel/Seminary Ravine, Ravine 1L, and Bull Creek Ravines. These ravines experienced small changes in ranking and erosion score. Of the ravines with the highest scores in 2011, Waukegan River is the only ravine that dropped considerably in ranking. In 2011 Waukegan River was ranked fifth and currently ranks eleventh. This drop was caused by two factors. The first being a significant difference in discharge points found in the ravine in 2011 (117) compared with 2019 (82). The second factor being a decrease from 9 knick points in 2011 to 0 in 2019. Erosion risk scores for all 53 ravines are compared in figure 11.

Table 4. Ravines with the highest erosion risk scores, 2011 & 2019

Ravine Name	Erosion Risk Score 2011	Ravine Name	Erosion Risk Score 2019
Ravine 7L	99.61	**Ravine 10L**	99.33
Ravine 10L	99.07	**Ravine 3L**	99.22
Ravine 3L	98.40	**Ravine 7L**	99.09
Witchhazel / Seminary Ravine	95.56	**Ravine 1L**	96.42
Waukegan River	93.99	**Bull Creek**	95.48

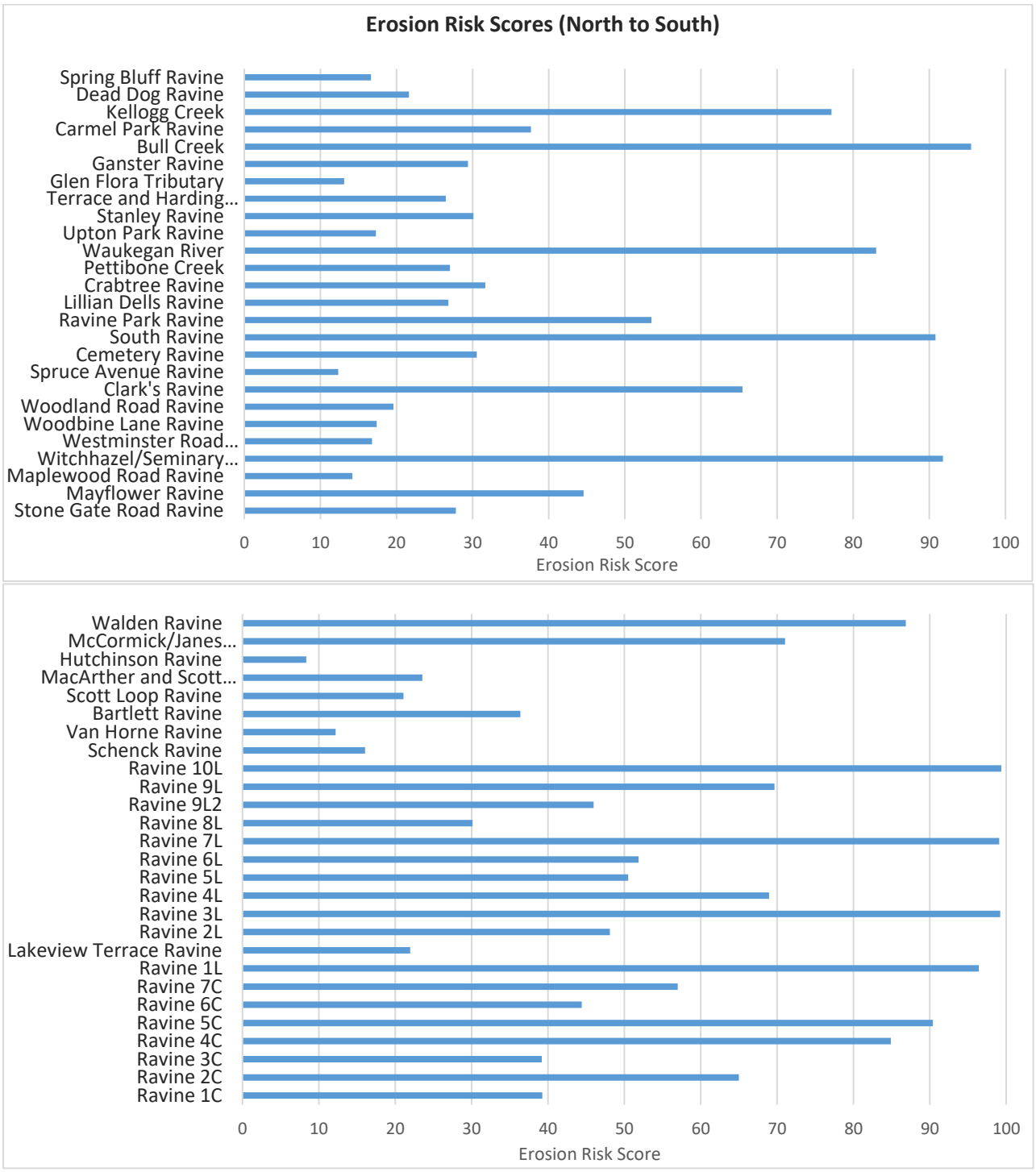


Figure 11. The bar graph displays the 2019 erosion risk scores for all ravines. The ravines are ordered geographically (north to south). The length of the blue bar represents the erosion risk score for the corresponding ravine.

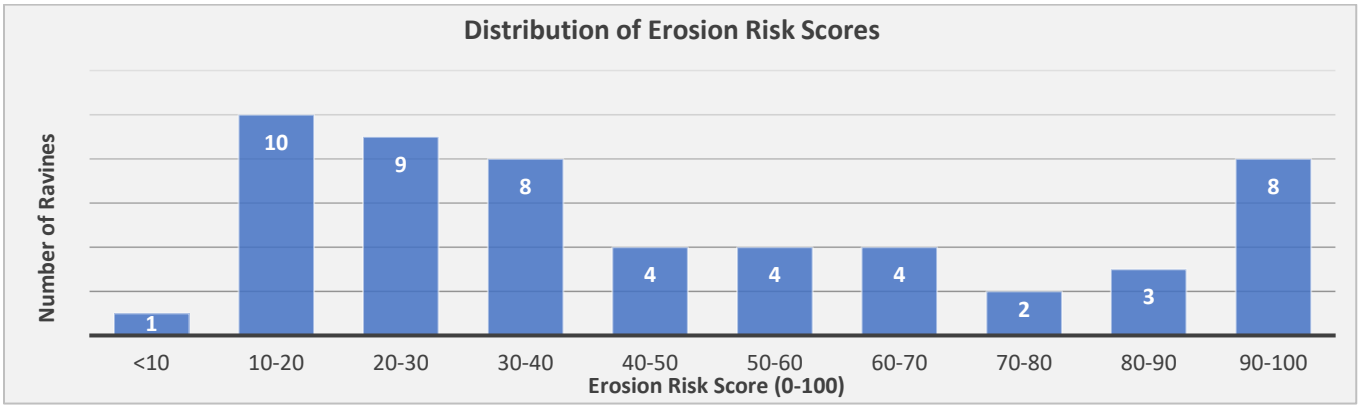


Figure 12. Shows the distribution of the 2019 erosion risk scores. Each bar represents the number of ravines that fell into a particular scoring range. The category of ravines scoring between '10-20' contains 10 ravines, which is the most of any category. There was only one ravine that received an erosion risk score of less than 10. *Erosion risk scores are calculated relative to each other**

Ravines with the Lowest Erosion Risk Scores

There were more dynamic changes to the ranking of the ravines with the lowest erosion scores. Hutchinson Ravine has the lowest 2019 erosion risk score and has dropped in ranking since 2011. Hutchinson Ravine was found to have the same number of discharge points and failing structures in 2019 as in 2011, but there was a decrease from 7 to 0 log jams. The elimination of logs jams is responsible for the drop in rank. In 2011, Ganster Ravine had the lowest erosion risk score. There was an additional section of Ganster Ravine surveyed in 2019, which likely lead to the increased score for that ravine. This extension of the ravine is south of Montesano Avenue and runs along Alta Vista Drive. Ganster Ravine now ranks 34 out of 53. Carmel Park Ravine also jumped in ranking. Carmel Park had a score of 8.98 and now has a score of 37.67. 10 additional discharge points were found in the ravine and the bed is measurably more eroded than in 2011. This is discussed further in the 'Erosion Risk Score Discrepancies' section. Furthermore, there was an additional ravine, Spruce Avenue Ravine, surveyed in 2019, which impacted the ranking order. However, relative to each other, many of the ravines in this category (Schenk Ravine, Hutchinson Ravine, Maplewood Road Ravine, and Van Horne Ravine), experienced decreases in erosion score. The table below lists the ravines with the lowest erosion risk scores for 2011 and 2019.

Table 5: Ravines with the lowest erosion risk score, 2011 & 2019

Ravine Name	Erosion Risk Score 2011	Ravine Name	Erosion Risk Score 2019
Upton Park Ravine	15.66	**Schenck Ravine**	16.04
Van Horne Ravine	14.27	**Maplewood Road Ravine**	14.20
Hutchinson Ravine	11.41	**Glen Flora Tributary**	13.11
Carmel Park Ravine	8.98	**Spruce Avenue Ravine**	12.34
Glen Flora Tributary	8.54	**Van Horne Ravine**	12.20
Ganster Ravine	6.78	**Hutchinson Ravine**	8.35

Ravines with Greatest Decrease in Erosion Risk Score

Pettibone Creek, Dead Dog Creek, Ravine 8L, Stone Gate Road Ravine, and Clark's Ravine sustained the greatest decreases in erosion risk score. Since a score of 100 represents the highest qualitative risk of erosion relative to the other ravines, a decrease in score from 2011 to 2019 indicates that either remediations or other improvements have been made or that conditions in other ravines have worsened causing the decrease in score. Pettibone Creek's score decreased by almost 50, dropping from 75.93 to 27.03. This drastic decrease in score is because a smaller section of the ravine was surveyed in 2019 than in 2011. In 2019 only the portion south of the Great Lakes Naval Station was surveyed. The remaining ravines in this category, Pettibone Creek, Dead Dog Creek, Ravine 8L, and Stone Gate Road Ravine, all scored under 30 in 2019. Clark's Ravine erosion score dropped by approximately 16, but its 2019 score of 65.47 is still relatively high.

Table 6. Ravines with the greatest decrease in 2019 erosion risk score

Ravine Name	Erosion Risk Score 2011	Erosion Risk Score 2019	Change in Score
Pettibone Creek	75.93	27.03	*-48.90*
Dead Dog Creek	48.16	21.62	*-26.54*
Ravine 8L	52.16	30.12	*-22.04*
Stone Gate Road Ravine	45.00	27.80	*-17.20*
Clark's Ravine	81.66	65.47	*-16.19*

Each criterion that factors into the calculation of the final erosion score is weighted differently, and therefore affects the final score to various degrees. The number of 'discharge points' is one criterion which is strongly weighted in the final erosion risk score calculation. The table below compares the number of discharge points collected for each ravine in 2011 and in 2019, as well as other consequential bed properties. For ravines where the overall erosion risk score decreased, there was also a general decrease in the number log jams and natural knick points. For example, Dead Dog Creek had 7 natural knick points in 2011 and 0 in 2019. In 2011 Dead Dog Creek had 31 discharge points and 27 in 2019. This trend towards a decrease in number of log jams, natural knick points, and other bed properties was observed for ravines where scores decreased.

Table 7. Change in bed properties for ravines with the greatest decrease in erosion risk score

Ravine Name	All Discharge Points		Difference	Failing Structures		Difference	Log Jams		Difference	Knick Points		Difference
	2011	2019		2011	2019		2011	2019		2011	2019	
Pettibone Creek	71	72	*1*	1	2	*1*	39	7	*-32*	14	3	*-11*
Dead Dog Creek	31	27	*-4*	5	2	*-3*	21	0	*-21*	7	0	*-7*
Ravine 8L	14	22	*8*	2	2	*0*	7	0	*-7*	1	0	*-1*
Stone Gate Road Ravine	20	20	*0*	4	2	*-2*	12	1	*-11*	0	0	*0*
Clark's Ravine	52	52	*0*	4	15	*11*	13	4	*-9*	0	1	*1*

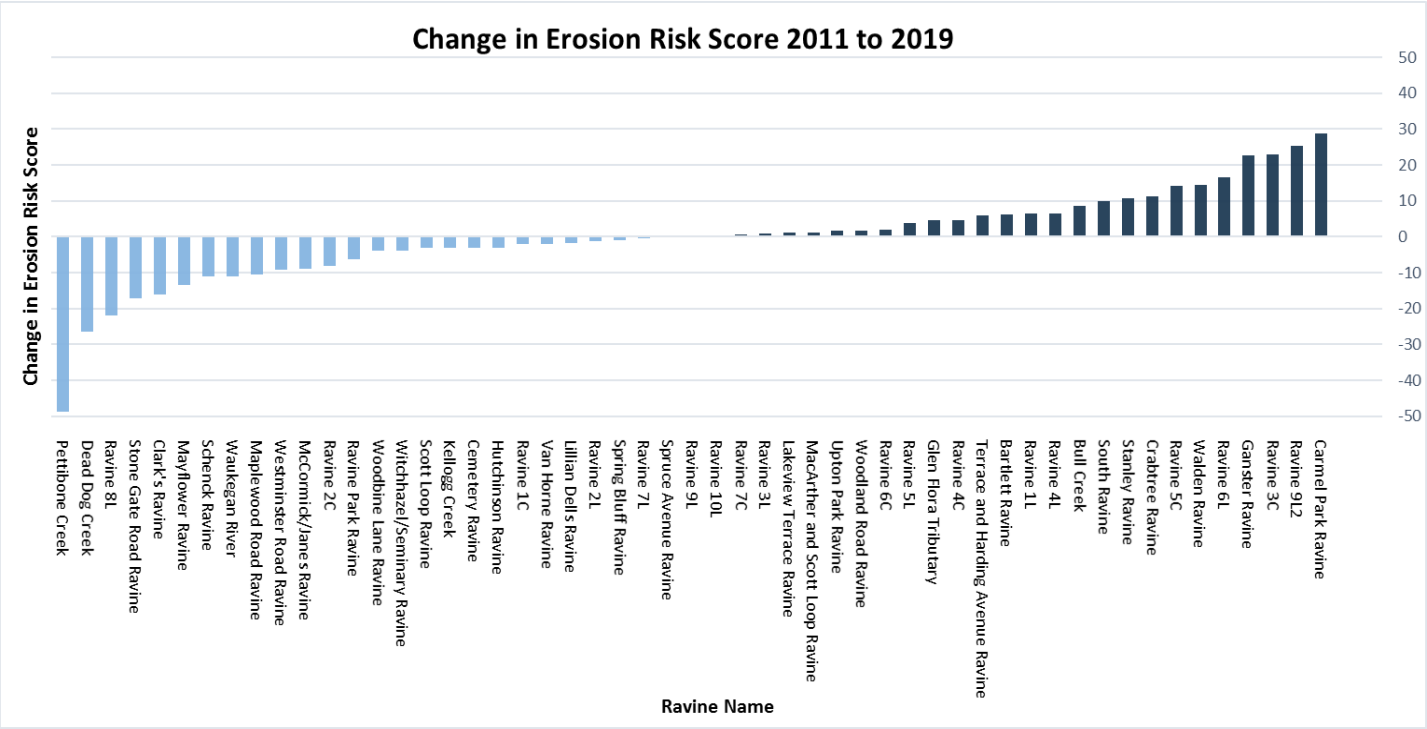


Figure 13. This graph shows the change in erosion risk scores from 2011 to 2019. The light blue bars represent a decrease in erosion risk score and the dark blue bars represent an increase in score.

Ravines with the Greatest Increase in Erosion Risk Score

Conversely the following ravines saw the largest increases in erosion risk score: Ravine 6L, Ganster Ravine, Ravine 3C, Ravine 9L2, and Carmel Park Ravine. Carmel Park Ravine experienced the greatest change in score. This is due to the additional discharge points found in the ravine and an increase in length of eroding channel. The extension added to Ganster Ravine impacted the number of discharge points and other bed properties causing its increase in score. While each ravine in this category increased in score, it is important to note each individual risk score, relative to other ravines, remains low. Ravine 6L has the highest risk score at 51.86. Apart from Ravine 6L, the other scores range from 29.39-45.97.

Table 8. Ravines with the greatest increase in erosion risk score

Ravine Name	Erosion Risk Score 2011	Erosion Risk Score 2019	Change in Score
Carmel Park Ravine	8.98	37.67	*+28.69*
Ravine 9L2	20.56	45.97	*+25.41*
Ravine 3C	16.15	39.18	*+23.04*
Ganster Ravine	6.78	29.39	*+22.61*
Ravine 6L	35.24	51.86	*+16.61*

Table 9 compares the total number of discharge points and other bed properties collected in 2011 and 2019 for the ravines that experienced the greatest increase in erosion score. Number of discharge points, failing structures, log jams, knick point are all positively correlated with erosion risk score. Therefore, an increase in any of those criteria will cause a corresponding increase erosion risk score, a trend that was also seen in 2011. In 2011 Ravine 9L2 was

ranked 40 out of 52 and now ranks 23 out of 53. This jump in rank stems from an increase in discharge points and failing structures. For this ravine, there was an increase of 31 discharge points and 5 additional failing structures.

Table 9. Change in bed properties from 2011 to 2019 for ravines that had the greatest increase 2019 score

Ravine Name	All Discharge Points		Difference	Failing Structures		Difference	Log Jams		Difference	Knick Points		Difference
	2011	2019		2011	2019		2011	2019		2011	2019	
Carmel Park Ravine	4	14	*+10*	1	2	*+1*	1	3	*+2*	0	1	*+1*
Ravine 9L2	4	35	*+31*	3	8	*+5*	1	2	*+1*	0	1	*+1*
Ravine 3C	0	18	*+18*	0	0	*0*	0	0	*0*	0	0	*0*
Ganster Ravine	3	15	*+12*	0	1	*+1*	4	6	*+2*	0	3	*+3*
Ravine 6L	8	12	*+4*	0	6	*+6*	5	8	*+3*	2	7	*+5*

Comparison of Weighted Erosion Risk Scores

Each criterion is weighted differently and affects the erosion risk score of a ravine to varying degrees. Of the criteria surveyed in the field (number of stormwater outlets, number of failing structures, number of log jams, and number of knick points) stormwater outlets has the heaviest weight. However, depending on the actual number of stormwater outlets present in a ravine, this may or may not be the most influential criterion on the final erosion risk score. Most of the erosion risk scores were strongly impacted by the weighted rank from stormwater outlets, but there were a few circumstances where other factors had a greater effect. For example, Crabtree Ravine and Ravine 4L's erosion scores were more heavily impacted by the amount of knick points. This resulted in lower than anticipated erosion risk scores based on field observations. This is discussed further in 'Erosion Risk Score Discrepancies' section. Table 10 lists the ravines where criteria other than stormwater outlets had a greater impact on final erosion scores. Figure 14 compares the weighted indicator ranks for each bed property for the ravines surveyed in 2019.

Table 10. Ravines where stormwater outlets did not have the largest impact on final erosion score (shown in Figure 14)

Ravine Name	Bed Property with Most Effect Erosion Risk Score
Lakeview Terrace Ravine	Number of Failing Structures
Ravine 1C	Number of Failing Structures
Ravine 2L	Number of Failing Structures
Ravine 9L	Number of Failing Structures
Crabtree Ravine	Number of Knick Points
Ravine 4L	Number of Knick Points
Ravine 5L	Number of Knick Points
Ravine 6L	Number of Knick Points
South Ravine	Number of Knick Points

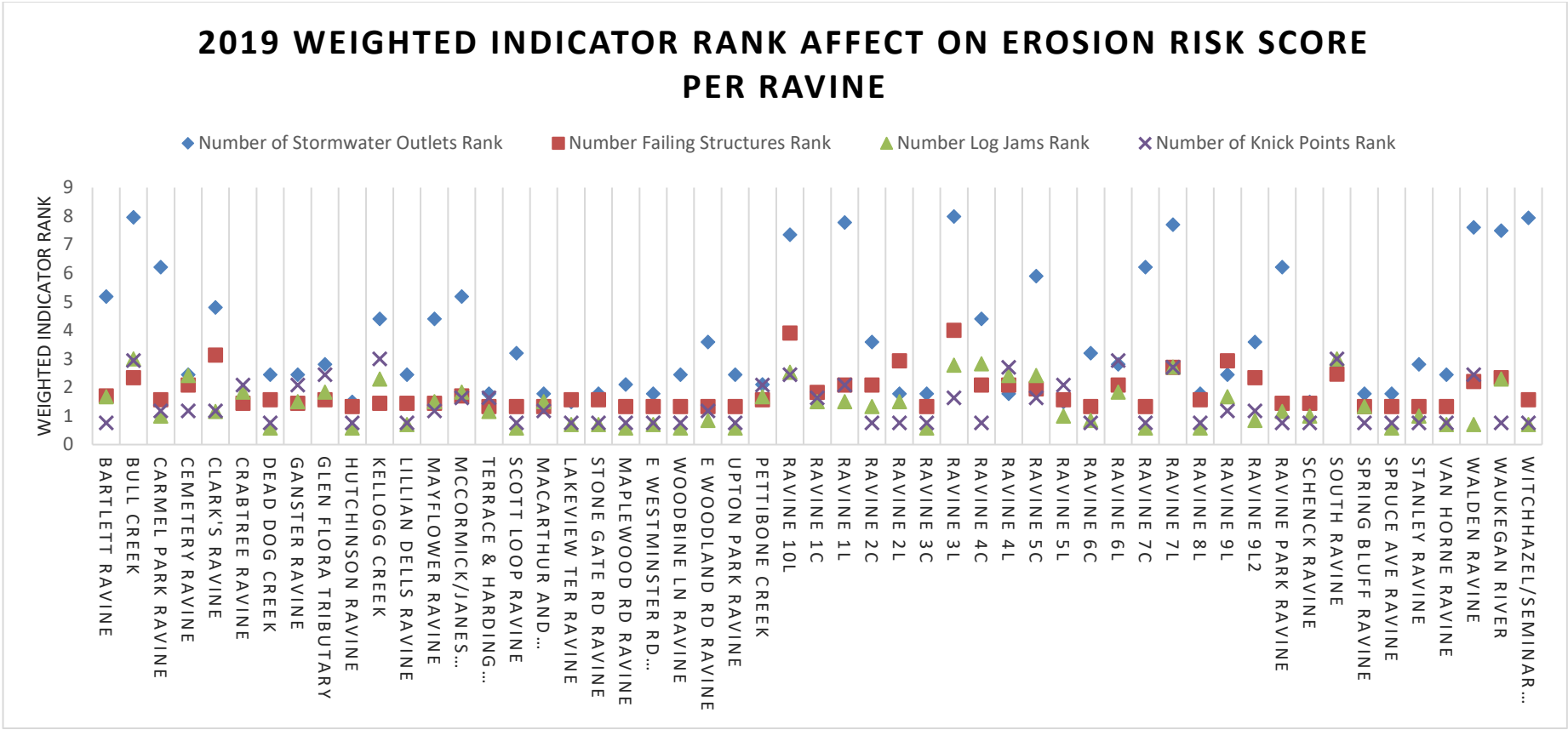


Figure 14. The effects of weighted indicators for each ravine are compared against one another in this graph. The blue diamond represents the weighted rank of the stormwater outlets for each ravine. This metric has the strongest weight and had the greatest impact on final erosion scores for most ravines. The red square represents the weighted indicator score for failing structures, the green triangle represents log jams, and the purple X represents knick points.

Erosion Risk Score Discrepancies

An erosion risk score is just one indication of the level of erosion in a ravine, field observations are another. For instance, Crabtree Ravine and Ravine 4L were visually observed to be more severely eroded than their erosion risk scores indicate. Crabtree Ravine scored 31.65 and Ravine 4L scored 68.94. Crabtree Ravine has large sections of bank that are noticeably eroding, and navigation through the ravine was extremely difficult due to extensive log jams and unstable channel conditions. As previously mentioned, factors like number of discharge points, knick points, and other bed properties are weighted differently and effect the final erosion scores to varying degrees. 90.77% of ravine banks in Crabtree Ravine were assessed to be 'most unstable' or 'unstable'. While this metric is considered when determining the final erosion risk score the low number of bed properties had a stronger pull on the final erosion risk score. Crabtree Ravine has a total of 5 discharge points, 3 knick points, and 1 failing structure. These factors are responsible for the relatively low erosion score. Ravine 4L is another instance where the erosion risk score does not correspond with field observations. 73.46% of the banks were ranked 'most unstable' or 'unstable', but very few discharge points were recorded.

This divergence also exists when comparing channel erosion and erosion risk score. Carmel Park Ravine and Ravine 3C are two examples. 100% of the ravine channel was surveyed as 'most unstable' or 'unstable' for both ravines, and both ravines have erosion risk scores under 40. As mentioned in a previous section, Carmel Park Ravine had an increase of 10 discharge points (4 to 14), and discharge points in Ravine 3C increased from 0 to 18. Compared with other ravines, 14 and 18 are relatively low quantities of discharge points and likely deflated the erosion risk scores for Carmel Park Ravine and Ravine 3C. Table 11 lists the percentage of both bank and channel erosion compared to each ravine's 2019 erosion risk score. The percentage of surveyed erosion does not always correspond with the erosion risk score. Such as with Crabtree Ravine, there are cases where the erosion risk score is vastly different than the observed bank or channel erosion.

Table 11. Ravines listed in order of highest bank and channel erosion percentage (percent rated unstable/most unstable)

Ravine Name	% Bank Erosion	Erosion Risk Score	Ravine Name	% Channel Erosion	Erosion Risk Score
Crabtree Ravine	90.77	31.65	Carmel Park Ravine	100.00	37.67
Ravine 4L	73.46	68.94	Ravine 3C	100.00	39.18
Ravine 6L	68.93	51.86	Ravine 7C	99.41	57.00
Stone Gate Road Ravine	57.47	27.80	Ravine 6C	97.53	44.43
Witchhazel/Seminary Ravine	54.63	91.80	Ravine 4C	97.53	84.89
Ravine 2C	53.81	64.99	Ravine 5C	96.83	90.41
South Ravine	44.96	90.81	Ravine 5L	83.09	50.52
Ravine 5L	43.16	50.52	Ravine 6L	78.46	51.86
McCormick/Janes Ravine	42.77	71.04	Crabtree Ravine	69.20	31.65
Ravine 1L	41.41	96.42	Terrace & Harding Avenue Ravine	67.98	26.47
MacArthur & Scott Loop Ravine	41.31	23.55	Ravine 4L	64.72	68.94
Ravine 5C	40.82	90.41	Ganster Ravine	53.93	29.39
Ravine 7L	40.73	99.09	Van Horne Ravine	41.52	12.20
Schenck Ravine	40.62	16.04	South Ravine	35.81	90.81
Ravine 10L	40.43	99.33	Spruce Avenue Ravine	33.58	12.34
Ravine 9L	40.12	69.66	Stanley Ravine	29.52	30.11
Mayflower Ravine	39.92	44.58	Ravine 10L	24.71	99.33
Clark's Ravine	39.47	65.47	Stone Gate Road Ravine	18.45	27.80
Walden Ravine	37.79	86.85	Ravine 1C	16.67	39.25
Ravine 4C	33.52	84.89	Dead Dog Creek	16.48	21.62
Ravine 7C	32.56	57.00	McCormick/Janes Ravine	16.09	71.04
Ravine 2L	32.05	48.12	Clark's Ravine	15.96	65.47
Woodbine Lane Ravine	31.01	17.39	Walden Ravine	15.51	86.85
Terrace & Harding Avenue Ravine	30.54	26.47	Witchhazel/Seminary Ravine	14.66	91.80
Westminster Road Ravine	28.92	16.78	Ravine 8L	14.25	30.13
Ravine 3L	27.63	99.22	Woodland Road Ravine	13.32	19.61
Cemetery Ravine	26.42	30.55	Ravine 9L2	13.31	45.97
Maplewood Road Ravine	24.71	14.20	Waukegan River	13.06	83.02
Stanley Ravine	23.65	30.11	Ravine 2L	12.67	48.12
Kellogg Creek	20.52	77.15	Ravine 1L	12.50	96.42
Ravine 9L2	19.95	45.97	Ravine 3L	11.98	99.22
Spruce Avenue Ravine	19.92	12.34	Ravine 2C	11.52	64.99
Waukegan River	18.87	83.02	Ravine 9L	11.28	69.66
Woodland Road Ravine	17.23	19.61	Bull Creek	9.94	95.48
Pettibone Creek	16.45	27.03	Ravine 7L	9.46	99.09
Bull Creek	16.40	95.48	Kellogg Creek	8.92	77.15
Dead Dog Creek	15.58	21.62	Westminster Road Ravine	8.82	16.78
Lillian Dells Ravine	14.31	26.83	Cemetery Ravine	8.07	30.55
Carmel Park Ravine	13.90	37.67	Mayflower Ravine	7.99	44.58
Ravine 8L	13.48	30.13	MacArthur & Scott Loop Ravine	7.49	23.55
Ravine Park Ravine	10.77	53.48	Lillian Dells Ravine	5.51	26.83
Scott Loop Ravine	8.84	21.08	Hutchinson Ravine	4.86	8.35
Ravine 6C	8.48	44.43	Schenck Ravine	3.88	16.04
Ravine 1C	7.51	39.25	Bartlett Ravine	3.76	36.40
Bartlett Ravine	6.59	36.40	Maplewood Road Ravine	2.45	14.20
Ravine 3C	5.92	39.18	Glen Flora Tributary	1.54	13.11
Spring Bluff Ravine	5.74	16.65	Pettibone Creek	1.54	27.03
Ganster Ravine	4.33	29.39	Woodbine Lane Ravine	0.00	17.39
Glen Flora Tributary	3.68	13.11	Ravine Park Ravine	0.00	53.48
Hutchinson Ravine	3.62	8.35	Scott Loop Ravine	0.00	21.08
Lakeview Terrace Ravine	0.49	21.96	Spring Bluff Ravine	0.00	16.65
Upton Park Ravine	0.00	17.28	Lakeview Terrace Ravine	0.00	21.96
Van Horne Ravine	0.00	12.20	Upton Park Ravine	0.00	17.28

Effects of Bed Properties on Channel and Bank Erosion

One factor that affects erosion in a ravine is the density of discharge points. A higher number of discharge points should increase the potential for erosion in a ravine. Table 12 below looks at this relationship for ravines in this study. The ravines listed in the table have the highest number of discharge points per foot of channel, so it is excepted they would also have the highest amounts of erosion. Ravine 4L has the most discharge points per foot of channel and does have high amounts of bank and channel erosion. However, while Ravine 9L also has a high density of discharge points; only 40.12% of its bank and 12.50% of its channel are considered unstable. For this analysis the quantity of discharges/ft was the only factor considered: frequency and volume of induvial discharges were not considered. The sheer number of discharge points is not enough information to draw definitive conclusions about the impact of discharges on erosion. If frequency and volume had been accounted for there would likely be a stronger correlation between observed erosion and the number of discharge points.

Table 12. Ravines with the highest number of discharge points per foot of channel

Ravine Name	Total Number of Discharge Points	Discharge Points /Channel ft	% Channel Erosion	% Bank Erosion	Erosion Risk Score
Ravine 4L	44	0.0316	64.72	73.46	68.94
Ravine 3C	18	0.0302	100.00	5.92	39.18
Ravine 5L	23	0.0279	83.09	43.16	50.52
Ravine 9L	112	0.0266	11.28	40.12	69.66
Ravine 1L	273	0.0240	12.50	41.41	96.42
Ravine 2C	77	0.0220	11.52	53.81	64.99

Table 13. Ravines with the highest number of Natural Knick Points per foot of channel

Ravine Name	Total Number of Knick Points	Knick Points/ Channel ft	% Channel Erosion	% Bank Erosion	Erosion Score
Ravine 6L	7	0.005408078	78.46	68.93	**51.86**
Crabtree Ravine	3	0.004476877	69.20	90.77	**31.65**
Ravine 5L	3	0.003634381	83.09	43.16	**50.52**
Ravine 4L	5	0.003591335	64.72	73.46	**68.94**
Terrace and Harding Avenue Ravine	2	0.003172438	67.98	30.54	**26.47**
MacArthur and Scott Loop Ravine	1	0.001809136	7.49	41.31	**23.55**

Table 14. Ravines with the most failing structures per foot of channel

Ravine Name	Total Number of Failing Structures	Failing Structures/Channel ft	% Channel Erosion	% Bank Erosion	Erosion Risk Score
Ravine 6L	6	0.004635496	78.46	68.93	51.86
Ravine 4L	6	0.004309602	64.72	73.46	68.94
Ravine 9L2	8	0.004027042	13.31	19.95	45.97
Ravine 3L	85	0.003940868	11.98	27.63	99.22
Ravine 2L	13	0.003912881	12.67	32.05	48.12
Ravine 9L	13	0.003082205	11.28	40.12	69.66

Table 15. Ravine with the highest number of log jams per foot of channel

Ravine Name	Total Number of Log Jams	Log Jams/ channel ft	% Channel Erosion	% Bank Erosion	Erosion Score
Crabtree Ravine	8	0.011938338	69.20	90.77	31.65
MacArthur and Scott Loop Ravine	6	0.010854817	7.49	41.31	23.55
Ravine 4L	12	0.008619204	64.72	73.46	68.94
Terrace and Harding Avenue Ravine	4	0.006344876	67.98	30.54	26.47
Ravine 6L	8	0.006180661	78.46	68.93	51.86
Ravine 4C	17	0.004379987	97.53	33.52	84.89

Change in Erosion From 2011 to 2019

There was a general increase in the amount of erosion observed since 2011. In 2019 there were 9 ravines found to have either no change to their percentage of bank erosion or a lower percentage of bank erosion. 18 ravines had percent increases of more than 20. Figure 15 displays the change in percentage of bank erosion from 2011 to 2019. While many of the ravines had increased amounts of bank erosion, closer to half of the ravines had lower amounts of channel erosion recorded in 2019 than in 2011. Figure 16 displays the change in percentage of channel erosion since 2011. There was also a general increase in channel erosion since 2011: 24 ravines had decreases in the percentage of eroding channel, and 6 ravines had a change of 5 or less. The observed changes in erosion could also be partially attributed to different observers performing the assessments. It is important to note the 2008, 2011, and 2019 surveys were each conducted by different groups of observers.

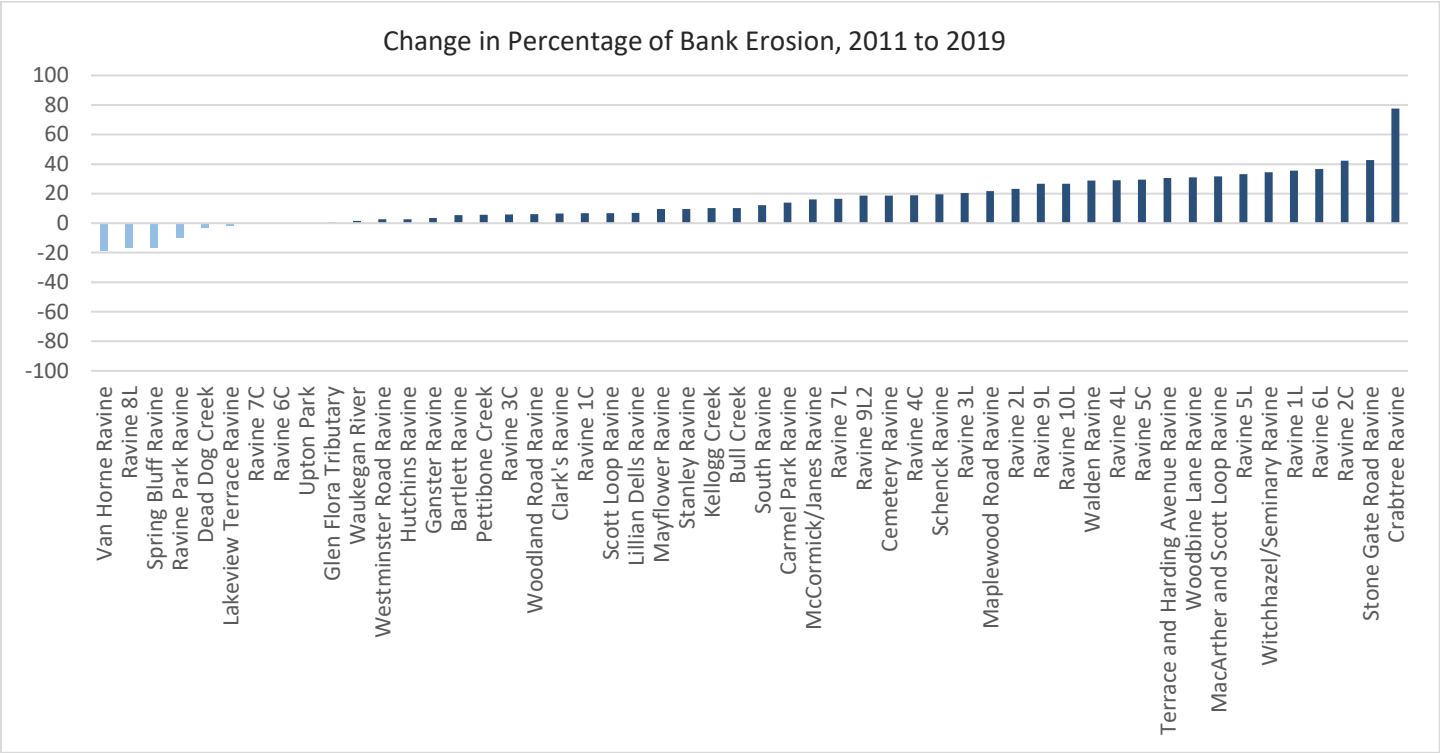


Figure 15. The change in percentage of bank erosion from 2011 to 2019. The light blue bars indicate a decrease in the percentage of bank erosion, where the darker blue bars show an increase in percentage of bank erosion. Each bar corresponds to the ravine name listed below. **Spruce Avenue Ravine was not surveyed in 2011 and has been excluded from this graph.*

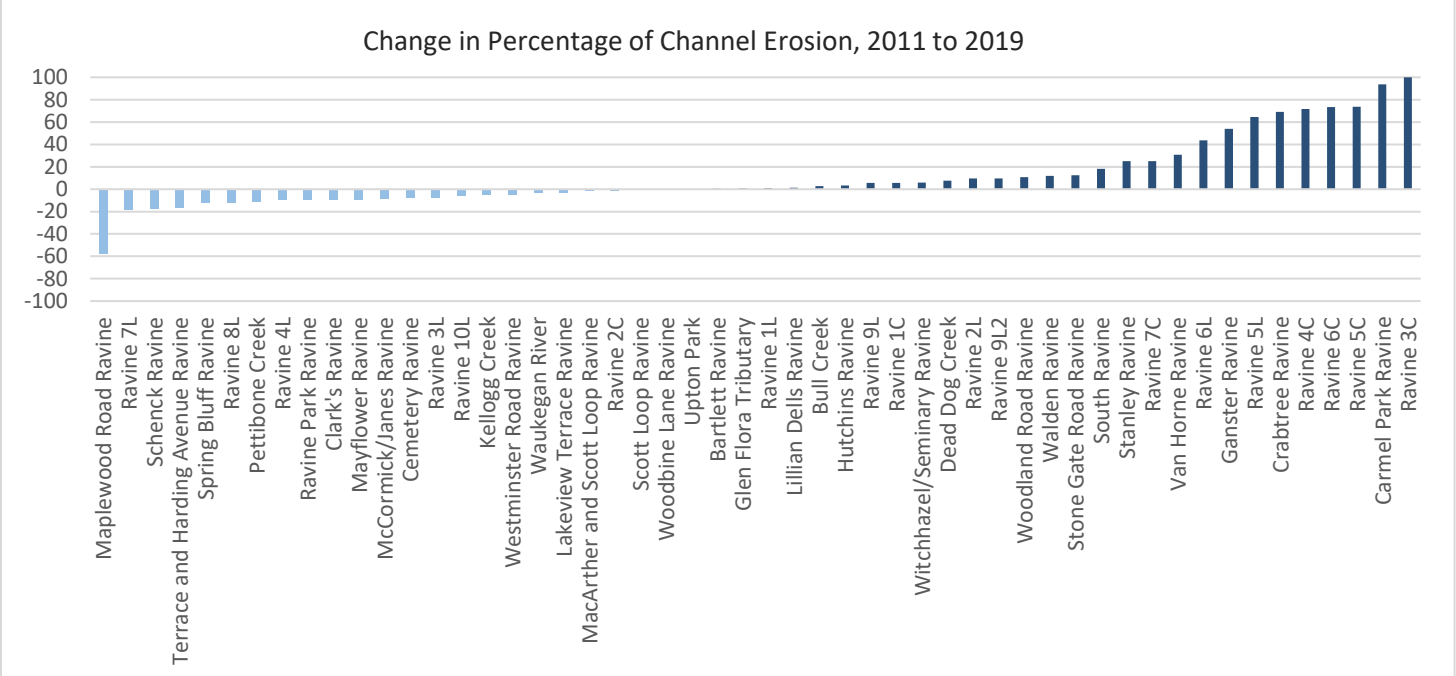


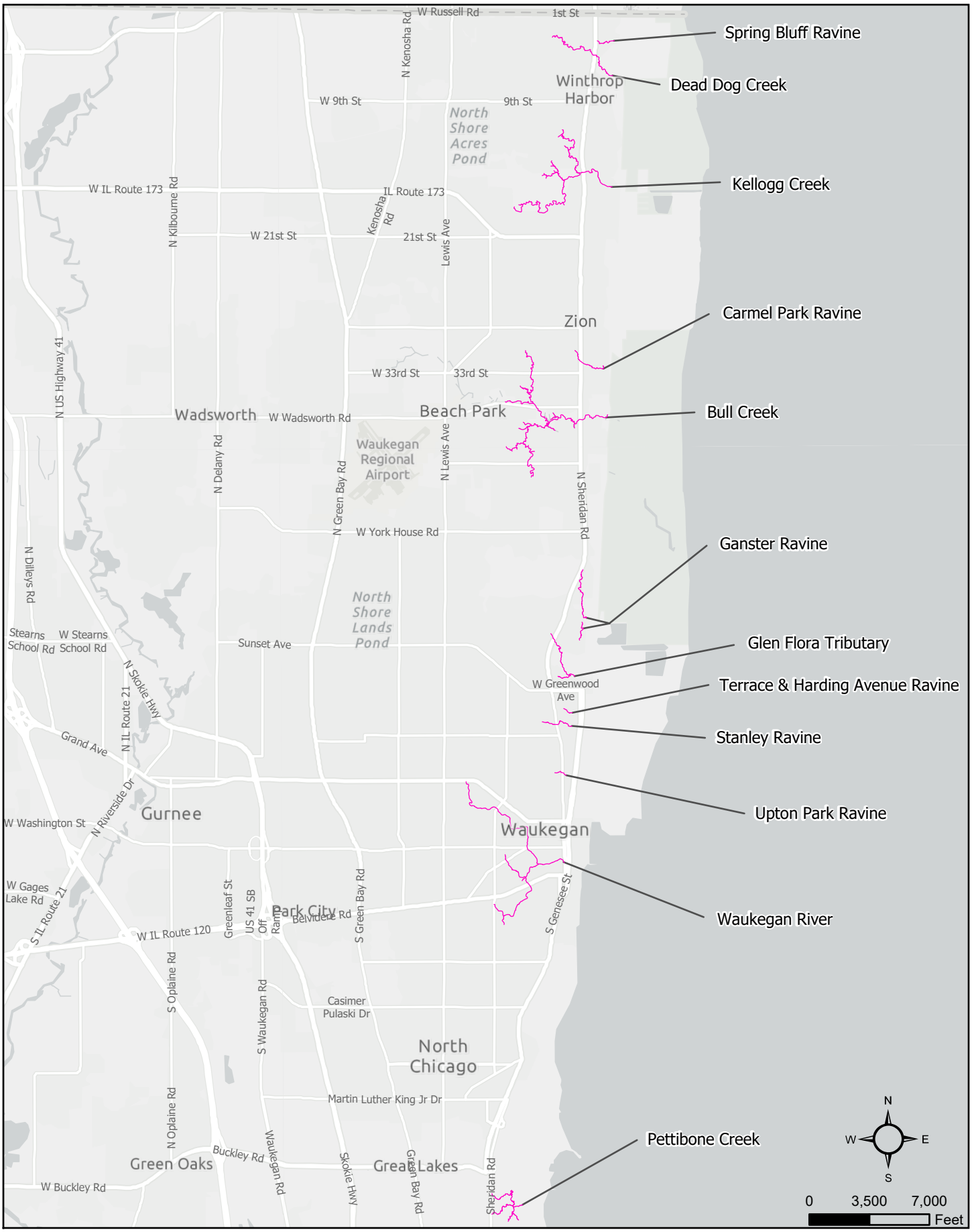
Figure 16. The change in percentage of channel erosion from 2011 to 2019. The light blue bars indicate a decrease in the percentage of channel erosion, where the darker blue bars show an increase in percentage of channel erosion. Each bar corresponds to the ravine name listed below. **Spruce Avenue Ravine was not surveyed in 2011 and has been excluded from this graph.*

Summary

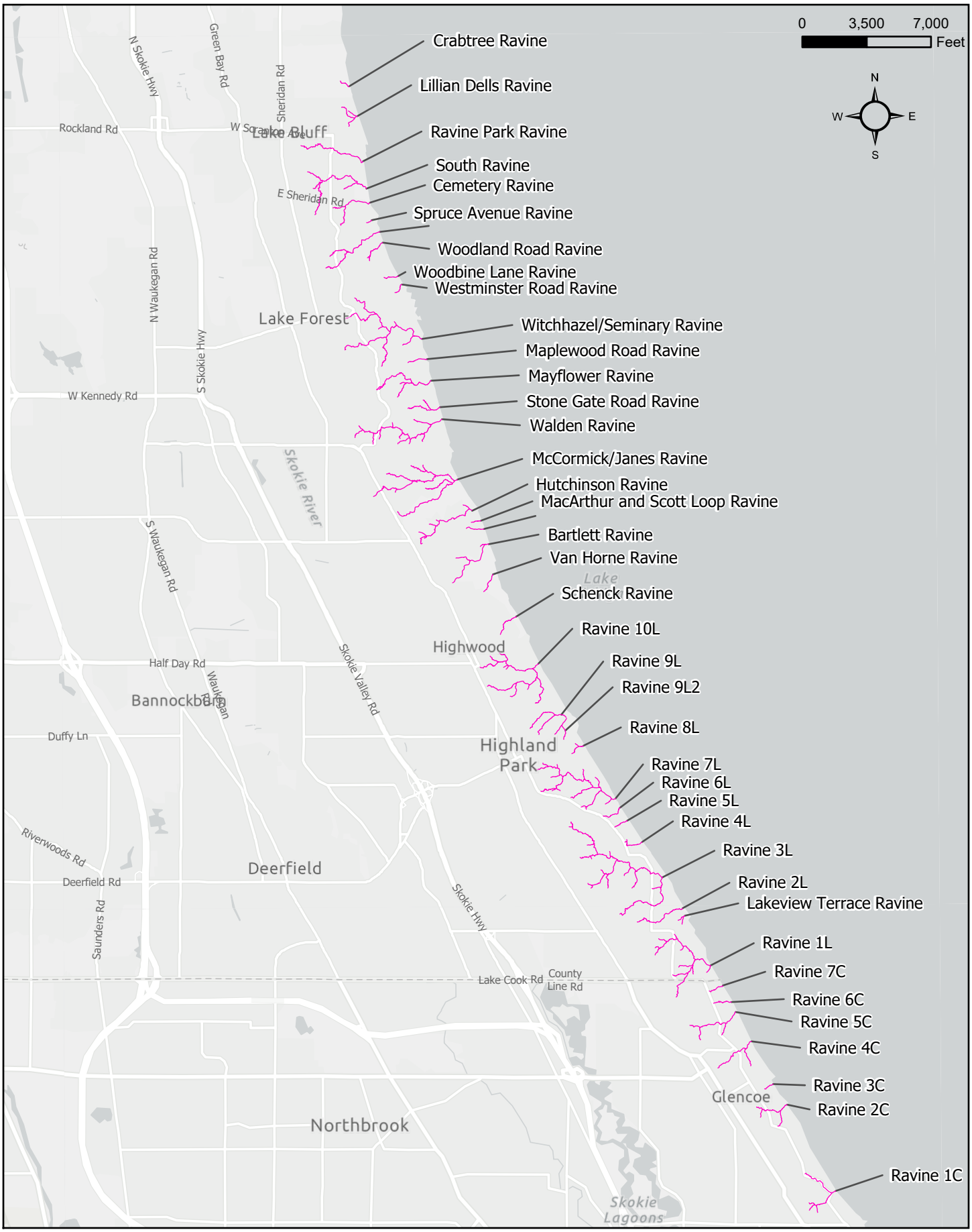
Thirty-three ravines in Lake County and seven ravines in Cook County were inventoried in the late fall of 2018 and the early winter of 2019 by SMC. An additional thirteen ravines in Lake County were inventoried by the City of Lake Forest in the summer of 2017. The combined 2017 and 2019 data was used to evaluate erosion levels as well as to assess changes that have occurred since previous inventories (2009 and 2011). In order to make comparisons and draw conclusions from the data collected each ravine was assigned an erosion risk score. This metric allows for basic inferences to be made; however, because a ravine's erosion risk score is calculated relative to other ravines this metric cannot be used as an exact measure of erosion. When comparing the 2019 erosion risk scores with the scores from 2009 and 2011, ravines with the highest erosion risk scores remained relatively the same. There were more dynamic changes to the erosion risk scores of the lowest ranking ravines. There are several explanations for this observed variance. Some explanations include: a smaller portion of a ravine was surveyed than in prior inventories, a larger quantity of discharge points was found, or changes to the condition of other ravines caused the increase/decrease. Generally ravines that experienced the largest increases in erosion risk score also had increases in number of discharge points, failing structure, and/or knick points. There were however several instances where a ravine's erosion risk score did not correspond with observations made in the field. Some of the ravines with the greatest amounts of observed bank or channel erosion had relatively low erosion risk scores. Each field criterion is weighted differently, and ravines with low erosion risk scores and high amount of observed erosion tended to have fewer of the heavily weighted criteria. Since 2011 there has been a greater general increase in ravine bank instability than in channel instability. From 2011 to 2019 roughly 17% of ravines surveyed saw a decrease in percentage of banks rated stable or unstable. However, closer to 50% of ravines surveyed had lower percentages of channel erosion recorded in 2019 than in 2011.

Appendix A

Ravine Inventory Index Map - North



Ravine Inventory Index Map - South



STORMWATER MANAGEMENT COMMISSION

Lake County Stormwater Management Commission Courtesy Map 2019. This map is provided for general locational information only. Map features have been derived from various sources, each of which has its own scale and accuracy. The locations of all features are approximate. This map should not be used to determine building set-backs or as a basis for purchasing property. Field Surveys and delineations are required to verify the exact locations of property lines and other map features.

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

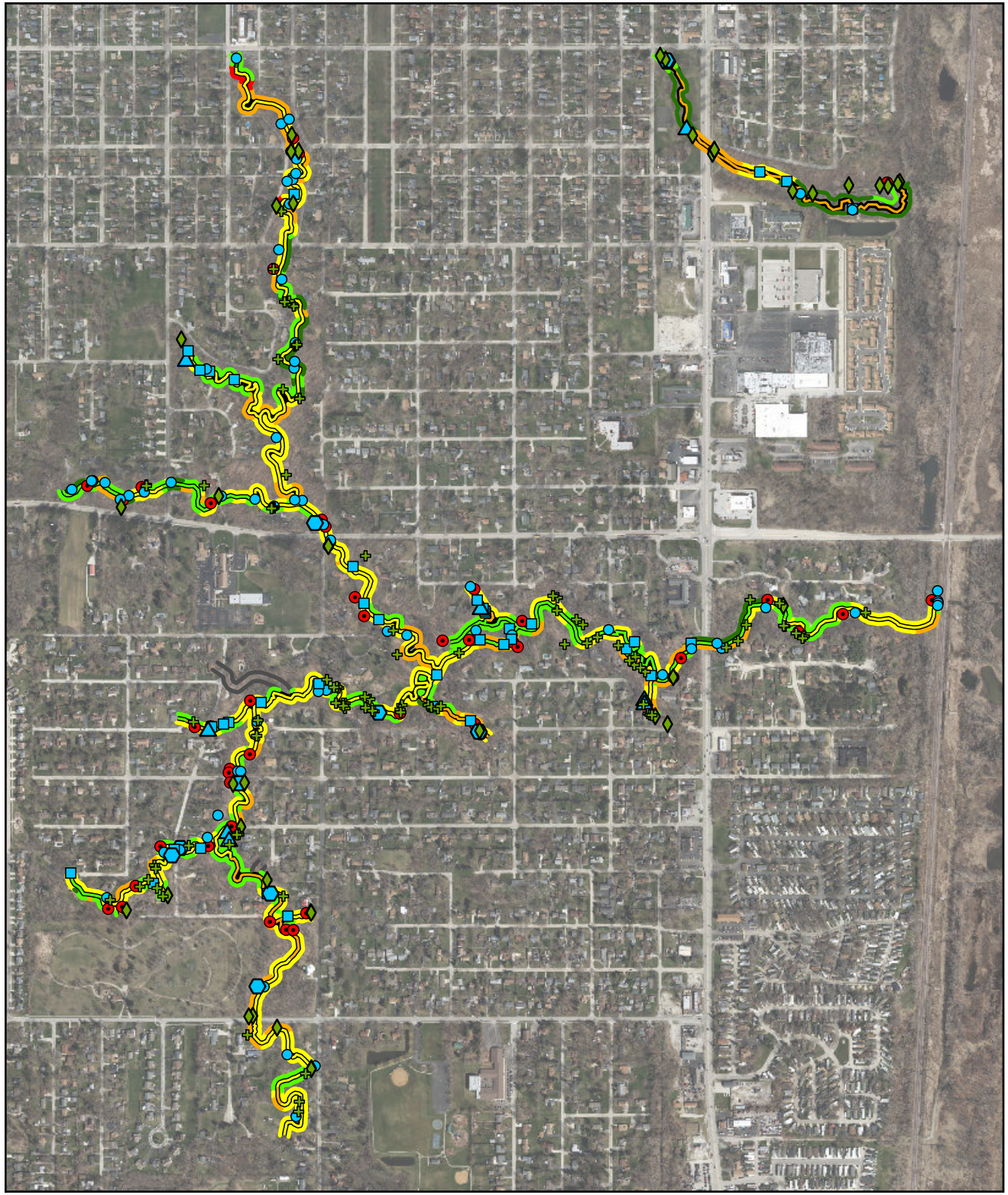
N W E S

Scale 1:4,800

0 50 100 200 300 400 Feet

Bartlett Ravine

Ranked 29 out of 53 for Erosion Potential



Bull Creek

Ranked 5 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

Scale: 1:12,000

0 250 500 1,000 Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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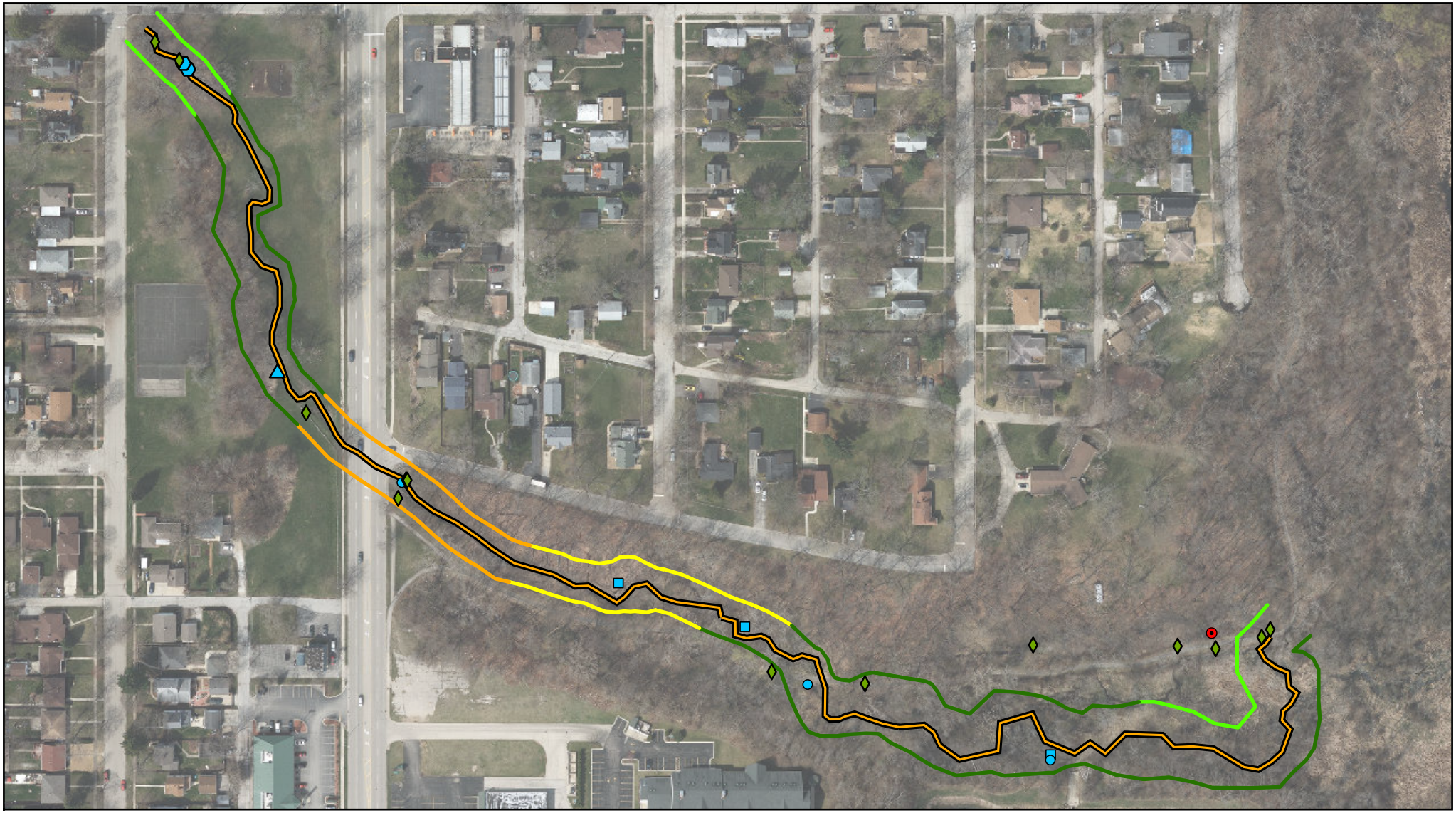

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Legend

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- Log Jam
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- Residential
- Municipal Stormwater

Channel Stability Rank

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- 2
- 3
- 4
- 5

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Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

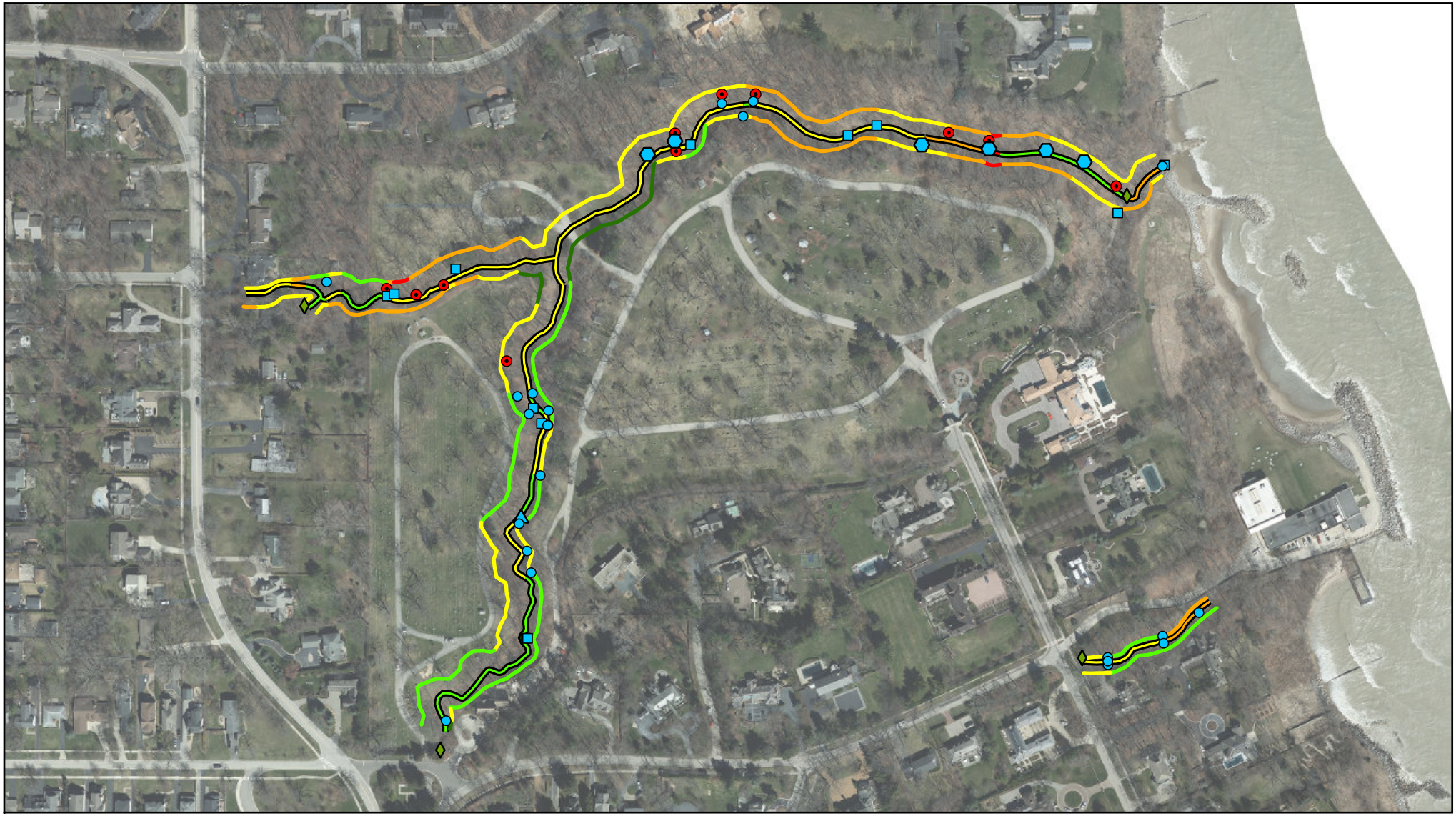
N W E S

Scale: 1:2,400

0 25 50 100 150 200 Feet

Carmel Park Ravine

Ranked 28 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

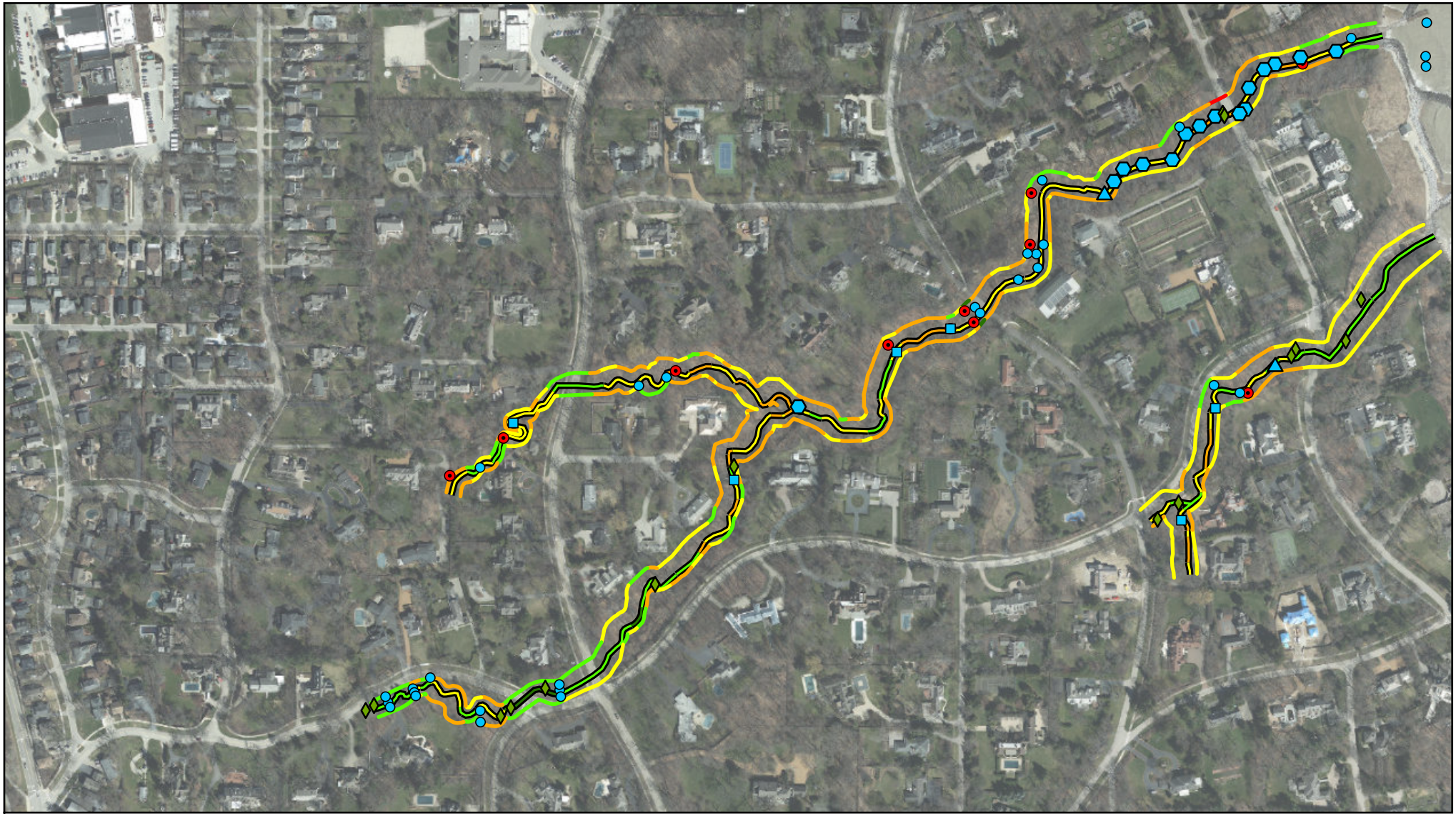
N W E S

Scale 1:3,600

0 75 150 300 Feet

Cemetery Ravine

Ranked 31 out of 53 for Erosion Potential



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Legend

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- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

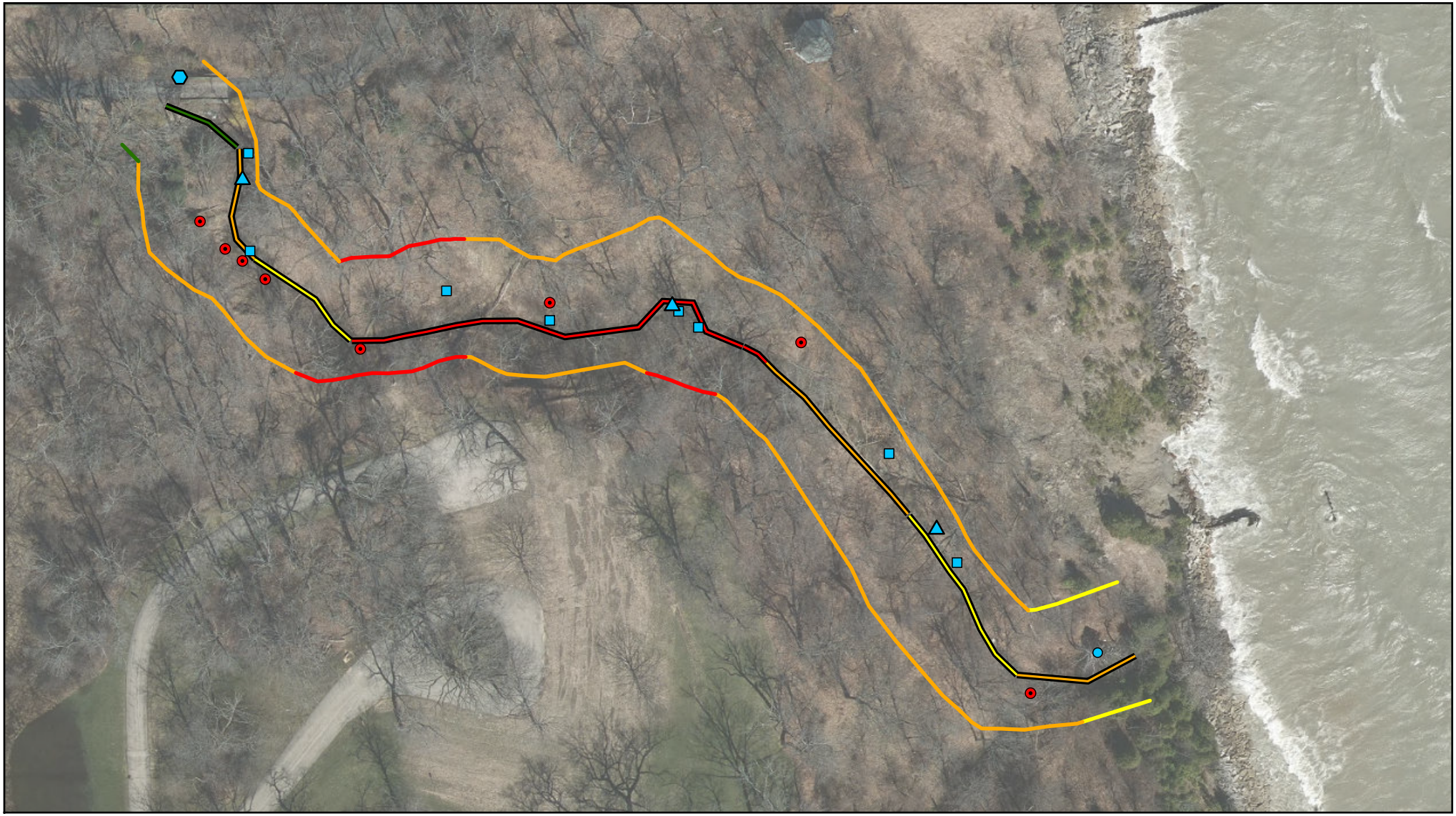
N W E S

Scale 1:4,800

0 100 200 400 Feet

Clark's Ravine

Ranked 16 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

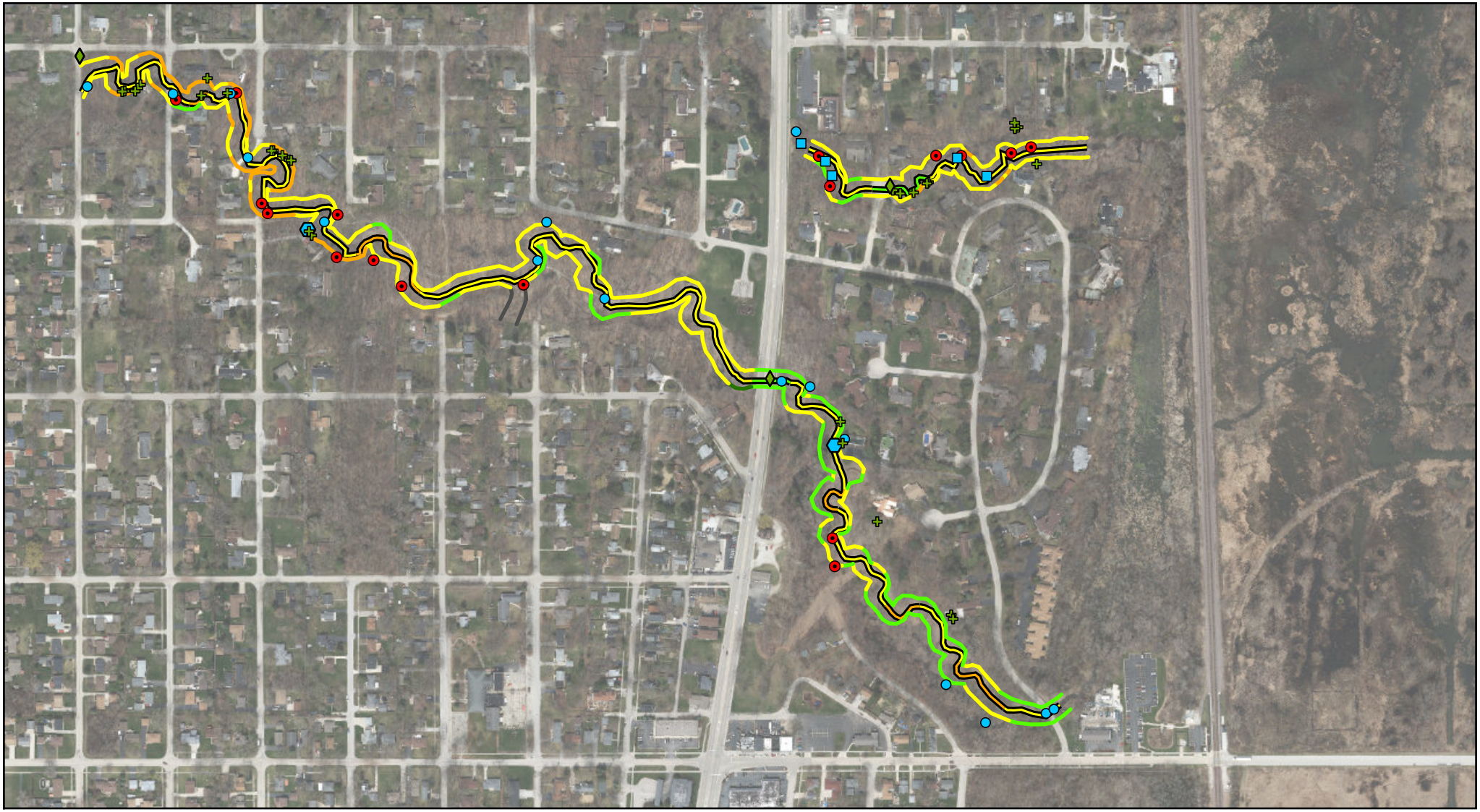
N W E S

Scale 1:840

0 510 20 30 40 50 60 70 Feet

Crabtree Ravine

Ranked 30 out of 53 for Erosion Potential



LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

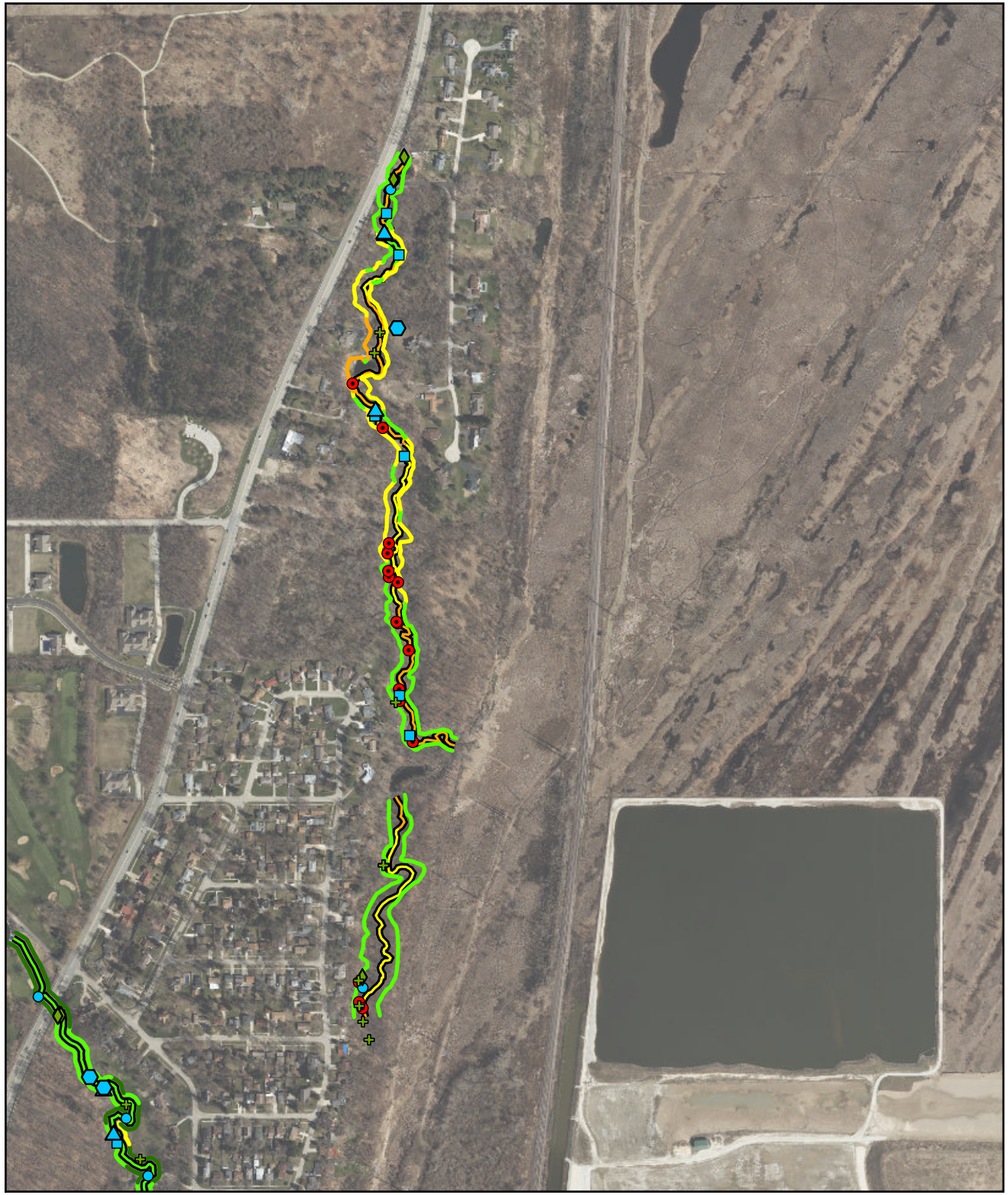
N
W E
S

Scale: 1:6,000

0 125 250 500 Feet

Dead Dog Creek

Ranked 41 out of 53 for Erosion Potential



Ganster Ravine

Ranked 34 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered trhe worst

N
W E
S

Scale: 1:8,400

0 175 350 700
Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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Glen Flora Tributary

Ranked 50 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

Scale: 1:4,800

0 100 200 400 Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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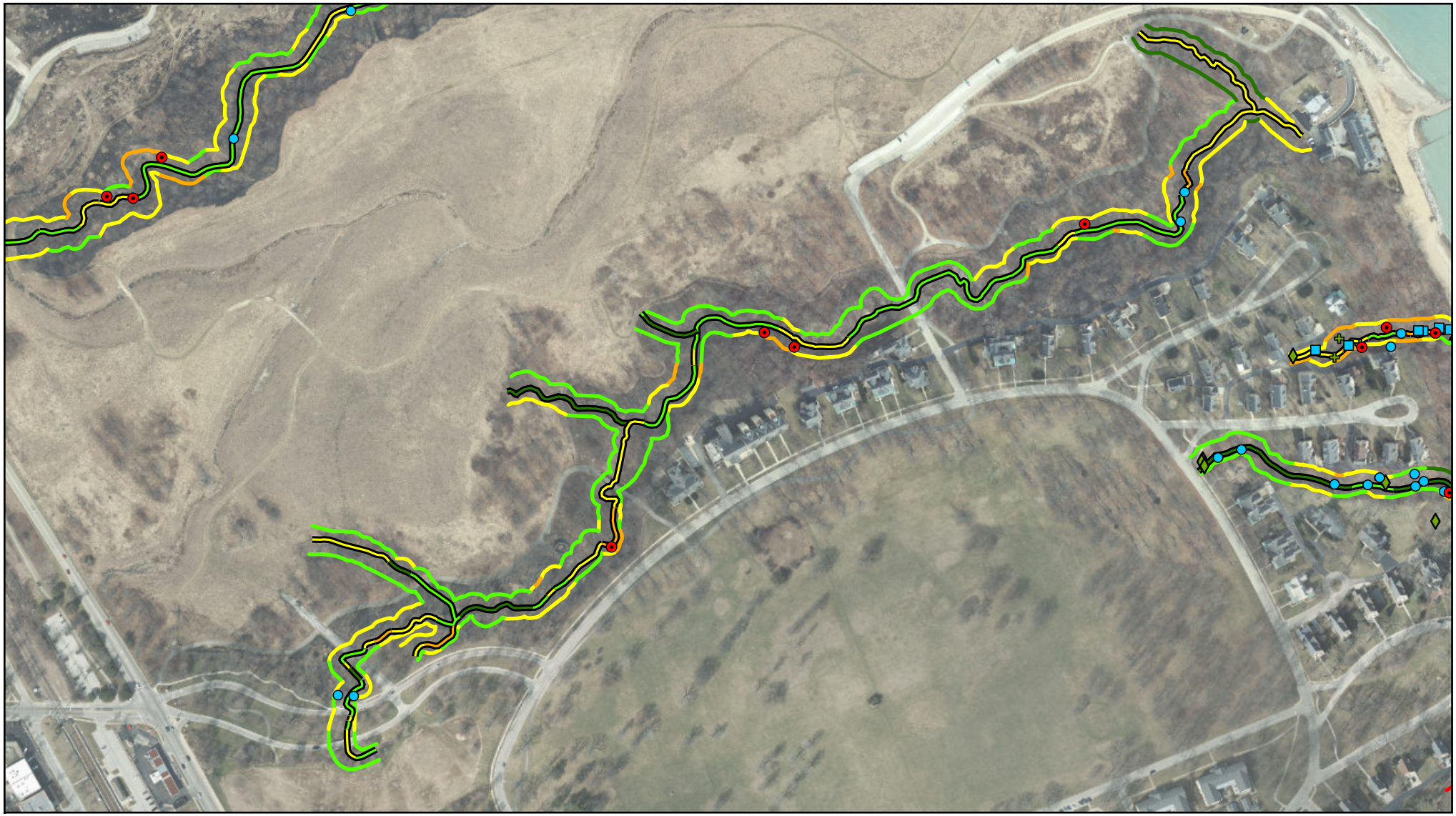

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Legend

- Gullies
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

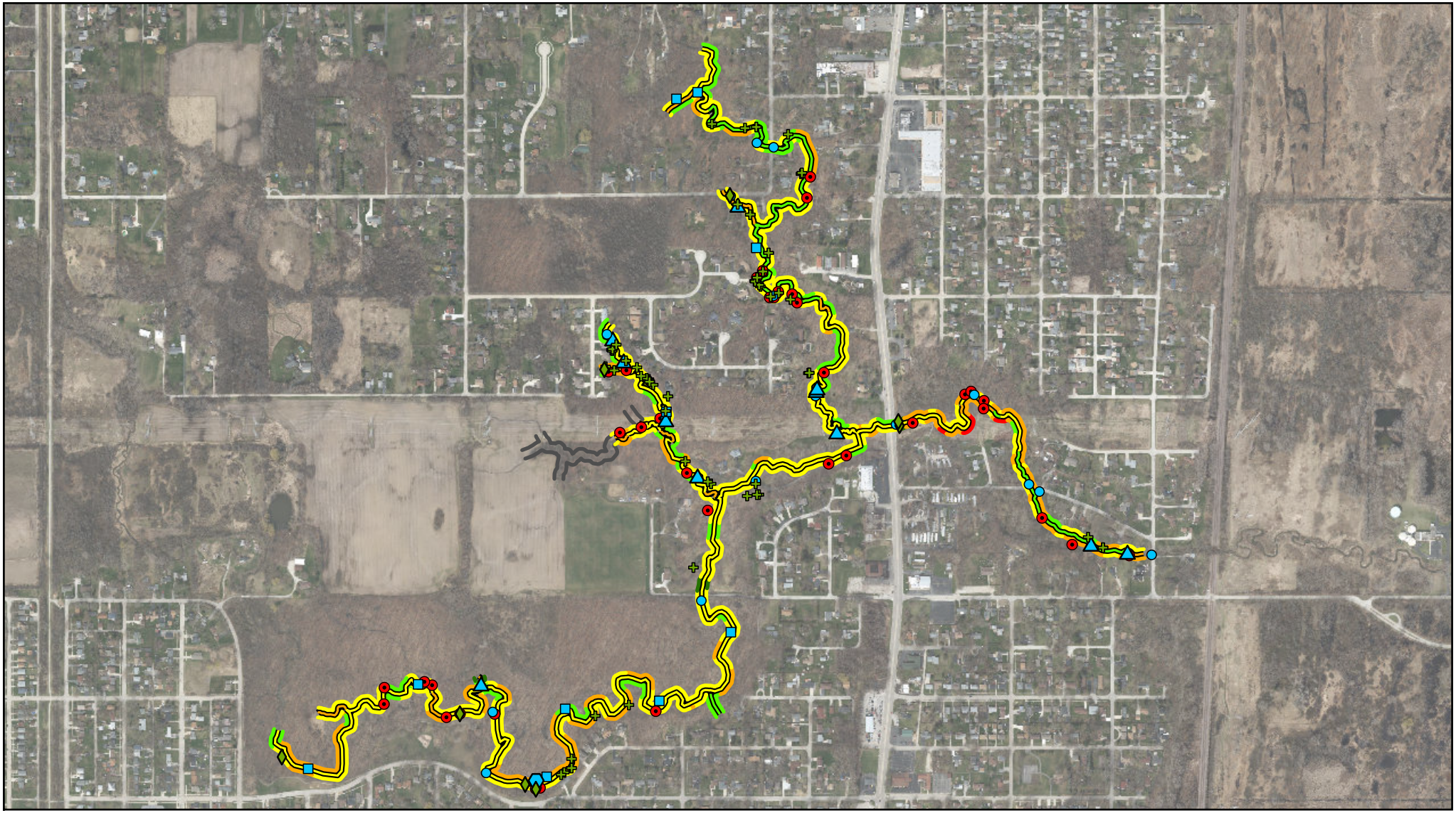
N W E S

Scale 1:4,800

0 100 200 400 Feet

Hutchinson Ravine

Ranked 53 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

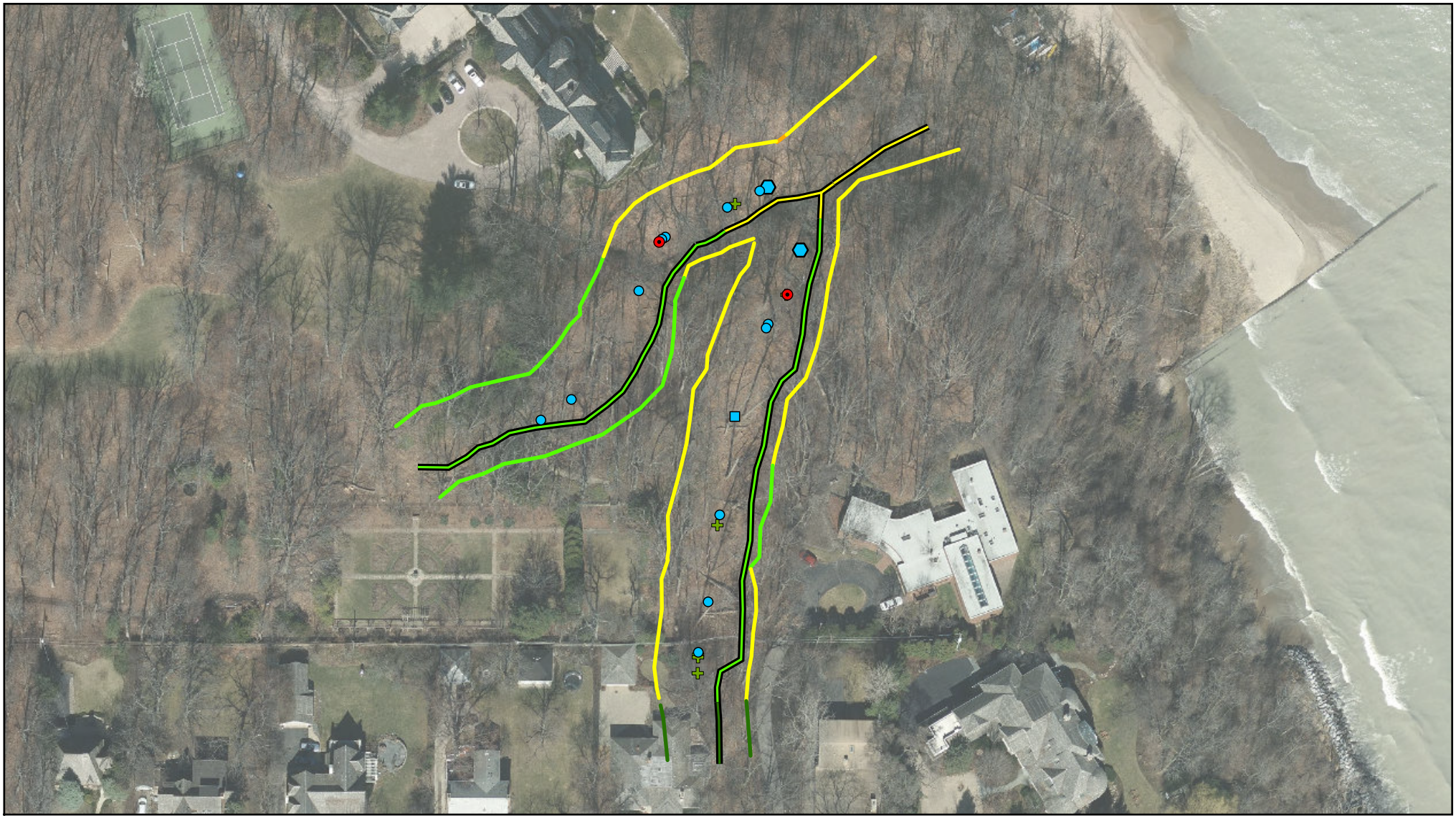
N W E S

Scale: 1:10,800

0 150 300 600 900 Feet

Kellogg Creek

Ranked 12 out of 53 for Erosion Potential



STORMWATER MANAGEMENT COMMISSION

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

N W E S

Scale 1:1,200

0 25 50 100 Feet

Lakeview Terrace Ravine

Ranked 40 out of 53 for Erosion Potential

Lillian Dells Ravine

Ranked 37 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N W E S

Scale: 1:2,400

0 50 100 200 Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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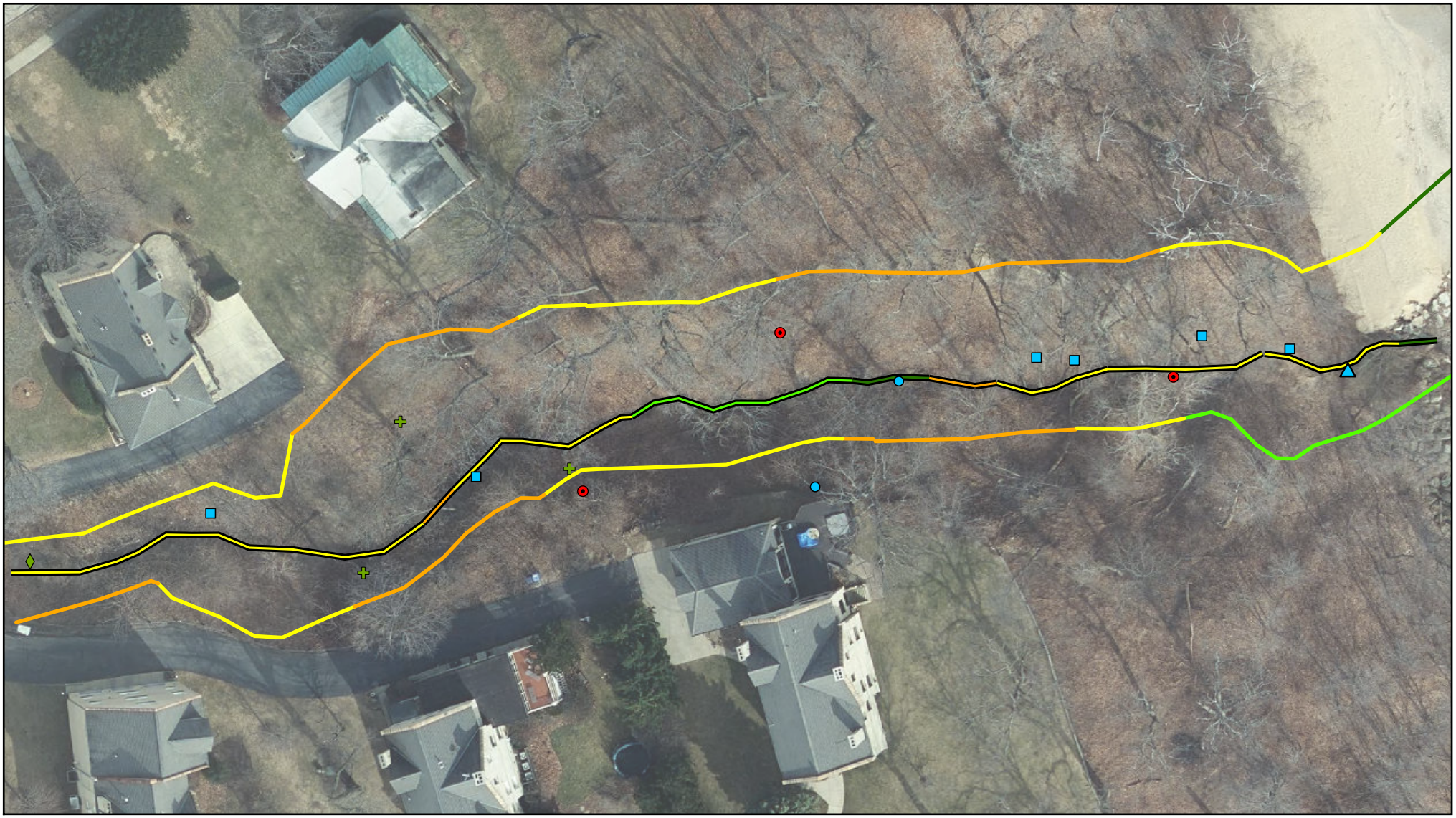

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

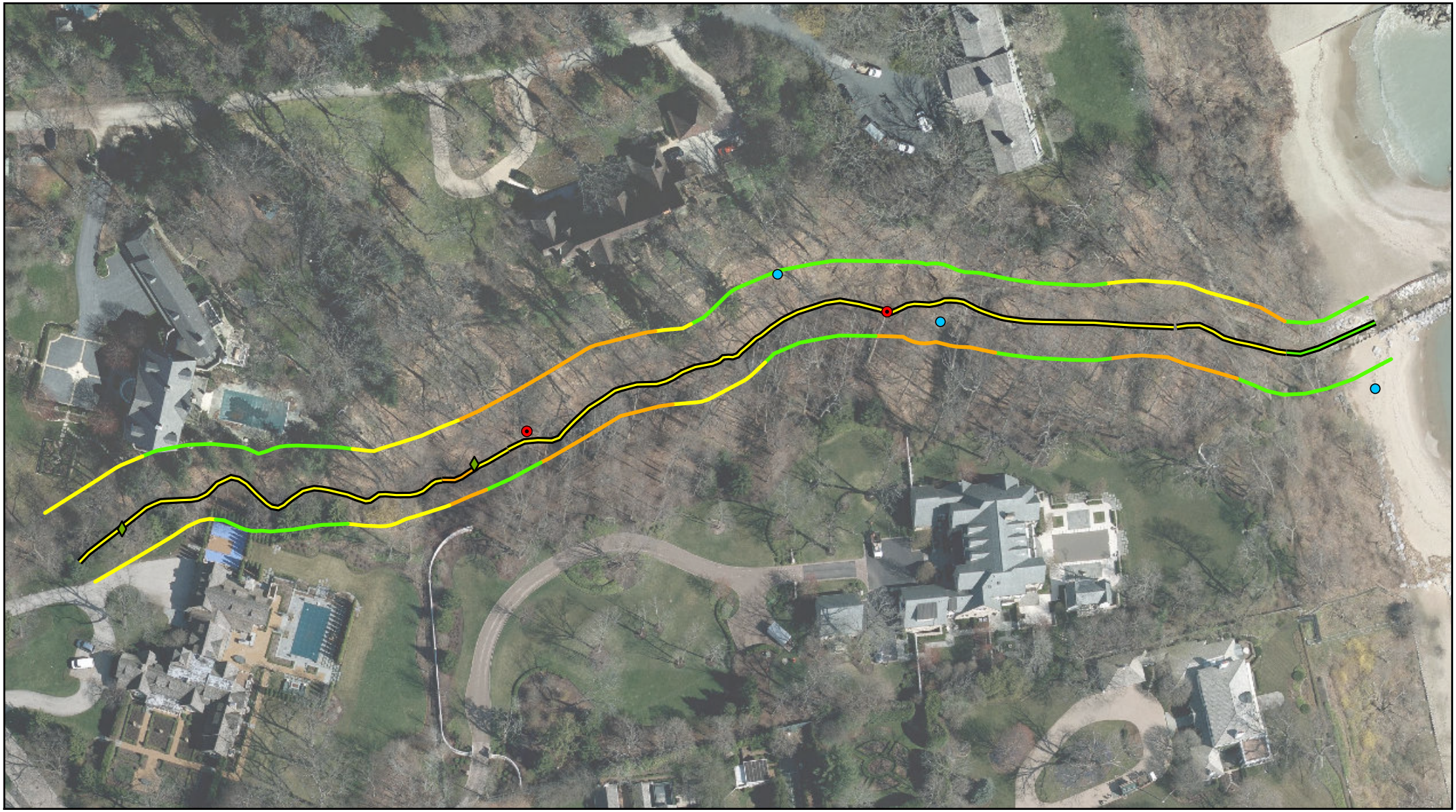
N W E S

Scale 1:600

0 25 50 Feet

MacArther & Scott Loop Ravine

Ranked 39 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

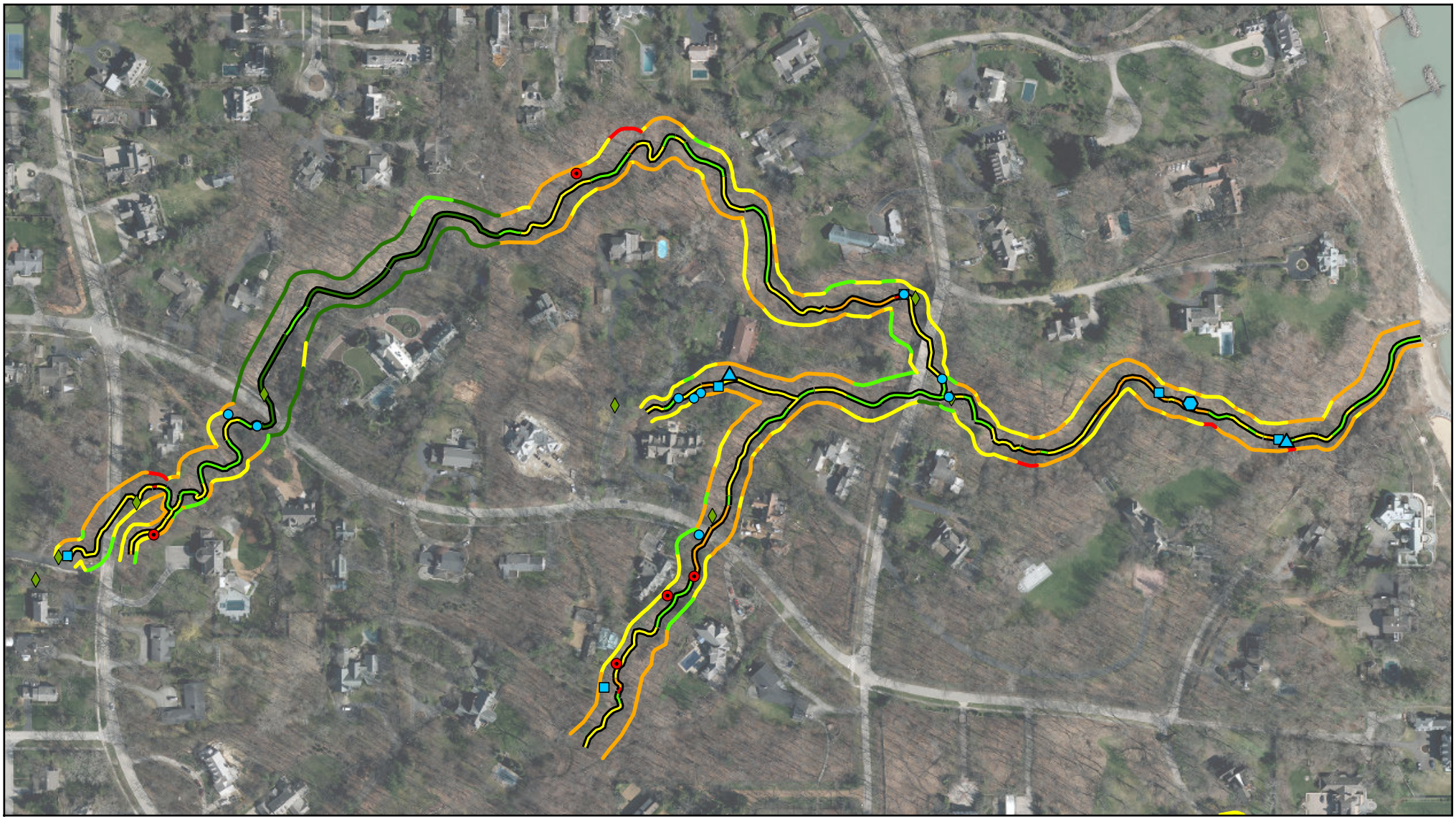
N W E S

Scale 1:1,320

0 55 110 Feet

Maplewood Road Ravine

Ranked 49 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

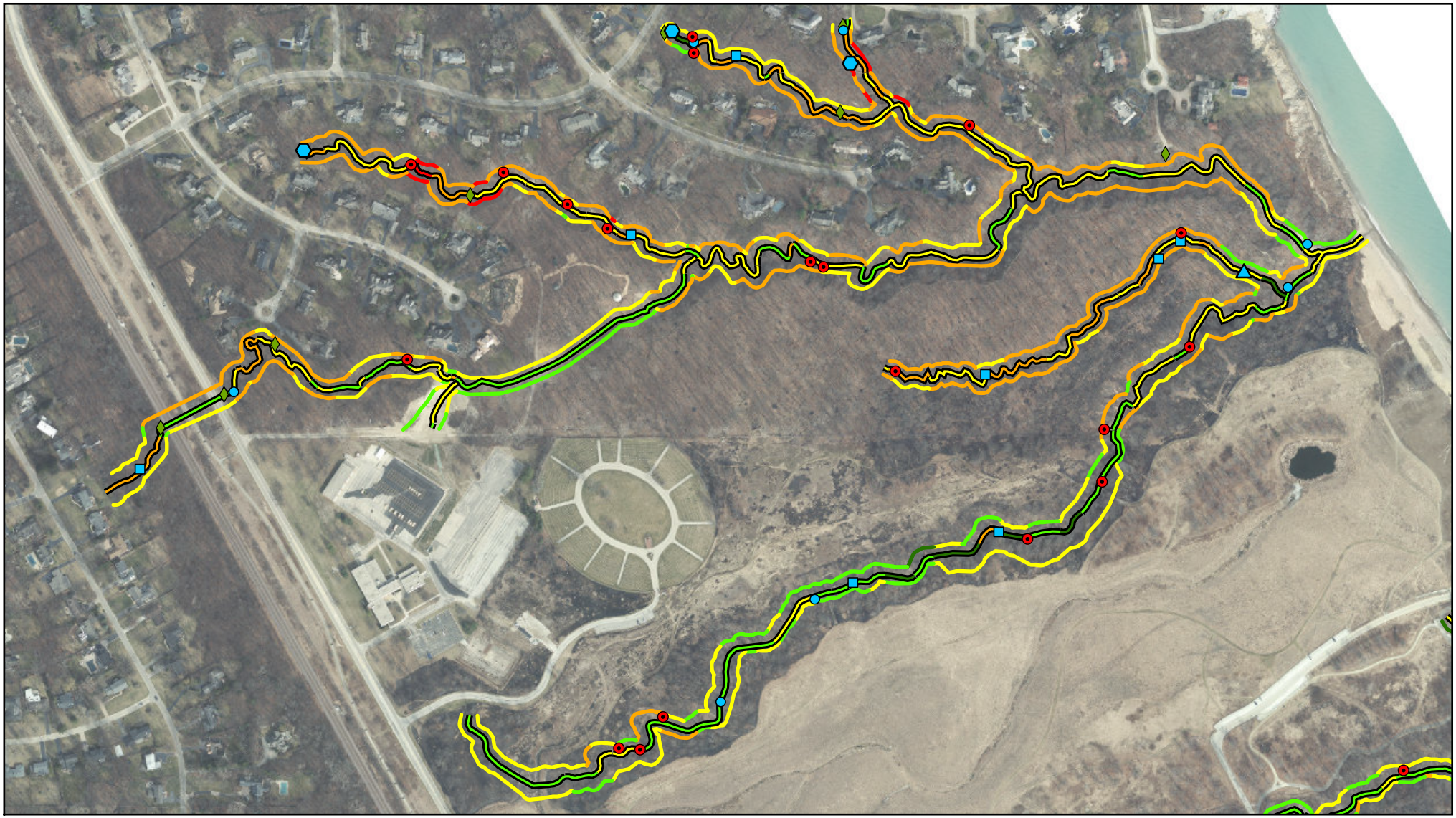
N W E S

Scale 1:3,600

0 75 150 300 Feet

Mayflower Ravine

Ranked 24 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Storm

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

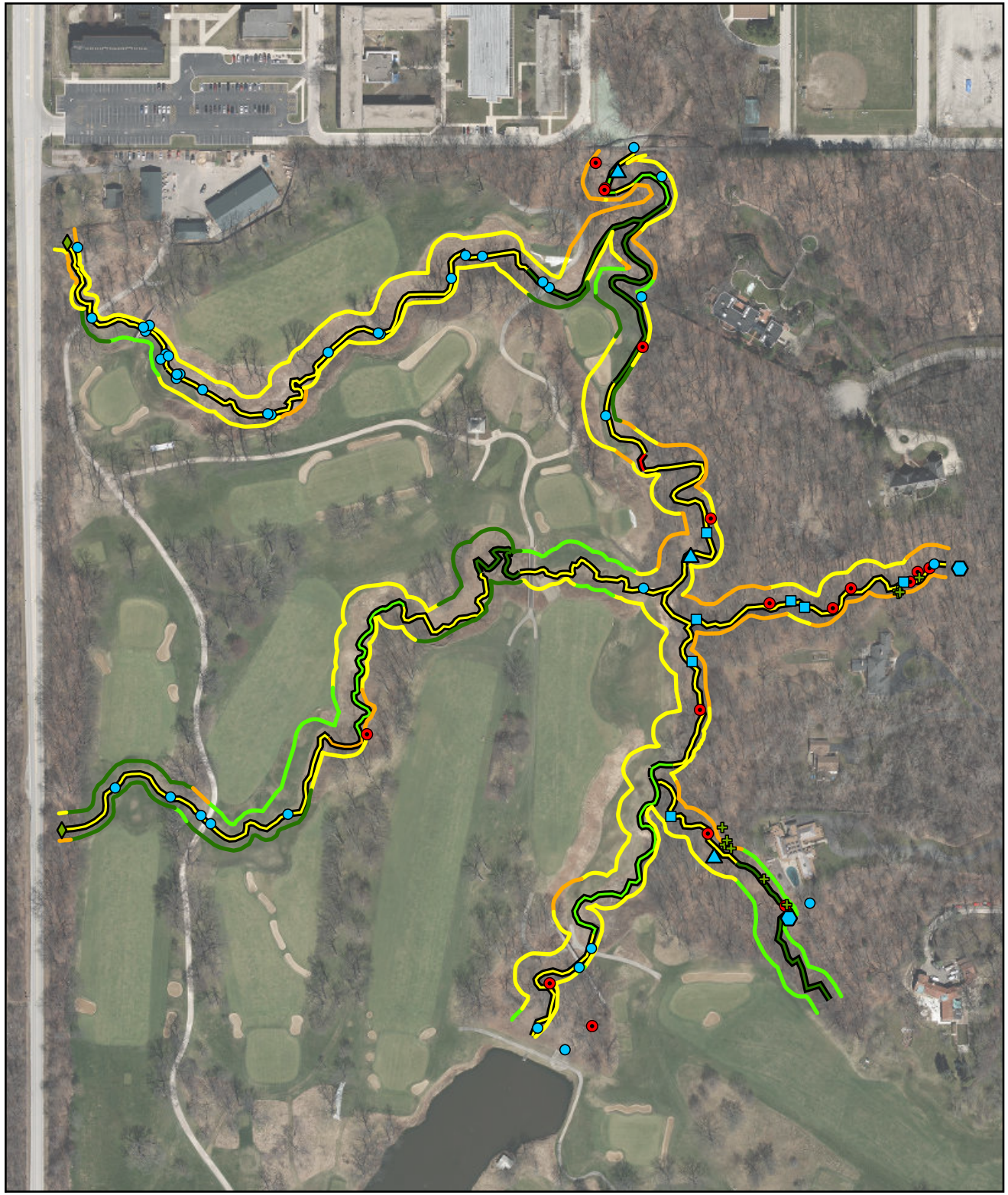
N W E S

Scale 1:6,000

0 125 250 500 Feet

McCormick/Janes Ravine

Ranked 13 out of 53 for Erosion Potential



Pettibone Creek

Ranked 36 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

N
W E
S

Scale: 1:3,600

0 50 100 200 300
Feet

*sections with a rank of 1 are considered the worst

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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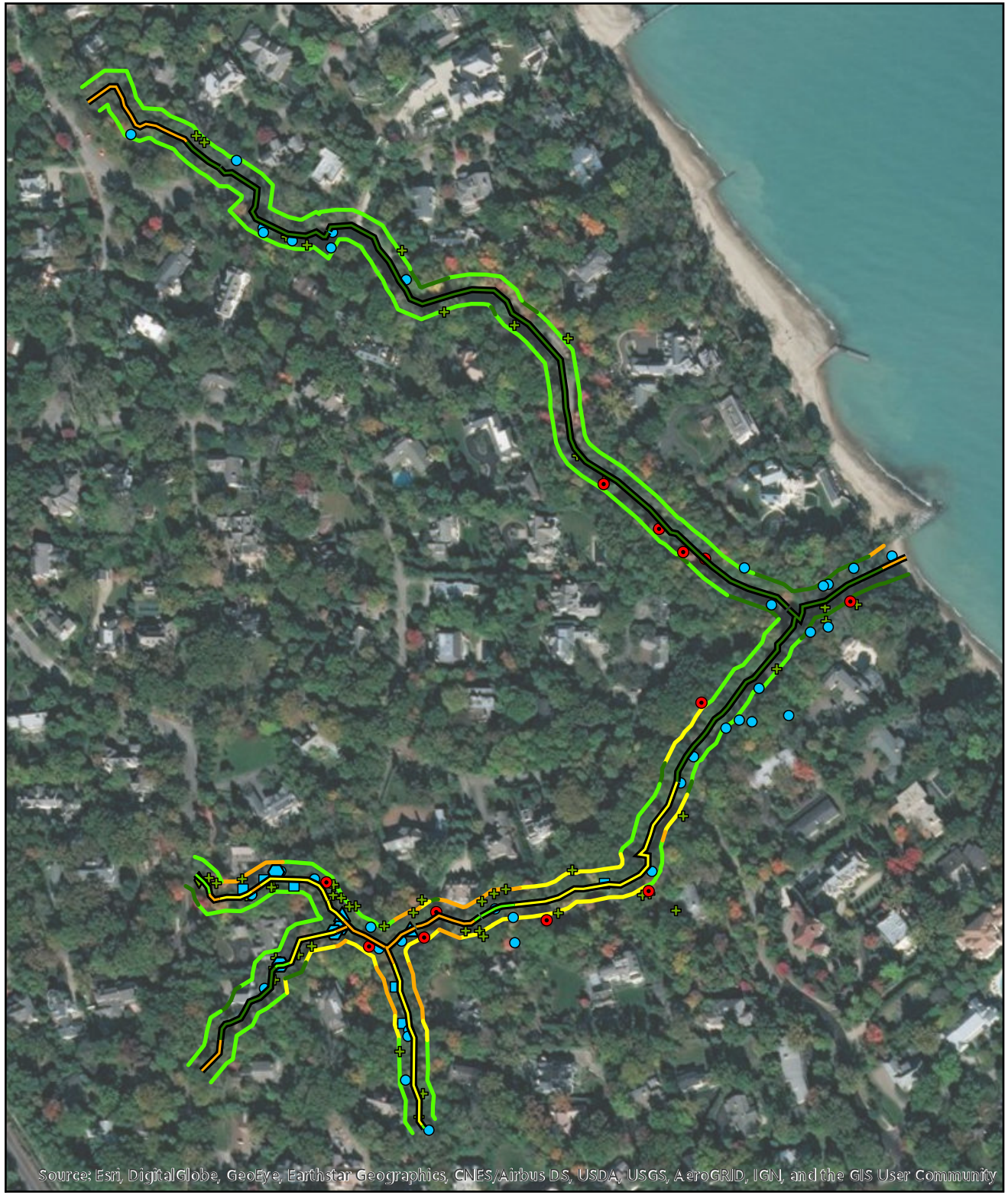

Ravine 1C

Ranked 27 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

N W E S

Scale: 1:3,600

0 75 150 300 Feet

*sections with a rank of 1 are considered the worst

LAKE COUNTY

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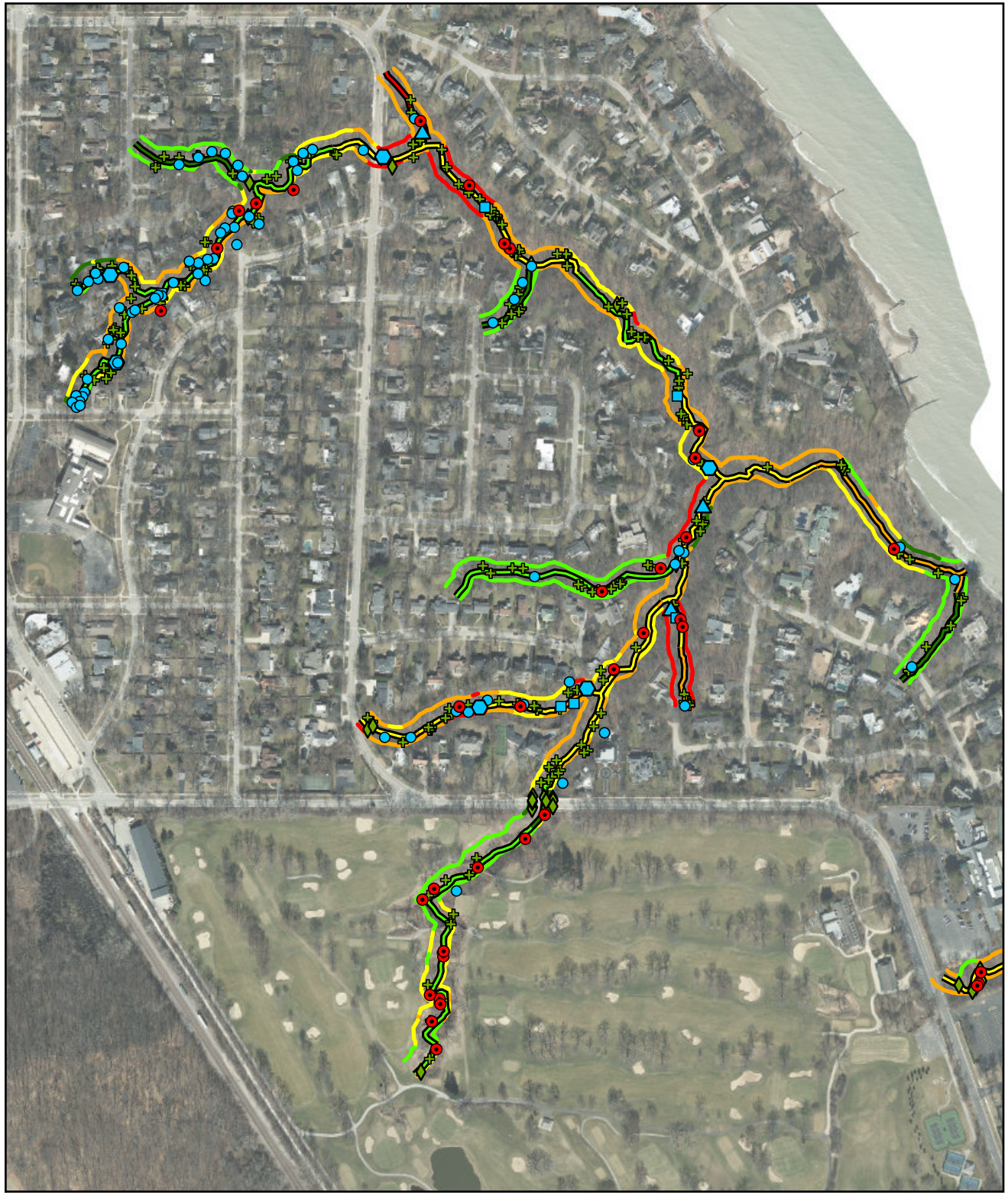

Ravine 1L

Ranked 4 out of 53 for Erosion Potential

Legend

- Gullies
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

Scale: 1:6,000

0 125 250 500 Feet

LAKE COUNTY

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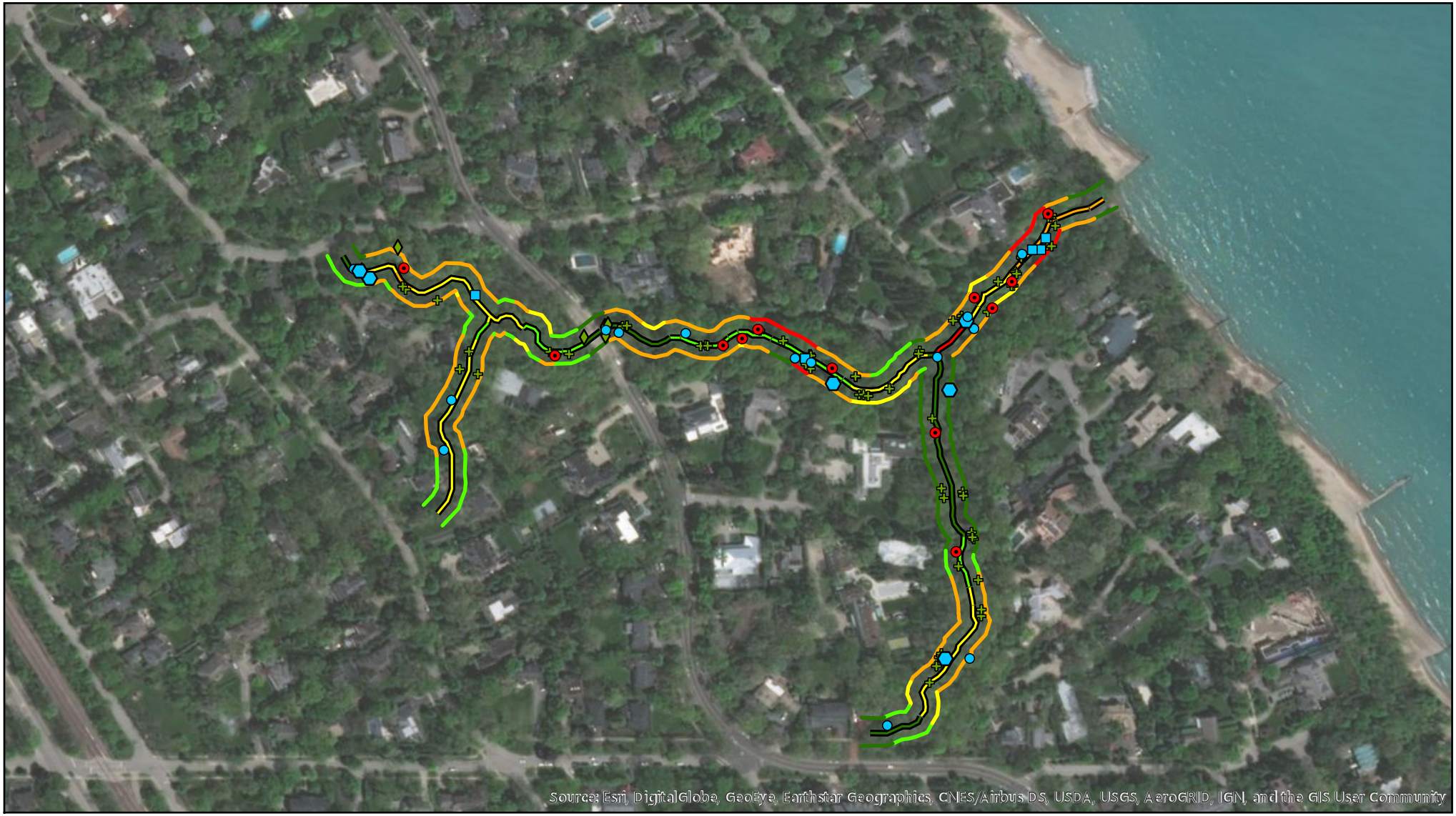

LAKE COUNTY

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank	Bank Stability Rank
	Not Surveyed
1	1
2	2
3	3
4	4
5	5

*sections with a rank of 1 are considered the worst

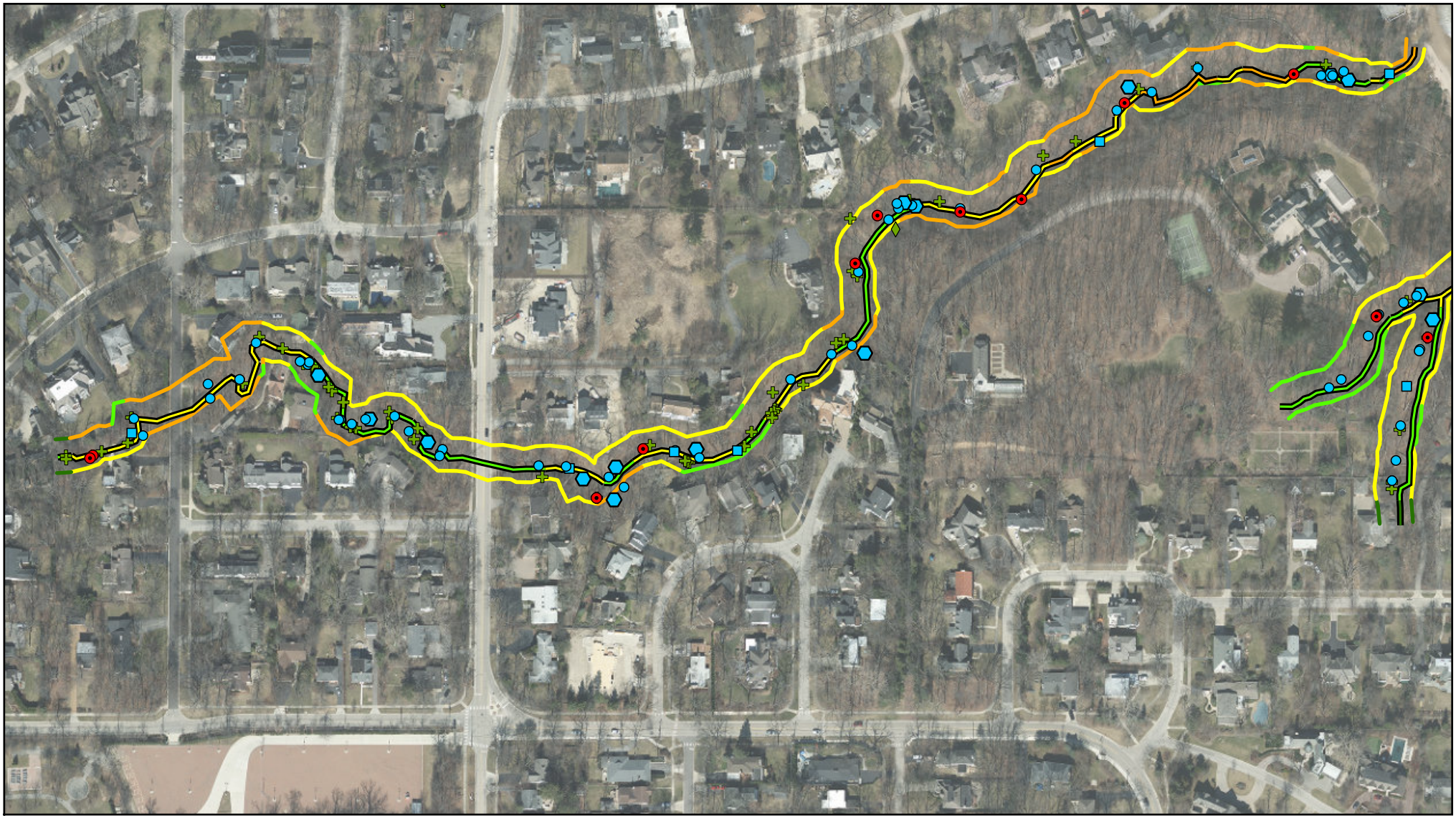
N
W E
S

Scale 1:3,600

0 75 150 300 Feet

Ravine 2C

Ranked 17 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

N W E S

Scale 1:3,000

0 2550 100 150 200 250 Feet

Ravine 2L

Ranked 22 out of 53 for Erosion Potential

LAKE COUNTY

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

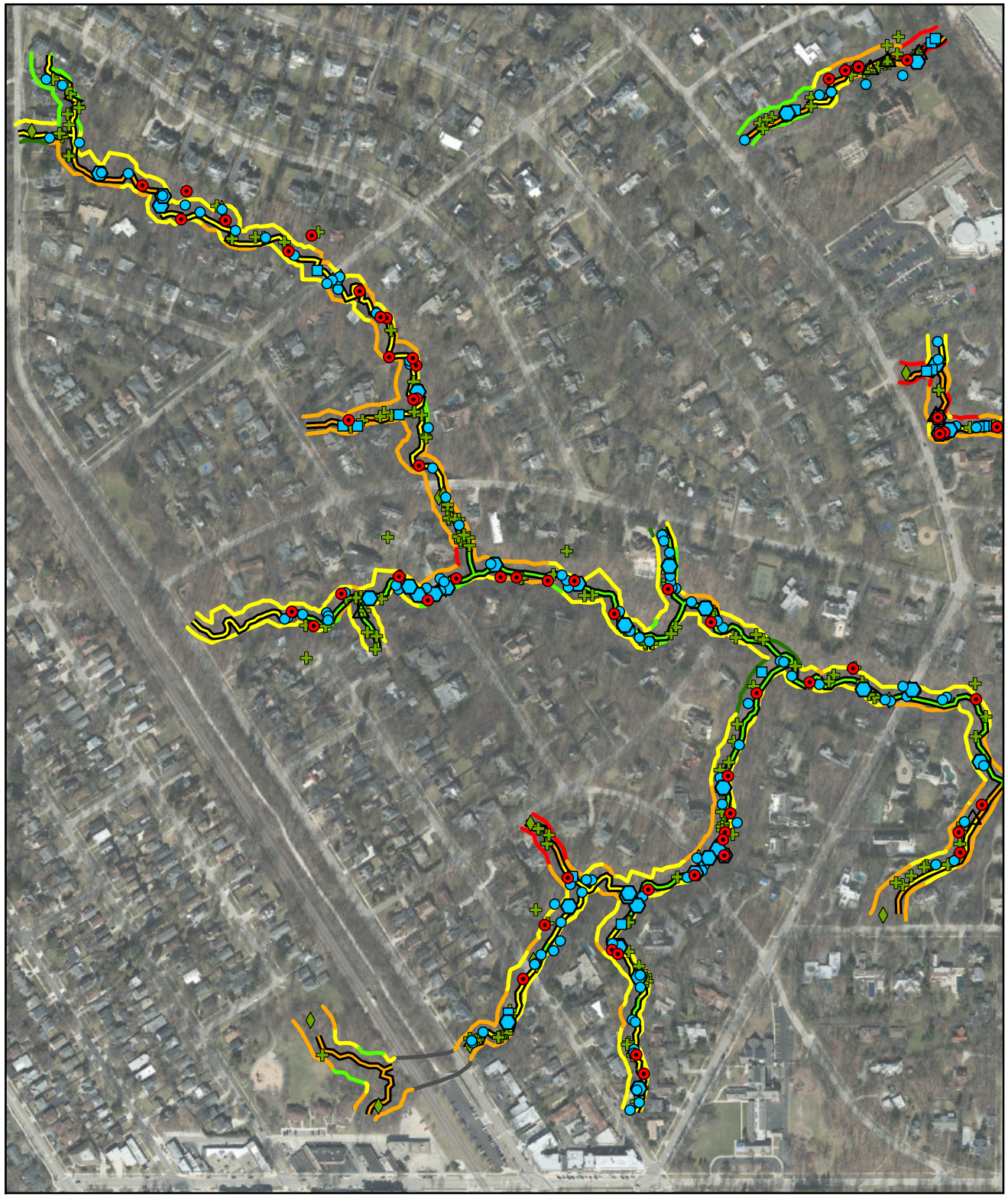
N
W E
S

Scale 1:720

0 15 30 60 Feet

Ravine 3C

Ranked 26 out of 53 for Erosion Potential



Ravine 3L
North Section

Ranked 2 out of 53
for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

Scale 1:6,000

0 200 400 800
Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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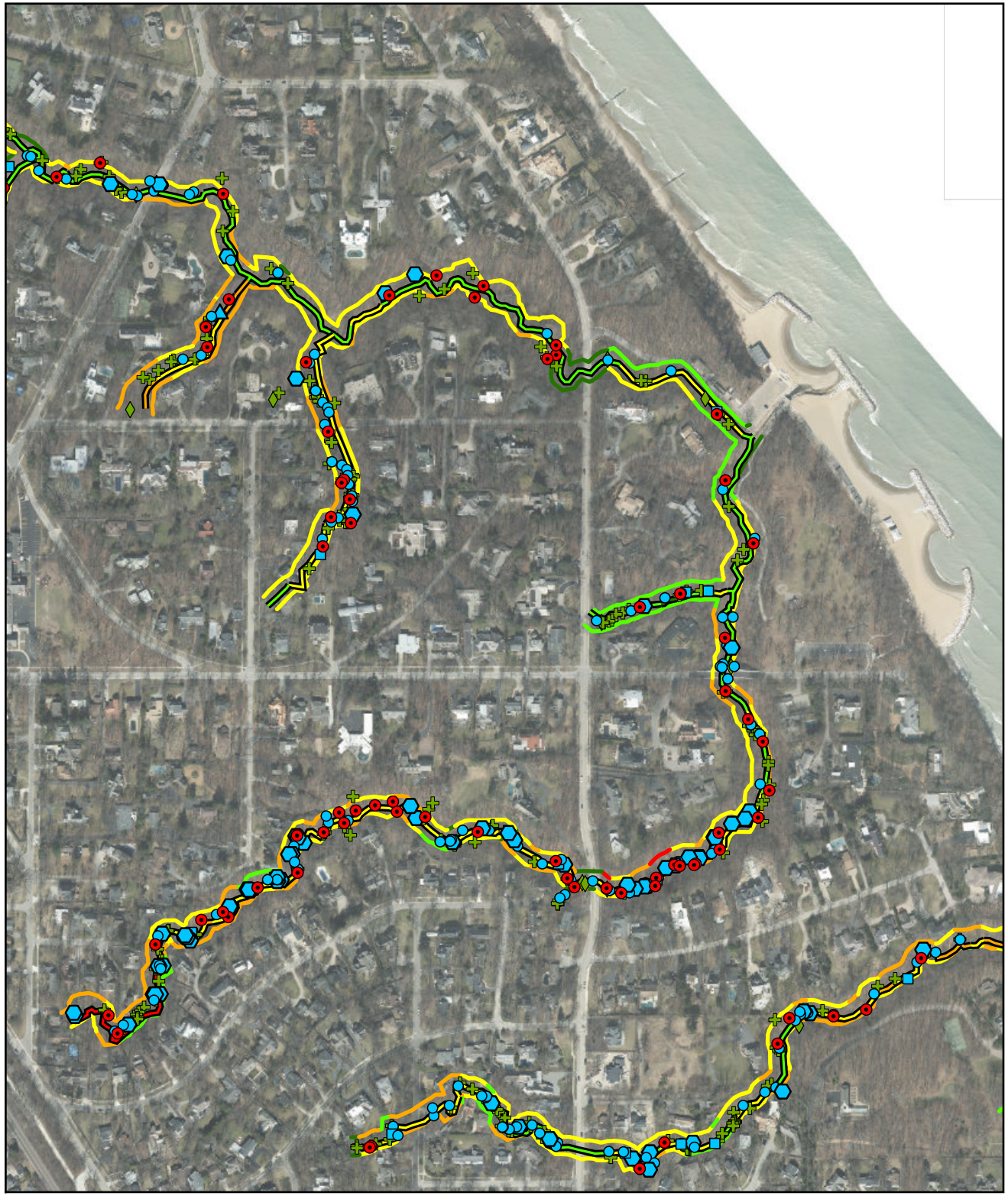

Ravine 3L
South Section

Ranked 2 out of 53
for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

Scale 1:6,000

0 200 400 800 Feet

LAKE COUNTY

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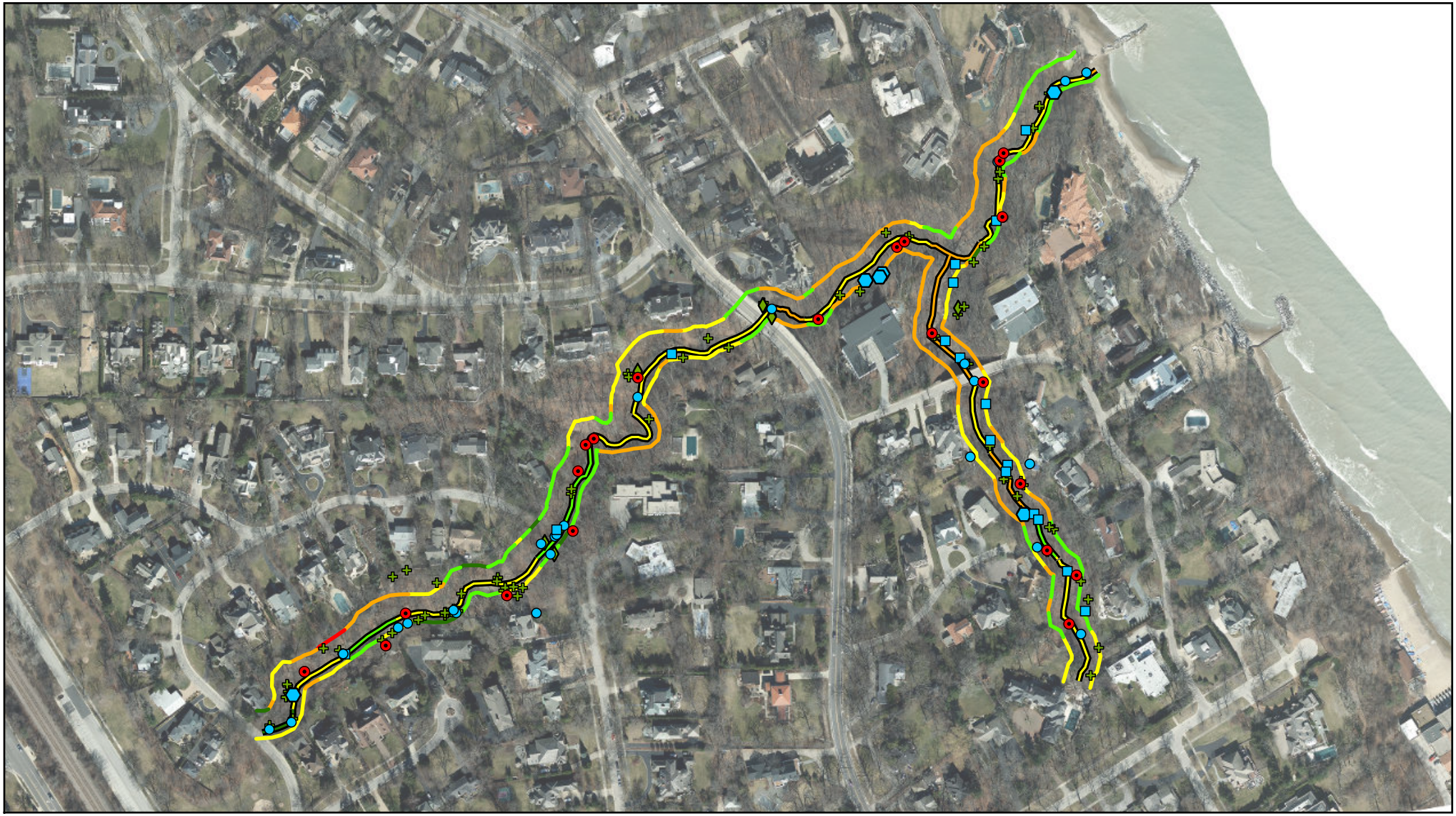

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Legend

- Gullies
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

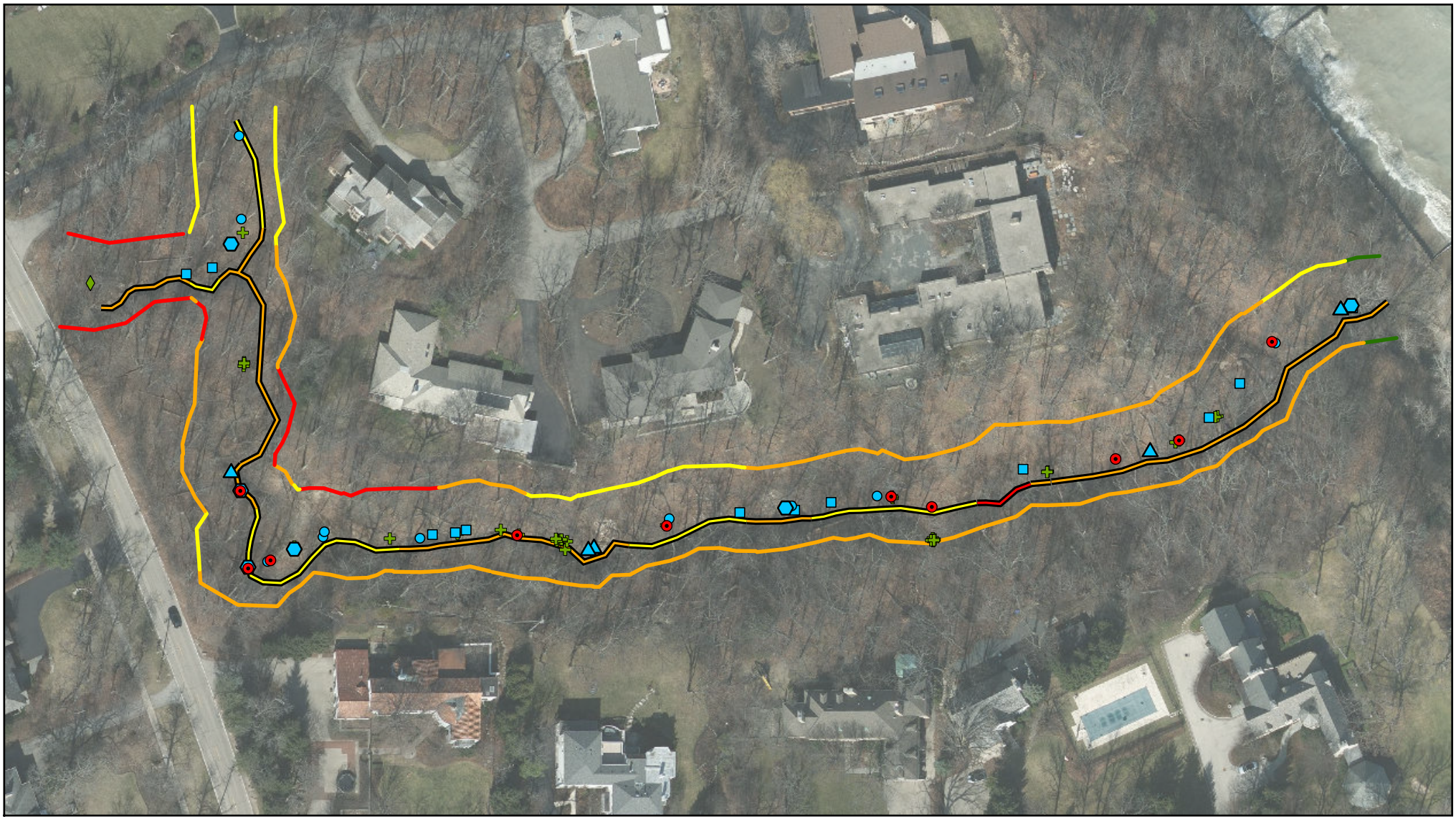
N W E S

Scale 1:3,600

0 75 150 300 Feet

Ravine 4C

Ranked 10 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

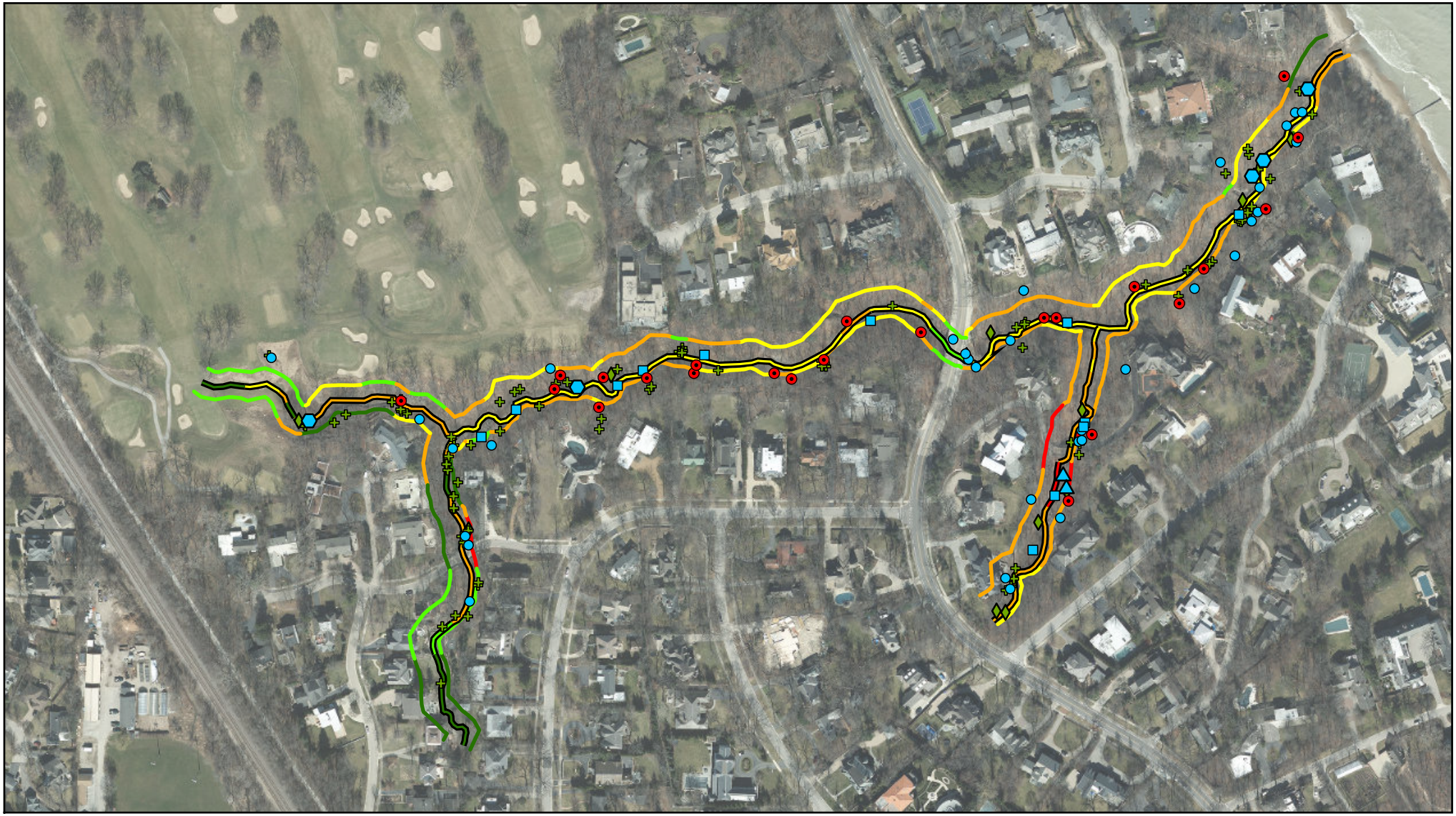
N W E S

Scale 1:1,200

0 25 50 100 Feet

Ravine 4L

Ranked 15 out of 53 for Erosion Potential



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Legend

- Gullies
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

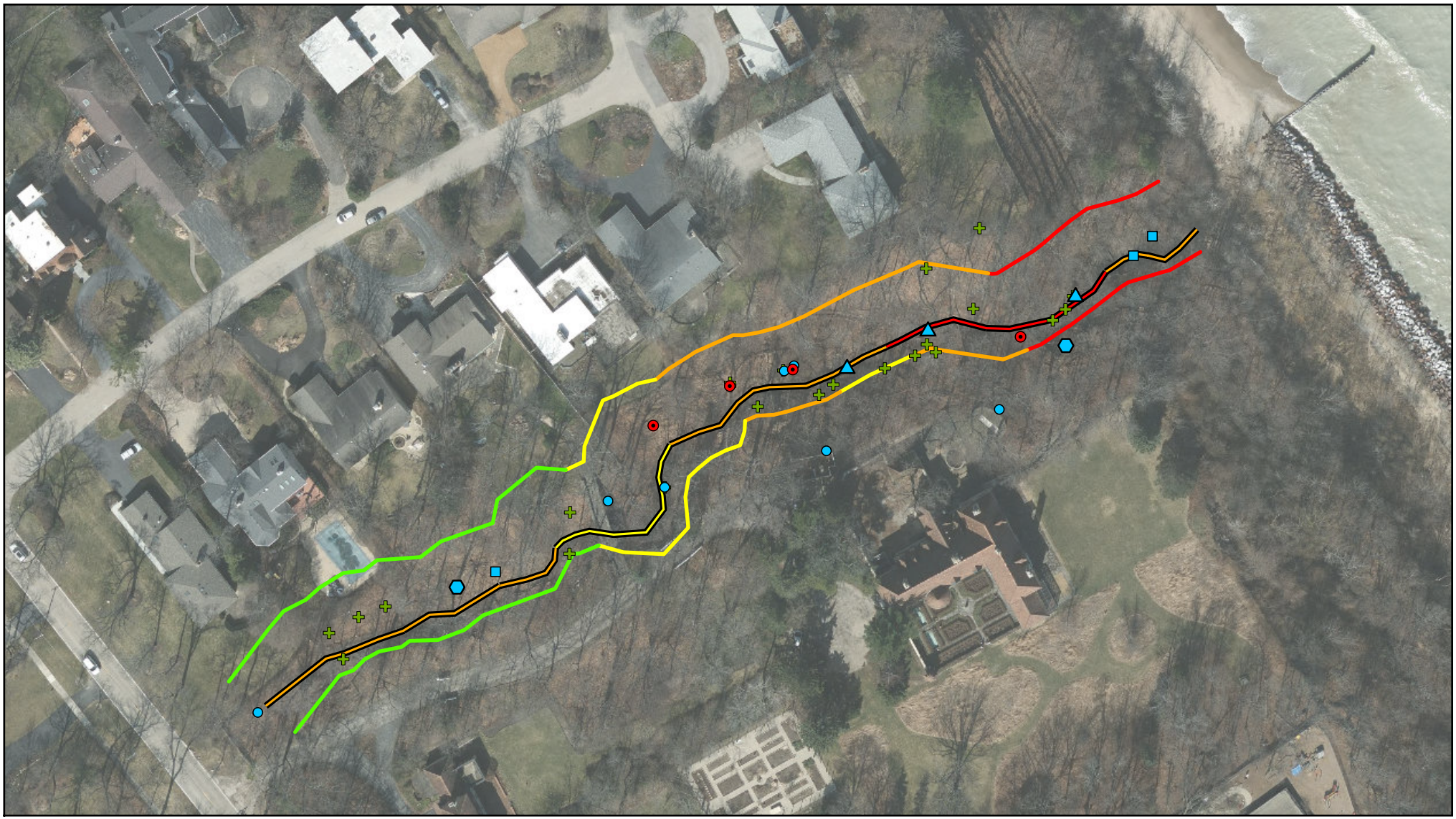
N W E S

Scale 1:3,600

0 75 150 300 Feet

Ravine 5C

Ranked 8 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

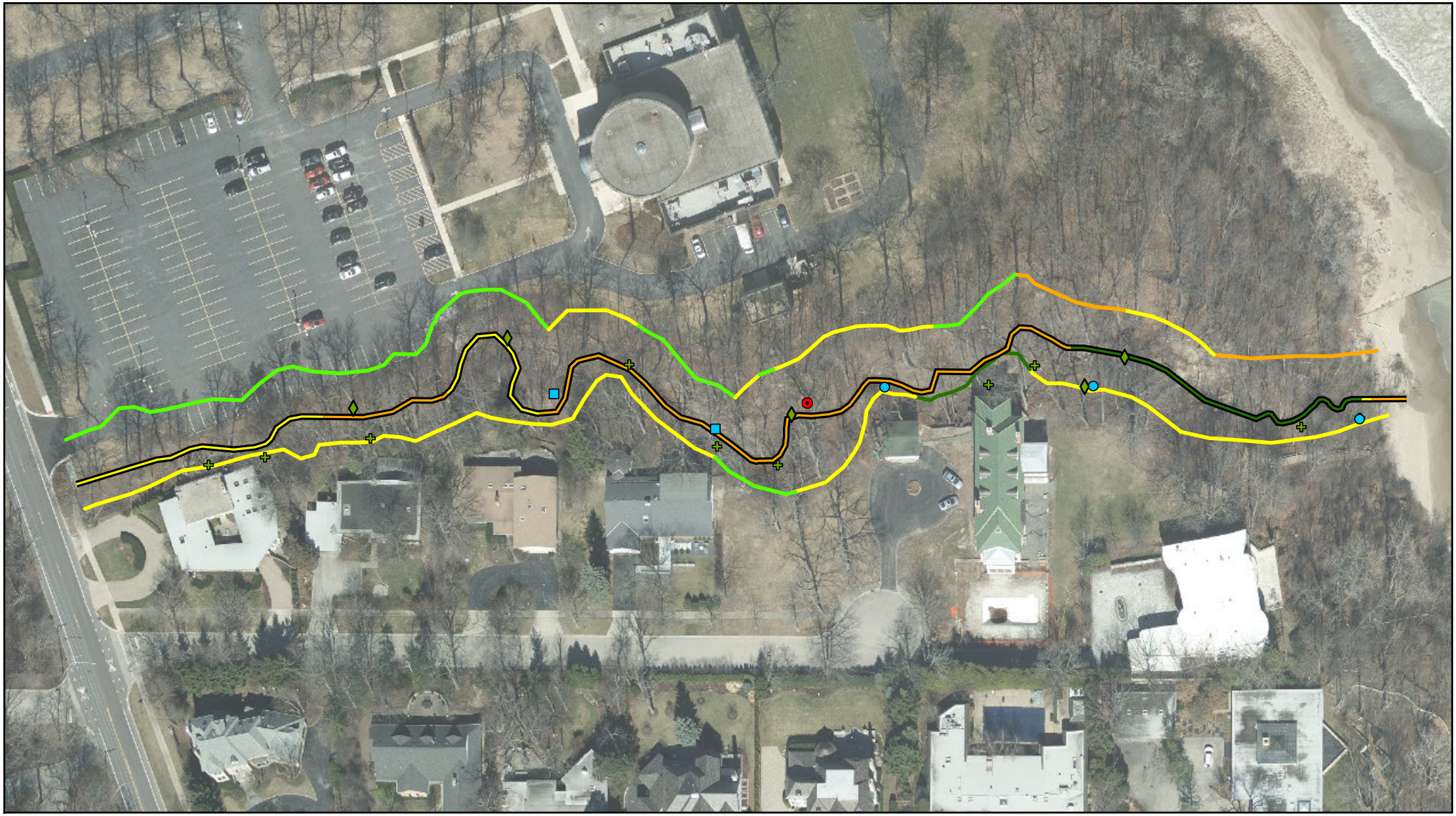
N W E S

Scale 1:1,200

0 25 50 100 Feet

Ravine 5L

Ranked 21 out of 53 for Erosion Potential



STORMWATER MANAGEMENT COMMISSION

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Legend

- Gullies
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

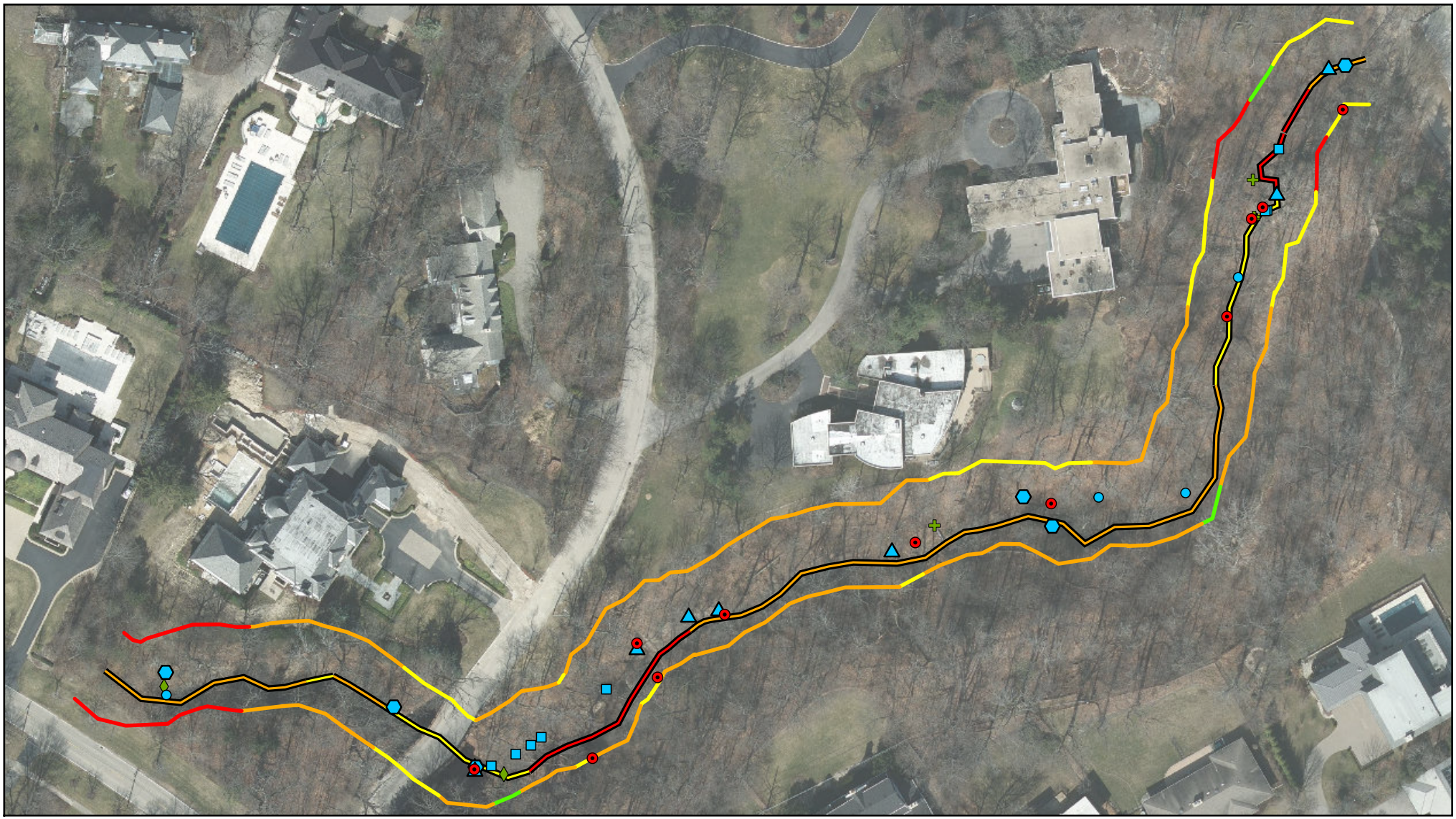
N W E S

Scale 1:1,200

0 25 50 100 Feet

Ravine 6C

Ranked 25 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

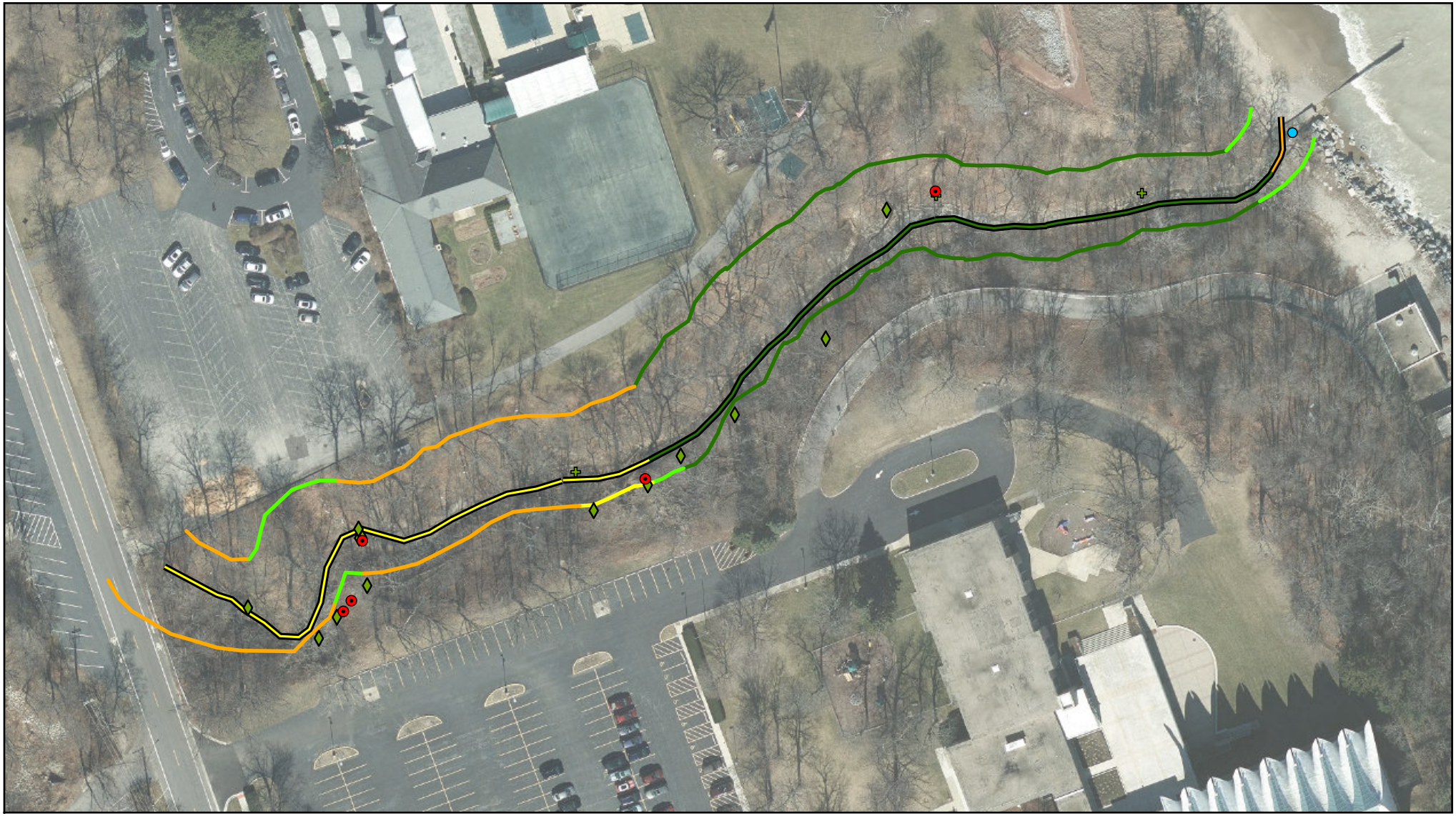
N W E S

Scale 1:1,200

0 25 50 100 Feet

Ravine 6L

Ranked 20 out of 53 for Erosion Potential



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Legend

- Gullies
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

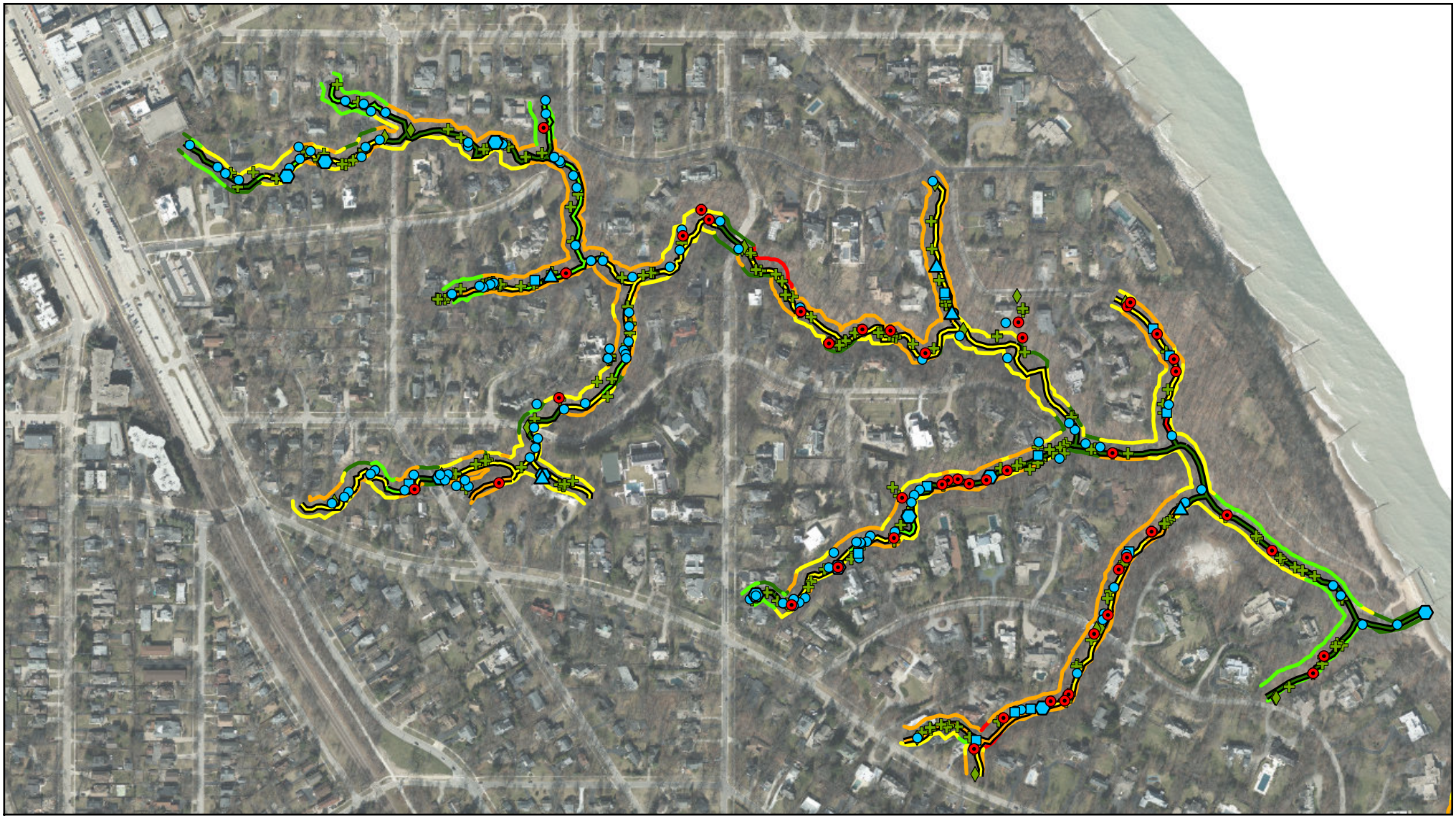
N W E S

Scale 1:1,080

0 45 90 Feet

Ravine 7C

Ranked 18 out of 53 for Erosion Potential



LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

N

W E

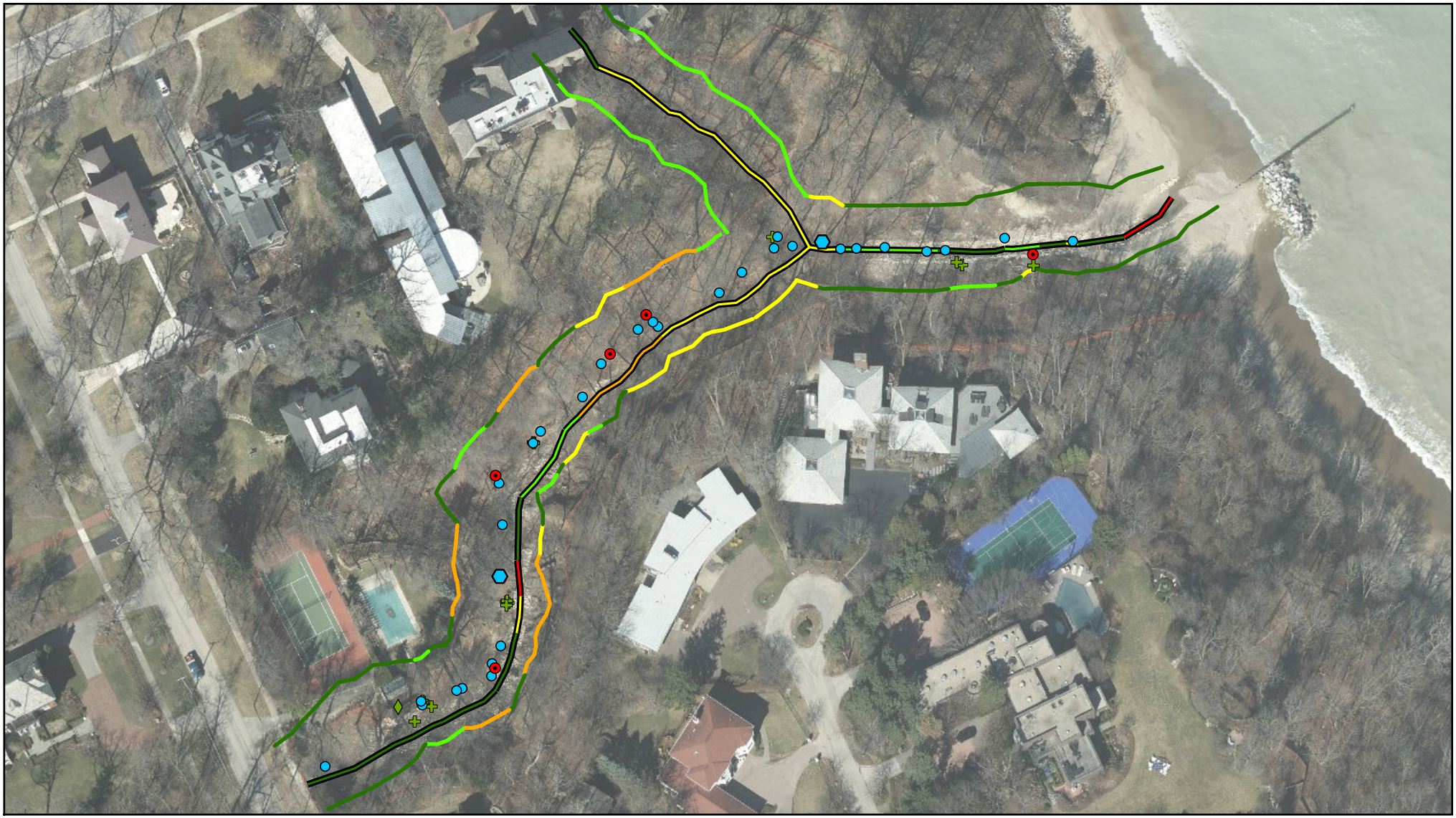
S

Scale 1:6,000

0 125 250 500 Feet

Ravine 7L

Ranked 3 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

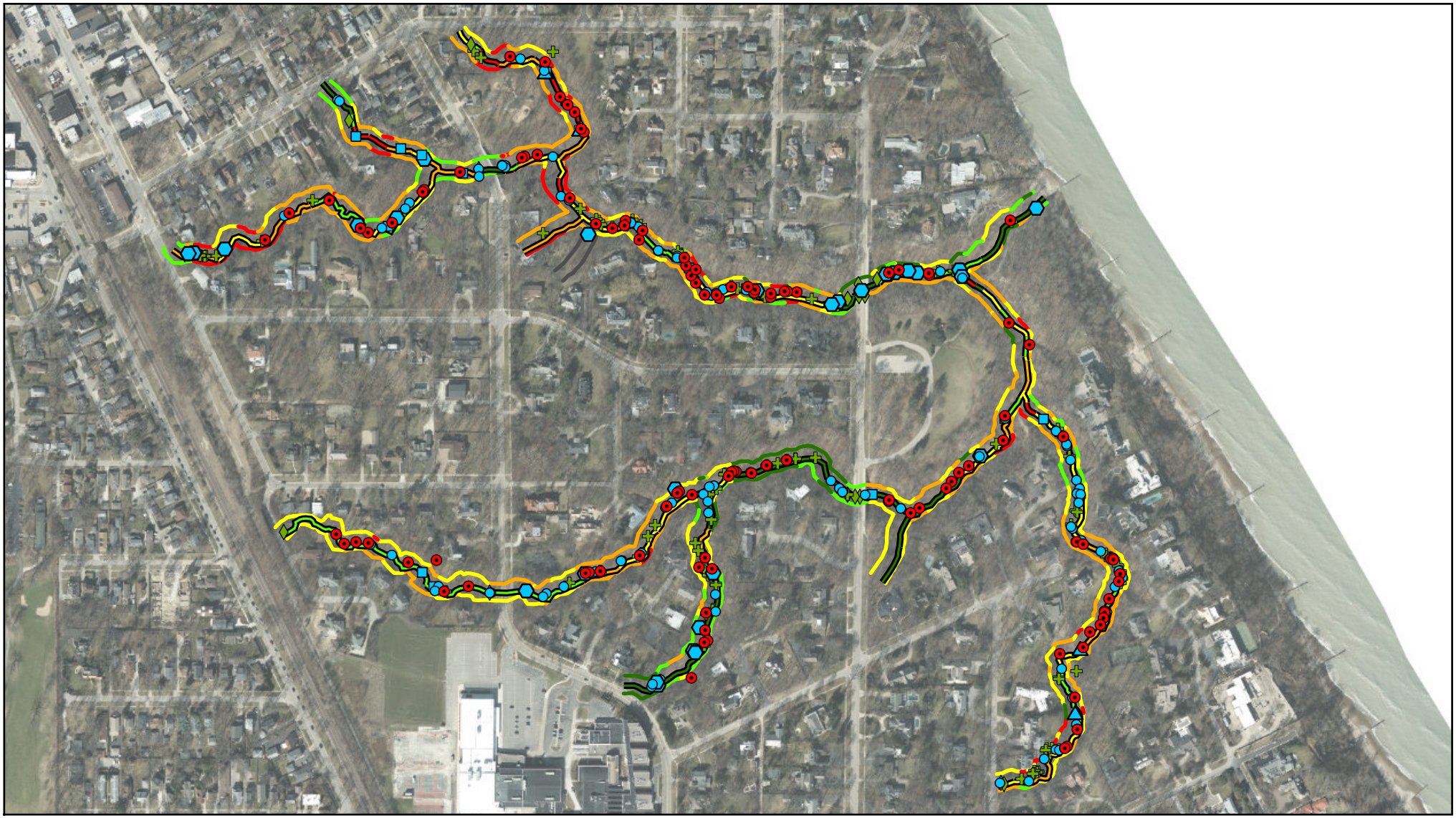
N W E S

Scale 1:1,200

0 25 50 100 Feet

Ravine 8L

Ranked 32 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

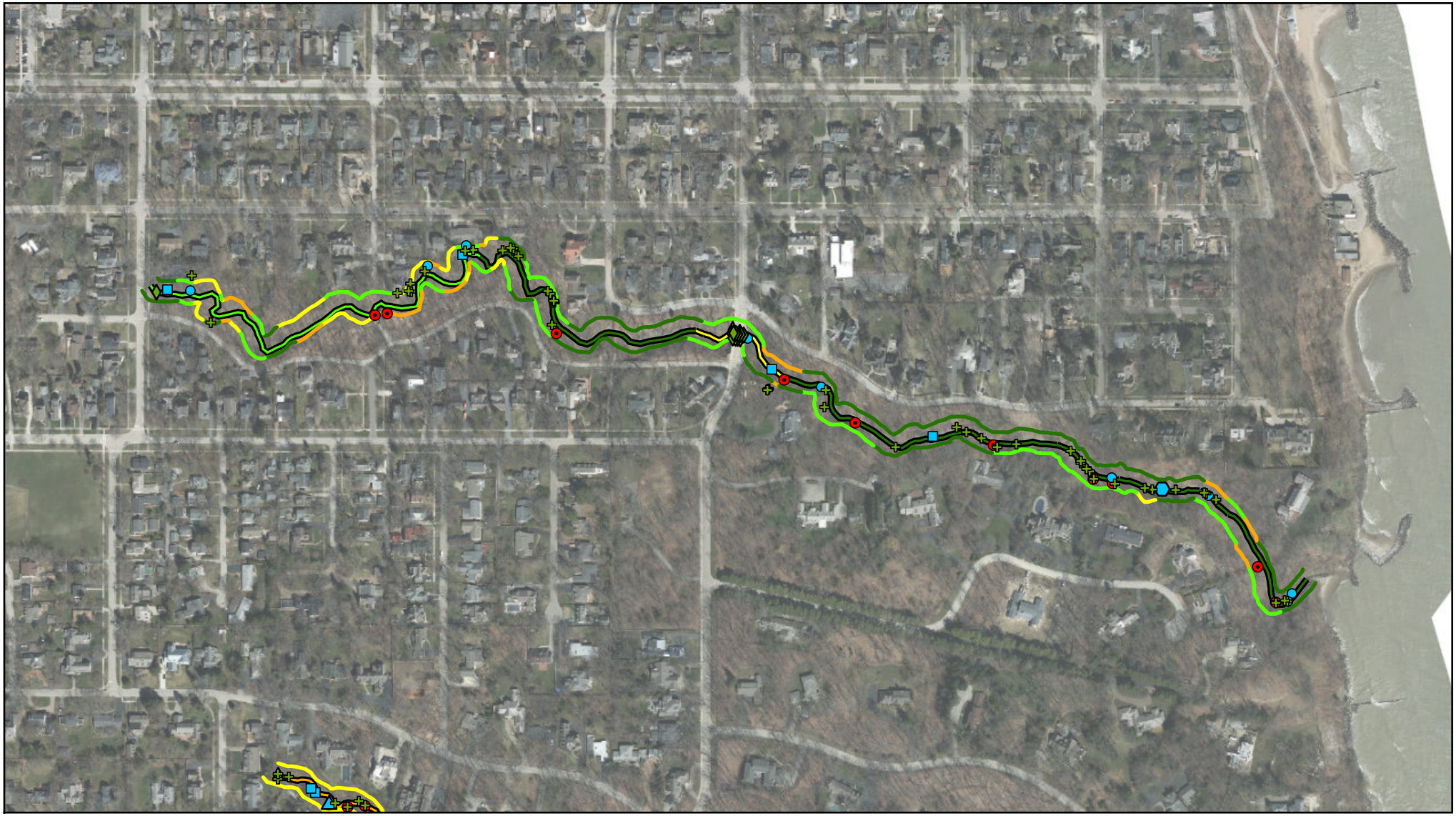
N W E S

Scale 1:6,000

0 125 250 500 Feet

Ravine 10L

Ranked 1 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

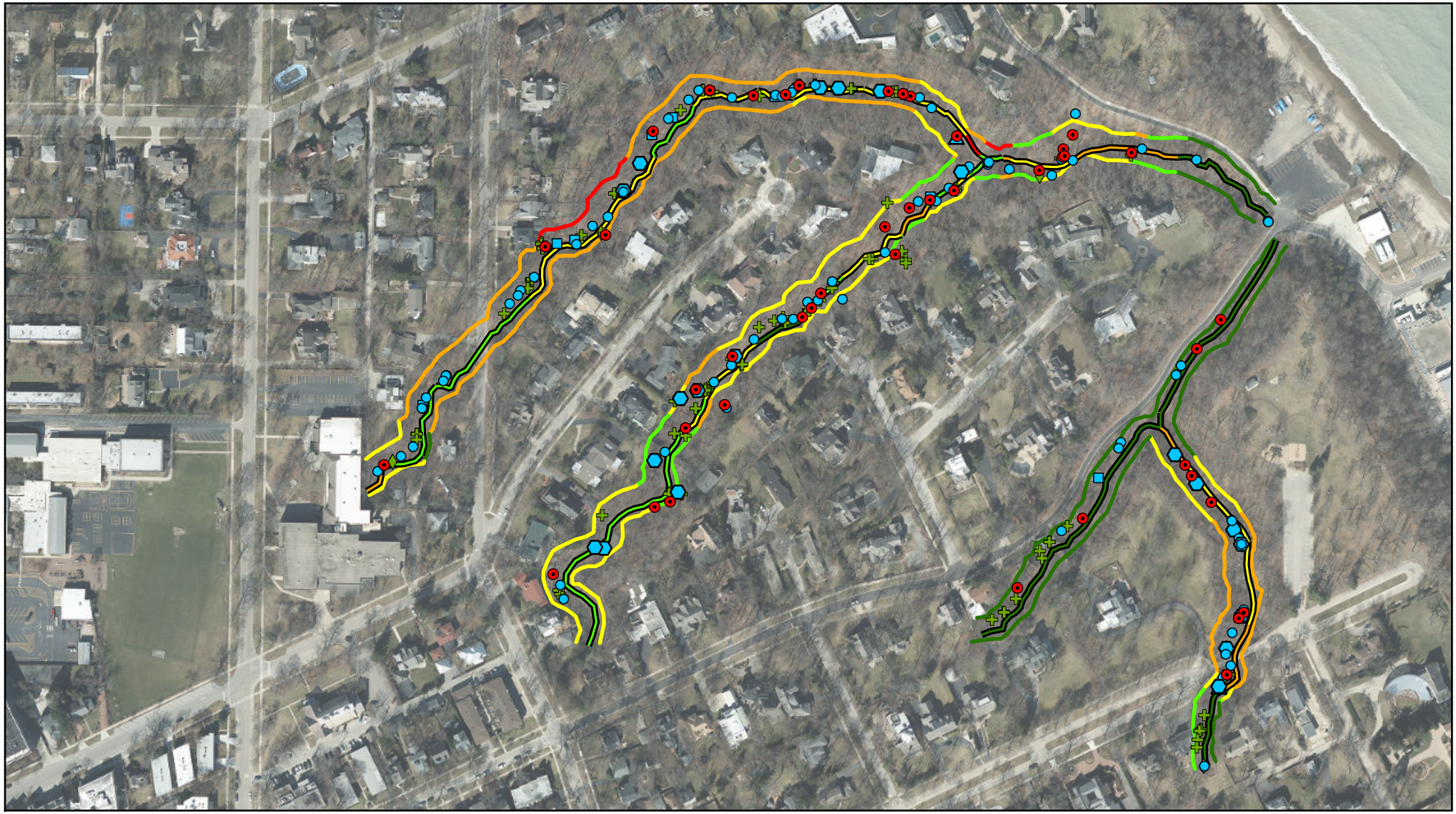
N W E S

Scale 1:4,800

0 100 200 400 Feet

Ravine Park Ravine

Ranked 19 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

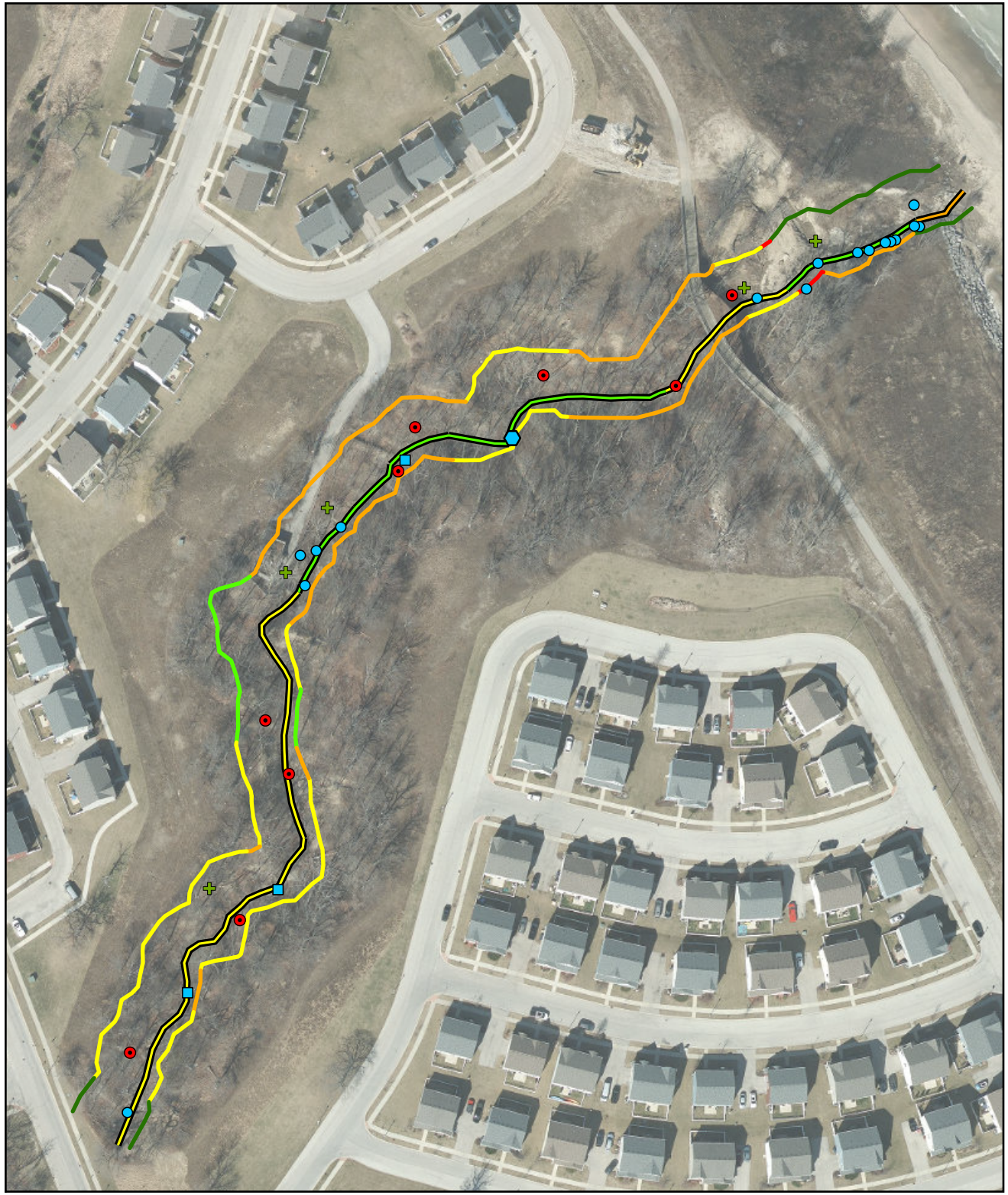
N W E S

Scale 1:3,600

0 50 100 200 300 Feet

Ravines 9L & 9L2

Ranked 14 out of 53
Ranked 23 out of 53
for Erosion Potential



Schenck Ravine

Ranked 48 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

Scale 1:1,800

0 25 50 100 150 Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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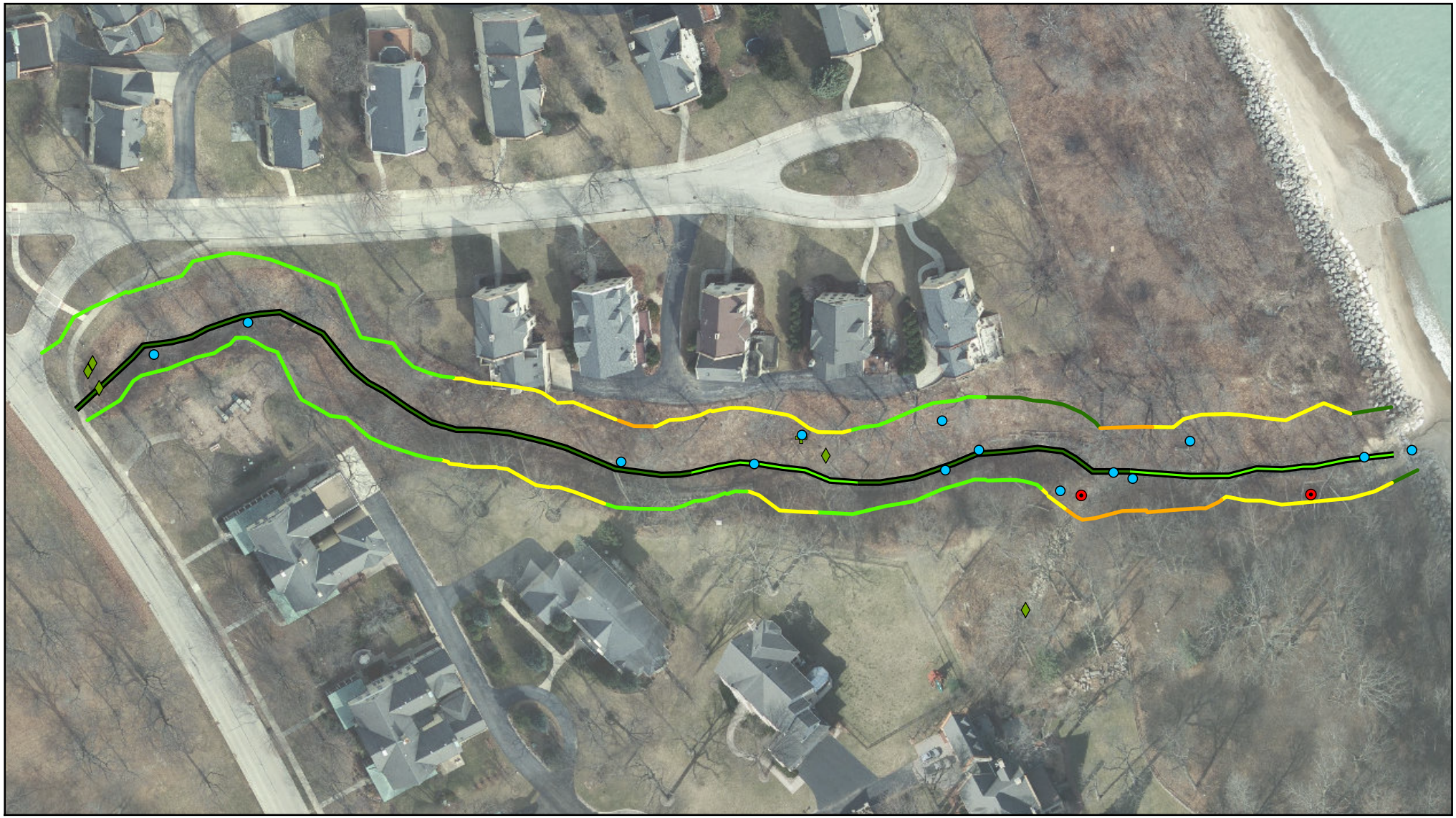

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank	Bank Stability Rank
1	Not Surveyed
2	1
3	2
4	3
5	4
	5

*sections with a rank of 1 are considered the worst

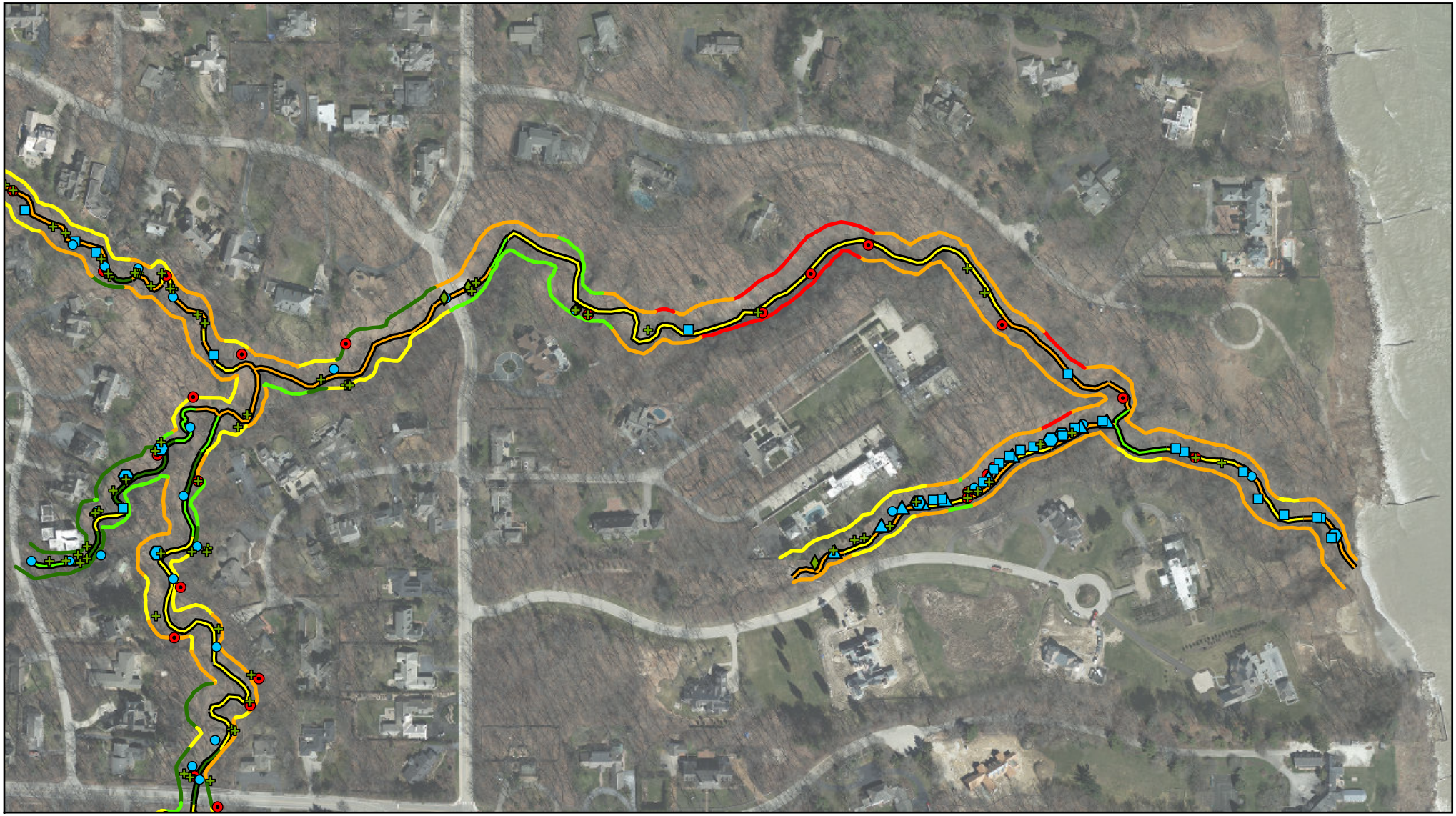
N
W E
S

Scale 1:1,200

0 25 50 100 Feet

Scott Loop Ravine

Ranked 42 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

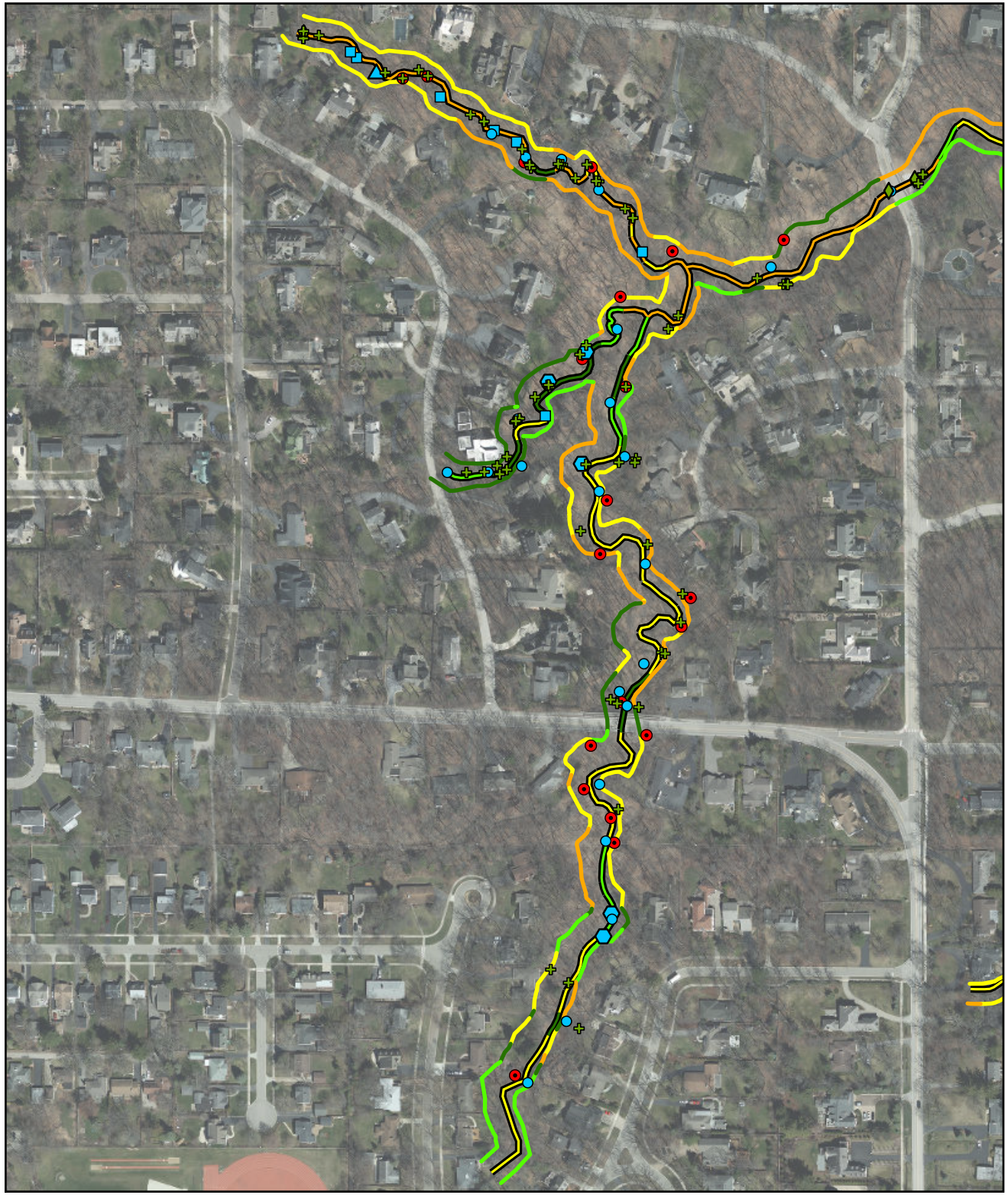
N W E S

Scale 1:3,600

0 75 150 300 Feet

South Ravine East Section

Ranked 7 out of 53 for Erosion Potential



South Ravine
West Section

Ranked 7 out of 53
for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

Scale: 1:3,600

0 75 150 300
Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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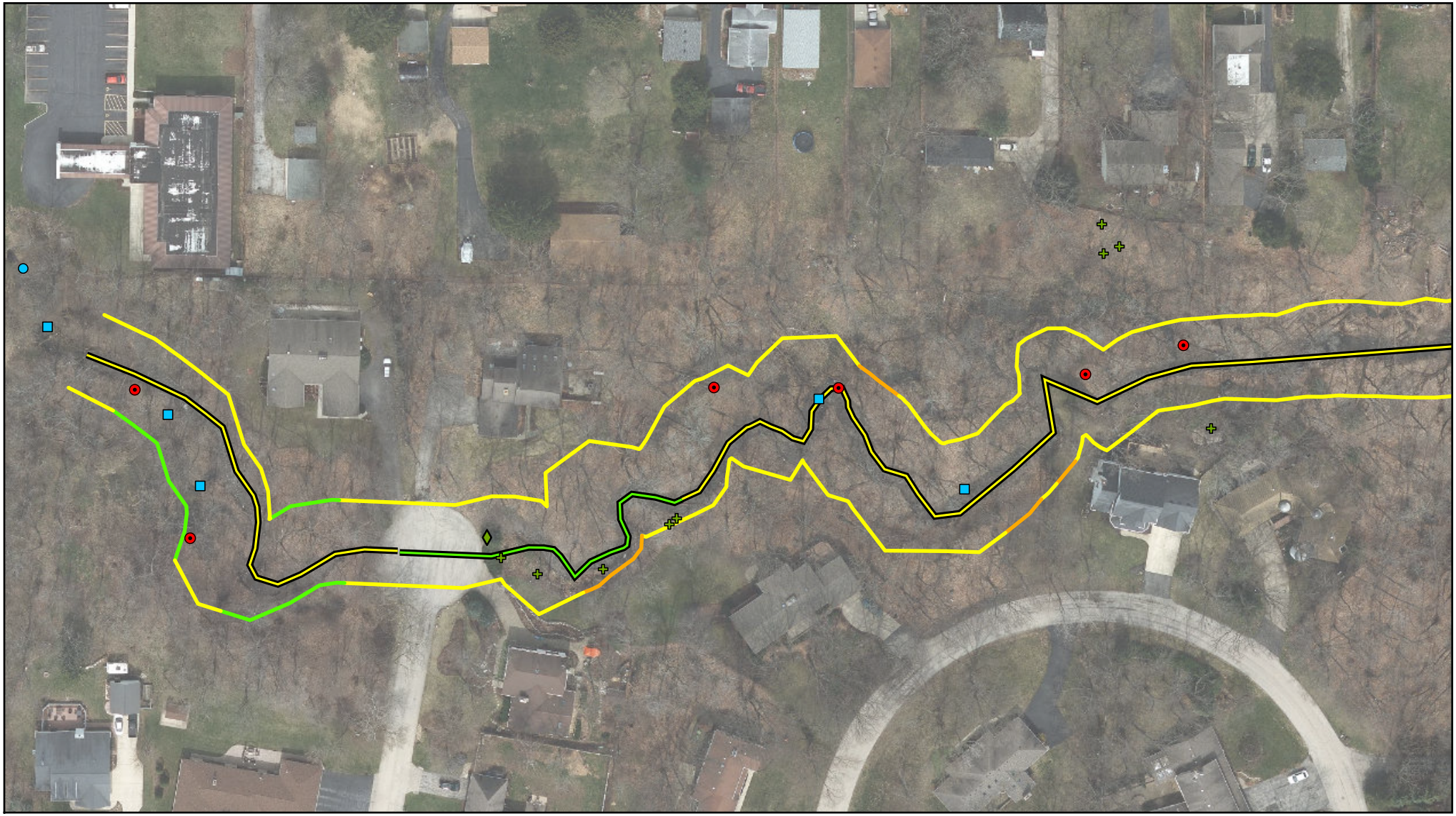

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

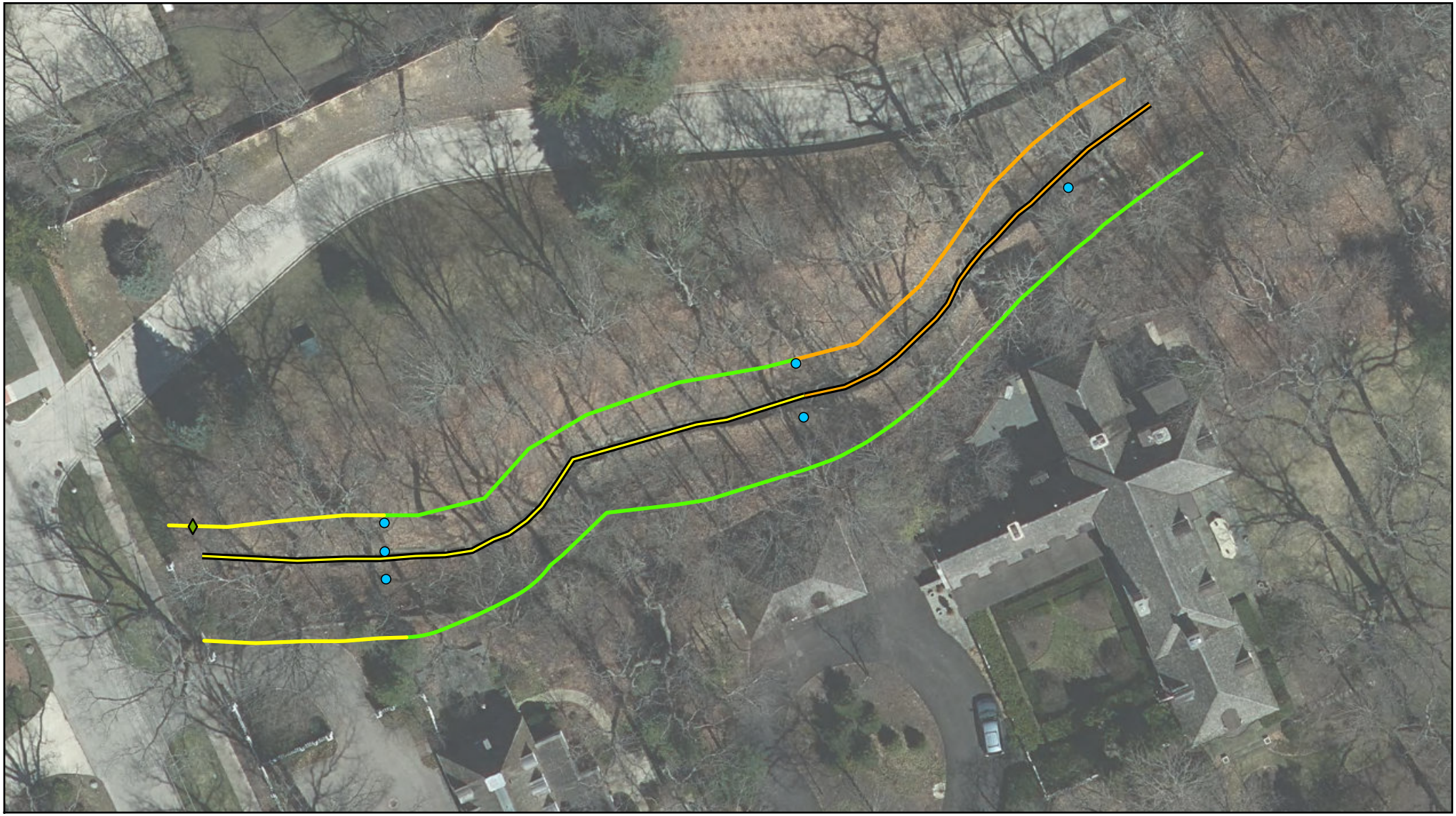
N W E S

Scale 1:1,200

0 25 50 100 Feet

Spring Bluff Ravine

Ranked 47 out of 53 for Erosion Potential



LAKE COUNTY

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank	Bank Stability Rank
1	Not surveyed
2	1
3	2
4	3
5	4
	5

*sections with a rank of 1 are considered the worst

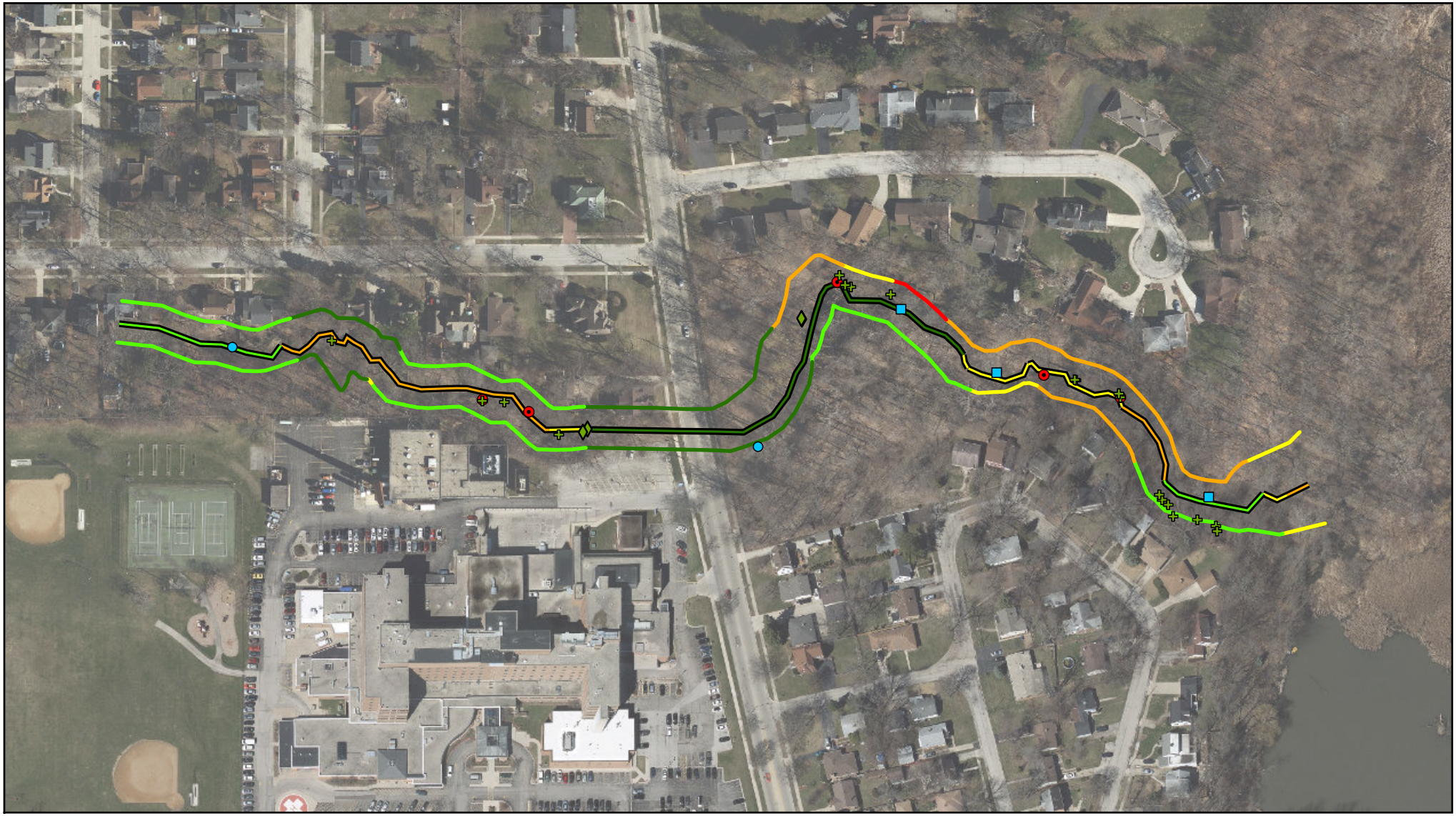
N
W E
S

Scale: 1:480

0 10 20 40 Feet

Spruce Avenue Ravine

Ranked 52 out of 53 for Erosion Potential



LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

N

W E

S

Scale 1:2,400

0 50 100 200 Feet

Stanley Ravine

Ranked 33 out of 53 for Erosion Potential

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

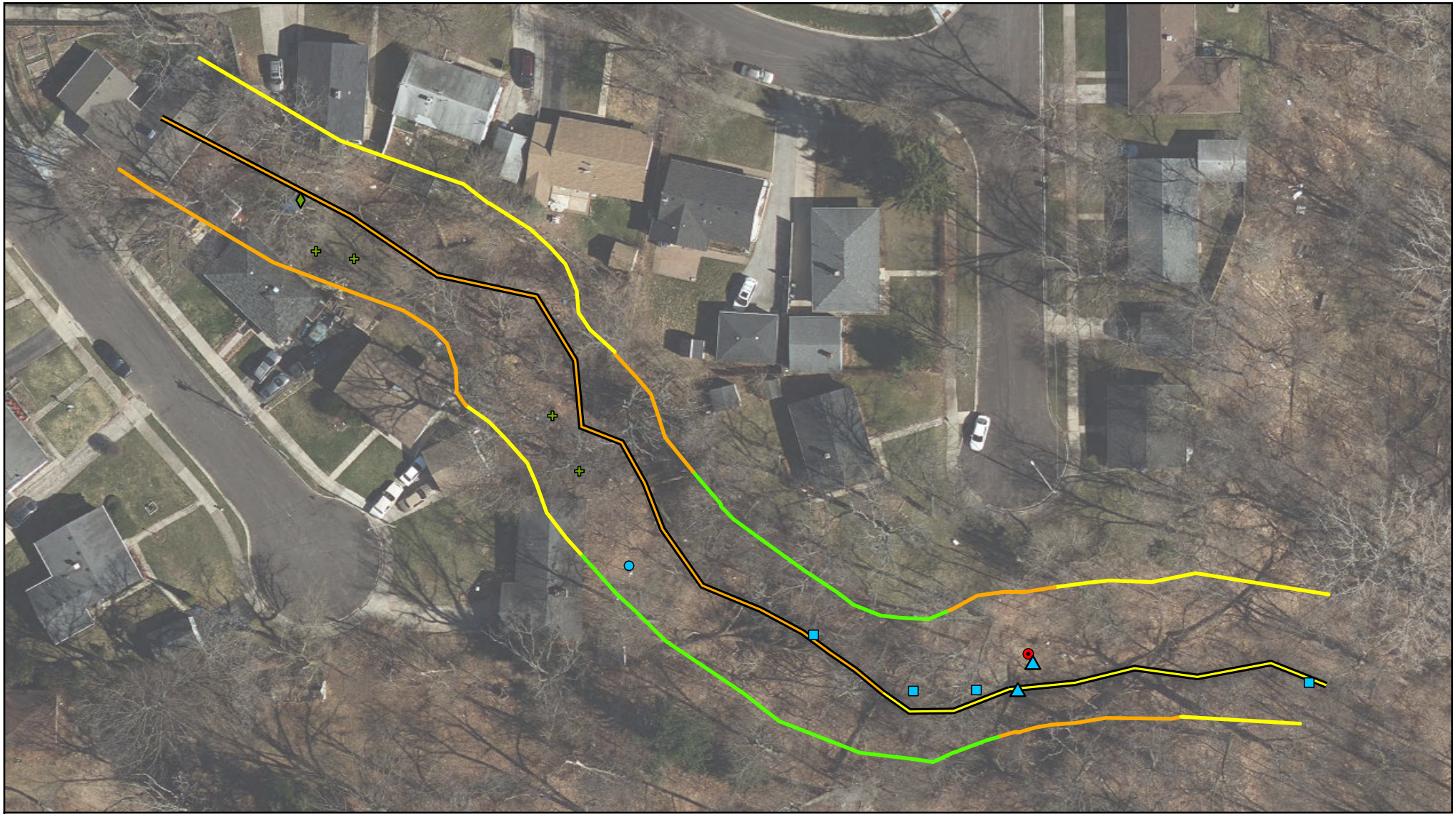
N W E S

Scale 1:2,400

0 50 100 200 Feet

Stone Gate Road Ravine

Ranked 35 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

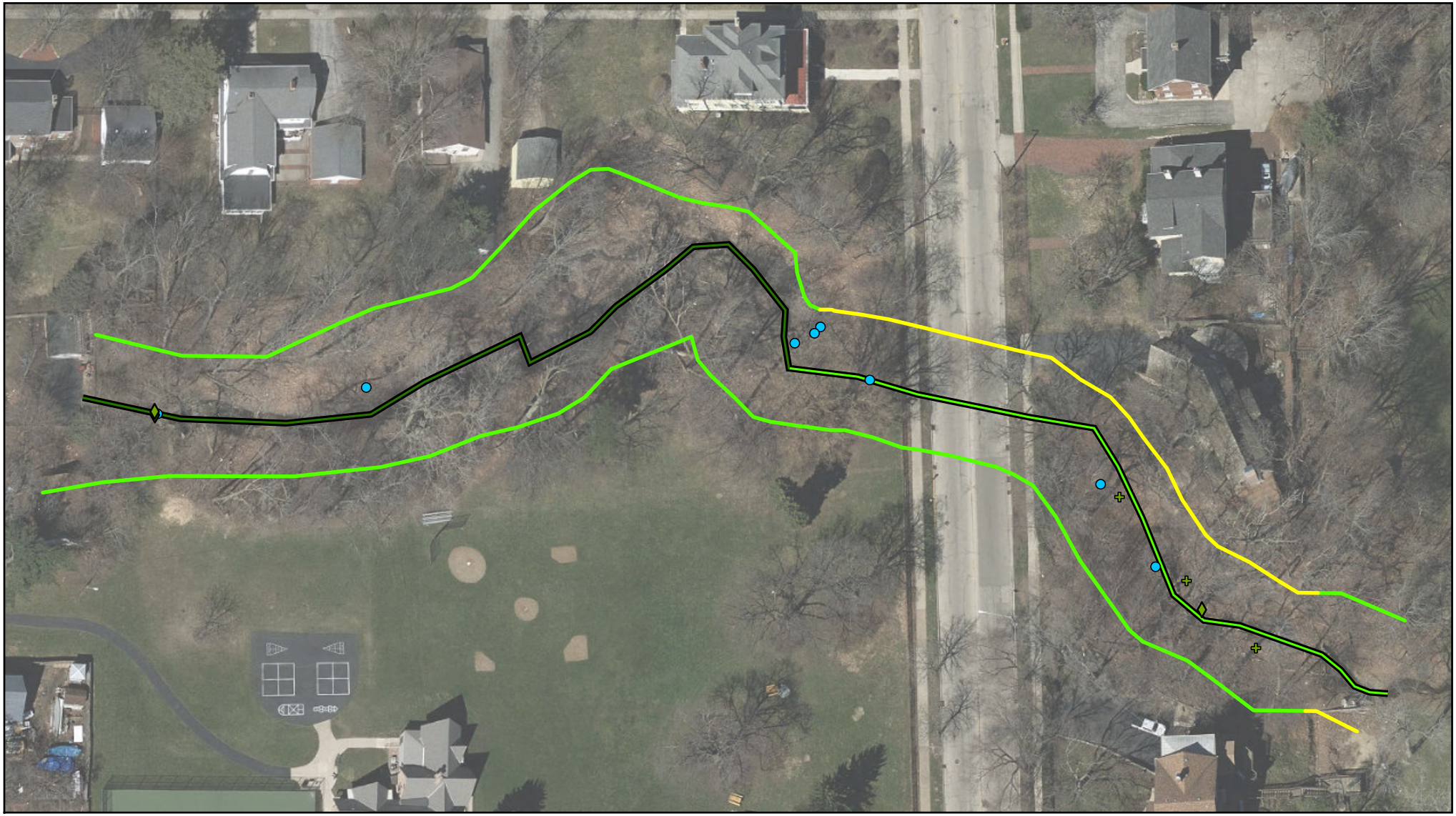
N W E S

Scale 1:720

0 15 30 60 Feet

Terrace & Harding Avenue Ravine

Ranked 38 out of 53 for Erosion Potential



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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

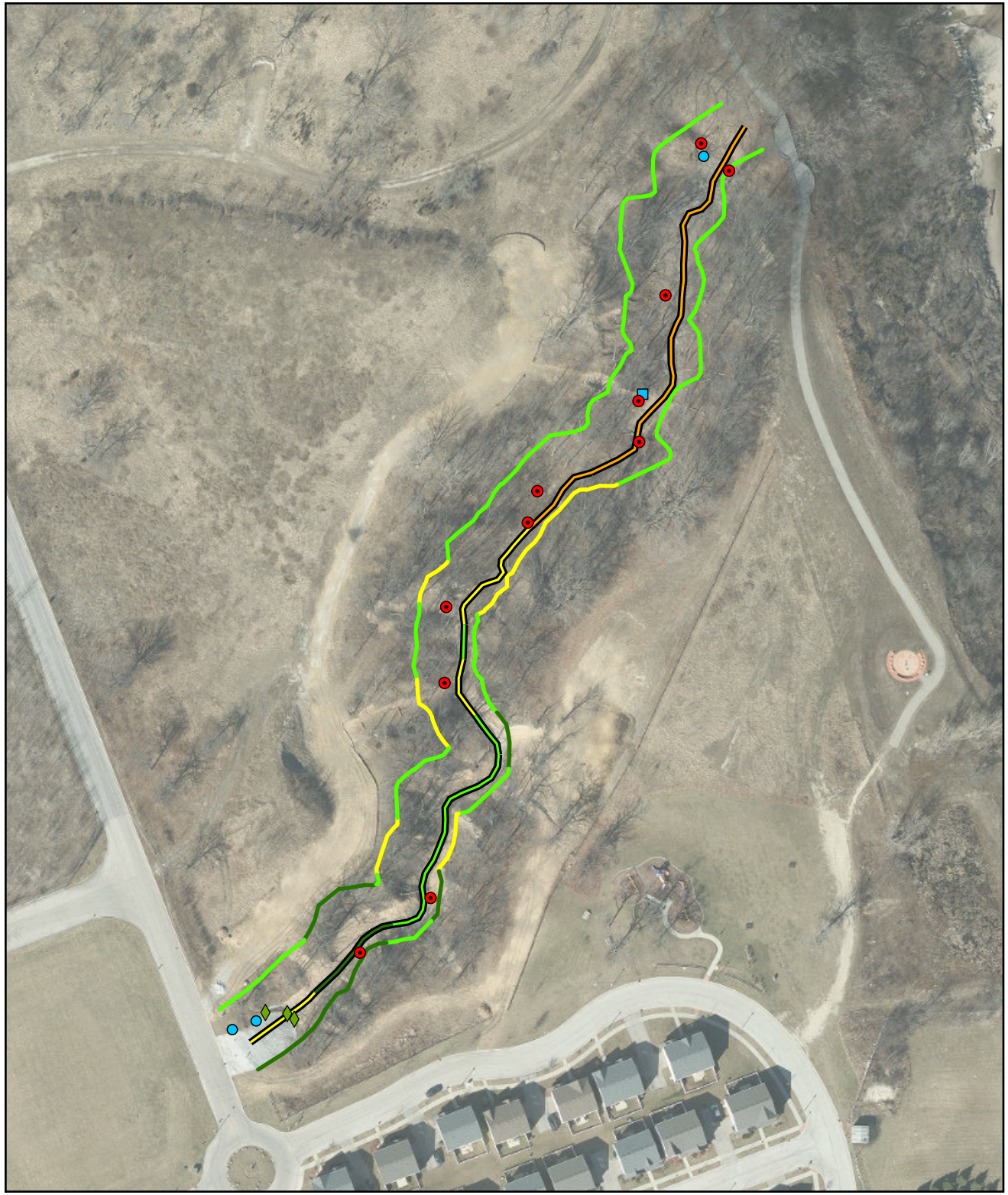
N W E S

Scale 1:840

0 510 20 30 40 50 60 70 Feet

Upton Park Ravine

Ranked 45 out of 53 for Erosion Potential



Van Horne Ravine

Ranked 51 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

Scale 1:1,800

0 25 50 100 150 Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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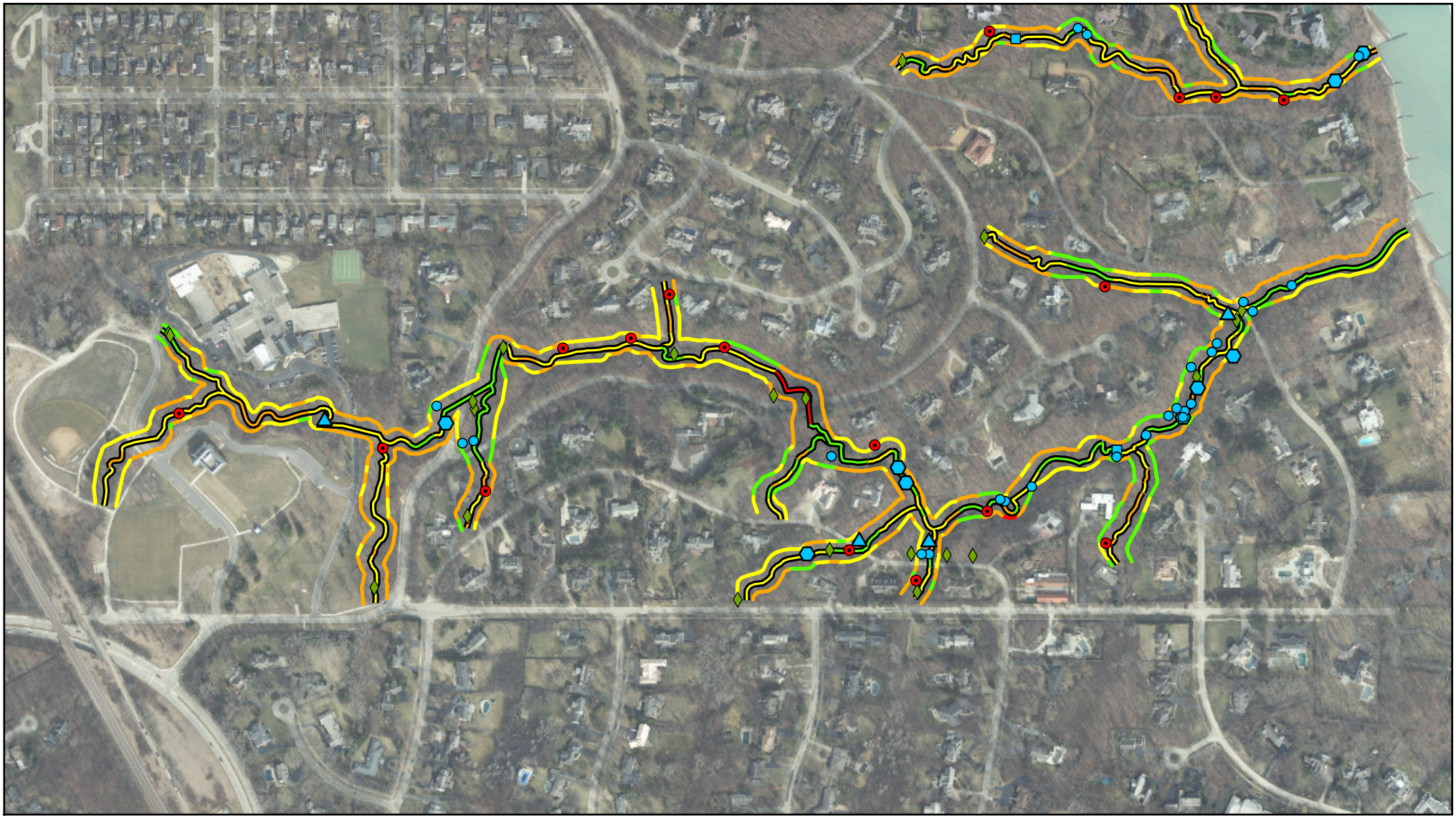

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Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

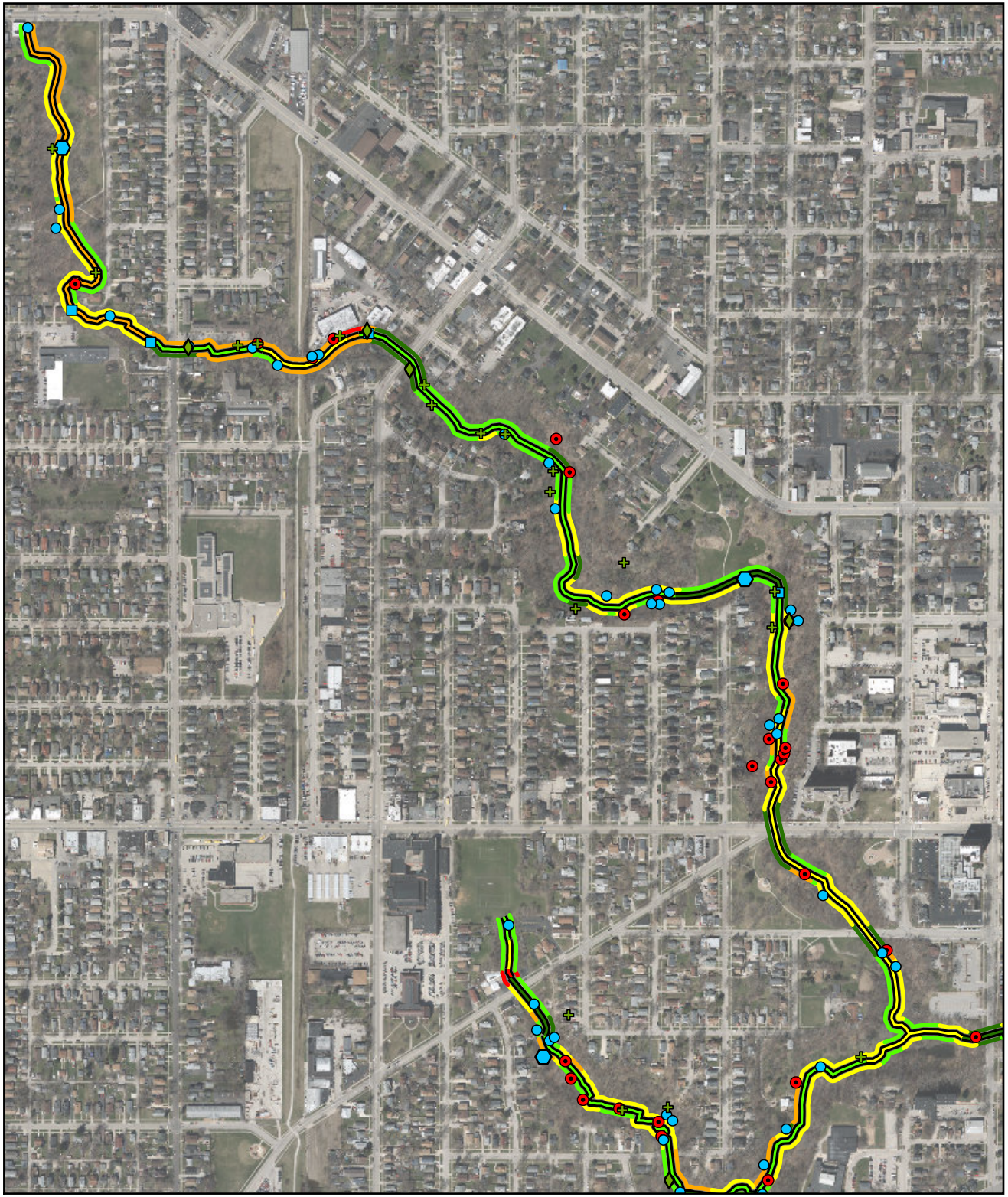
N W E S

Scale 1:6,000

0 125 250 500 Feet

Walden Ravine

Ranked 9 out of 53 for Erosion Potential



Waukegan River
North Section

Ranked 11 out of 53
for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

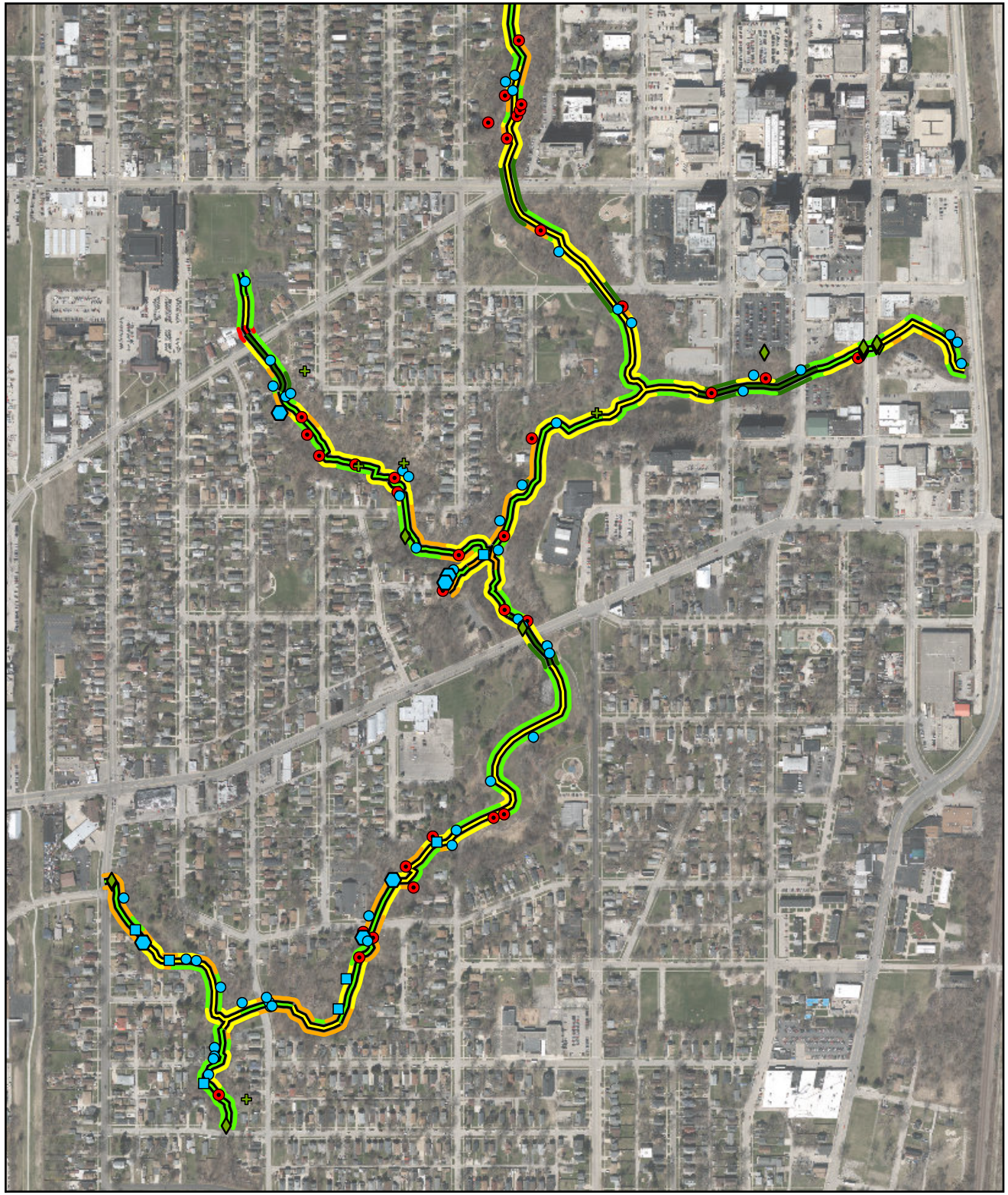
Scale: 1:8,400

0 175 350 700
Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

Lake County Stormwater Management Commission Courtesy Map 2019. This map is provided for general locational information only. Map features have been derived from various sources, each of which has its own scale and accuracy. The locations of all features are approximate. This map should not be used to determine building set-backs or as a basis for purchasing property. Field Surveys and delineations are required to verify the exact locations of property lines and other map features.



Waukegan River South Section

Ranked 11 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N
W E
S

Scale: 1:8,400

0 175 350 700
Feet

STORMWATER MANAGEMENT COMMISSION

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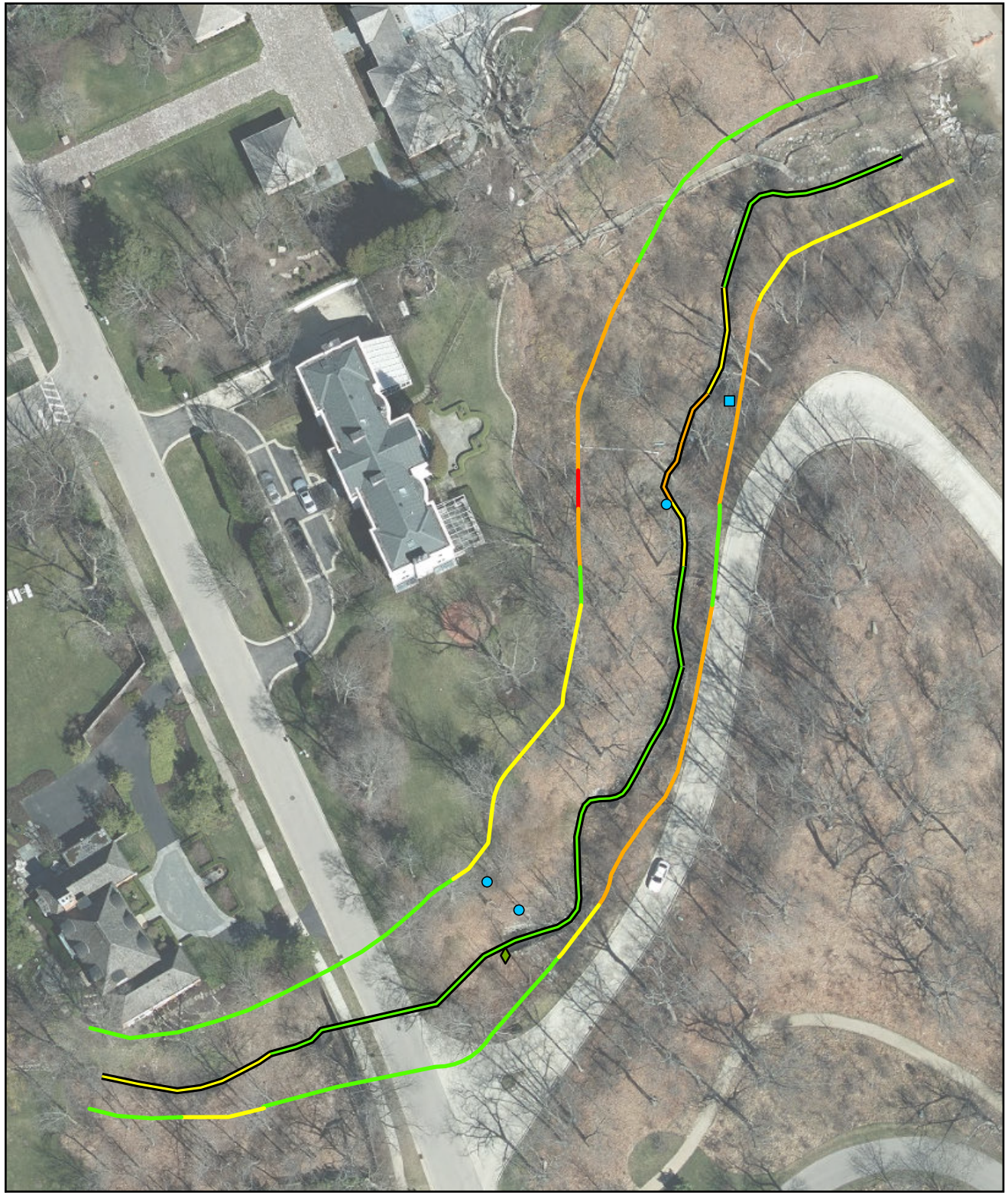

Westminster Road Ravine

Ranked 46 out of 53 for Erosion Potential

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

N W E S

Scale: 1:840

0 510 20 30 40 50 60 70 Feet

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

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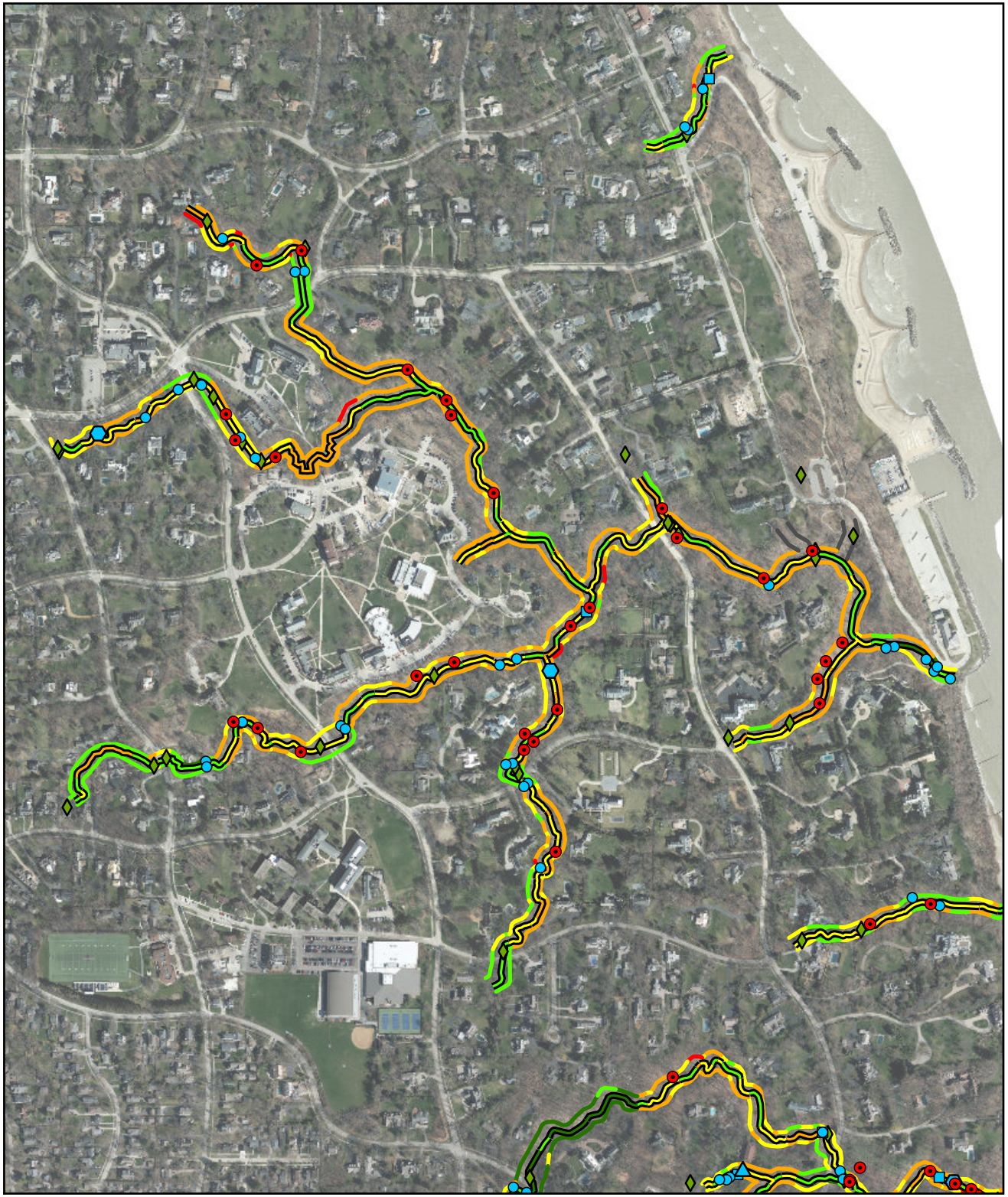


Witchhazel/Seminary Ravine

Ranked 6 out of 53 for Erosion Potential

Legend

- Gullies
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

Bank Stability Rank

- Not Surveyed
- 1
- 2
- 3
- 4
- 5

N
W E
S

Scale: 1:8,400

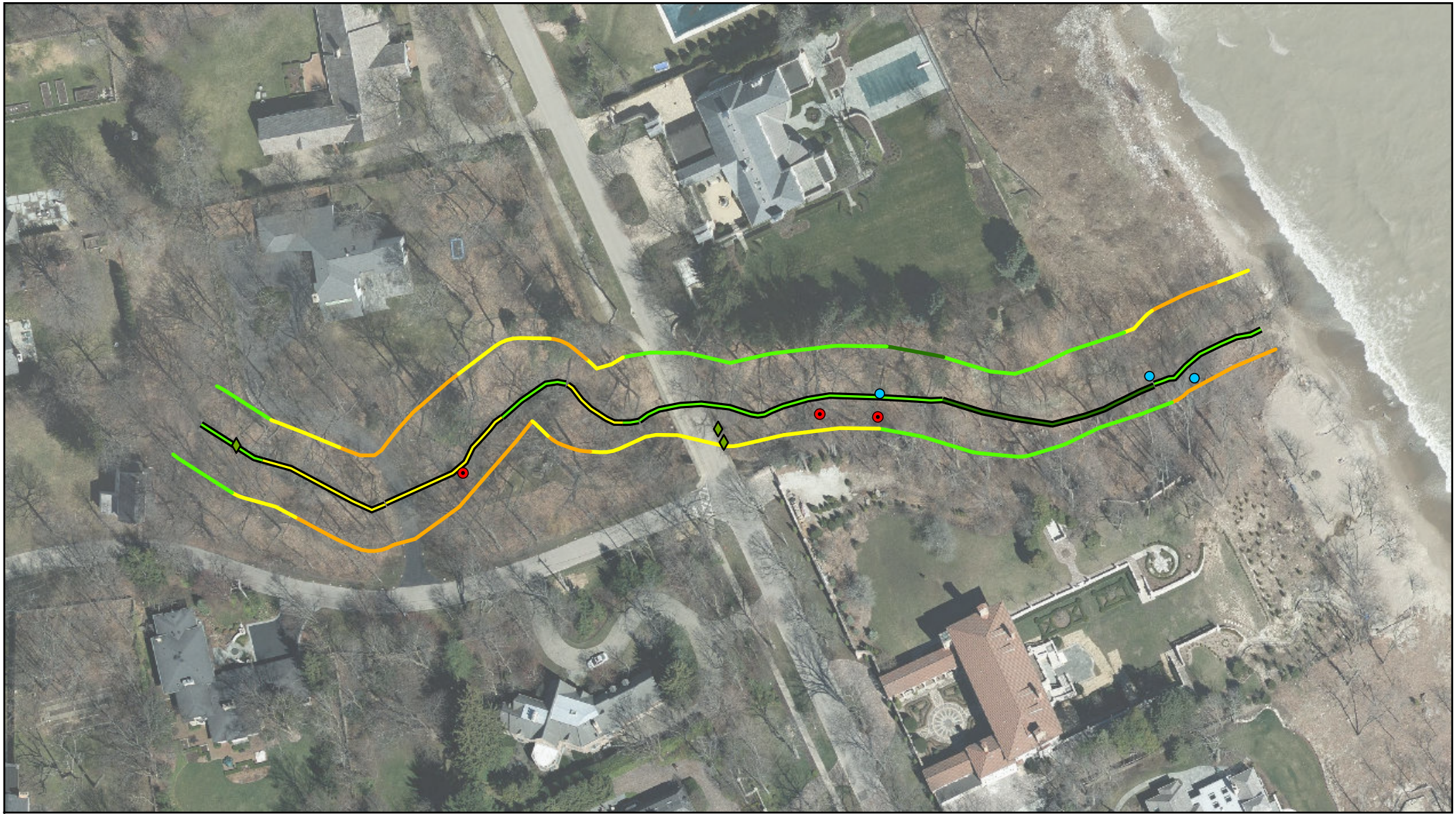
0 175 350 700
Feet

*sections with a rank of 1 are considered the worst

LAKE COUNTY

STORMWATER MANAGEMENT COMMISSION

Lake County Stormwater Management Commission Courtesy Map 2019. This map is provided for general locational information only. Map features have been derived from various sources, each of which has its own scale and accuracy. The locations of all features are approximate. This map should not be used to determine building set-backs or as a basis for purchasing property. Field Surveys and delineations are required to verify the exact locations of property lines and other map features.



STORMWATER MANAGEMENT COMMISSION

Lake County Stormwater Management Commission Courtesy Map 2019. This map is provided for general locational information only. Map features have been derived from various sources, each of which has its own scale and accuracy. The locations of all features are approximate. This map should not be used to determine building set-backs or as a basis for purchasing property. Field Surveys and delineations are required to verify the exact locations of property lines and other map features.

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

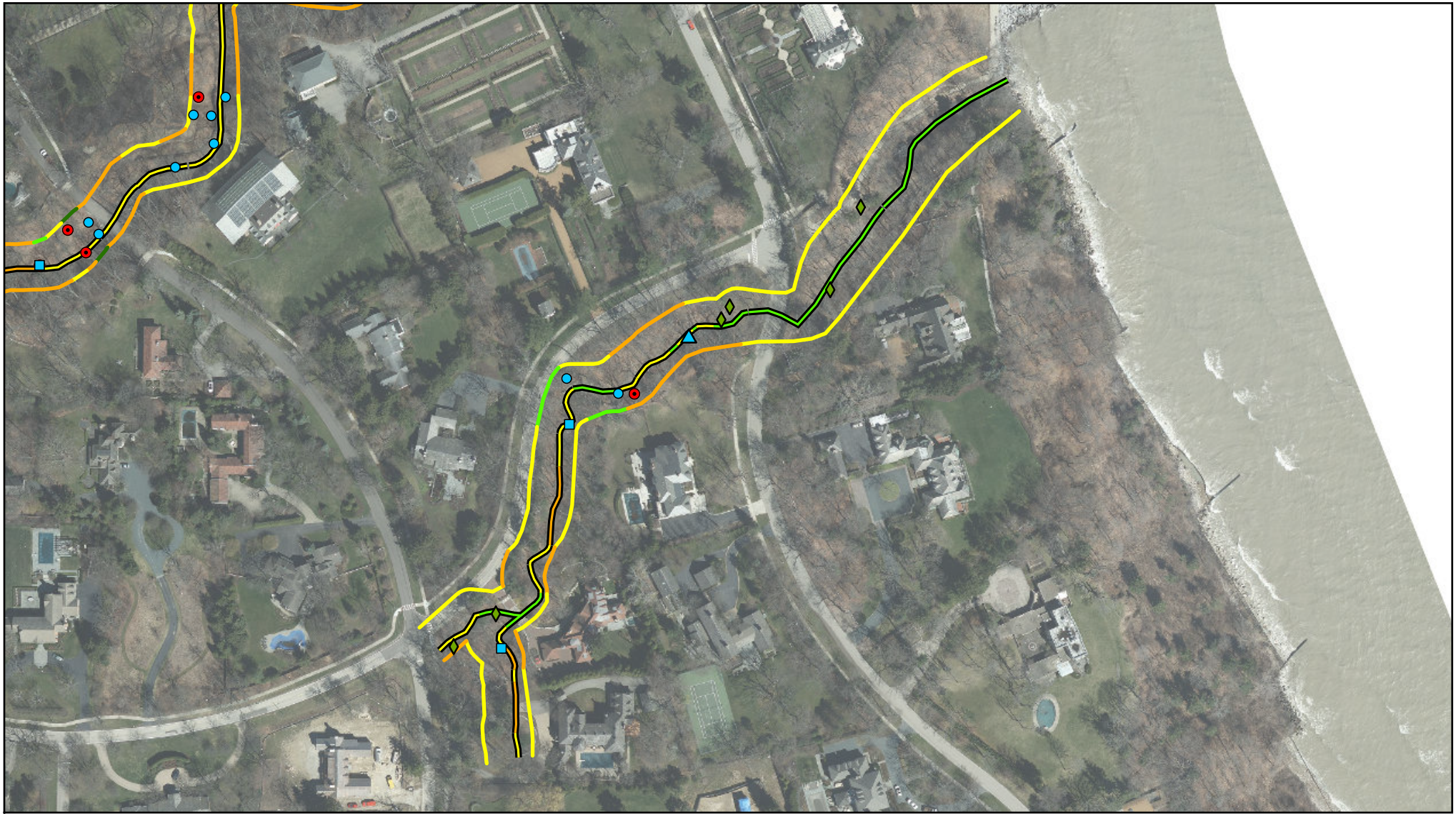
N W E S

Scale 1:1,200

0 25 50 100 Feet

Woodbine Lane Ravine

Ranked 44 out of 53 for Erosion Potential



STORMWATER MANAGEMENT COMMISSION

Lake County Stormwater Management Commission Courtesy Map 2019. This map is provided for general locational information only. Map features have been derived from various sources, each of which has its own scale and accuracy. The locations of all features are approximate. This map should not be used to determine building set-backs or as a basis for purchasing property. Field Surveys and delineations are required to verify the exact locations of property lines and other map features.

Legend

- Gully
- Existing Project
- Failing Structure
- Log Jam
- Natural Knick Point
- Residential
- Municipal Stormwater

Channel Stability Rank

- 1
- 2
- 3
- 4
- 5

*sections with a rank of 1 are considered the worst

Bank Stability Rank

- Not surveyed
- 1
- 2
- 3
- 4
- 5

N W E S

Scale 1:2,400

0 50 100 200 Feet

Woodland Road Ravine

Ranked 43 out of 53 for Erosion Potential

APPENDIX D:
DETENTION BASIN INVENTORY

Jurisdiction	Basin ID	Latitude	Longitude	Preliminary Retrofit Opportunities	Subwatershed	Post WDO?	Basin Type
Beach Park	20-1072	42.420210	-87.833927	-	Dead River	Y	Wet
Beach Park	20-0072	42.418264	-87.833551	-	Dead River	Y	Wet
Beach Park	20-8009	42.434010	-87.857409	Implement sediment control measure in unvegetated area that drains to the basin.	Dead River	Y	Wetland
Beach Park	20-8011	42.445962	-87.860596	1. Stabilize side slopes. 2. Remove sediment and debris from inlet.	Dead River	Y	Wetland
Beach Park	20-0070	42.419442	-87.850988	Repair the outlet and restrictor.	Dead River	Y	Dry
Beach Park	20-0071	42.419794	-87.838752	-	Dead River	Y	Dry
Beach Park	20-0074	42.408705	-87.839399	-	Dead River	Y	Wet
Beach Park	20-0075	42.419759	-87.840232	-	Dead River	Y	Dry
Beach Park	20-0123	42.429170	-87.836835	-	Dead River	Y	Dry
Beach Park	20-8014	42.419902	-87.851151	-	Dead River	Y	Dry
Beach Park	19-0193	42.453352	-87.875134	-	Kellogg Creek	Y	Dry
Beach Park	19-8027	42.451088	-87.874641	-	Kellogg Creek	Y	Wetland
Beach Park	21-8026	42.402193	-87.871087	-	Waukegan River	Y	Wetland
Highland Park	23-8005	42.194723	-87.804380	Repair inlet	Bluff/Ravine	Y	Wetland
Highwood	23-8004	42.215997	-87.819816	Inventory detention basin	Bluff/Ravine	Y	Wetland
Lake Bluff	23-8001	42.270292	-87.832065	-	Bluff/Ravine	Y	Wetland
Lake Bluff	23-8006	42.272255	-87.848328	-	Bluff/Ravine	Y	Dry
Lake Forest	23-8000	42.265841	-87.840112	-	Bluff/Ravine	Y	Wetland
Lake Forest	23-8002	42.238323	-87.836170	Stabilize side slope erosion	Bluff/Ravine	Y	Wetland
Lake Forest	23-8003	42.238087	-87.836155	-	Bluff/Ravine	Y	Wetland
North Chicago	21-8004	42.299739	-87.857640	-	Pettibone Creek	Y	Wet
North Chicago	21-8005	42.299927	-87.856659	Add riprap around parking lot inlet to reduce erosion.	Pettibone Creek	Y	Wetland
North Chicago	21-8006	42.300306	-87.853972	Inventory detention basin	Pettibone Creek	Y	Dry
North Chicago	21-8007	42.303628	-87.857294	Stabilize shoreline erosion.	Pettibone Creek	N	Wet
North Chicago	21-8009	42.320651	-87.845617	-	Pettibone Creek	Y	Wetland
North Chicago	21-8010	42.328603	-87.862284	-	Pettibone Creek	Y	Wetland
North Chicago	21-8011	42.328654	-87.861278	-	Pettibone Creek	Y	Wetland
North Chicago	21-8012	42.328690	-87.860421	-	Pettibone Creek	Y	Wetland
North Chicago	21-8013	42.326139	-87.864186	-	Pettibone Creek	Y	Wetland
North Chicago	21-8021	42.310588	-87.847481	Inventory detention basin	Pettibone Creek	Y	Wetland
North Chicago	21-8023	42.300743	-87.860695	-	Pettibone Creek	Y	Wet
North Chicago	21-8024	42.308222	-87.845533	Inventory detention basin	Pettibone Creek	N	Wetland
North Chicago	21-8025	42.317918	-87.863102	-	Pettibone Creek	Y	Dry
North Chicago	21-8029	42.302938	-87.860724	-	Pettibone Creek	Y	Dry
North Chicago	21-0001	42.333379	-87.856212	-	Waukegan River	N	Wetland
North Chicago	21-8022	42.332255	-87.857902	-	Waukegan River	Y	Wetland
North Chicago	21-8028	42.333804	-87.857215	-	Waukegan River	Y	Wetland

Jurisdiction	Basin ID	Latitude	Longitude	Preliminary Retrofit Opportunities	Subwatershed	Post WDO?	Basin Type
Pleasant Prairie	19-8001	42.500020	-87.845511	Inventory detention basin	Kellogg Creek	NA	Wet
Pleasant Prairie	19-8002	42.498557	-87.858888	Inventory detention basin	Kellogg Creek	NA	Wetland
Pleasant Prairie	19-8009	42.503968	-87.835073	Inventory detention basin	Kellogg Creek	NA	Wetland
Pleasant Prairie	19-8010	42.498280	-87.845365	Inventory detention basin	Kellogg Creek	NA	Dry
Waukegan	20-8005	42.420383	-87.854160	1. Stabilize shoreline and side slope erosion. 2. Remove sediment from outlet.	Dead River	Y	Wetland
Waukegan	20-8010	42.424903	-87.857924	Stabilize swale inlet and side slopes.	Dead River	N	Dry
Waukegan	20-0201	42.417140	-87.855925	-	Dead River	Y	Wetland
Waukegan	20-0190	42.398474	-87.831310	-	Dead River	Y	Wetland
Waukegan	20-0574	42.397707	-87.829569	-	Dead River	Y	Wet
Waukegan	21-0002	42.334873	-87.862578	-	Waukegan River	Y	Wetland
Waukegan	21-0004	42.351803	-87.865970	1. Repair damaged inlet. 2. Unclog all inlets/outlets.	Waukegan River	N	Wetland
Waukegan	21-0005	42.352516	-87.867127	-	Waukegan River	Y	Dry
Waukegan	21-0006	42.355486	-87.867317	-	Waukegan River	Y	Wetland
Waukegan	21-0007	42.357276	-87.867740	Stabilize and repair damaged inlet.	Waukegan River	N	Wetland
Waukegan	21-0009	42.360475	-87.867808	Inventory detention basin	Waukegan River	N	Wetland
Waukegan	21-0010	42.372070	-87.872921	-	Waukegan River	Y	Wetland
Waukegan	21-8001	42.371663	-87.873356	-	Waukegan River	Y	Wetland
Waukegan	21-0011	42.374263	-87.875259	Stabilize and repair damaged inlet.	Waukegan River	N	Wet
Waukegan	21-0012	42.375015	-87.866943	Inventory detention basin	Waukegan River	Y	Wetland
Waukegan	21-0013	42.375812	-87.866563	1. Stabilize side slope erosion 2. Stabilize and repair damaged inlets.	Waukegan River	N	Wet
Waukegan	21-0014	42.380495	-87.871238	-	Waukegan River	Y	Wetland
Waukegan	21-0015	42.380561	-87.846413	-	Waukegan River	Y	Wetland
Waukegan	21-0017	42.382615	-87.872249	-	Waukegan River	Y	Dry
Waukegan	21-0016	42.382619	-87.871777	-	Waukegan River	Y	Dry
Waukegan	21-0018	42.383802	-87.872118	-	Waukegan River	Y	Wetland
Waukegan	21-0019	42.384196	-87.872185	-	Waukegan River	Y	Dry
Waukegan	21-0020	42.383824	-87.871655	-	Waukegan River	Y	Dry
Waukegan	21-0021	42.384169	-87.871420	-	Waukegan River	Y	Dry
Waukegan	21-0022	42.384479	-87.871887	-	Waukegan River	Y	Dry
Waukegan	21-0023	42.383156	-87.865645	Remove accumulated sediment and debris from outlet and inlet.	Waukegan River	N	Wetland
Waukegan	21-0024	42.383694	-87.865701	1. Stabilize and repair damaged inlet. 2. Stabilize side-slope erosion 3. Remove accumulated sediment and debris from outlet and inlet.	Waukegan River	N	Wetland
Waukegan	21-0025	42.395828	-87.871072	-	Waukegan River	N	Dry
Waukegan	21-0026	42.415053	-87.868709	-	Waukegan River	N	Wetland

Jurisdiction	Basin ID	Latitude	Longitude	Preliminary Retrofit Opportunities	Subwatershed	Post WDO?	Basin Type
Waukegan	21-0027	42.408078	-87.862924	-	Waukegan River	N	Wet
Waukegan	20-8000	42.393169	-87.851861	Stabilize side-slope erosion	Waukegan River	N	Wet
Waukegan	21-0038	42.389671	-87.874511	-	Waukegan River	Y	Wetland
Waukegan	21-0039	42.381400	-87.867350	Stabilize side-slope erosion	Waukegan River	Y	Dry
Waukegan	21-0040	42.374103	-87.870015	-	Waukegan River	Y	Dry
Waukegan	21-0042	42.352888	-87.871271	Stabilize inlet erosion	Waukegan River	N	Wetland
Waukegan	21-0043	42.351129	-87.862770	-	Waukegan River	Y	Dry
Waukegan	21-0045	42.352494	-87.829754	Remove accumulated sediment in inlet.	Waukegan River	Y	Dry
Waukegan	21-0046	42.365191	-87.875946	Remove accumulated sediment in outlet.	Waukegan River	Y	Wetland
Waukegan	21-8002	42.350056	-87.867222	-	Waukegan River	N	Dry
Waukegan	20-8001	42.394125	-87.850743	-	Waukegan River	Y	Dry
Waukegan	21-8003	42.349705	-87.855475	-	Waukegan River	Y	Wet
Waukegan	21-8008	42.367145	-87.876213	Remove sediment from outlet.	Waukegan River	Y	Wetland
Waukegan	21-8014	42.370785	-87.876130	-	Waukegan River	Y	Wetland
Waukegan	21-8015	42.415237	-87.864501	-	Waukegan River	Y	Dry
Waukegan	21-8016	42.356052	-87.861964	-	Waukegan River	Y	Dry
Waukegan	21-8017	42.389618	-87.872163	-	Waukegan River	Y	Wetland
Waukegan	21-8018	42.390988	-87.882330	-	Waukegan River	Y	Wetland
Waukegan	21-8019	42.390987	-87.880374	-	Waukegan River	Y	Dry
Waukegan	21-8020	42.361720	-87.846589	-	Waukegan River	Y	Wetland
Waukegan	20-0221	42.394521	-87.850924	-	Waukegan River	Y	Wet
Waukegan	21-8027	42.373612	-87.875246	-	Waukegan River	Y	Wetland
Winthrop Harbor	19-0075	42.482604	-87.816950	-	Kellogg Creek	Y	Wetland
Winthrop Harbor	19-8007	42.489998	-87.846970	-	Kellogg Creek	Y	Wetland
Winthrop Harbor	19-8011	42.479422	-87.860795	-	Kellogg Creek	Y	Dry
Winthrop Harbor	19-8012	42.484433	-87.855023	1. Repair gap between E inlet FES and pipe. 2. Stabilize erosion from sump pump discharges.	Kellogg Creek	Y	Dry
Winthrop Harbor	19-8013	42.486795	-87.846259	-	Kellogg Creek	Y	Wetland
Winthrop Harbor	19-8014	42.485712	-87.837494	-	Kellogg Creek	N	Dry
Winthrop Harbor	19-8015	42.485530	-87.835657	-	Kellogg Creek	Y	Dry
Winthrop Harbor	19-8020	42.471833	-87.834145	Investigate potential illicit discharge.	Kellogg Creek	Y	Wetland
Winthrop Harbor	19-0081	42.488116	-87.836168	-	Kellogg Creek	Y	Wet
Winthrop Harbor	19-0082	42.486485	-87.835839	1. Stabilize erosion from southern inlet 2. Repair SW inlet	Kellogg Creek	Y	Wet
Winthrop Harbor	19-0084	42.492783	-87.843839	-	Kellogg Creek	Y	Wet
Winthrop Harbor	19-0085	42.490236	-87.843046	Stabilize shoreline erosion	Kellogg Creek	Y	Wet
Winthrop Harbor	19-0086	42.489263	-87.856152	Unclog restrictor	Kellogg Creek	Y	Wet
Winthrop Harbor	19-0087	42.490745	-87.838917	-	Kellogg Creek	Y	Dry
Winthrop Harbor	19-0165	42.484433	-87.852602	-	Kellogg Creek	Y	Wet

Jurisdiction	Basin ID	Latitude	Longitude	Preliminary Retrofit Opportunities	Subwatershed	Post WDO?	Basin Type
Winthrop Harbor	19-0167	42.478319	-87.854759	1. Repair outlet 2. Stabilize severe erosion around restrictor	Kellogg Creek	Y	Wet
Winthrop Harbor	19-0168	42.486926	-87.856396	1. Stabilize shoreline erosion 2. Unclog restrictor	Kellogg Creek	Y	Wet
Winthrop Harbor	19-0173	42.468623	-87.847677	-	Kellogg Creek	Y	Dry
Winthrop Harbor	19-0083	42.481301	-87.834444	-	Kellogg Creek	Y	Wet
Winthrop Harbor	19-8024	42.490161	-87.839292	-	Kellogg Creek	Y	Dry
Zion	20-0023	42.447549	-87.861598	-	Dead River	Y	Wetland
Zion	20-8002	42.442850	-87.824216	-	Dead River	Y	Wetland
Zion	20-8003	42.444576	-87.812851	Implement sediment control measures in unvegetated area that drains to the basin.	Dead River	N	Wet
Zion	20-8004	42.444600	-87.811682	Implement sediment control measures in unvegetated area that drains to the basin.	Dead River	N	Wet
Zion	20-8006	42.455829	-87.854098	-	Dead River	Y	Wetland
Zion	20-8007	42.452540	-87.858570	-	Dead River	Y	Dry
Zion	20-8008	42.450431	-87.857935	Stabilize erosion from sump pump discharges.	Dead River	N	Wetland
Zion	20-8012	42.443175	-87.853059	-	Dead River	Y	Wetland
Zion	20-0004	42.435603	-87.821739	-	Dead River	Y	Wet
Zion	20-0005	42.448474	-87.829358	-	Dead River	N	Wet
Zion	20-0025	42.452983	-87.859865	Repair restrictor.	Dead River	Y	Wetland
Zion	20-0024	42.451072	-87.861275	Clear sediment and debris from outlet.	Dead River	Y	Wet
Zion	20-0031	42.453730	-87.858298	-	Dead River	Y	Wetland
Zion	20-8013	42.447664	-87.864773	Stabilize erosion around the outlet	Dead River	Y	Dry
Zion	20-8015	42.445459	-87.867903	-	Dead River	Y	Wetland
Zion	19-0027	42.458697	-87.870345	-	Kellogg Creek	Y	Wet
Zion	19-8003	42.459689	-87.869738	-	Kellogg Creek	Y	Wetland
Zion	19-8004	42.462876	-87.865707	-	Kellogg Creek	Y	Wetland
Zion	19-8005	42.453908	-87.865867	1. Stabilize side slopes. 2. Investigate cause of high turbidity.	Kellogg Creek	Y	Wetland
Zion	19-8006	42.466831	-87.850023	-	Kellogg Creek	Y	Wetland
Zion	19-8008	42.474999	-87.870613	-	Kellogg Creek	N	Dry
Zion	19-8016	42.447663	-87.869752	-	Kellogg Creek	Y	Dry
Zion	19-8017	42.447743	-87.866762	-	Kellogg Creek	Y	Dry
Zion	19-8018	42.465254	-87.862000	Remove sediment from inlet.	Kellogg Creek	Y	Wetland
Zion	19-8019	42.463193	-87.862796	-	Kellogg Creek	Y	Wetland
Zion	19-8021	42.455713	-87.826275	-	Kellogg Creek	Y	Wetland
Zion	19-8022	42.458957	-87.825733	Stabilize eroded area caused by sheet flow from parking lot.	Kellogg Creek	Y	Wetland
Zion	19-8023	42.459048	-87.858029	-	Kellogg Creek	Y	Dry
Zion	19-0010	42.455729	-87.825778	-	Kellogg Creek	Y	Wet

Jurisdiction	Basin ID	Latitude	Longitude	Preliminary Retrofit Opportunities	Subwatershed	Post WDO?	Basin Type
Zion	19-0012	42.460703	-87.855077	-	Kellogg Creek	Y	Wetland
Zion	19-0014	42.472800	-87.863962	-	Kellogg Creek	N	Wet
Zion	19-0016	42.469324	-87.855192	-	Kellogg Creek	Y	Wetland
Zion	19-0017	42.472908	-87.869606	1. Stabilize shoreline and side slopes. 2. Repair broken inlet.	Kellogg Creek	N	Wet
Zion	19-0020	42.459460	-87.874335	Clear debris from inlets and outlets.	Kellogg Creek	Y	Dry
Zion	19-0021	42.456954	-87.867421	Repair and stabilize outlet.	Kellogg Creek	Y	Dry
Zion	19-0022	42.452898	-87.867367	-	Kellogg Creek	Y	Wet
Zion	19-0023	42.453382	-87.868472	-	Kellogg Creek	Y	Wet
Zion	19-0024	42.451913	-87.867639	-	Kellogg Creek	Y	Wet
Zion	19-0025	42.450963	-87.868002	-	Kellogg Creek	Y	Wet
Zion	19-0026	42.450236	-87.867780	Stabilize side slope erosion	Kellogg Creek	Y	Wet
Zion	19-0028	42.461565	-87.869885	Repair damaged inlet	Kellogg Creek	N	Wet
Zion	19-0029	42.464133	-87.870190	Stabilize side slope erosion	Kellogg Creek	Y	Wet
Zion	19-0031	42.464990	-87.876139	Investigate potential illicit discharge from E inlet.	Kellogg Creek	Y	Dry
Zion	19-0032	42.465187	-87.871054	Remove vegetation and debris from inlets.	Kellogg Creek	N	Wet
Zion	19-0033	42.466917	-87.870954	-	Kellogg Creek	N	Wet
Zion	19-0034	42.463100	-87.871986	Stabilize shoreline erosion	Kellogg Creek	Y	Wetland
Zion	19-0600	42.469477	-87.875024	-	Kellogg Creek	Y	Dry
Zion	19-0036	42.465782	-87.877774	-	Kellogg Creek	Y	Wet
Zion	19-0194	42.453523	-87.870776	Stabilize side slope erosion	Kellogg Creek	Y	Wetland
Zion	19-8025	42.472457	-87.863905	Stabilize erosion near outlet	Kellogg Creek	N	Wet
Zion	19-8026	42.465892	-87.857952	Repair broken PVC outlet pipe	Kellogg Creek	Y	Dry

-: No action recommendation, **N/A**: Not applicable because basin is not in Lake County

APPENDIX E:
LAKE SHORELINE ASSESSMENT

Lake Shoreline Assessment

Visual assessments of lake shorelines were conducted to characterize shoreline erosion.

The degree of shoreline erosion was categorically defined as none, slight, moderate, or severe. Below are brief descriptions of each category.

None: No visible erosion. Includes purpose-built erosion control such as riprap and sea walls.

Slight: Minimal or observable erosion. Generally considered stable.

Moderate: Obvious recession and/or eroded banks. Area may exhibit some exposed roots, fallen vegetation or minor slumping.

Severe: Recession is characterized by eroding of exposed soil on nearly vertical banks, exposed roots, fallen vegetation or extensive slumping of bank material, undercutting, washouts or fence posts exhibiting realignment.

The lake shoreline assessment results are summarized in **table 1**. Full results of the lake shoreline assessment can be accessed via the Lake Assessment Web Application.

Table 1 Lake Shoreline Assessment Results.

Lake	Shore Erosion	Lateral Recession Rate (ft/yr)	Segment Length (ft)	Object ID
Dugdale Lake	None	0.00	105.2	373
	None	0.00	1179.1	374
	None	0.00	1133.0	375
Sand Pond	None	0.00	403.0	1
	None	0.00	886.3	6
	None	0.00	175.9	8
	None	0.00	132.7	10
	None	0.00	97.4	12
	None	0.00	353.4	366
	None	0.00	78.4	368
	None	0.00	261.8	370
	None	0.00	43.7	372
	Slight	0.03	371.6	2
	Slight	0.03	60.4	7
	Slight	0.03	172.3	9
	Slight	0.03	54.4	11
	Slight	0.03	793.4	13

Lakeshore Buffer Condition

Lakeshore buffer condition was assessed using an area up to 25 feet inland from the shoreline for each reach. A 25 foot buffer was chosen based on research that indicates a 25-foot vegetated buffer is the minimum effective width for in-lake habitat maintenance (a 15 foot buffer is the minimum effective width for bank stability). The assessment was conducted utilizing 2018 and 2019 aerial images in ArcGIS. The aerial images were visually assessed to determine vegetation and impervious surface cover. The lakeshore buffers were categorized as good, fair, or poor. Below are brief descriptions of each category.

Good: ≥ 70% unmowed grasses, forbs, trees and/or shrubs and ≤ 5% impervious surfaces
Fair: ≥ 50% unmowed grasses, forbs, trees and/or shrubs or > 5% - ≤ 50% impervious surfaces
Poor: ≤ 50% unmowed grasses, forbs, trees and/or shrubs or ≥ 50% impervious surfaces

Results for the lakeshore buffer condition assessment are summarized in **table 2.** Full results of the buffer condition assessment can be accessed via the Lake Assessment Web Application.

Table 2 Lakeshore Buffer Condition Assessment Results.

Lake	Buffer Condition	Segment Length (ft)	Object ID
Dugdale Lake	Good	120.8	109
	Good	1331.1	110
	Good	286.7	111
	Fair	150.4	106
	Fair	59.9	108
	Poor	468.5	107
Sand Pond	Good	345.3	96
	Good	340.5	97
	Good	312.5	98
	Good	962.3	99
	Good	181.2	100
	Good	29.3	101
	Good	30.0	102
	Good	43.0	103
	Good	149.2	104
	Good	177.1	105
	Fair	101.7	79
	Fair	44.2	80
	Fair	104.7	90

Lake	Buffer Condition	Segment Length (ft)	Object ID
	Fair	141.2	91
	Fair	31.9	94
	Poor	240.5	78
	Poor	87.2	81
	Poor	145.7	82
	Poor	14.8	83
	Poor	10.9	84
	Poor	13.0	85
	Poor	9.8	86
	Poor	22.2	87
	Poor	70.6	88
	Poor	88.7	89
	Poor	14.0	92
	Poor	85.5	93
	Poor	87.8	95

APPENDIX F:
POLLUTANT LOAD ESTIMATION

Appendix F. Pollutant Loading Estimation

Pollutant loads were estimated based on a methodology developed by the Northeastern Illinois Planning Commission (NIPC), now the Chicago Metropolitan Agency for Planning (CMAP), for a comprehensive nonpoint source pollution study of the Lake Michigan watershed in partnership with the Lake County Stormwater Management Commission. The estimates are based on Event Mean Concentrations for several common pollutants in urban stormwater runoff. The catchments in the watershed planning area are divided into land uses and an EMC for each pollutant is assigned to each land use category. Each land use category is also assigned a runoff coefficient. The annual precipitation for the watershed, runoff coefficient, and Event Mean Concentration are used to estimate an annual pollutant loading rate (pounds/acre/year) for each pollutant and land use. Area of each land use is multiplied by the loading rate to estimate the annual pollutant load for each pollutant and land use in a catchment. All land use load estimates for each pollutant in a catchment are summed to estimate total annual load for each pollutant in a catchment.

Runoff Coefficients are calculated from the following relationship:

$Rv = 0.05 + 0.009*I$

Where

Rv = Runoff Coefficient

I = Percent impervious

Land uses were divided into "sewered" and "unsewered" to better reflect effective imperviousness. Land uses served by stormsewer systems have higher effective imperviousness and therefore higher runoff coefficients.

Land Use	**Runoff Coefficient**	
	Sewered	**Unsewered**
Commercial	0.85	0.75
Industrial	0.80	0.70
Institutional	0.50	0.30
Transportation, Auto Surface	0.85	0.50
Transportation, Utility and Waste Facilities	0.80	0.70
Residential	0.15	0.15
Agricultural	NA	0.10
Open Space	0.15	0.05
Open Water	1.00	1.00

The residential runoff coefficients were modified from the original NIPC values based on 2007 analyses for the Dead River and Kellogg Creek Watershed Management Plans, which found that the original NIPC analysis included streets within residential districts as part of the analysis. While pollutant loads in runoff from individual lots should be comparatively similar in sewered versus unsewered districts, the effect of stormsewer systems was estimated to increase the loading rate in sewered districts in the original NIPC methodology. Since that time, the roadways in which the majority of the stormsewer system is located have been removed from the residential land use polygons and set in its own land use classification (Transportation, Auto Surface). The 2007 analysis found that runoff coefficients for sewered and unsewered residential should be set equal, which is reflected in the coefficients employed here.

Pollutant loading rates (Lbs/acre/year) were calculated for each land use according to the following relationship:

Lt = [(P*CF*Rv)/12]*C*2.72

Where:

Lt = Annual pollutant loading rate (Lbs/acre/year)

P = Annual Precipitation (in)

CF = Correction Factor to adjust for storms where no runoff occurs (0.9 used)

Rv = Runoff Coefficient

C = Event Mean Concentration (usually mg/L)

EMCs used to calculate loading rates for each land use (all units mg/L except Fecal Coliform, which is Colony Forming Units/100 mL):

Land Use	BOD	COD	TSS	TDS	TN	TKN	DP	TP	Cd	Pb	Cu	Zn	Fecal Coliform
Commercial	**15**	**103**	**206**	**495**	**3.6**	**1.2**	**0.12**	**0.23**	**0.0014**	**0.180**	**0.035**	**0.27**	1800
Industrial	**9**	**48**	**230**	**239**	**2.6**	**0.8**	**0.16**	**0.27**	**0.0047**	**0.294**	**0.039**	**0.25**	2500
Institutional	**16**	**96**	**391**	**185**	**3.2**	**1.9**	**0.18**	**0.42**	**0.0011**	**0.109**	**0.030**	**0.17**	1800
Transportation, Auto Surface	**9**	**154**	**395**	**1059**	**2.3**	**3.2**	**0.04**	**0.32**	**0.0036**	**0.467**	**0.097**	**0.56**	1400
Transportation, Utility and Waste Facilities	**9**	**48**	**230**	**239**	**2.6**	**0.8**	**0.16**	**0.27**	**0.0047**	**0.294**	**0.039**	**0.25**	2500
Residential	**11**	**70**	**153**	**216**	**3.1**	**1.6**	**0.13**	**0.40**	**0.0010**	**0.116**	**0.024**	**0.45**	8400
Agricultural	**8**	**82**	**456**	**265**	**7.1**	**2.7**	**0.25**	**0.53**	**0.0005**	**0.007**	**0.013**	**0.21**	2600
Open Space	**1**	**46**	**60**	**717**	**0.7**	**1.3**	**0.08**	**0.39**	**0.0002**	**0.016**	**0.006**	**0.08**	1000
Open Water	**1**	**46**	**60**	**717**	**0.7**	**1.3**	**0.08**	**0.39**	**0.0002**	**0.016**	**0.006**	**0.08**	276

APPENDIX G:
IMPERVIOUS LAND USE COVER

Subwatershed	Catchment	Description	Total Acres	EXISTING LAND USE (Acres)								FUTURE LAND USE (Acres)								Model Impervious Cover (Existing %)	Model Impervious Cover (Future %)
				Agricultural	Government & Institutional	Industrial	Open Space	Residential	Retail, Commercial & Mixed Use	Transportation (Auto Surface)	Transportation, Utility & Waste Facilities	Water	Agricultural	Government & Institutional	Industrial	Open Space	Residential	Retail, Commercial & Mixed Use	Transportation (Auto Surface)	Transportation, Utility & Waste Facilities	Water		
Bluff/Ravine Subwatershed	LMBR001	Crabtree Ravine	98.38	4.76	0.00	0.00	84.53	6.80	0.00	2.18	0.10	0.00	0.00	0.00	0.00	56.58	41.05	0.00	0.75	0.00	0.00	8.9%	16.5%
Bluff/Ravine Subwatershed	LMBR002	Lillian Dells Ravine	217.73	0.49	3.55	0.00	41.15	111.14	3.44	55.14	2.80	0.02	0.00	1.13	0.00	13.38	138.88	4.02	60.12	0.00	0.00	36.9%	41.0%
Bluff/Ravine Subwatershed	LMBR003	Lake Catchment	14.99	0.00	0.00	0.00	11.09	2.08	0.00	1.32	0.41	0.08	0.00	0.00	0.00	8.34	4.60	0.00	1.04	0.00	0.00	15.2%	17.4%
Bluff/Ravine Subwatershed	LMBR004	Ravine Park Ravine	356.16	0.00	9.75	0.00	87.40	172.02	0.05	69.51	15.91	1.51	0.00	9.07	0.00	72.44	189.75	0.05	84.84	0.00	0.00	31.9%	35.2%
Bluff/Ravine Subwatershed	LMBR005	South Ravine	372.53	0.00	28.74	0.00	72.15	213.92	2.92	47.61	7.13	0.06	0.00	29.05	0.00	15.15	276.49	2.60	49.21	0.00	0.00	32.4%	36.5%
Bluff/Ravine Subwatershed	LMBR006	Cemetery Ravine	121.33	0.00	34.06	0.00	14.10	61.17	0.00	11.95	0.00	0.04	0.00	34.58	0.00	0.11	74.42	0.00	12.05	0.00	0.00	36.8%	39.7%
Bluff/Ravine Subwatershed	LMBR007	Spruce Avenue Ravine	38.39	0.00	0.00	0.00	7.24	23.73	0.00	3.76	3.56	0.09	0.00	0.03	0.00	0.00	33.90	0.00	3.50	0.00	0.00	28.3%	33.1%
Bluff/Ravine Subwatershed	LMBR008	Woodland Road Ravine	57.39	0.00	0.00	0.00	7.13	40.63	0.00	9.63	0.00	0.00	0.00	0.00	0.00	0.00	47.01	0.00	10.18	0.00	0.00	33.8%	37.1%
Bluff/Ravine Subwatershed	LMBR009	Clark's Ravine	202.04	0.00	3.46	0.00	28.37	131.05	3.68	32.17	3.27	0.03	0.00	3.62	0.00	13.25	141.42	10.09	33.28	0.00	0.00	34.5%	38.9%
Bluff/Ravine Subwatershed	LMBR010	Lake Catchment	17.65	0.00	0.00	0.00	6.94	8.97	0.00	1.72	0.00	0.02	0.00	0.00	0.00	0.00	15.93	0.00	1.70	0.00	0.00	24.4%	34.0%
Bluff/Ravine Subwatershed	LMBR011	Woodbine Lane Ravine	28.81	0.00	0.00	0.00	3.09	21.87	0.00	3.84	0.00	0.00	0.00	0.00	0.00	0.00	24.95	0.00	3.86	0.00	0.00	32.9%	35.5%
Bluff/Ravine Subwatershed	LMBR012	Westminster Road Ravine	51.30	0.00	0.00	0.00	10.96	33.71	0.00	6.58	0.00	0.05	0.00	0.00	0.00	0.00	7.71	35.88	0.00	6.55	0.00	30.0%	30.9%
Bluff/Ravine Subwatershed	LMBR013	Witchhazel/Seminary Ravine	176.02	0.00	9.68	0.00	8.50	96.98	21.14	37.81	1.92	0.00	0.00	12.66	0.00	6.73	104.10	14.03	38.50	0.00	0.00	46.9%	44.9%
Bluff/Ravine Subwatershed	LMBR014	Witchhazel/Seminary Ravine	31.08	0.00	16.90	0.00	5.31	8.82	0.00	0.05	0.00	0.00	0.00	20.10	0.00	0.00	10.93	0.00	0.05	0.00	0.00	36.8%	43.0%
Bluff/Ravine Subwatershed	LMBR015	Witchhazel/Seminary Ravine	100.93	0.00	0.00	0.00	42.21	49.05	0.00	9.48	0.00	0.18	0.00	0.00	0.00	26.11	58.06	0.00	7.91	0.00	0.00	23.7%	24.3%
Bluff/Ravine Subwatershed	LMBR016	Witchhazel/Seminary Ravine	167.53	0.00	19.95	0.00	23.29	74.16	15.07	31.76	3.30	0.00	0.00	27.84	0.00	8.99	85.29	12.35	33.05	0.00	0.00	42.7%	45.2%
Bluff/Ravine Subwatershed	LMBR017	Witchhazel/Seminary Ravine	247.02	0.00	44.89	0.00	24.15	143.25	0.00	31.59	2.73	0.40	0.00	45.21	0.00	5.64	162.53	0.00	33.63	0.00	0.00	36.3%	38.7%
Bluff/Ravine Subwatershed	LMBR018	Maplewood Road Ravine	51.93	0.00	0.00	0.00	10.89	38.10	0.00	2.83	0.00	0.11	0.00	0.00	0.00	0.81	47.54	0.00	2.43	0.00	0.00	27.2%	31.0%
Bluff/Ravine Subwatershed	LMBR019	Mayflower Ravine	190.38	0.00	0.00	0.00	34.93	125.72	0.00	29.62	0.10	0.00	0.00	0.00	0.00	2.27	158.88	0.00	29.22	0.00	0.00	31.9%	36.0%
Bluff/Ravine Subwatershed	LMBR020	Lake Catchment	11.70	0.00	0.00	0.00	4.02	7.58	0.00	0.07	0.00	0.04	0.00	0.00	0.00	0.00	10.80	0.00	0.31	0.00	0.00	22.0%	29.7%
Bluff/Ravine Subwatershed	LMBR021	Stone Gate Road Ravine	59.12	0.00	0.00	0.00	22.49	32.02	0.00	4.60	0.00	0.01	0.00	0.00	0.00	3.51	50.95	0.00	4.64	0.00	0.00	24.0%	31.8%
Bluff/Ravine Subwatershed	LMBR022	Walden Ravine	384.39	0.00	24.67	0.00	110.97	182.52	0.00	55.69	10.55	0.00	0.00	53.57	0.00	28.80	230.00	0.00	72.01	0.00	0.00	29.8%	38.6%
Bluff/Ravine Subwatershed	LMBR023	Lake Catchment	36.74	0.00	0.00	0.00	17.25	19.02	0.00	0.34	0.00	0.12	0.00	0.00	0.00	1.59	33.38	0.00	0.34	0.00	0.00	19.0%	28.3%
Bluff/Ravine Subwatershed	LMBR024	McCormick/Janes Ravine	315.98	0.00	11.10	0.00	157.16	115.39	0.00	28.20	4.12	0.00	0.00	0.00	0.00	122.06	154.84	0.00	38.01	0.00	0.00	22.1%	25.4%
Bluff/Ravine Subwatershed	LMBR025	MacArthur and Scott Loop Ravin	10.79	0.00	0.00	0.00	3.96	5.12	0.00	1.70	0.00	0.00	0.00	0.00	0.00	3.30	6.16	0.00	1.28	0.00	0.00	27.5%	27.3%
Bluff/Ravine Subwatershed	LMBR026	Hutchinson Ravine	95.85	0.00	0.00	0.00	85.40	4.54	0.56	5.29	0.02	0.04	0.00	0.27	0.00	89.08	4.27	0.56	0.66	0.00	0.00	11.1%	8.0%
Bluff/Ravine Subwatershed	LMBR027	Fort Sheridan Forest Preserve	161.94	0.00	9.61	0.00	67.40	52.76	1.48	24.26	5.68	0.75	0.00	0.05	0.00	70.94	56.90	1.16	31.68	0.00	0.98	27.3%	27.6%
Bluff/Ravine Subwatershed	LMBR028	Scott Loop Ravine	95.88	0.00	0.00	0.00	66.87	17.23	0.00	11.75	0.00	0.03	0.00	0.00	0.00	63.56	18.06	0.00	13.70	0.00	0.00	18.1%	19.5%
Bluff/Ravine Subwatershed	LMBR029	Lake Catchment	16.20	0.00	7.18	0.00	8.36	0.00	0.00	0.58	0.00	0.07	0.00	0.00	0.00	0.00	15.38	0.00	0.00	0.00	0.00	27.7%	28.6%
Bluff/Ravine Subwatershed	LMBR030	Bartlett Ravine	198.87	0.00	36.35	0.00	44.34	64.67	10.41	37.65	4.87	0.58	0.00	1.33	0.00	19.49	85.17	58.53	32.55	0.69	0.74	39.2%	54.8%
Bluff/Ravine Subwatershed	LMBR031	Van Horne Ravine	70.53	0.00	43.91	0.00	18.32	0.00	0.00	7.82	0.00	0.48	0.00	0.00	0.00	0.01	50.84	18.48	0.00	0.00	0.00	40.4%	47.9%
Bluff/Ravine Subwatershed	LMBR032	Lake Catchment	135.50	0.00	64.38	0.00	1.86	17.66	22.33	24.70	4.56	0.01	0.00	5.02	0.00	21.10	37.02	55.85	15.36	0.22	0.00	57.6%	60.2%
Bluff/Ravine Subwatershed	LMBR033	Schenck Ravine	58.48	0.00	24.54	0.00	17.10	6.56	0.00	10.27	0.00	0.01	0.00	0.00	0.00	2.06	41.21	7.91	5.47	0.00	0.00	38.3%	41.5%
Bluff/Ravine Subwatershed	LMBR034	Lake Catchment	15.34	0.00	4.51	0.00	8.71	0.00	0.00	2.05	0.07	0.00	0.00	0.00	0.00	0.00	15.16	0.00	0.00	0.00	0.00	27.4%	29.8%
Bluff/Ravine Subwatershed	LMBR035	Lake Catchment	13.10	0.00	2.62	0.00	4.26	3.66	0.00	1.93	0.44	0.19	0.00	3.81	0.00	0.00	6.49	0.00	1.91	0.00	0.00	31.3%	39.6%
Bluff/Ravine Subwatershed	LMBR036	Lake Catchment	16.89	0.00	0.01	0.00	1.77	11.43	0.00	3.68	0.00	0.00	0.00	0.01	0.00	0.00	12.11	0.00	4.73	0.00	0.00	36.3%	41.3%
Bluff/Ravine Subwatershed	LMBR037	Lake Catchment	12.71	0.00	0.00	0.00	7.11	5.31	0.00	0.18	0.00	0.11	0.00	0.00	0.00	0.62	10.39	0.00	0.38	0.00	0.00	16.9%	27.1%
Bluff/Ravine Subwatershed	LMBR038	Ravine 10L	459.63	0.00	30.47	0.00	89.34	204.05	34.61	89.21	11.91	0.04	0.00	43.83	0.00	38.00	251.71	37.90	87.89	0.00	0.00	39.4%	43.4%
Bluff/Ravine Subwatershed	LMBR039	Ravine 9L	117.65	0.00	12.17	0.00	28.48	50.46	6.99	19.31	0.10	0.15	0.00	12.54	0.00	9.76	65.85	8.48	18.92	0.00	0.00	37.0%	41.2%
Bluff/Ravine Subwatershed	LMBR040	Ravine 9L2	36.80	0.00	0.09	0.00	7.18	21.38	0.00	8.15	0.00	0.00	0.00	0.08	0.00	4.51	23.94	0.00	8.27	0.00	0.00	34.3%	36.2%
Bluff/Ravine Subwatershed	LMBR041	Ravine 8L	61.97	0.00	0.59	0.00	21.65	29.92	0.00	9.52	0.00	0.29	0.00	0.58	0.00	5.63	43.07	0.00	10.64	0.00	0.00	27.8%	34.0%
Bluff/Ravine Subwatershed	LMBR042	Ravine 7L	451.04	0.00	5.98	0.00	57.03	265.97	12.18	98.33	11.55	0.00	0.00	7.53	0.00	18.52	303.55	26.86	94.43	0.00	0.00	37.6%	42.0%
Bluff/Ravine Subwatershed	LMBR043	Ravine 6L	30.98	0.00	0.00	0.00	6.26	20.40	0.00	4.25	0.00	0.05	0.00	0.00	0.00	0.00	24.70	0.00	5.73	0.00	0.00	30.7%	37.0%
Bluff/Ravine Subwatershed	LMBR044	Ravine 5L	13.42	0.00	0.00	0.00	5.07	7.64	0.00	0.64	0.00	0.07	0.00	0.00	0.00	0.00	12.06	0.00	0.10	0.00	0.00	22.7%	27.6%
Bluff/Ravine Subwatershed	LMBR045	Ravine 4L	45.50	0.00	5.01	0.00	11.59	25.74	0.00	3.12	0.00	0.04	0.00	6.52	0.00	0.00	34.76	0.00	3.11	0.00	0.00	28.9%	35.0%
Bluff/Ravine Subwatershed	LMBR046	Ravine 3L	556.61	0.00	4.02	0.00	97.08	335.98	6.56	99.47	12.74	0.77	0.00	3.69	0.00	31.56	413.13	6.89	100.05	0.00	0.00	33.7%	36.9%
Bluff/Ravine Subwatershed	LMBR047	Ravine 2L	105.77	0.00	0.00	0.00	25.08	42.73	22.53	11.85	1.84	1.73	0.00	0.00	0.00	31.61	61.77	0.00	10.00	0.00	0.00	43.1%	26.0%
Bluff/Ravine Subwatershed	LMBR048	Lakeview Terrrace Ravine	21.52	0.00	0.00	0.00	11.34	9.98	0.00	0.00	0.00	0.19	0.00	7.09	0.00	0.00	13.70	0.00	0.04	0.00	0.00	17.1%	35.8%
Bluff/Ravine Subwatershed	LMBR049	Ravine 1L	377.17	0.00	5.37	0.00	129.21	167.67	13.35	51.83	8.78	0.94	0.00	37.97	0.00	15.80	153.23	2.43	47.74	0.00	0.00	29.7%	27.0%
Bluff/Ravine Subwatershed	LMBR050	Ravine 7C	57.78	0.00	10.78	0.00	39.59	4.49	0.00	1.83	0.10	0.92	0.00	4.63	0.00	0.00	0.14	0.00	0.00	0.00	0.00	18.0%	4.1%
Bluff/Ravine Subwatershed	LMBR051	Ravine 6C	11.68	0.00	6.39	0.00	0.00	4.47	0.00	0.59	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.4%	0.0%
Bluff/Ravine Subwatershed	LMBR052	Ravine 5C	207.43	0.00	0.13	0.00	60.81	118.84	0.00	20.35	6.59	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.5%	0.0%
Bluff/Ravine Subwatershed	LMBR053	Ravine 4C	210.80	0.00	3.48	0.00	17.47	147.79	0.62	33.29	7.83	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.5%	0.0%
Bluff/Ravine Subwatershed	LMBR054	Cook Catchment	32.25	0.00	0.39	0.00	5.48	17.96	0.00	8.20	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.2%	0.0%
Bluff/Ravine Subwatershed	LMBR055	Ravine 3C	55.88	0.00	0.18	0.00	6.94	38.43	0.00	9.76	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.9%	0.0%
Bluff/Ravine Subwatershed	LMBR056	Ravine 2C	162.74	0.00	6.45	0.00	8.58	105.47	3.64	31.81	6.45	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.5%	0.0%
Bluff/Ravine Subwatershed	LMBR057	Cook Catchment	195.88	0.00	5.27	0.00	14.68	124.29	1.03	44.15	4.80	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.7%	0.0%
Bluff/Ravine Subwatershed	LMBR058	Cook Catchment	16.28	0.00	0.00	0.00	0.00	14.37	0.00	0.00	0.00	1.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.0%	0.0%
Bluff/Ravine Subwatershed	LMBR059	Ravine 1C	212.61	0.00	0.04	0.00	10.12	158.33	3.12	30.82	9.89	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.2%	0.0%
Bluff/Ravine Subwatershed	LMBR060	Cook Catchment	61.78	0.00	0.00	0.00	17.63	34.48	0.00	2.32	4.55	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.5%	0.0%
Dead River Subwatershed	LMDR001	Bull Creek	130.77	0.70	3.20	0.00	59.72	47.33	0.99	18.72	0.00	0.11	0.00	3.07	0.00	12.09	99.80	2.11	13.70	0.00	0.00	25.6%	33.7%
Dead River Subwatershed	LMDR002	Carmel Park Ravine	130.75	0.00	20.28	0.00	66.03	10.98	7.70	22.36	0.00	3.41	0.00	17.72	0.00	65.62	12.27	8.59	26.56	0.00	0.00	31.2%	33.3%
Dead River Subwatershed	LMDR003	Bull Creek	106.34	0.00	23.46	0.00	27.18	33.32	0.00	21.06	0.48	0.84	0.00	22.39	0.00	21.12	36.15	1.51	25.17	0.00	0.00	35.9%	39.9%
Dead River Subwatershed	LMDR004	Bull Creek	121.68	21.26	12.54	0.00	42.83	34.79	0.00	9.25	0.74	0.26	0.00	10.11	0.00	0.16	101.11	0.67	9.64	0.00	0.00	22.1%	35.3%
Dead River Subwatershed	LMDR005	Bull Creek	107.09	0.00	0.00	0.00	48.34	42.13	0.00	15.03	0.81	0.77	0.00	0.00	0.00	20.37	61.66	5.23	19.82	0.00	0.00	24.5%	36.3%
Dead River Subwatershed	LMDR006	Bull Creek	17.39	0.00	1.22	0.00	0.00	11.70	0.00	4.38	0.09	0.00	0.00	0.16	0.00	0.00	12.02	0.68	4.53	0.00	0.00	41.5%	43.4%
Dead River Subwatershed	LMDR007	Carmel Park Ravine	24.35	0.00	0.10	0.00	1.28	13.74	0.00	9.23	0.00	0.00	0.00	0.09	0.00	1.20	13.69	0.00	9.36	0.00	0.00	44.1%	44.4%
Dead River Subwatershed	LMDR008	Bull Creek	205.45	3.22	13.90	0.00	89.48	77.00	0.00	21.41	0.00	0.44	0.00	8.00	0.00	49.34	109.47	16.59	22.05	0.00	0.00	24.6%	35.0%
Dead River Subwatershed	LMDR009	Bull Creek	158.03	0.00	3.05	0.00	17.44	89.78	1.39	46.32	0.00	0.05	0.00	2.82	0.00	10.40	92.65	1.81	50.35	0.00	0.00	40.1%	42.4%
Dead River Subwatershed	LMDR010	Lake Catchment	943.45	0.00	16.09	27.01	610.04	61.74	12.72	68.98	132.90	13.96	0.00	12.59	0.00	433.09	310.53	15.12	60.34	106.11	0.00	17.7%	21.3%
Dead River Subwatershed	LMDR011	Carmel Park Ravine	259.94	0.00	4.83	0.14	27.22	122.19	34.49	69.73	0.00	1.33	0.00	4.80	0.00	16.44	130.12	37.63	70.94	0.00	0.00	47.8%	50.0%
Dead River Subwatershed	LMDR012	Bull Creek	273.14	0.00	2.86	4.76	187.41	54.50	0.00	14.63	0.04	8.93	0.00	0.03	0.00	145.22	90.31	16.81	15.52	0.00	5.25	15.7%	23.3%
Dead River Subwatershed	LMDR013	Bull Creek	206.63	0.00	2.14	0.00	33.76	120.36	0.00	49.14	0.10	1.12	0.00	1.65	0.00	13.67	140.17	0.00	51.13	0.00	0.00	35.7%	38.6%
Dead River Subwatershed	LMDR014	Bull Creek	142.11	3.37	3.20	0.00	46.77	71.67	0.00	15.24	0.72	1.14	0.00	0.81	0.00	10.73	108.97	3.90	17.69	0.00	0.00	26.0%	35.3%
Dead River Subwatershed	LMDR015	Bull Creek	132.95	14.72	0.91	6.86	66.05	25.29	8.45	7.56	2.29	0.81	0.00	0.76	9.34	0.00	64.98	26.73	31.14	0.00	0.00	24.0%	56.8%
Dead River Subwatershed	LMDR016	Bull Creek	247.21	5.70	0.24	3.72	133.20	60.43	1.48	21.71	18.77	1.95	0.00	0.00	3.31	19.77	54.91	67.02	102.20	0.00	0.00	19.9%	64.2%
Dead River Subwatershed	LMDR017	Bull Creek	64.47	0.00	7.58	0.00	8.45	33.97	0.00	13.99	0.00	0.48	0.00	0.00	0.00	0.00	49.12	0.00	15.35	0.00	0.00	37.8%	39.7%
Dead River Subwatershed	LMDR018	Bull Creek	38.34	0.00	0.00	0.00	12.45	19.65	0.00	5.38	0.00	0.87	0.00	0.00	0.00	0.00	29.19	0.25	8.90	0.00	0.00	27.2%	39.9%
Dead River Subwatershed	LMDR019	Bull Creek	123.98	0.00	0.00	0.00	70.68	23.28	3.54	15.40	4.51	6.56	0.00	0.00	0.00	73.10	30.23	7.17	13.47	0.00	0.00	21.4%	24.2%
Dead River Subwatershed	LMDR020	Bull Creek	92.68	0.78	2.35	0.00	15.28	57.66	0.00	15.66	0.00	0.95	0.00	0.00	0.00	0.00	75.03	0.00	17.64	0.00	0.00	32.9%	37.8%
Dead River Subwatershed	LMDR021	Dead River	127.18	0.00	0.00	0.00	123.74	0.00	0.00	3.32	0.00	0.12	0.00	0.00	0.00	127.00	0.00	0.00	0.00	0.00	0.17	7.5%	5.8%
Dead River Subwatershed	LMDR022	Bull Creek	132.22	1.01	0.00	0.00	20.53	9.00	1.11	3.03	96.73	0.80	0.00	0.00	1.89	0.00	0.00	19.68	110.65	0.00	0.00	18.4%	74.5%
Dead River Subwatershed	LMDR023	Bull Creek	221.76	7.39	25.00	0.00	26.76	132.43	0.36	29.62	0.08	0.10	0.00	5.91	0.00	8.02	173.10	0.42	34.31	0.00	0.00	34.0%	36.1%
Dead River Subwatershed	LMDR024	Bull Creek	215.44	11.91	4.30	8.25	48.89	36.29	2.77	13.74	88.04	1.23	0.00	4.33	7.17	0.00	64.57	6.62	132.75	0.00	0.00	23.5%	58.7%
Dead River Subwatershed	LMDR025	Dead River	164.99	0.00	0.00	0.00	64.86	61.10	0.77	19.09	7.70	11.46	0.00	0.00	0.00	75.37	79.63	0.77	9.21	0.00	0.00	23.1%	21.6%
Dead River Subwatershed	LMDR026	Bull Creek	124.19	0.00	4.42	0.00	13.70	69.67	6.73	29.19	0.00	0.47	0.00	0.00	0.00	0.00	77.65	13.87	32.66	0.00	0.00	41.2%	48.4%
Dead River Subwatershed	LMDR027	Dead River	133.97	0.00	0.00	0.00	113.13	0.00	9.05	2.75	0.00	9.04	0.00	0.00	0.00	125.07	0.00	0.00	0.00	0.00	0.00	13.4%	5.4%
Dead River Subwatershed	LMDR028	Dead River	25.03	0.00	0.00	0.00	22.78	0.00	0.00	0.24	0.00	2.01	0.00	0.00	0.00	22.54	0.00	0.00	0.00	0.00	2.49	6.3%	5.6%
Dead River Subwatershed	LMDR029	Bull Creek	75.10	0.00	0.00	0.00	20.99	42.08	0.00	11.49	0.06	0.48	0.00	0.00	0.00	0.57	58.11	0.00	16.42	0.00	0.00	29.3%	38.7%
Dead River Subwatershed	LMDR030	Bull Creek	159.07	0.00	12.42	0.00	50.98	54.55	4.02	17.94	18.58	0.57	0.00	10.13	0.00	5.19	79.13	16.00	48.61	0.00	0.00	28.6%	49.8%
Dead River Subwatershed	LMDR031	Bull Creek	187.01	3.48	4.54	0.00	59.65	98.03	0.00	19.39	0.23	1.69	0.00	0.00	0.00	0.00	143.43	23.18	20.40	0.00	0.00	26.3%	43.2%
Dead River Subwatershed	LMDR032	Dead River	129.71	0.00	0.00	2.69	96.24	10.48	0.10	3.47	9.24	7.49	0.00	0.00	0.00	104.20	14.26	2.61	0.66	0.00	7.98	11.7%	10.6%
Dead River Subwatershed	LMDR033	Bull Creek	26.37	0.00	0.00	0.00	4.68	16.79	0.00	4.78	0.09	0.02	0.00	0.00	0.00	0.08	17.04	0.00	9.25	0.00	0.00	33.0%	44.1%

Subwatershed	Catchment	Description	Total Acres	EXISTING LAND USE (Acres)								FUTURE LAND USE (Acres)								Model Impervious Cover (Existing %)	Model Impervious Cover (Future %)
				Agricultural	Government & Institutional	Industrial	Open Space	Residential	Retail, Commercial & Mixed Use	Transportation (Auto Surface)	Transportation, Utility & Waste Facilities	Water	Agricultural	Government & Institutional	Industrial	Open Space	Residential	Retail, Commercial & Mixed Use	Transportation (Auto Surface)	Transportation, Utility & Waste Facilities	Water		
Dead River Subwatershed	LMDR034	Bull Creek	184.64	3.42	0.36	0.00	34.95	107.42	5.50	32.99	0.00	0.00	0.00	0.00	0.00	0.32	138.73	5.66	39.92	0.00	0.00	34.3%	40.9%
Dead River Subwatershed	LMDR035	Dead River	230.24	17.85	0.00	0.78	109.61	63.95	6.22	27.45	2.05	2.33	0.00	0.00	0.00	26.85	73.99	102.03	27.36	0.00	0.01	23.0%	63.0%
Dead River Subwatershed	LMDR036	Dead River	69.75	0.00	0.00	0.00	63.02	0.00	0.00	0.00	5.29	1.44	0.00	0.00	0.00	67.97	0.00	0.00	0.00	0.00	1.77	6.7%	5.8%
Dead River Subwatershed	LMDR037	Bull Creek	350.67	7.90	0.00	0.00	138.42	148.14	0.00	38.19	16.74	1.28	0.00	0.00	0.00	92.23	187.72	15.55	37.98	17.18	0.00	23.6%	30.6%
Dead River Subwatershed	LMDR038	Dead River	49.40	0.00	0.00	0.00	47.67	0.00	0.00	0.00	0.00	1.73	0.00	0.00	0.00	46.53	0.00	0.00	0.00	0.00	1.71	5.7%	5.6%
Dead River Subwatershed	LMDR039	Dead River	308.68	0.00	0.00	0.00	303.60	0.00	0.00	0.00	0.00	5.08	0.00	0.00	0.00	303.14	0.00	0.00	0.00	0.00	5.54	5.8%	5.8%
Dead River Subwatershed	LMDR040	Dead River	384.21	0.00	0.00	0.00	317.56	19.68	0.00	4.89	35.74	6.34	0.00	0.00	0.00	306.88	40.19	0.00	6.18	24.96	6.00	9.0%	10.1%
Dead River Subwatershed	LMDR041	Ganster Ravine	386.14	0.00	0.00	0.00	215.63	82.98	3.55	39.20	42.57	2.21	0.00	0.00	0.00	125.95	162.38	4.26	50.63	42.35	0.56	19.7%	26.8%
Dead River Subwatershed	LMDR042	Glen Flora Tributary	1067.95	0.00	46.99	1.37	388.86	406.34	32.19	157.68	29.88	4.61	0.00	0.00	2.90	295.27	523.91	31.26	187.38	27.22	0.00	29.8%	32.3%
Dead River Subwatershed	LMDR043	Dead River	180.24	0.00	0.00	0.00	178.83	0.00	0.00	0.00	0.00	1.41	0.00	0.00	0.00	179.02	0.00	0.00	0.00	0.00	1.20	5.8%	5.8%
Dead River Subwatershed	LMDR044	Dead River	102.43	0.00	0.00	0.00	95.81	0.00	0.00	0.00	0.38	6.25	0.00	0.00	0.00	50.09	0.00	0.00	0.97	0.32	5.04	5.7%	3.7%
Dead River Subwatershed	LMDR045	Dead River	166.25	0.00	0.00	0.00	108.55	0.00	0.00	0.00	0.00	57.70	0.00	0.00	0.00	81.45	0.00	0.00	0.00	0.00	84.80	5.1%	4.8%
Dead River Subwatershed	LMDR046	Dead River	81.43	0.00	0.00	0.00	79.56	0.00	0.00	0.22	0.54	1.11	0.00	0.00	0.00	81.10	0.00	0.00	0.33	0.00	0.00	6.0%	6.1%
Dead River Subwatershed	LMDR047	Terrace & Harding Avenue Ravin	36.75	0.00	0.00	0.00	0.38	20.58	1.28	6.95	7.27	0.29	0.00	0.00	0.00	0.00	24.43	0.55	7.05	4.73	0.00	37.2%	37.2%
Dead River Subwatershed	LMDR048	Stanley Ravine	200.19	0.00	15.08	0.00	14.41	105.07	7.48	48.05	10.02	0.09	0.00	9.29	0.00	9.42	114.95	8.10	48.49	9.95	0.00	41.4%	41.8%
Dead River Subwatershed	LMDR049	Lake Catchment	416.68	0.00	0.00	0.00	218.47	0.00	0.00	22.86	148.78	26.57	0.00	0.00	0.00	211.76	0.00	0.00	20.11	154.48	13.25	13.5%	13.0%
Dead River Subwatershed	LMDR050	Lake Catchment	256.70	0.00	4.79	0.84	122.93	12.92	0.67	30.19	76.48	7.88	0.00	0.00	0.55	73.83	57.60	2.33	60.19	48.01	0.00	19.4%	29.2%
Dead River Subwatershed	LMDR051	Upton Park Ravine	228.76	0.00	9.69	0.00	28.72	128.18	6.93	55.25	0.00	0.00	0.00	0.00	0.00	6.74	156.63	9.34	56.05	0.00	0.00	39.7%	42.1%
Dead River Subwatershed	LMDR052	Lake Catchment	90.89	0.00	0.71	0.00	83.24	0.00	2.03	2.20	0.35	2.36	0.00	0.00	0.00	24.86	0.00	31.67	2.46	0.00	0.00	9.8%	38.3%
Dead River Subwatershed	LMDR053	Lake Catchment	104.86	0.00	0.00	36.61	28.05	0.00	13.90	8.53	17.57	0.21	0.00	0.00	0.00	23.06	0.00	68.92	9.37	0.00	0.00	49.5%	73.2%
Dead River Subwatershed	LMDR054	Upton Park Ravine	84.93	0.00	1.12	7.48	15.02	0.00	10.28	25.04	25.85	0.14	0.00	0.00	0.00	16.33	0.00	29.49	37.67	0.00	0.00	46.4%	66.9%
Kellogg Creek Subwatershed	LMKC001	Spring Bluff Ravine	638.66	281.98	0.77	2.59	163.30	133.86	9.29	40.71	0.20	3.03	0.00	3.42	0.00	7.06	45.86	31.12	22.16	0.00	3.42	16.2%	9.8%
Kellogg Creek Subwatershed	LMKC002	Spring Bluff Ravine	53.03	0.00	0.00	0.00	25.46	20.49	2.01	3.28	0.95	0.11	0.00	0.00	0.00	21.83	0.00	27.05	3.58	0.00	0.00	22.9%	58.1%
Kellogg Creek Subwatershed	LMKC003	Dead Dog Creek	1260.83	211.12	9.84	0.00	385.31	473.73	3.25	160.36	0.60	9.23	28.57	4.32	0.00	140.02	602.35	45.94	150.14	0.39	3.17	23.5%	27.3%
Kellogg Creek Subwatershed	LMKC004	Kellogg Creek	138.24	0.00	0.02	0.00	102.31	20.67	2.20	8.12	3.38	1.54	0.00	1.15	0.00	99.04	20.84	3.62	8.94	0.00	1.15	15.0%	16.3%
Kellogg Creek Subwatershed	LMKC005	Kellogg Creek	169.24	0.00	0.00	0.00	142.63	0.00	13.72	2.22	0.60	10.08	0.00	0.00	0.00	169.13	0.00	0.00	0.11	0.00	0.00	14.2%	5.9%
Kellogg Creek Subwatershed	LMKC006	Kellogg Creek	74.58	0.00	0.00	0.00	69.05	0.00	4.57	0.00	0.00	0.90	0.00	0.07	0.00	66.75	0.07	0.07	0.07	0.00	0.07	11.6%	5.4%
Kellogg Creek Subwatershed	LMKC007	Kellogg Creek	462.33	0.00	6.38	0.00	213.48	149.64	19.97	67.68	4.09	1.08	0.00	2.13	0.00	224.37	113.13	54.06	68.65	0.00	0.00	27.9%	32.5%
Kellogg Creek Subwatershed	LMKC008	Kellogg Creek	39.86	0.00	0.00	0.00	39.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.86	0.00	0.00	0.00	0.00	0.00	5.8%	5.8%
Kellogg Creek Subwatershed	LMKC009	Kellogg Creek Ravine	1286.20	203.40	29.22	0.49	461.83	404.27	7.14	121.97	46.83	11.04	0.00	14.43	44.97	258.49	746.92	43.51	134.73	43.14	0.00	21.4%	33.2%
Kellogg Creek Subwatershed	LMKC010	Kellogg Creek Ravine	283.27	21.27	11.30	0.64	86.81	108.29	0.43	47.43	6.93	0.16	0.00	0.36	21.25	13.08	187.99	1.39	51.95	7.24	0.00	28.1%	39.7%
Kellogg Creek Subwatershed	LMKC011	Kellogg Creek	331.81	0.00	0.00	0.00	274.85	34.65	1.52	14.02	6.55	0.23	0.00	0.00	0.00	272.87	34.28	3.50	16.38	4.77	0.00	11.7%	12.7%
Kellogg Creek Subwatershed	LMKC012	Kellogg Creek	56.46	0.00	0.00	0.00	52.66	0.00	0.00	2.05	0.00	1.76	0.00	0.00	0.00	56.42	0.00	0.00	0.00	0.00	0.04	8.1%	5.8%
Kellogg Creek Subwatershed	LMKC013	Kellogg Creek	237.65	0.00	0.00	0.00	128.62	50.75	7.34	23.84	21.79	5.31	0.00	0.00	0.00	112.21	42.76	31.76	24.32	23.03	3.57	21.4%	30.5%
Kellogg Creek Subwatershed	LMKC014	Kellogg Creek Ravine	885.51	51.27	49.69	58.00	271.65	234.50	40.25	107.10	53.60	19.45	0.00	23.61	143.70	42.12	329.91	176.93	105.78	55.88	7.56	31.9%	54.4%
Kellogg Creek Subwatershed	LMKC015	Kellogg Creek	223.75	0.00	1.35	0.00	121.08	43.28	0.95	19.31	16.97	20.81	0.00	1.31	0.00	115.61	45.54	1.77	24.33	15.30	19.88	17.5%	19.4%
Kellogg Creek Subwatershed	LMKC016	Kellogg Creek Ravine	150.48	0.00	3.59	1.49	20.04	75.09	2.93	47.12	0.11	0.12	0.00	4.15	0.00	11.38	76.71	5.91	52.32	0.00	0.00	41.6%	45.5%
Kellogg Creek Subwatershed	LMKC017	Kellogg Creek	162.66	0.00	0.43	0.00	18.19	75.91	21.18	46.96	0.00	0.00	0.00	0.49	0.00	3.04	80.03	28.14	50.95	0.00	0.00	48.1%	54.3%
Kellogg Creek Subwatershed	LMKC018	Kellogg Creek Ravine	138.89	4.53	22.43	32.11	47.29	15.55	0.98	15.93	0.07	0.00	0.00	10.29	61.82	25.36	19.27	6.76	15.39	0.00	0.00	39.6%	54.8%
Kellogg Creek Subwatershed	LMKC019	Kellogg Creek Ravine	320.18	0.00	13.44	0.02	66.98	147.79	2.25	86.73	0.00	2.96	0.00	11.36	0.58	61.10	149.80	3.12	94.23	0.00	0.00	36.9%	38.7%
Kellogg Creek Subwatershed	LMKC020	Kellogg Creek	102.16	0.00	0.00	0.00	97.02	0.00	0.00	4.17	0.97	0.00	0.00	0.00	0.00	97.76	4.07	0.00	0.00	0.31	0.00	8.5%	6.8%
Kellogg Creek Subwatershed	LMKC021	Kellogg Creek	334.06	0.00	0.00	1.50	280.12	0.00	0.00	15.71	36.72	0.00	0.00	0.00	0.00	229.82	65.30	2.47	7.25	29.23	0.00	10.5%	13.7%
Kellogg Creek Subwatershed	LMKC022	Kellogg Creek Ravine	32.98	0.00	2.18	0.00	2.36	17.21	0.57	10.66	0.00	0.00	0.00	2.16	0.00	0.82	18.04	0.22	11.73	0.00	0.00	43.8%	45.5%
Kellogg Creek Subwatershed	LMKC023	Kellogg Creek	140.69	0.00	2.13	0.00	46.83	41.87	9.65	39.36	0.84	0.00	0.00	1.93	0.00	42.70	41.00	13.15	41.91	0.00	0.00	38.2%	41.4%
Kellogg Creek Subwatershed	LMKC024	Kellogg Creek Ravine	138.08	0.00	7.92	1.34	19.87	63.64	0.77	44.54	0.00	0.00	0.00	5.59	1.25	11.96	72.07	0.64	46.57	0.00	0.00	41.5%	43.0%
Kellogg Creek Subwatershed	LMKC025	Kellogg Creek Ravine	361.73	59.77	34.84	5.93	91.85	122.10	0.00	42.92	0.35	3.97	0.00	48.56	14.64	0.43	244.45	28.47	25.17	0.00	0.00	26.8%	42.9%
Pettibone Creek Subwatershed	LMPC001	Pettibone Creek	160.62	0.00	25.07	0.00	14.55	74.39	0.40	46.21	0.00	0.00	0.00	20.27	0.02	6.66	83.17	1.27	49.24	0.00	0.00	42.7%	44.4%
Pettibone Creek Subwatershed	LMPC002	Pettibone Creek	271.67	0.00	86.72	0.00	78.15	62.76	1.11	42.37	0.00	0.55	0.00	84.82	0.00	36.73	102.46	2.41	45.25	0.00	0.00	35.9%	40.3%
Pettibone Creek Subwatershed	LMPC003	Pettibone Creek	244.36	0.00	19.07	9.82	19.90	124.53	2.58	65.23	3.21	0.02	0.00	11.24	8.49	3.00	139.58	7.69	74.36	0.00	0.00	42.7%	46.6%
Pettibone Creek Subwatershed	LMPC004	Pettibone Creek	256.82	0.00	6.97	22.93	41.26	90.17	17.57	68.14	9.70	0.08	0.00	6.00	19.40	0.69	100.71	50.54	79.47	0.00	0.00	45.6%	60.0%
Pettibone Creek Subwatershed	LMPC005	Pettibone Creek	148.46	0.00	108.51	3.17	5.78	0.01	4.25	20.86	5.90	0.00	0.00	125.87	7.50	0.50	0.16	0.00	14.42	0.00	0.00	51.7%	53.0%
Pettibone Creek Subwatershed	LMPC006	Lake Catchment	128.63	0.00	86.79	0.00	28.80	0.00	0.00	8.84	3.91	0.29	0.00	80.85	0.00	27.48	0.00	0.00	0.00	0.00	0.00	40.4%	32.6%
Pettibone Creek Subwatershed	LMPC007	Pettibone Creek	319.85	0.00	33.46	35.18	77.81	91.65	9.75	62.79	9.02	0.17	0.00	150.80	41.97	32.05	8.95	27.76	58.32	0.00	0.00	40.8%	56.2%
Pettibone Creek Subwatershed	LMPC008	Pettibone Creek	131.13	0.00	104.58	0.00	0.00	0.00	0.00	22.43	2.82	1.30	0.00	118.66	0.00	0.00	0.00	0.00	12.47	0.00	0.00	52.2%	51.8%
Pettibone Creek Subwatershed	LMPC009	Pettibone Creek	111.92	0.00	92.47	0.00	0.68	2.12	0.00	16.38	0.00	0.27	0.00	104.62	0.00	0.00	2.79	0.00	0.00	0.00	0.00	52.1%	47.4%
Pettibone Creek Subwatershed	LMPC010	Pettibone Creek	53.16	0.00	35.37	1.08	1.97	0.00	0.00	12.11	1.96	0.67	0.00	39.17	1.09	0.00	0.00	0.00	12.89	0.00	0.00	51.6%	55.3%
Pettibone Creek Subwatershed	LMPC011	Pettibone Creek	173.09	0.00	136.74	0.00	10.33	0.04	0.00	23.91	2.07	0.00	0.00	136.10	0.00	23.34	0.00	0.00	13.64	0.00	0.00	49.7%	45.6%
Pettibone Creek Subwatershed	LMPC012	Pettibone Creek	241.19	0.00	46.98	0.00	158.02	13.68	0.00	15.55	2.83	4.13	0.00	57.33	0.00	87.76	80.37	0.00	15.73	0.00	0.00	20.0%	28.6%
Pettibone Creek Subwatershed	LMPC013	Pettibone Creek	233.69	0.00	124.62	0.00	53.11	15.59	0.00	31.10	7.78	1.49	0.00	86.53	0.00	97.79	21.15	0.00	28.22	0.00	0.00	39.9%	32.1%
Pettibone Creek Subwatershed	LMPC014	Lake Catchment	117.25	0.00	1.56	0.00	83.22	30.67	0.00	1.47	0.00	0.32	0.00	0.85	0.00	8.27	107.08	0.00	0.00	0.00	0.00	13.6%	28.3%
Pettibone Creek Subwatershed	LMPC015	Pettibone Creek	257.04	0.00	19.48	0.00	84.13	94.70	4.05	41.96	10.07	2.66	0.00	43.94	0.00	43.18	109.10	5.03	54.31	0.00	1.48	30.5%	39.1%
Pettibone Creek Subwatershed	LMPC016	Pettibone Creek	362.56	4.82	3.73	0.00	208.78	88.10	0.54	46.02	4.83	5.74	0.00	6.31	0.00	111.21	184.49	1.07	56.29	0.00	3.19	20.6%	29.2%
Waukegan River Subwatershed	LMWR001	Waukegan River	584.97	0.34	14.94	0.00	147.21	133.92	0.09	52.16	231.78	4.52	0.00	0.00	0.00	71.89	193.11	0.36	305.74	10.70	3.17	23.0%	47.7%
Waukegan River Subwatershed	LMWR002	Waukegan River	131.31	0.15	1.30	0.00	34.30	55.66	0.00	24.66	15.22	0.02	0.00	0.00	0.00	2.91	79.17	0.00	34.12	15.11	0.00	30.0%	38.5%
Waukegan River Subwatershed	LMWR003	Waukegan River	131.39	0.00	0.00	0.00	43.05	63.30	0.00	24.55	0.00	0.48	0.00	0.00	0.00	0.00	94.50	0.00	36.89	0.00	0.00	29.5%	41.4%
Waukegan River Subwatershed	LMWR004	Waukegan River	279.71	0.00	2.94	0.00	135.82	97.07	12.99	23.80	0.00	7.09	0.00	0.00	0.00	133.77	106.08	16.04	23.81	0.00	0.00	24.5%	25.9%
Waukegan River Subwatershed	LMWR005	Waukegan River	334.34	0.00	19.33	2.75	78.02	157.94	9.24	65.49	1.25	0.32	0.00	0.00	0.00	28.04	213.89	13.96	78.44	0.00	0.00	35.7%	40.4%
Waukegan River Subwatershed	LMWR006	Waukegan River	83.45	0.00	2.09	1.41	28.71	24.41	17.42	8.25	0.02	1.15	0.00	0.00	0.00	25.60	31.59	18.06	8.19	0.02	0.00	41.2%	41.7%
Waukegan River Subwatershed	LMWR007	Waukegan River	294.93	0.00	29.27	0.00	18.11	153.39	20.94	50.23	22.50	0.48	0.00	0.00	0.00	11.23	188.64	21.60	49.56	23.90	0.00	41.4%	40.0%
Waukegan River Subwatershed	LMWR008	Waukegan River	302.62	0.00	3.97	0.59	145.07	84.91	2.12	37.70	23.12	5.14	0.00	0.00	0.00	3.21	193.23	5.10	74.24	21.53	5.31	22.9%	39.5%
Waukegan River Subwatershed	LMWR009	Waukegan River	221.34	3.60	11.88	0.00	123.74	24.91	20.31	12.18	15.95	8.77	0.00	0.00	0.00	64.87	89.07	26.23	12.37	28.80	0.00	23.9%	31.9%
Waukegan River Subwatershed	LMWR010	Waukegan River	95.77	0.00	2.51	0.00	3.75	64.14	3.97	21.40	0.00	0.00	0.00	0.00	0.00	0.52	69.53	3.92	21.80	0.00	0.00	41.5%	42.0%
Waukegan River Subwatershed	LMWR011	Waukegan River	157.17	0.00	8.73	0.00	2.70	90.14	6.54	44.85	4.20	0.00	0.00	0.00	0.00	2.42	98.91	7.44	44.12	4.27	0.00	44.8%	43.9%
Waukegan River Subwatershed	LMWR012	Waukegan River	273.18	0.95	22.19	1.31	9.44	167.23	6.78	65.24	0.00	0.04	0.00	0.00	0.00	6.13	190.82	10.26	65.98	0.00	0.00	42.3%	41.9%
Waukegan River Subwatershed	LMWR013	Waukegan River	253.16	0.00	26.58	0.00	70.22	107.68	3.96	32.62	7.99	4.11	0.00	0.00	0.00	28.45	159.19	19.44	38.01	8.06	0.00	30.9%	38.4%
Waukegan River Subwatershed	LMWR014	Waukegan River	303.27	0.00	15.80	0.00	15.55	163.89	34.38	72.62	0.00	1.02	0.00	0.00	0.00	10.05	180.92	39.74	72.56	0.00	0.00	47.3%	48.0%
Waukegan River Subwatershed	LMWR015	Waukegan River	151.34	0.00	6.54	5.82	9.78	89.94	1.87	37.06	0.00	0.33	0.00	0.00	4.02	5.13	100.34	4.70	37.16	0.00	0.00	41.7%	42.5%
Waukegan River Subwatershed	LMWR016	Waukegan River	445.26	0.00	49.35	0.36	15.36	222.64	42.51	102.72	12.30	0.00	0.00	0.60	0.00	29.93	249.69	59.83	98.32	6.89	0.00	47.1%	46.5%
Waukegan River Subwatershed	LMWR017	Waukegan River	169.50	0.00	9.55	0.00	39.42	70.29	9.85	37.21	0.92	2.27	0.00	0.00	0.00	25.65	85.71	19.20	38.94	0.00	0.00	38.0%	43.5%
Waukegan River Subwatershed	LMWR018	Waukegan River	128.64	0.00	20.51	1.20	9.29	55.05	14.65	27.94	0.00	0.00	0.00	0.00	0.31	6.96	77.83	14.80	28.75	0.00	0.00	48.6%	45.9%
Waukegan River Subwatershed	LMWR019	Waukegan River	193.49	0.00	25.96	11.59	30.21	14.71	41.11	62.79	5.96	1.16	0.00	0.00	0.00	14.26	28.98	76.00	66.74	0.00	0.00	58.9%	68.4%
Waukegan River Subwatershed	LMWR020	Waukegan River	483.95	0.00	40.90	7.57	91.02	200.19	53.65	89.51	0.48	0.62	0.00	28.88	3.09	58.57	232.09	69.65	89.21	0.00	2.45	43.0%	45.9%
Waukegan River Subwatershed	LMWR021	Waukegan River	329.99	0.00	22.79	12.33	57.02	149.01	14.00	71.37	0.05	3.40	0.00	0.00	0.99	48.78	166.48	40.93	72.80	0.00	0.00	40.3%	44.1%
Waukegan River Subwatershed	LMWR022	Waukegan River	443.91	0.00	29.33	5.89	163.45	125.91	50.31	68.84	0.00	0.17	0.00	0.00	1.25	133.97	177.23	54.91	76.54	0.00	0.00	37.2%	38.4%
Waukegan River Subwatershed	LMWR023	Waukegan River	48.61	0.00	4.09	2.29	12.40	19.70	0.47	9.66	0.00	0.00	0.00	0.00	2.59	11.94	19.35	5.78	8.95	0.00	0.00	36.3%	42.2%
Waukegan River Subwatershed	LMWR024	Waukegan River	133.58	0.00	2.69	0.00	3.13	77.95	9.33	40.48	0.00	0.00	0.00	2.33	0.00	0.79	81.37	8.26	40.82	0.00	0.00	46.9%	46.9%
Waukegan River Subwatershed	LMWR025	Waukegan River	130.06	0.00	20.33	16.69	39.54	27.93	3.24	18.41	3.92	0.00	0.00	0.00	25.30	25.54	25.98	38.26	14.97	0.00	0.00	38.6%	59.2%
Waukegan River Subwatershed	LMWR026	Lake Catchment	602.83	0.00	46.29	117.95	199.19	82.19	15.89	84.32	56.71	0.29	0.00	15.40	119.88	62.79	115.83	177.59	101.47	9.15	0.00	38.6%	64.0%
Waukegan River Subwatershed	LMWR027	Waukegan River	424.92	0.00	16.92	8.36	260.20	66.10	14.60	53.86	0.21	4.65	0.00	18.44	16.35	228.16	72.66	29.73	54.48	0.00	5.10	24.1%	29.3%
Waukegan River Subwatershed	LMWR028	Waukegan River	59.82	0.00	2.43	0.29	5.06	31.33	1.51	19.19	0.01	0.00	0.00	2.45	0.51	4.31	32.43	0.89	19.23	0.00	0.00	43.7%	43.4%
Waukegan River Subwatershed	LMWR029	Waukegan River	75.28	0.00	1.92	0.00	1.40	44.89	2.11	24.97	0.00	0.00	0.00	0.00	0.00	0.52	44.00	5.87	24.89	0.00	0.00	45.4%	48.6%

APPENDIX H:
FLOOD PROBLEM AREA UPDATE

Strelcheck, Ashley

From: Lake County Stormwater Management Commission <LakeCountySMC@public.govdelivery.com>
Sent: Friday, November 22, 2019 12:11 PM
To: Strelcheck, Ashley
Subject: Flood Problem Area Community Update!: TEST

VIEW AS WEBPAGE

FLOOD PROBLEM AREA COMMUNITY UPDATE

Lake County Stormwater Management Commission (SMC) needs watershed stakeholder input updating flood problems areas in the North Branch Chicago River and Lake Michigan watershed planning areas.

We Need Your Input!

- **Who:** Input from North Branch Chicago River & Lake Michigan watershed communities & townships
- **What**: Please go to Lake County's Flood Problem Area Web Application to update information on existing or known flood problem areas and identify new flood problem areas.
- **Where**: Please review your community/township areas on the Web Application and update or provide new information on flood problem areas.
- **How:** Click on this link Web Application and you can use this Tutorial to for step-by-step instructions.
- **When**: Deadline to provide updated information is **January 15, 2020**

- **Why**: This information will assist SMC with the watershed planning efforts to identify additional flood problem areas and prioritize flood mitigation projects.

Please Note: This web application contains information that contains sensitive (site-specific) flood data. This web application should not be redistributed or shared publically.

For more information about the Web Application please contact:

- Ashley Strelcheck, astrelcheck@lakecountyil.gov
- Mike Prusila, mprusila@lakecountyil.gov

Funding for the North Branch Chicago River and Lake Michigan Watershed Plans are provided, in part, by the Illinois Department of Natural Resources Coastal Management Program, the Illinois Environmental Protection Agency through Section 319 of the Clean Water Act, and the Lake County Stormwater Management Commission.

For more information visit:

- **NBWW website**
- **North Branch Chicago River watershed webpage** - watershed planning efforts
- **Lake Michigan watershed webpage** - watershed planning efforts

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SMC Website | email SMC

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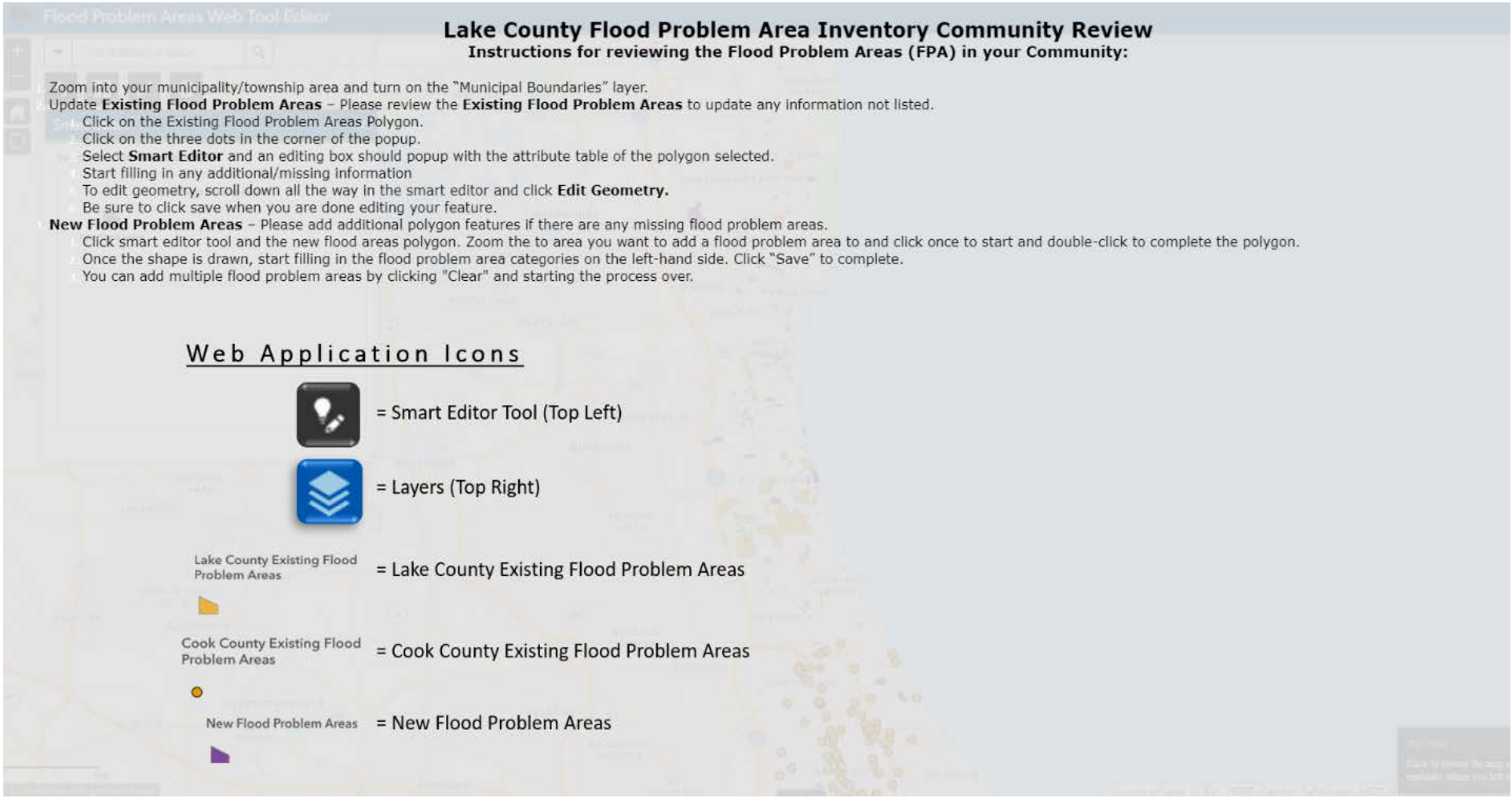
GOVDELIVERY

Lake County Stormwater Management Commission (SMC) reached out to North Branch Chicago River watershed stakeholders for input on updating the existing flood problems area inventory between November 2019 and November 2020. SMC requested community input on the current flood problem area inventory information (via a Web Application-link) for the North Branch Chicago River Watershed-Based Plan Update (see more information below). Updates provided to current flood problem areas or newly identified flood problem areas assisted SMC to better prioritize flood problem areas and identify flood mitigation opportunities and projects. This information is important because flood problem areas have an impact on all watershed stakeholders and identifying flood problem areas in watershed-based plans helps prioritize projects for grant and cost-share funding opportunities.

Webapplication Link: https://lakecountyil.maps.arcgis.com/apps/webappviewer/index.html?id=524e79af4b52442d8e94a5227a182674



APPENDIX I:
POTENTIAL WETLAND RESTORATION SITE METHODOLOGY

POTENTIALLY RESTORABLE WETLAND SITE IDENTIFICATION METHODOLOGY

Geographic data from the Lake County Wetland Restoration and Preservation Plan (WRAPP) Potentially Restorable Wetland (PRW) map layer were used as the baseline for potential wetland restoration site selection and prioritization. The Lake County WRAPP data cover the planning area within Lake County, Illinois. Wetland restoration sites from the 2008 Dead River and Kellogg Creek Watershed-Based Plans were updated to reflect wetland geometry delineated in the WRAPP (there were not apparent viable wetland restoration sites in the Cook County portion of the planning area). The Lake County WRAPP data include qualitative predictions of significance level (high, moderate, low) for various beneficial wetland functions, including ***unique wetland resources (high quality wetlands)***, ***flood water storage, nutrient transformation, sediment and particulate retention, streambank stabilization, and native fish habitat***. Additional filtering and prioritization criteria were applied to obtain a reasonable number of potential restoration sites for cost and pollutant load reduction and inclusion in the action plan. The method for prioritization is outlined below.

1) Lake County PRWs were prioritized according to the following criteria, which are weighted by the significance rating for each potentially restorable wetland (High, Moderate, Low, NA):

Function	Criteria Weight = 2.0	Criteria Weight = 1.0	Criteria Weight = 0.5	Criteria Weight = 0.25	Criteria Weight = 0.1	Criteria Weight = 0
Floodwater Storage		High	Moderate			Low & NA
In floodplain?		Yes				No
Sediment and Other Particulate Retention		High	Moderate			Low
Nutrient Transformation (P-focus)		High	Moderate			Low
Shoreline/Streambank Stabilization		High	Moderate			Low & NA
Stream Baseflow Maintenance		High	Moderate			Low & NA
Stream Shading				High	Moderate	Low & NA
Native Fish Habitat				High	Moderate	Low & NA
Unique Wetland Resource	High					NA
Waterfowl Habitat				High	Moderate	Low & NA
Wetland-Dependent Bird Habitat, Other				High	Moderate	Low & NA
Wildlife Movement Corridor				High	Moderate	Low & NA
Woodland Amphibian Habitat				High	Moderate	Low & NA

2) Based on the sum of scores for each polygon, all polygons were classified as High, Medium, or Low priority.

3) Priority distribution by acres of potentially restorable wetlands is as follows: 26% High, 46% Moderate, 28% Low.

DRAFT

APPENDIX J:
COST ASSUMPTIONS FOR BEST MANAGEMENT PRACTICES

ACTION	COST	BMP TYPE
Beach Grading	$2,500	Beach Management
Beach Grooming	$22,700-$102,000	Beach Management
Beach Survey	$5,000	Beach Management
Bioswale	$16.87 per square foot	Beach Management
Debris Jam Removal	$11,000 if debris only. $87,000 if debris and sediment.	Debris Jam, Stream/Ravine Restoration
Detention Basin Debris Removal	$5,000	Detention Basin Retrofit
Detention Basin Retrofit	$55,000	Detention Basin Retrofit
Discharge Point Repair/Replacement	$5,500-$33,000	Water Infrastructure
Dune Protection Area	$300	Beach Management
Filter Strip	$10,000 per acre.	Filter Strip
Gull Management	$10,000	Beach Management
Hydraulic Structure Repair/Replacement	$11,000-$87,000	Water Infrastructure
Illicit Discharge Investigation	$500 per sampling event, $16,500 per beach season	Beach Management, Stream/Ravine Restoration, Detention Basin Retrofit
Illicit Sump Pump Connection Removal	$250 per house	Flood Risk Reduction
Invasive Species Control	$800-$1,000 per acre	Beach Management
Lake Michigan Shoreline Stabilization	$750-$2,000 per linear feet	Beach Management, Shoreline Stabilization
Lift Station Maintenance	$3,315 per year	Beach Management
Plan Creation	$75,000-$100,000	Beach Management, Flood Risk Reduction
Property Grading	$50,000-$70,000	Beach Management
Riparian Buffer Vegetation Management	$4,300-$10,000 per acre	Stream/Ravine Restoration
Runoff Volume Reduction	$7-$35 per square foot	Runoff Volume Reduction
Sand Dune Creation	$3,000 per dune	Beach Management
Streambank and Ravine Stabilization	$325 per linear foot for linear features, $6,000-$33,000 for point features	Stream/Ravine Restoration, Stabilization
Stream Dredging	$312-$416 per linear foot	Flood Risk Reduction
Stormwater Detention Creation or Expansion	$56,000-$112,500	Flood Risk Reduction
Wetland Enhancement	$33,000 per acre Site Specific Action Plan, $10,000 per acre Basin Wide Site Specific Action Plan	Wetland Enhancement
Wetland Restoration	$87,000 per acre	Wetland Restoration

*Specific action costs from detailed engineering plans not included in this Appendix.

APPENDIX K:
EXECUTIVE SUMMARIES FOR KELLOGG CREEK, DEAD RIVER, AND WAUKEGAN RIVER WATERSHED-BASED PLANS

dead river

watershed - based plan

2008

Our vision for the Dead River Watershed is of . . .

a network of healthy streams and ecosystems where habitat for native plants and animals, and surface and ground water quality, are protected and enhanced;

unique, vibrant communities with sustainable and healthy economies;

a dedicated system of open space is protected, enhanced and preserved.

~ THE DEAD RIVER WATERSHED
PLANNING COMMITTEE

executive summary

THE DEAD RIVER WATERSHED

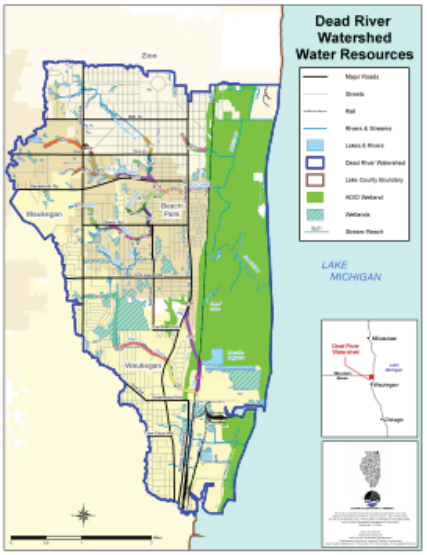
The Dead River watershed is the area of land where water that falls as rain or snow flows across the landscape, enters Bull Creek, Glen Fora Tributary or Dead River, and ultimately drains into Lake Michigan. The 16 square mile (10,200-acre) watershed is bounded by Green Bay Road on the west, Lake Michigan on the east, Waukegan Harbor on the south, and Shiloh 25th Street on the north.

The watershed is part of the Root-Pike watershed system that includes Kellogg Creek to the north and the Root and Pike Rivers in southeastern Wisconsin. The Dead River watershed is one of the few remaining Illinois tributaries that drains to Lake Michigan, and contributes to the overall quality and health of Lake Michigan and the Great Lakes system.

The watershed includes over twelve miles of stream and more than 1700 acres of wetlands. From north to south, the major stream channels inlcude an unnamed tributary, Bull Creek, and Glen Flora Tributary. Bull Creek is made up of the 27th Street Tributary, North Branch of Bull Creek, South Branch of Bull Creek, and the Wilson Avenue Tributary, which together become the Dead River in Illinois Beach State Park. The Glen Flora Tributary, formerly known as the Little Dead River, currently flows through the Johns Manville lagoons and discharges through a pipe to Lake Michigan.

The watershed includes part of Illinois Beach State Park, a National Natural Landmark visited by 2.8 million people annually, which contains 2000 acres of Illinois Nature Preserve, a high concentration of threatened and endangered species, and unique ecosystems found nowhere else on earth. The park also contains the last remaining undeveloped Lake Michigan shoreline and sand dune complex in Illinois.

The Dead River watershed includes areas of the City of Zion, Village of Beach Park, and City of Waukegan, as well as lands owned and managed by Lake County, the Lake County Forest Preserve District, the State of Illinois, and a number of other public and private entities.



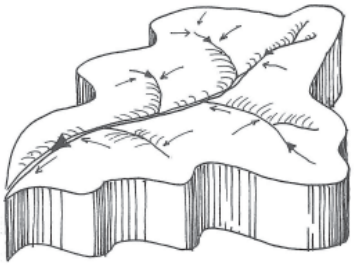
The Dead River watershed (red dot) within the context of Illinois, Wisconsin, and the Great Lakes basin.

THE WATERSHED OVER TIME

In the early 1800s, the watershed landscape consisted of scattered oak trees, prairies, and wetlands in the central and western thirds, large areas of open oak woodlands along the ridges and ravines, and a coastal 'beach ridge' along the Lake Michigan shoreline. Before settlement, the Dead River and tributary streams flowed cool and clear, and were surrounded with dense ground vegetation and scattered trees. When water reached the Lake Michigan beach plain, it spread out across the landscape creating a vast wetland and dune system and slowly seeped into the lake.

In the 1800's, the fertile soils and openness of the oak tree and prairie landscape attracted farmers, who converted these lands, including the draining of wetlands, for agriculture. In the early 1900's, urbanization of settlements began and continued with suburbanization following World War II. Today, the coastal beach ridge has been preserved as Illinois Beach State Park, and many of the ravine woodlands are intact. The rest of the watershed has been converted into downtown areas, older neighborhoods, and newer suburban development interspersed with commercial and industrial land uses and Waukegan Airport.

A watershed is the geographic area of land that drains water to a particular stream, lake or wetland, and is defined by the topography of the landscape. The watershed includes not just the surface of the land, but also the area below the surface where water that infiltrates into the soil flows toward the receiving stream or waterbody as underground flow.



A WATERSHED DRAINS AN AREA OF LAND

URBANIZING WATERSHED

© Conservation Design Forum

© Conservation Design Forum

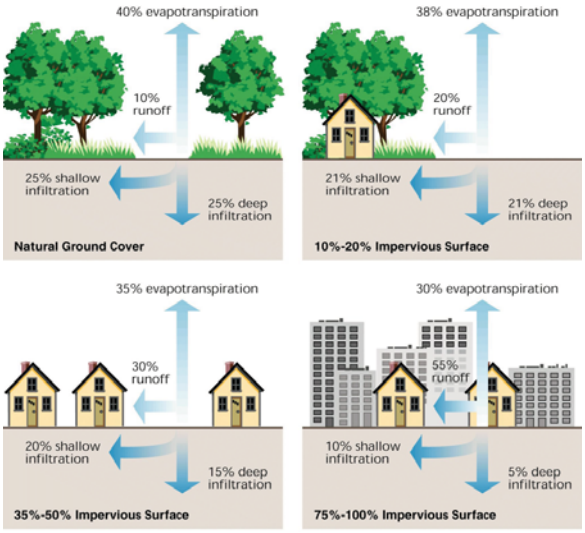
These landscapes have been restored to resemble presettlement condition similar to that found in the Dead River watershed.

THE IMPACT OF WATERSHED DEVELOPMENT

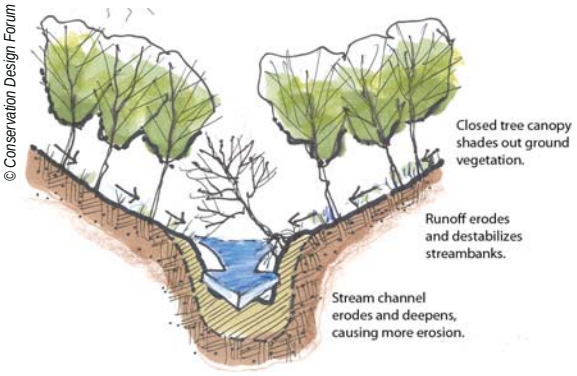
Under natural conditions, most of the water that falls on earth is used by plants, evaporates into the air, or seeps into the soil and becomes groundwater. Water that does not evaporate or infiltrate into the ground is called runoff. As a watershed develops, natural areas are converted into lawns, rooftops, roads, and parking lots. Instead of being used by plants or seeping into the ground, water that falls on these surfaces quickly flows to our streams directly or through the stormwater drainage and sewer system. As a result, streams and wetlands receive large pulses of water in shorter periods of time, resulting in erosion and destabilization of the stream channel and streambanks. When this happens, streambanks erode away, causing the loss of property and the pollution of our water with sediment. Where the stream channels or the stormwater system is insufficient to contain this flush of water, flooding can occur.

Streambanks are further destabilized by the type and density of vegetation along the streambanks. Due to the introduction of plants that are not native to Illinois, and to the lack of natural landscape processes such as fire, deep-rooted ground vegetation that used to stabilize stream edges have been replaced with non-native plants and dense woods that shade out good vegetation and do not adequately stabilize the stream banks.

In addition to increasing the volume and rate of runoff with urbanization, pollutants such as oil and grease, road salt, eroding soil and sediment, metals, bacteria from pet wastes, and excess nutrients (nitrogen and phosphorus) from fertilizers are washed from streets, buildings, parking lots, construction sites, lawns and golf courses into the streams and lake. This kind of pollution is called nonpoint source pollution. Additional pollutants include increased water temperature, altered pH, and low dissolved oxygen levels, making the stream or river unhealthy for aquatic life.



Greater imperviousness results in a greater percentage of rainfall leaving as runoff and less infiltrating into the ground.



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High runoff can cause erosion and incision of stream channels.

Impervious surfaces contribute pollutants to rain water runoff.

The health of the Dead River system and Lake Michigan are a direct reflection of land use activities throughout the watershed, such as how we develop the watershed and how we live in and manage our urban landscape, have a dramatic effect on the condition of watershed resources. These impacts affect not only the residents and visitors of Zion, Beach Park, and Waukegan, but all of the communities that depend on Lake Michigan to provide water, recreation, food, economic well-being, or other values. Fortunately, there are proven practices for addressing these impacts, and landowners, business owners, public officials, and all who live, work, and play within the watershed can take positive action towards improving the watershed. One of the first steps in the process it to understand watershed problems and make a plan for moving forward -- a watershed plan.

WATERSHED PLANNING

Healthy watersheds offer many benefits including a healthy creek and river with better water quality, enhanced opportunities for recreation and environmental education, opportunities for environmentally sustainable economic development, better wildlife habitat, reduced flood damage, and a healthier Lake Michigan.

One of the first steps to rediscovering and enhancing these watershed benefits is through a process called watershed planning. The purpose of the watershed planning process is to:

- better understand the condition of Dead River watershed resources;
- identify actions to prevent existing watershed problems from worsening as a result of future land use and management changes;
- preserve and improve water resources;
- reduce flood damage;
- protect property and infrastructure;
- and improve the quality of life for watershed residents.

Surface drainage patterns do not conform to political boundaries. As a result Watershed planning provides a unique opportunity to bring numerous communities and other stakeholders together to plan for the greater good and to protect and improve the land and water resources they share and impact.

The following general steps were used in developing this watershed plan.

1. Conduct monthly Watershed Planning Committee meetings with watershed stakeholders and technical team members.
2. Solicit public input on watershed issues and opportunities and formulate watershed goals and objectives.
3. Review and analyze existing studies, watershed conditions, and watershed data to identify watershed problems.
4. Identify best management practices and policies to improve watershed resources.
5. Develop detailed recommendations for a watershed improvement action and implementation plan.

© Lake County Stormwater Management Commission

Watershed planning is a participatory process with watershed stakeholders.

WATERSHED ISSUES AND GOALS

During the first two Watershed Planning Committee meetings, watershed stakeholders developed a list of watershed issues and opportunities and prioritized them via a voting process. Specific areas of concern include the stream system and erosion problems, the ravines, the area north of Waukegan Harbor, and Lake Michigan and its shoreline. These and other issues were categorized into the following topic areas, with the number of priority votes received shown in parenthesis:

1. Stream Restoration and Management (53)
2. Floodplains (16)
3. Natural Resources (34)
4. Watershed Education & Coordination (32)
5. Stormwater Infrastructure (0)
6. Water Quality (0)

Due to the similarity and proximity of the Kellogg Creek and Dead River watersheds, these results were combined with those of the Kellogg Creek watershed as the foundation for developing the following watershed management goals for both, which are further detailed in Chapter 2:

Goal A: Restore the health and function of streams as part of a watershed *green infrastructure system or network* (see description at right).

Goal B: Reduce and prevent flood damage to protect health, safety, property and infrastructure.

Goal C: Preserve and restore a *green infrastructure* network of land and water resources.

Goal D: Provide people with watershed improvement education, resources, and opportunities.

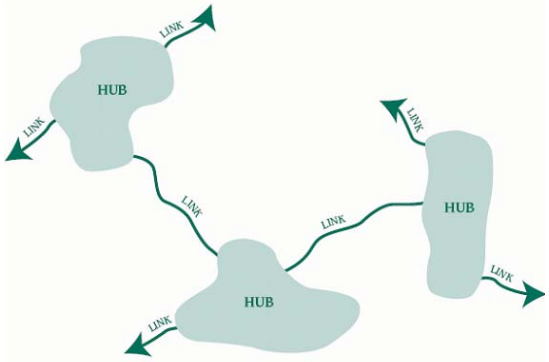
Goal E: Improve water quality by reducing the impacts of land use and development.

Goal F: Improve public, private, and non-profit coordination and decision-making.

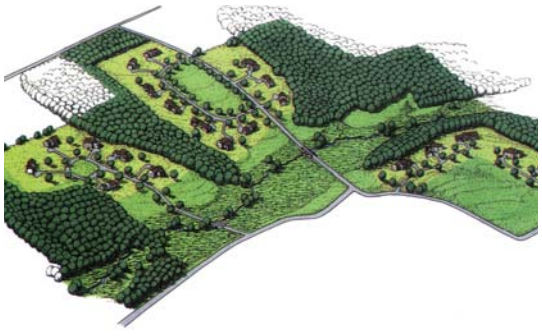
Goal G: Stabilize the stream systems by reducing surface runoff.

Green infrastructure: *On the local scale, municipal or neighborhood, green infrastructure consists of site-specific best management practices (such as naturalized detention facilities, vegetated swales, porous pavements, rain gardens and green roofs) that are designed to maintain natural hydrologic functions by absorbing and infiltrating precipitation where it falls.*

On the regional scale, green infrastructure consists of the interconnected network of open spaces and natural areas (such as forested areas, floodplains and wetlands, greenways, parks and forest preserves) that mitigate stormwater runoff, naturally recharge aquifers, improve water quality while providing recreational opportunities and wildlife habitat.



Conservation design: *A county-wide method for developing land that conserves the green infrastructure elements of a site while providing for development at full density on the remainder of the site. Conservation design typically includes the use of stormwater management measures that filter and infiltrate runoff on site.*



WATERSHED INVENTORY AND ASSESSMENT

Chapter 3 of this plan is an assessment of watershed conditions based on data, studies, and inventories, and the preparation of a series of watershed maps. The assessment included stream corridor conditions, stormwater infrastructure, flooding, water quality, land use, wetlands, and other relevant data and information. This information serves as baseline data for comparison with future watershed assessments. Five important conclusions based on this watershed assessment are summarized here.

1. The Dead River system exhibits rapid increases and decreases in water flow, level and velocity, which reduces water quality, reduces the quality of stream habitat, and destabilizes the stream channel, causing erosion of streambanks and ravines and damage to stormwater infrastructure.

2. Streambank and ravine erosion are a major concern along many reaches and require immediate attention. Stormwater discharge points are of particular concern as many of them were found to be failing or negatively impacting the stream system.

3. Water quality is impacted primarily by sediment, low dissolved oxygen levels, high phosphorous concentrations, and other typical urban watershed non- point source pollutants. The Waukegan Regional airport, other impervious surface areas, and the industrial legacy of Waukegan Harbor and areas to the north of the harbor are significant contributors to water runoff and pollution.

4. Preserving and restoring priority green infrastructure areas, including Illinois Beach State Park, Lyons Woods Forest Preserve, wetlands, and stream corridors, is critical for preserving the natural drainage system and improving water quality and other watershed resources. Restoration measures include restoring stream stability and aquatic habitat, controlling invasive species, which threaten high quality natural areas, stemming beach erosion in Illinois Beach State Park, and enhancing the habitat of the stream channel and the natural corridor through which the stream channel runs.

5. The municipalities, residents, businesses, landowners, and other organizations and agencies within the watershed lack the knowledge, skills, and resources to effectively coordinate to improve watershed resources.

WATERSHED BEST MANAGEMENT PRACTICE TOOLBOX

Chapter 4 of the watershed plan includes a description of best management practices and policies that can improve watershed resources. Included in this toolbox are actions that can be taken by residents, landowners, business owners, agencies, and municipalities to prevent conditions from worsening and to improve existing impaired conditions. Best management practices described in the toolbox include:

- Stabilize eroding streambanks using deep-rooted vegetation and other environmentally-friendly measures.

- Use conservation design principles for new development and retrofitting existing development with improved stormwater management practices.

- Install vegetated swales, raingardens, and filter strips, to help slow, filter, infiltrate, cool, and cleanse stormwater before being discharged to our streams and wetlands.

- Reduce the area of impervious surfaces and using permeable paving practices that allow water to infiltrate into the ground rather than run across the surface.

- Maintain deep-rooted, native vegetation buffers around streams, wetlands, and detention basins.

- Preserve green infrastructure including open space, stream corridors, wetlands, and natural areas.

executive summary

WATERSHED ACTION PLAN

The effectiveness of the Dead River watershed plan will be largely dependent on the quality of the action plan in Chapter 5. The action plan provides the "who, what, where and when" for making watershed improvements and includes programmatic, policy, and site-specific recommendations. The site-specific action items are tied to a particular location in the watershed or along the stream corridor, and include details such as area, length, cost, responsibility, schedule, and priority. The eleven most important recommendations are summarized as follows:

1. Stabilize streambanks and ravine slopes to reduce erosion, protect property and infrastructure, improve water quality, and improve habitat.

2. Restore and manage stream corridors by restoring native riparian buffers, reducing the density of trees by removing non-native and invasive species, removing excessive debris, and stabilizing the stream bed with practices that also enhance habitat.

3. Manage, retrofit, and stabilize the stormwater management system including detention basins and culverts, with focused attention on stormwater discharge points (pipes and ditches), to reduce runoff rate and volume and to improve water quality in the streams and Lake Michigan.

4. Preserve and restore priority green infrastructure areas to provide natural surface water storage areas, provide space for installing best management practices, and preserve an ecologically functioning network of open space, wetlands, streams, and natural areas as part of an interconnected system.

5. Manage and restore watershed natural areas including Lyons Woods Forest Preserve, Illinois Beach State Park and the coastal plain north of Waukegan Harbor, wetlands, and former wetlands / hydric soil areas.

6. Develop positive and creative new uses for the Zion Nuclear Power Plant and Waukegan Harbor areas, ensuring that these uses are compatible with protecting and improving the coastal plain and dunes and Lake Michigan.

7. Remediate existing flood problems and prevent future flood damage by reducing stormwater runoff and preserving areas for surface water storage and absorption such as floodplains, depressional storage areas, and wetlands, which also provide water quality improvement benefits.

8. Use better stormwater management including conservation design, and low impact development practices for new and existing development that slows, filters, infiltrates, cools, and cleanses stormwater runoff, especially in Critical Subbasins. This includes reducing pollution inputs at the source such as reducing herbicide and pesticide loads on lawns and road salt on streets and parking lots. It also includes installing lot level best management practices such as vegetated swales, rain gardens, stream buffers, filter strips, and reducing the use of lawn chemicals and fertilizers.

9. Modify and use planning and development standards, policies, and capital improvement plans and budgets to preserve green infrastructure and protect and enhance water quality.

10. Provide public education and outreach to enhance understanding and apprciation of watershed resources and problems, to provide solutions, and to provide opportunities for people to get involved in watershed stewardship and improvement activities.

11. Monitor and evaluate watershed plan implementation and physical watershed conditions to gauge progress towards watershed goals.

Monitoring is an important part of improving watershed resources.

MONITORING AND EVALUATION PLAN

A monitoring and evaluation plan was developed to provide a means of measuring progress towards watershed goals and plan implementation. This plan should be used by watershed plan stakeholders and other implementers to monitor watershed resources and to track whether meaningful progress is being made towards plan goals. The monitoring plan includes details such as the frequency of monitoring, short, medium, and long term milestones, responsible party, and mode of collection.

THE FUTURE OF THE WATERSHED DEPENDS ON ALL OF US

This plan has limited usefulness without the dedication and commitment of watershed stakeholders to the improvement, restoration, management, and stewardship of watershed resources. As the primary land use, development, and infrastructure authorities in the watershed, municipal and county officials and staff have a significant amount of the responsibility for plan implementation. County, state, and federal agencies also have a significant role in watershed plan implementation, by approving and supporting projects with funding, and by providing technical information, tools, and resources to assist local authorities and watershed organizations in their efforts. Watershed residents and landowners must also accept responsibility for managing their own land and water resources, for identifying watershed problems and opportunities, and for working with others to implement this plan.

All of these people and organizations will need to work together to successfully protect and restore the Dead River watershed, to ensure long-term watershed stewardship, and to share the responsibilities, costs, and benefits of watershed improvements. Plan implementation will also depend on a watershed organization to oversee, guide, coordinate and monitor watershed activities on behalf of the stakeholders. This organization typically forms as an outgrowth of the Watershed Planning Committee with support coming from a variety of state and local agencies as well as local land use authorities and decision makers. This is the primary mechanism for the general public to be involved in watershed activities, to support the implementation of the watershed plan, and to voice their concerns and celebrate their successes in restoring watershed resources.

WHY THIS WATERSHED PLAN

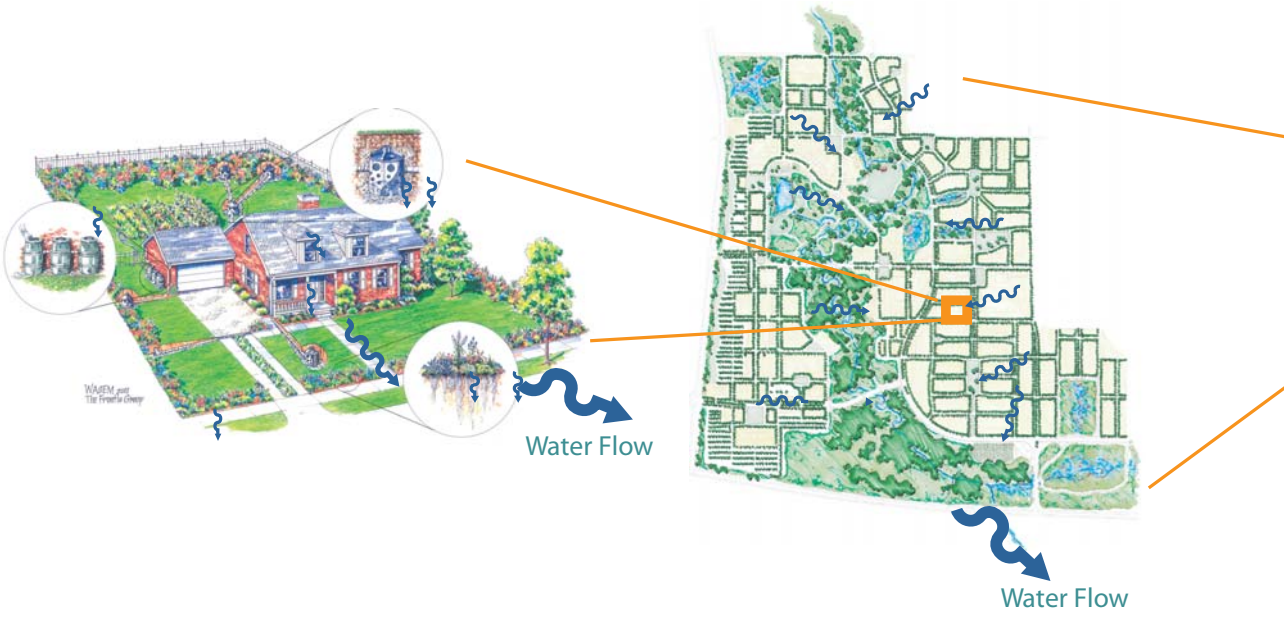
Humans, as well as plants and animals, require clean water to survive. This plan is important to you because it specifically addresses water problems in your community within the Dead River watershed. Clean and abundant water, healthy lakes and streams, and safety from flooding are important for residents and businesses and the economic and environmental health of our community. Water quality in this watershed is particularly important since Lake Michigan is the recipient of all surface flows from the watershed and is also the source of drinking water for the Chicago region and the surrounding Great Lakes states.

Because water flows across political and jurisdictional boundaries, most water resource problems need to be addressed at the watershed level, which frequently involves several political jurisdictions. The watershed planning process for the Dead River brought together many of the watershed stakeholders to plan for managing and improving the land, lakes, streams and wetlands of the watershed.

As a resident, landowner, business owner or community official, your actions make a difference. This Watershed Plan was created to help stakeholders better understand the watershed conditions and to identify actions that you as a stakeholder, individually or in collaboration with others, can take to prevent and reduce flood damage, improve water quality, and protect and enhance natural resources, greenways, and recreational opportunities.

There is no single fix for watershed problems. They are the result of thousands of different decisions and actions made across the 10,000 acres of the watershed, and it will take an equal number of decisions and actions to improve the watershed. Every landowner, business owner, resident, public official, public works employee, golf course superintendent, farmer, teacher, banker, and bus driver—EVERY SINGLE PERSON who lives, works, and plays in the watershed—can take simple and positive actions to help improve it for you, your children, and your children's children.

Take your yard as an example. If you replace 10 square feet of your turf grass lawn with native plants, you'll need to mow, fertilize, and control weeds on 10 square feet less. This translates into less air pollution from lawn mowers, less fertilizers and pesticides making their way into the stream, and reduced yard maintenance needs (and costs) for you. Now consider the impact of all of your neighbors, the entire town, and the entire watershed doing the same thing. The combined impact of many small actions has a significant positive impact on overall health of the watershed.



Individual Lot Scale

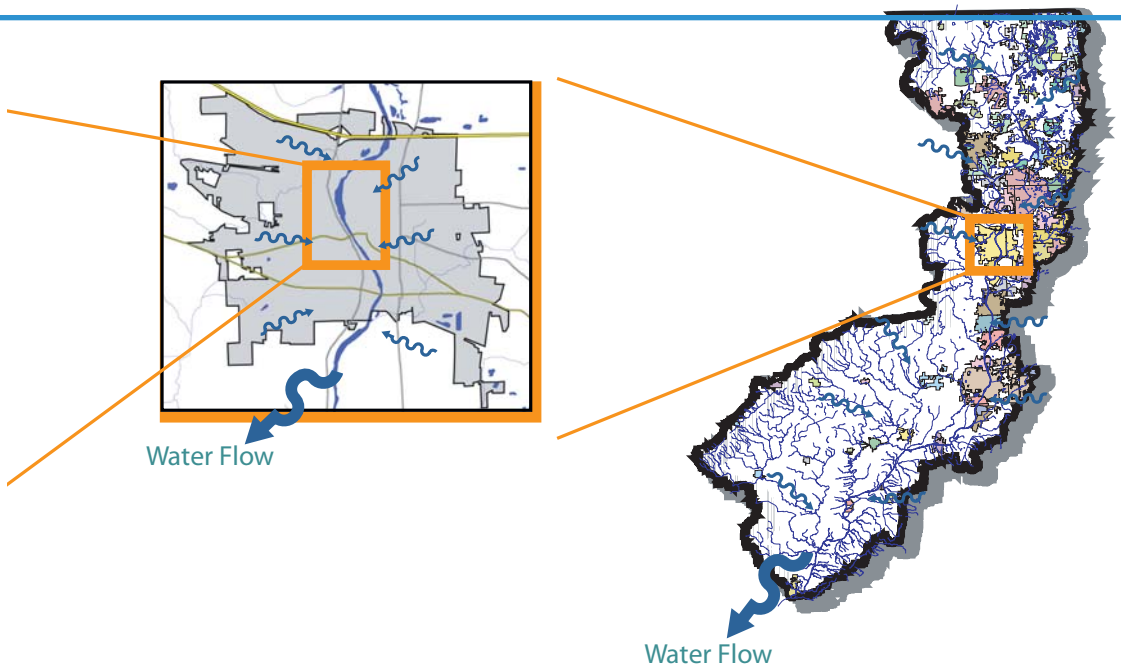
Every lot is part of a larger watershed. The degree to which water is properly managed at the lot scale is the degree to which downstream flooding, water quality, and habitat degradation can be avoided. Many practices described in this plan can be applied on individual residential and commercial lots, including green roofs, rain gardens and bioswales, native landscaping, and permeable paving. Although governed by community standards and regulations, implementation of lot-scale BMPs is generally the responsibility of property owners.

Neighborhood Scale

Greater benefits can be achieved through application of a conservation design approach at the neighborhood and campus scale. Proper planning at this scale ensures that onsite natural areas, water quantity, and water quality are protected. Conservation design and other approaches protect onsite resources from disturbance. Stormwater management approaches that mimic natural infiltration, evaporation, and runoff processes will protect offsite resources from the impacts of urban runoff.

Likewise, actions can be taken at every scale, from the individual lot to the neighborhood, town and watershed, to postiively impact watershed resources, as illustrated in the graphic below. Just as each landowner can do their part, everyone who works at these scales also must take responsibility for improving the watershed.

This watershed plan is a first step in helping you understand what you can do to help restore and highlight the unique and valuable resources of this wateshed. The watershed plan and planning process are described in the following section.



Community Scale

Communities are responsible for land use and development planning and thus have the ability to implement green infrastructure plans through comprehensive planning, development standards, easements, and planning assistance. Communities should establish stormwater and natural resource standards based on regional and watershed goals. Conversely, traditional community landscape and subdivision standards often can discourage environmentally-friendly conservation design in favor of more traditional development practices.

Watershed Scale

Since a watershed is composed of many communities, the actions of each of the communities will affect their watershed neighbors. Analysis of water resources and attention to goals at the watershed scale will ensure full protection of the region's lakes, streams, and wetlands. Green infrastructure plans established at the watershed scale can create ecologically functioning open space networks that can also serve as recreational resources.

kellogg creek

watershed - based plan

2008

Our vision for the Kellogg Creek Watershed is of

a network of healthy streams and ecosystems where habitat for native plants and animals, and surface and ground water quality, are protected and enhanced;

unique, vibrant communities with sustainable and healthy economies;

a dedicated system of open space is protected, enhanced and preserved.

~ KELLOGG CREEK WATERSHED PLANNING COMMITTEE

executive summary

THE KELLOGG CREEK WATERSHED

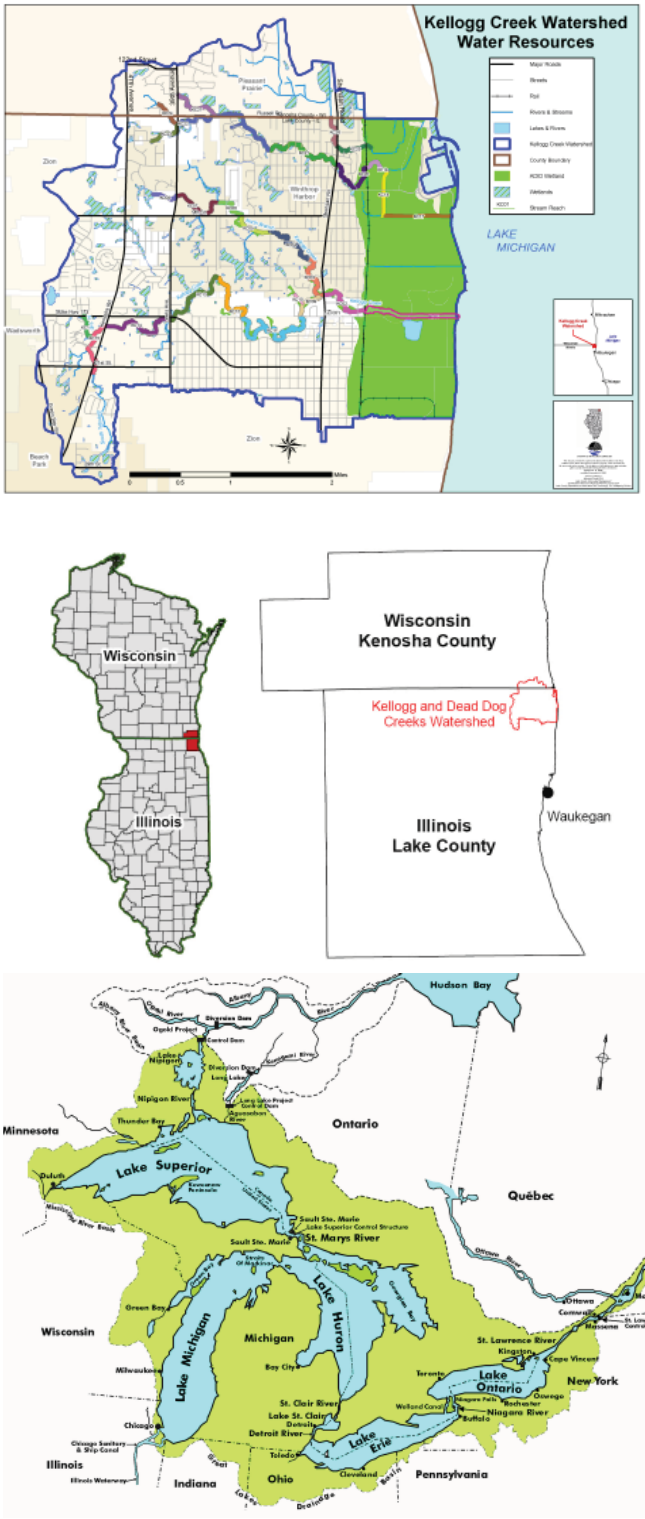
The Kellogg Creek watershed is an area of land where water that falls as rain or snow flows across the landscape, enters our streams and wetlands, and ultimately drains into Lake Michigan. The 12.7 square mile (Illinois and Wisconsin) watershed (7200 acres in Illinois; 900 acres in Wisconsin; and 8100 acres total) is bounded by Green Bay Road on the west, Lake Michigan on the east, 29th Street on the south, and 116th Street in Pleasant Prairie, Wisconsin on the north.

The watershed is part of the Root-Pike watershed system that includes the Dead River to the south and the Root and Pike Rivers in southeastern Wisconsin. The Kellogg Creek watershed is one of the few remaining Illinois tributaries that drains to Lake Michigan, and contributes to the overall quality and health of Lake Michigan and the Great Lakes system.

The watershed includes over 10 miles of stream and more than 2000 acres of wetlands. From north to south, the major stream channels inlcude an unnamed tributary, Dead Dog Creek, and the North Branch and South Branch of Kellogg Creek, which flow together into Illinois Beach State Park.

The watershed includes part of Illinois Beach State Park, a National Natural Landmark visited by 2.8 million people annually, which contains 2000 acres of Illinois Nature Preserve, a high concentration of threatened and endangered species, and unique ecosystems found nowhere else on earth. The park also contains the last remaining undeveloped Lake Michigan shoreline and sand dune complex in Illinois.

The Kellogg Creek watershed includes areas of the City of Zion, Village of Beach Park, Village of Winthrop Harbor, and Pleasant Prairie, Wisconsin, as well as lands owned and managed by Lake County, the Lake County Forest Preserve District, the State of Illinois, and a number of other public and private entities.



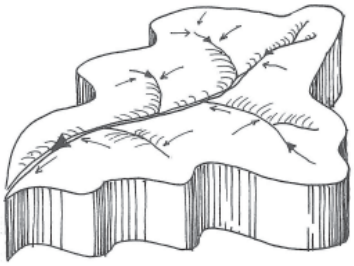
The Kellogg Creek watershed within the context of Illinois, Wisconsin, and the Great Lakes basin.

THE WATERSHED OVER TIME

In the early 1800s, the watershed landscape consisted of scattered oak trees, prairies, and wetlands in the central and western thirds, large areas of open oak woodlands along the ridges and ravines, and a coastal 'beach-ridge plain' along the Lake Michigan shoreline. Before settlement, the Kellogg Creek and tributary streams flowed cool and clear, and were surrounded with dense ground vegetation and scattered trees. When water reached the Lake Michigan beach-ridge plain, it spread out across the landscape creating a vast wetland and dune system and slowly seeped into the lake.

In the 1800's, the fertile soils and openness of the oak tree and prairie landscape attracted farmers, who converted these lands, including the draining of wetlands, for agriculture. In the early 1900's, urbanization of settlements began and continued with suburbanization following World War II. Today, the coastal beach ridge has been preserved as Illinois Beach State Park, and many of the ravine woodlands are intact. The rest of the watershed has been converted into downtown areas, older neighborhoods, and newer suburban development interspersed with commercial and industrial land uses.

A watershed is the geographic area of land that drains water to a particular stream, lake or wetland, and is defined by the topography of the landscape. The watershed includes not just the surface of the land, but also the area below the surface where water that infiltrates into the soil flows toward the receiving stream or waterbody as underground flow.



A WATERSHED DRAINS AN AREA OF LAND

URBANIZING WATERSHED

© Conservation Design Forum

© Conservation Design Forum

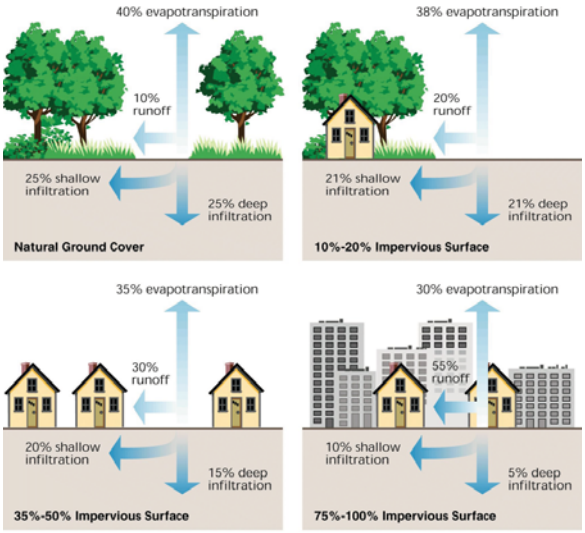
These landscapes have been restored to resemble presettlement condition similar to that found in the Kellogg Creek watershed.

THE IMPACT OF WATERSHED DEVELOPMENT

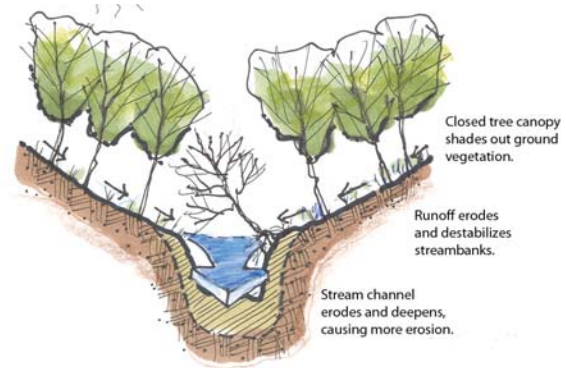
Under natural conditions, most of the water that falls on earth is used by plants, evaporates into the air, or seeps into the soil and becomes groundwater. Water that does not evaporate or infiltrate into the ground is called runoff. As a watershed develops, natural areas are converted into lawns, rooftops, roads, and parking lots. Instead of being used by plants or seeping into the ground, water that falls on these surfaces quickly flows to our streams directly or through the stormwater drainage and sewer system. As a result, streams and wetlands receive large pulses of water in shorter periods of time, resulting in erosion and destabilization of the stream channel and streambanks. When this happens, streambanks erode away, causing the loss of property and the pollution of our water with sediment. Where the landscape or the stormwater system is insufficient to contain this flush of water, flooding can occur.

Streambanks are further destabilized by the type and density of vegetation along the streambanks. Due to the introduction of plants that are not native to Illinois, and to the lack of natural landscape processes such as fire, deep-rooted ground vegetation that used to stabilize stream edges have been replaced with non-native plants and dense woods that shade out native vegetation and do not adequately stabilize the stream banks.

In addition to increasing the volume and rate of runoff, pollutants such as oil and grease, road salt, eroding soil and sediment, metals, bacteria from pet wastes, and excess nutrients (nitrogen and phosphorus) from fertilizers are washed from streets, buildings, parking lots, construction sites, lawns and golf courses into the streams and lake. This kind of pollution is called nonpoint source pollution. Additional pollutants include increased water temperature, altered pH, and low dissolved oxygen levels, making the river unhealthy for aquatic life.



Greater imperviousness results in a greater percentage of rainfall leaving as runoff and less infiltrating into the ground.



High runoff can cause erosion and incision of stream channels.

Impervious surfaces contribute pollutants to rain water runoff.

The health of the Kellogg Creek system and Lake Michigan are a direct reflection of land use activities throughout the watershed such as how we develop the watershed, and how we live in and manage our urban landscape, have a dramatic effect on the condition of watershed resources. These impacts affect not only the residents and visitors of Zion, Beach Park, Winthrop Harbor, and Pleasant Prairie, but all of the communities that depend on Lake Michigan to provide water, recreation, food, economic well-being, or other values. Fortunately, there are proven practices for addressing these impacts, and landowners, business owners, public officials, and all who live, work, and play within the watershed can take positive action towards improving the watershed. One of the first steps in the process is to understand watershed problems and make a plan for moving forward -- a watershed plan.

WATERSHED PLANNING

Healthy watersheds offer many benefits including a healthy river with better water quality, enhanced opportunities for recreation and environmental education, opportunities for environmentally sustainable economic development, better wildlife habitat, reduced flood damage, and a healthier Lake Michigan.

One of the first steps to rediscovering and enhancing these watershed benefits is through a process called watershed planning. The purpose of the watershed planning process to better understand the condition of Kellogg Creek watershed resources, and to identify actions to prevent existing watershed problems from worsening as a result of future land use and management changes, preserve and improve water resources, reduce flood damage, protect property and infrastructure, and improve the quality of life for watershed residents. Watershed planning has the added benefit of bringing numerous communities together to plan for the greater good and to protect and improve the land and water resources they share and impact.

The following general steps were used in developing this watershed plan.

1. Conduct monthly Watershed Planning Committee meetings with watershed stakeholders and technical team members.
2. Solicit public input on watershed issues and opportunities and formulate watershed goals and objectives.
3. Review and analyze existing studies, watershed conditions, and watershed data to identify watershed problems.
4. Identify best management practices and policies to improve watershed resources.
5. Develop detailed watershed improvement action and implementation plan and recommendations.

© Lake County Stormwater Management Commission

Watershed planning is a participatory process with watershed stakeholders.

WATERSHED ISSUES AND GOALS

During the first Watershed Planning Committee meetings, watershed stakeholders developed a list of watershed issues and opportunities and prioritized them via a voting process. Specific areas of concern include the stream system and erosion problems, the ravines, the area north of Waukegan Harbor, and Lake Michigan and its shoreline. These and other issues were categorized into the following topic areas, with the number of votes received shown in parenthesis:

1. Stream Restoration and Management (53)
2. Floodplains (16)
3. Natural Resources (34)
4. Watershed Education & Coordination (32)
5. Stormwater Infrastructure (0)
6. Water Quality (0)

Due to the similarity and proximity of the Kellogg Creek and Dead River watersheds, these results were combined as the foundation for developing the following watershed management goals, which are further detailed in Chapter 2:

Goal A: Restore the health and function of streams as part of a watershed *green infrastructure* (see description at right).

Goal B: Reduce and prevent flood damage to protect health, safety, property and infrastructure.

Goal C: Preserve and restore a *green infrastructure* network of land and water resources.

Goal D: Provide people with watershed improvement education, resources, and opportunities.

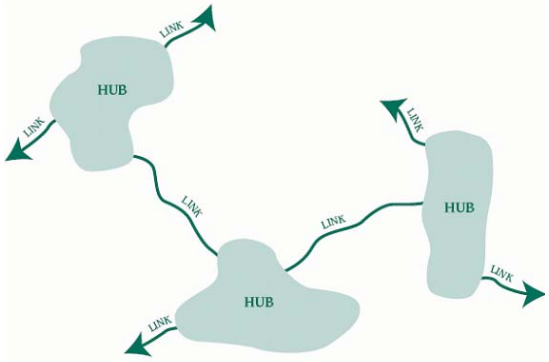
Goal E: Improve water quality by reducing the impacts of land use and development.

Goal F: Improve public, private, and non-profit coordination and decision-making.

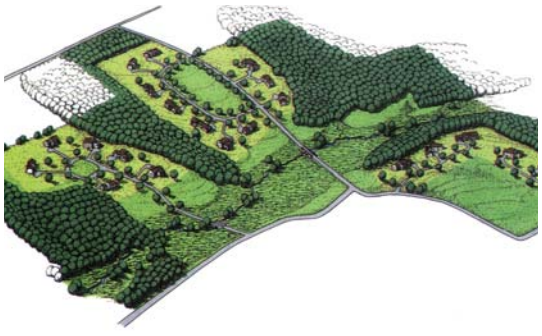
Goal G: Stabilize the stream systems by reducing surface runoff.

Green infrastructure: *On the local scale, municipal or neighborhood, green infrastructure consists of site-specific best management practices (such as naturalized detention facilities, vegetated swales, porous pavements, rain gardens and green roofs) that are designed to maintain natural hydrologic functions by absorbing and infiltrating precipitation where it falls.*

On the regional scale, green infrastructure consists of the interconnected network of open spaces and natural areas (such as forested areas, floodplains and wetlands, greenways, parks and forest preserves) that mitigate stormwater runoff, naturally recharge aquifers, improve water quality while providing recreational opportunities and wildlife habitat.



Conservation design: *A county-wide method for developing land that conserves the green infrastructure elements of a site while providing for development at full density on the remainder of the site. Conservation design typically includes the use of stormwater management measures that filter and infiltrate runoff on site.*



WATERSHED INVENTORY AND ASSESSMENT

Chapter 3 of this plan is an assessment of watershed conditions based on data, studies, and inventories, and the preparation of a series of watershed maps. The assessment included stream corridor conditions, stormwater infrastructure, flooding, water quality, land use, wetlands, and other relevant data and information. This information serves as baseline data for comparison with future watershed assessments. Five important conclusions based on this watershed assessment are summarized here.

1. The Kellogg Creek system exhibits rapid increases and decreases in water flow, level and velocity, which reduces water quality, reduces the quality of stream habitat, and destabilizes the stream channel, causing erosion of streambanks and ravines and damage to stormwater infrastructure.

2. Streambank and ravine erosion are a major concern along many reaches and require immediate attention. Stormwater discharge points are of particular concern as many of them were found to be failing or negatively impacting the stream system.

3. Water quality is impacted primarily by sediment, low dissolved oxygen levels, high phosphorous concentrations, and other typical urban watershed non- point source pollutants. Large impervious surface areas are significant contributors to stormwater runoff and pollution.

4. Preserving and restoring priority green infrastructure areas, including Illinois Beach State Park, Spring Bluff Forest Preserve, wetlands, and stream corridors, is critical for improving water quality and other watershed resources. Restoration measures include controlling invasive species, which threaten high quality natural, beach erosion in Illinois Beach State Park, and the habitat of the stream channel and the natural corridor through which the stream channel runs.

5. The municipalities, residents, businesses, landowners, and other organizations and agencies within the watershed lack the coordination and communication necessary to improve watershed resources.

WATERSHED BEST MANAGEMENT PRACTICE TOOLBOX

Chapter 4 of the watershed plan includes a description of best management practices and policies that can improve watershed resources. Included in this toolbox are actions that can be taken by residents, landowners, business owners, agencies, and municipalities to prevent conditions from worsening and to improve existing impaired conditions. Best management practices described in the toolbox include:

- Stabilize eroding streambanks using deep-rooted vegetation and other environmentally-friendly measures.
- Use conservation design principles for new development and retrofitting existing development with improved stormwater management practices.
- Install vegetated swales, raingardens, and filter strips, to help slow, filter, infiltrate, cool, and cleanse stormwater before being discharged to our streams and wetlands.
- Reduce the area of impervious surfaces and using permeable paving practices that allow water to infiltrate into the ground rather than run across the surface.
- Maintain deep-rooted, native vegetation buffers around streams, wetlands, and detention basins.
- Preserve green infrastructure including open space, stream corridors, wetlands, and natural areas.

executive summary

WATERSHED ACTION PLAN

The effectiveness of the Kellogg Creek watershed plan will be largely dependent on the quality of the action plan in Chapter 5. The action plan provides the "who, what, where and when" for making watershed improvements and includes programmatic, policy, and site-specific recommendations. The site-specific action items are tied to a particular location in the watershed or along the stream corridor, and include details such as responsibility, schedule, and priority. The eleven most important general recommendations are summarized as follows:

1. Stabilize streambanks and ravine slopes to reduce erosion, protect property and infrastructure, improve water quality, and improve habitat.
2. Restore and manage stream corridors by restoring native riparian buffers, reducing the density of trees, removing excessive debris, and stabilizing the stream bed with practices that also enhance habitat.
3. Manage, retrofit, and stabilize the stormwater management system including detention basins and culverts, with focused attention on stormwater discharge points (pipes and ditches), to reduce runoff rate and volume and to improve water quality in the streams and Lake Michigan.
4. Preserve and restore priority green infrastructure areas to provide natural surface water storage areas, provide space for installing best management practices, and preserve an ecologically functioning network of open space, wetlands, streams, and natural areas as part of an interconnected system.

An eroding stream channel before (left) and after restoration (right).

5. Manage and restore watershed natural areas including wetlands, former wetlands / hydric soil areas, and especially Spring Bluff Forest Preserve and Illinois Beach State Park.
6. Develop positive and creative new uses for the Zion Nuclear Power Plant areas, ensuring that these uses are compatible with protecting and improving watershed resources and Lake Michigan.
7. Remediate existing flood problems and prevent future flooding by reducing stormwater runoff and preserving areas for surface water storage and absorption such as floodplains, depressional storage areas, and wetlands, which also provide water quality improvement benefits.
8. Use better stormwater management, conservation design, and low impact development practices for new and existing development that slows, filters, infiltrates, cools, and cleanses stormwater runoff. This includes source controls and lot level best management practices such as vegetated swales, naturalized detention basins, rain gardens, stream buffers, filter strips, and reduced use of lawn chemicals and fertilizers.
9. Modify and use planning and development standards, policies, and capital improvement plans and budgets to protect and enhance water quality.
10. Provide public education and outreach to enhance understanding and appreciation of watershed resources and problems, to provide solutions, and to provide opportunities for people to get involved in watershed improvement activities.

Monitoring is an important part of improving watershed resources.

11. Monitor and evaluate watershed plan implementation and physical watershed conditions to guage progress towards watershed goals.

MONITORING AND EVALUATION PLAN

A monitoring and evaluation plan was developed to provide a means of measuring progress towards watershed goals and plan implementation. This plan should be used by watershed plan stakeholders and other implementers to monitor watershed resources and to track whether meaningful progress is being made towards plan goals. The monitoring plan includes details such as the frequency of monitoring, short, medium, and long term milestones, responsible party, and mode of collection.

THE FUTURE OF THE WATERSHED DEPENDS ON ALL OF US

This plan has limited usefulness without the dedication and commitment of watershed stakeholders to the improvement, restoration, management, and stewardship of watershed resources. As the primary land use, development, and infrastructure authorities in the watershed, municipal and county officials and staff have a significant amount of the responsibility for plan implementation. County, state, and federal agencies also have a significant role in watershed plan implementation, by approving and supporting projects with funding, and by providing technical information, tools, and resources to assist local authorities and watershed organizations in their efforts. Watershed residents and landowners must also accept responsibility for managing their own land and water resources, for identifying watershed problems and opportunities, and for working with others to implement this plan.

All of these people and organizations will need to work together to successfully protect and restore the Kellogg Creek watershed, to ensure long-term watershed stewardship, and to share the responsibilities, costs, and benefits of watershed improvements. Plan implementation will also depend on a watershed organization to oversee, guide, coordinate and monitor watershed activities on behalf of the stakeholders. This organization typically forms as an outgrowth of the Watershed Planning Committee with support coming from a variety of state and local agencies as well as local land use authorities and decision makers. This is the primary mechanism for the general public to be involved in watershed activities, to support the implementation of the watershed plan, and to voice their concerns and celebrate their successes in restoring watershed resources.

WHY THIS WATERSHED PLAN

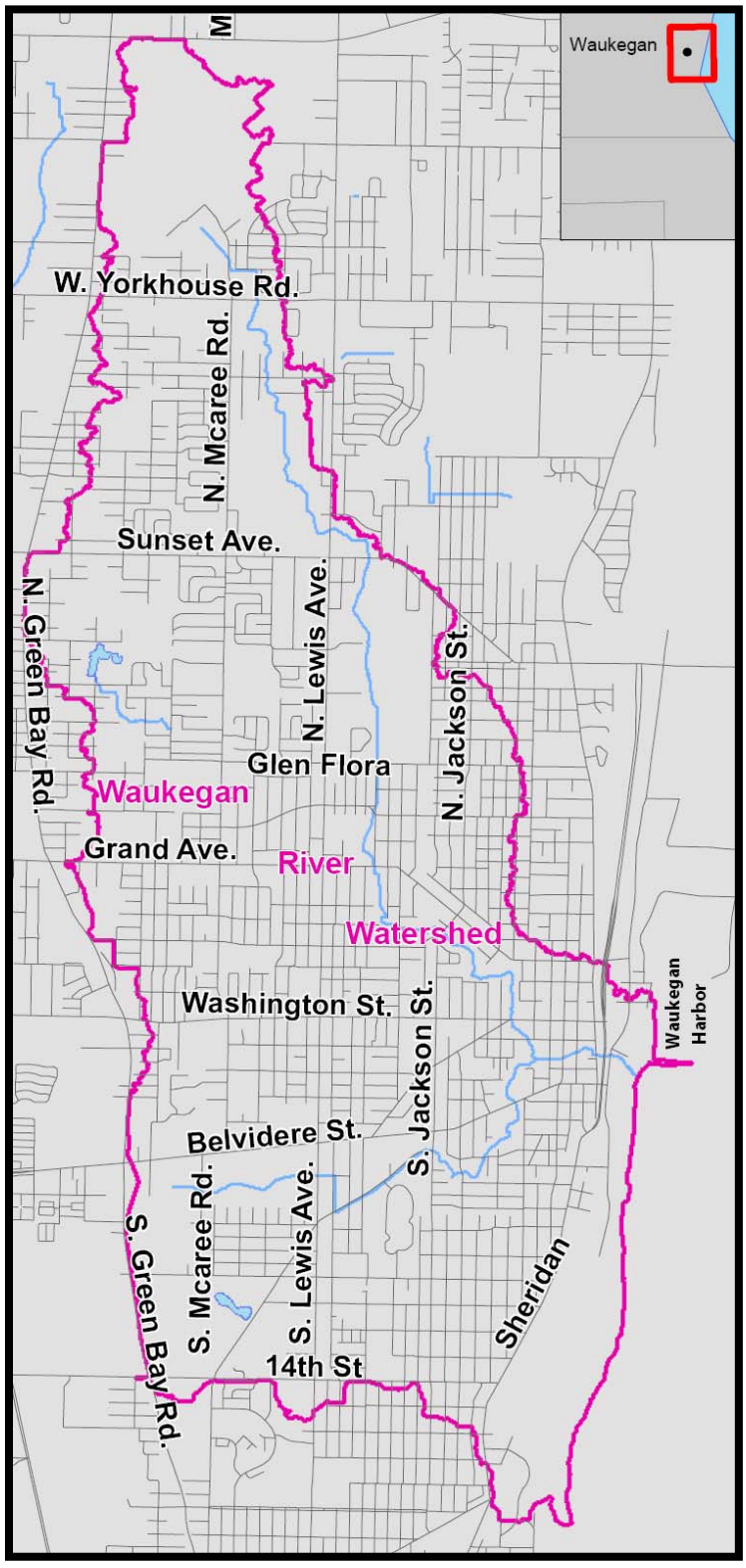
Humans, as well as plants and animals, require clean water to survive. This plan is important to you because it specifically addresses water problems in your community within the Kellogg Creek watershed. Clean and abundant water, healthy lakes and streams, and safety from flooding are important for residents and businesses and the economic and environmental health of our community. Water quality in this watershed is particularly important since Lake Michigan is the recipient of all surface flows from the watershed and is also the source of drinking water for the Chicago region and the surrounding Great Lakes states.

Because water flows across political and jurisdictional boundaries, most water resource problems need to be addressed at the watershed level, which frequently involves several political jurisdictions. The watershed planning process for Kellogg Creek brought together many of the watershed stakeholders to plan for managing and improving the land, lakes, streams and wetlands of the watershed.

As a resident, landowner, business owner or community official, your actions make a difference. This Watershed Plan was created to help stakeholders better understand the watershed conditions and to identify actions that you as a stakeholder, individually or in collaboration with others, can take to prevent and reduce flood damage, improve water quality, and protect and enhance natural resources, greenways, and recreational opportunities.

Waukegan River Watershed Plan

At a Glance …



Waukegan River Watershed

This summary of the Waukegan Watershed Plan gives an overview of the creation and implementation of a watershed-based plan to address the various concerns of communities in the Waukegan River Watershed. It includes facts and figures on the current state of the watershed. It also contains the vision by a group of residents, local officials and other interested individuals and organizations to return the Waukegan River to a welcoming oasis in the city; a green wooded corridor along a meandering waterway of riffles and pools; immortalized in literature; a safe and inviting place of nature, teeming with fish, birds, and other wildlife; a source of pride, wonderment and exploration for the residents and visitors of Waukegan. Finally this summary contains a roadmap to reach this destination.

This work is the result of the assistance of many people; people who have dedicated their time and resources, have provided information, expertise and enthusiasm to document the current conditions of the river, see the possibilities of the future and determine the steps, people and tools needed to achieve the future. Below is a list of those who have graciously assisted in this process.

Tom Anton, Field Museum Herpetologist
Marvin Bariyani, Resident
Tom Barlow, Resident
John Beardsley, Illinois State Water Survey
Lawrence Blacik, Resident
Sharon Blacik, Resident
Mea Blauer, Lake County SWCD
Tom Chefalo, Lake County Planning Building and Development Dept.
Barbara Chervin, Resident
Mary R. Cunningham, Lake County Board
Sam Cunningham, 1st Ward Alderman, City of Waukegan
David Dallison, TOWN
Tom Dilley, USDA
Tony Figueroa, 4th Ward Alderman, City of Waukegan
Nada Finn, TOWN
Newton Finn, TOWN
Keith Gray, Integrated Lakes Management
Scott Hickman, Avian Biologist
John Jurkovac, Waukegan Bldg. Commissioner
Paul Kakuris, Citizen
Kathleen Kilkelly Thompson, Resident
Sandy Kubillus, Integrated Lakes Mgmt.
Ron Laubach, City of Waukegan
John Lesnak, Illinois EPA
Don Lloyd, Lake County SWCD
Lee Luu, TOWN
Tammy Mitchell, Illinois EPA
Kent Moon, Harbor Place, LLC
John Moore, City of Waukegan
Debra Nelson, Illinois DNR
Bob Newport, United States EPA
Audrey Nixon, Lake County Board
Adrienne Orr, Lake County Health Dept.
Diane Ower, Resident
Doug Ower, Sierra Club
Mark Pfister, Lake County Health Dept.
Rosa Reyes-Prosen, Latino Advisory Board
Gary Schissler, Resident
Nick Spittlemeister, Lake County SWCD
Jim Stanczak, Waukegan Regional Airport
Mary Stickers, Resident
Chris Tanner, Tanner Environmental
Jeff Terwin, United States EPA
Scott Tomkins, Illinois EPA
Peter Toyra, Resident
Mike Trigg, Waukegan Park District
Mary Walker, Resident
Denise Waters, Resident
Bill White, Illinois State Water Survey
Sean Wiedel, Lake County SMC
Victoria Wiedel, Resident
Steve Wikner, Waukegan Park District

Local Stakeholders Coordinators:

Waukegan Harbor Citizens Advisory Group
Penny Bouchard
Susie Schreiber
Paul Geiselhart
Mary Connor
John Ohl
Hugh Flack

Consulting Team:

Kabbes Engineering, Inc.
Karen C. Kabbes
Dan Hirsch
John Hood
Chuck Sparks
Steve Luu
Teresa Kraegler

Geosyntec Consultants
Ed Goss
William Ward
Mark Willobee
Hollis Ude

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FUN FACTS

How much land drains into the Waukegan River?

11.6 square miles.

How long is the Waukegan River System?

12.5 miles.

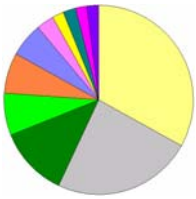
What is the highest point in the watershed?

730 feet above sea level.

What is the lowest point?

580 feet above sea level.

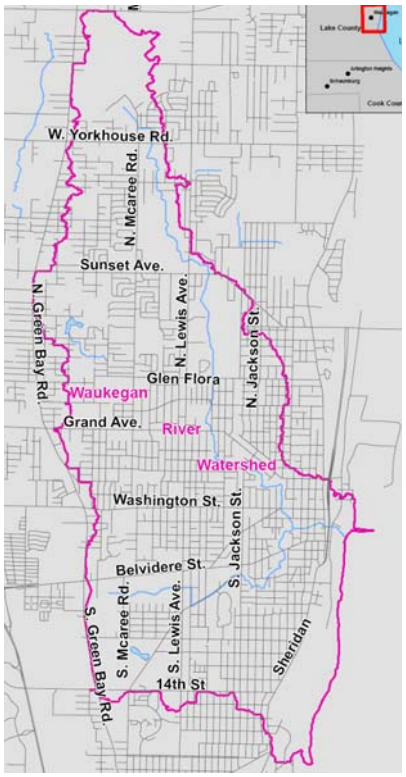
How Is The Watershed Used?



33% Single Family
24% Transportation
12% Open Space
7% Forest/Grassland
7% Retail/Commercial
6% Government
3% Industrial
2% Multi-Family Housing
2% Wetlands
2% Utilities
2% Other
100% Total

What is the Waukegan River Watershed?

The Waukegan River Watershed includes all the land area that drains into the Waukegan River, from Unincorporated Lake County and three municipalities: Beach Park, North Chicago and Waukegan.



All the water that runs off the land, including rainfall and snowmelt, water from your hose when you wash your car or water your lawn or wash down your parking area, in our watershed flows into area storm sewers and ditches to the Waukegan River and into Lake Michigan.

How we build and maintain our cities, roads, homes, businesses and parkland all determine the quality of the Waukegan River Watershed. Pollution or erosion anywhere in the watershed affects the river and the lake.

The Waukegan River Watershed is comprised of two smaller watersheds: the North Branch and the South Branch of the Waukegan River. The two branches join together at South West Street to form the Waukegan River which then drains into Lake Michigan.

Who Does The River Effect?

The Waukegan River Watershed affects the 30,000 people living and 50,000 people working in the watershed according the Northeastern Illinois Planning Commission (NIPC) estimates. By 2030, the NIPC predicts the overall population will swell to over 153,000. Water quality is an issue not only for those who enjoy the Waukegan River, but also for those who fish and swim in Lake Michigan. When the river floods, there are 90 structures that lie in the path, including 23 apartment buildings, 46 houses, and 12 commercial buildings according to analysis performed by Geosyntec.

What Fish Live In The River?

Coho	White Sucker
Largemouth Bass	Green Sunfish
Common Carp	Bluegill
Fathead Minnow	Goldfish
Rainbow Trout	Threespine Stickleback
Chinook Salmon	

2000 to 2006 Fish Survey Data from ISWS

Threespine Stickleback

Green Sunfish

Largemouth Bass

Fish images released under GNU Free Document License version 1.2 or later (gnu.org/licenses/fdl.txt)

The History of the Waukegan River

The Waukegan River system of the 1800s consisted of wetlands, channels, and ravines as depicted on this 1839 land plat map.

Historically, development altered the drainage system. Wetlands were filled and portions of the river have been buried in pipes. Waukegan eventually became a center for factories and other industrial uses. Wastes and byproducts were often buried or placed on the land or dumped into nearby water ways. Some of these pollutants can degrade and break down over time. However, other pollutants may not degrade and need to be dealt with in other ways.

The River Today

The Waukegan River we see today is no longer as pristine as the waters before the arrival of development.

Wetlands in the Waukegan River Watershed

In 2001, in the joint Intensive River Basin survey conducted between the Illinois Department of Natural Resources and the Illinois Environmental Protection Agency who surveyed and sampled the sediment in reaches of the river and found elevated levels of contaminants such as aldrin, DDT, PCBs and hexachlorobenzene at the surveyed sites.

Another problem plaguing the river is low dissolved oxygen. In order to survive, fish must obtain oxygen through water just as we do through air. The Lake County Health Department has been monitoring dissolved oxygen in the river since 2003. The most recent 2006 data shows that at some sample sites, levels of oxygen fell dangerously to 0 mg/l.

Waukegan River Pollution…Where Does it Come From?

The Waukegan River and its tributaries are listed in the Illinois EPA's 2006 list of impaired waters. The contaminants from the 2006 Illinois Integrated Water Quality Report that cause the river to be listed are noted in the adjacent box.

Contaminant	Found In	Past or Current Source
Total Dissolved Solids (TDS)	Urban Runoff	Road Salt
DDT	Contaminated Sediment	Insecticide
PCBs	Contaminated Sediment	Industry
Aldrin	Contaminated Sediment	Pesticide
Chromium	Contaminated Sediment	Industry

Many of these pollutants come from Waukegan's past as an industrial hub. The previously released toxins leach into the sediments at the bottom of the Waukegan River. Some of these contaminants take decades to break down while others remain in the soil until removed.

Pollution of the river is still occurring. Our urban lifestyles contribute pollution on a daily basis.

Illicit Drain

Oil that drips off the vehicles we drive, salt we place on our roads and sidewalks eventually can get washed into our lakes and streams. Garbage can wash down to the river where there is no one to pick it up.

When we fertilize our lawns, the excess fertilizer is washed into storm sewers and ends up in the river and eventually Lake Michigan.

Our roofs collect pollutants. If our roof downspouts drain the water to sidewalks and driveways, the water can carry pollutants to the river.

While some tree waste is a part of a healthy stream system, neighbors who place grass clippings or other waste along the river also add pollutants.

Plumbing errors or sewer leaks allow toilet and sink water to be deposited in the river leading to pollution with noticeable odors, and in some cases, immediate fish kills.

Estimated Pollution From Stormwater Runoff

Pollutant	Pounds/Year
Total Dissolved Solids (TDS)	13,486,800
Total Nitrogen	54,200
Zinc	8,700
Lead	5,900
Copper	1,200
Cadmium	49.6

Annual pollutant loads calculated from "Unit Area Pollutant Load Estimates for Lake County, Illinois Lake Michigan Watershed", SMC/NIPC 1993

What Effect Does The Pollution Have?

TDS: Impairs water quality for fish, can be toxic to aquatic life.

DDT: Toxic to aquatic life. Causes thinning of bird egg shells.

PCBs: Linked to cancer in laboratory animals. Toxic to fish, can kill fish larva in small doses.

Aldrin: A pesticide that is toxic to both humans and fish

Chromium: Heavy metal that can accumulate in aquatic life. Causes organ damage in humans.

More Information at: www.epa.gov

A Vision for the Future

Issues at Hand

Some pollutants in the Waukegan River's sediment do not degrade over time. If present, contaminants such as PCBs and heavy metals must be permanently capped or covered over.

Parking lots and other impervious surfaces which do not allow water to soak into the ground increase the pollution that washes to the river.

Places where the Waukegan River has been covered or piped cannot support wildlife or allow natural pollutant removal.

Some pollutants are very difficult or impossible to remove once they reach the water. Chloride in road salt is one example.

Vegetated river corridors can act as a buffer between the river and the development and provide habitat. Without them, pollutants wash directly into the water.

Controlling accessibility by vehicles and providing for visibility is important. Illegal dumping has plagued parts of the Waukegan River.

How do we address the problems facing the Waukegan River?

A Vision for Water Quality

- Remove debris from the river and prevent more dumping
- Address legacy pollution problems
- Reduce urban runoff pollution
- Stop illegal discharges into the river
- Enact additional regulations and policies to protect the river
- Address riverbank erosion
- Maintain and enhance existing wetlands

A Vision for Wildlife Habitat

- Remove in-stream blockages to aquatic life
- Expand and establish greenway corridors along the waterway and connect existing habitats
- Extend trails and protected park land for wildlife and the public use

A Vision for a Safer River

- Maintain the riparian corridor vegetation to increase public visibility, use and safety
- Obtain up-to-date floodplain studies for the entire stream
- Replace, remove, or flood-proof vulnerable buildings
- Reduce runoff rates and volumes to reduce flash flooding
- Re-grade and stabilize steep banks

A Vision for Measurable Progress

- Conduct annual river walks
- Maintain the river and river corridor vegetation
- Monitor the river's water, sediment and wildlife quality
- Track watershed planning projects and milestones

A Vision for an Informed Public

- Integrate the Watershed plan into school, local government and volunteer organizations programs
- Expand public and volunteer awareness programs

How Much Can We Reduce Pollution From Urban Runoff?

Road Salting Practices

As part of the watershed plan a study was done to look at how pollution from runoff could be reduced by changing road salting practices or disconnecting direct stormwater discharges to the river. Salt increases Total Dissolve Solids (TDS) in the water which adversely affects the health of fish.

Jurisdiction	Lane-Miles*	Approx. Salt Application Rate (lb/lane-mile/event)	Avg. Annual Chloride Equivalent Load (tons/year)
Beach Park	14.30	300 to 400	27.33
Waukegan	371.07	400 to 800	1215.55
North Chicago	27.68	300 to 500	60.45
Lake County	9.40	200 to 400	15.40
Total	**422.45**		**1318.72**

Over 1300 tons of road salt and other chloride based de-icers are used each year in the Waukegan River watershed, much of which eventually makes it into the waterway and out to Lake Michigan. TDS pollution in the Waukegan River consists mostly of the chloride used to keep roads ice-free. This study analyzed the salt load reductions if a given jurisdiction adopted lower salt application rates used by a neighboring municipality.

Image released under GNU Free Document License version 1.2 or later (gnu.org/licenses/fdl.txt)

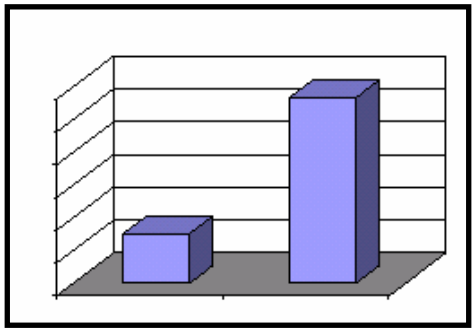
However, safety of the motoring public is always a concern. Road salt application rates may differ based on local needs. If a lower 200 to 400 lbs per lane mile per snow event application rate could be used throughout the watershed it is estimated that the chloride use, and thus chloride in runoff, could be reduced by as much as 48%. Lower salt use means less TDS pollution.

Storm Water Pollution Reduction

Another way to control pollution is to reduce the amount of stormwater discharged into the river. Reducing stormwater flow can involve implementing best management practices that reduce pollutant loads from stormwater by cutting the direct connection from runoff to the waterway. These practices can allow water to be filtered by the soil and plant life as it flows naturally over land and into the ground.

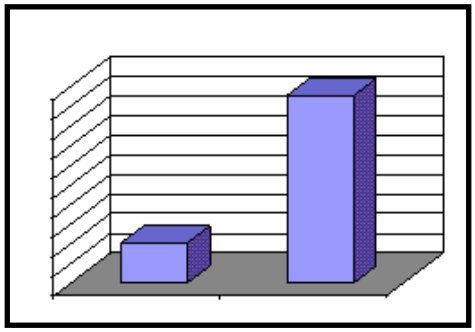
- Alternative 1: Convert 5% of storm sewered areas to non-storm sewered areas
- Alternative 2: Convert 25% of storm sewered areas to non-storm sewered areas

Total Dissolved Solids Reduction



Alternative 1: 150 tons/year
Alternative 2: 570 tons/year

Total Suspended Solids Reduction



Alternative 1: 51 tons/year
Alternative 2: 240 tons/year

Implementing the Vision

Bridging the Gap: Ideas to Action

How will the vision be implemented? As part of the plan, specific actions have been identified to be undertaken by lead organizations and supporting groups.

Below is some of the action items identified in the report.

Cleaning up the river

- Develop a citizen stream watch and monitoring network
- Conduct annual river walks to clean up debris and identify illicit discharges
- Place more garbage receptacles in public areas along river
- Acquire prioritized parcels
- Sample sediment in the river and determine course of action
- Develop easily policed trails where appropriate with lighting and camera surveillance for public safety
- Disconnect direct storm sewer discharges to river, wherever possible
- Divert direct stormwater discharge from roadways at all bridge crossings

New Policies

- Increase city code enforcement staffing and training to address dumping
- Encourage introduction of legislation for statewide deposit and refund program for glass bottles, aluminum cans, and plastic bottles
- Require developers to disconnect direct storm water discharges, where able
- Require future development or re-development along river to re-grade river banks to reconnect river channel and floodplain where needed
- Modify ordinances to allow use of permeable materials for driveways and parking lots
- Propose a city fee for impervious surfaces to use for federal and state matching funds for BMPs
- Revise ordinances to require areas of imperviousness not to be increased on site during re-development and give credit for infiltration practices

- Revise ordinance to not allow abandoned impervious areas to be maintained as impervious areas when site is re-developed.
- Revise ordinance to require in-watershed mitigation of wetlands

Public Awareness

- Educate riverfront property owners about property ownership boundaries and their impact and responsibility to the river
- Educate the public on proper pet waste, fertilizer, oil and paint, carwash runoff, pharmaceutical, and diaper disposal
- Expand storm sewer inlet stenciling program
- Educate plumbers and contractors about illicit discharges
- Develop bi-lingual watershed and water quality information
- Expand schools involvement in the Waukegan Watershed Plan.

Addressing Flood Safety

- Request a FEMA and SMC floodplain study for the entire Waukegan River system
- Acquire or relocate flood vulnerable structures
- Enhance regionally significant storage area to help reduce flashy flood peaks

Erosion Control

- Construct in-stream rock riffles to address stream down cutting issues
- Terrace stream banks to re-connect channel and flood plain terrace at 6-month to 2-year flood plain elevation
- Re-grade steep drop offs caused by stream erosion
- Do not remove sediment or re-grade earthen areas without detailed soil erosion control in place and appropriate permitting

Addressing Wildlife Habitat

- Remove obstructions to fish in the river
- Daylight enclosed portions of the river
- Remove or retrofit dams, weirs or other blockages
- Remove manmade blockages to Lake Michigan
- Repair failed outlet structures
- Create a consistent greenway along river for wildlife and to allow area for future stream dynamics
- Vegetate stream banks and stream corridors with native vegetation and maintain to allow for visibility of the stream corridor
- Implement invasive species control

Measuring Progress

- Sample river for oxygen levels, bacteria, and contaminants regularly
- Conducted a fish and wildlife survey every five years
- Monitor sediments on regular basis.

Lead and Supporting Organizations

US Environmental Protection Agency
Federal Emergency Management Agency
IL Environmental Protection Agency
IL Department of Transportation
IL Department of Natural Resources
University of Illinois Extension
City of Waukegan
Village of Beach Park
City of North Chicago
Waukegan Park District
LC Department of Transportation
LC Health Department
LC Stormwater Management Comm.
Solid Waste Agency of Lake County
Task Force on Waukegan Neighborhoods
Waukegan Main Street
School Districts
College of Lake County
Waukegan Harbor CAG

An Eye on the Future

Best Management Practices for Implementation

Rain Gardens

Rain gardens are specially designed planting areas that allow water to infiltrate into the ground. During the infiltration process, pollutants are removed and the water is cooled. Water is returned to the stream more slowly. They act as a green buffer between the roofs, driveways, parking lots, roads and the river. Neighborhood rain gardens improve property values.

Stream Riffle Installation

Artificial riffles replicate naturally occurring rock formations that can improve oxygen levels in the water and provide habitat for fish and aquatic organisms. Riffles are also used to stop stream downcutting and therefore help protect stream banks from erosion.

Porous Pavement

Parking lots consist of mostly of impervious paving material.

Replacing asphalt and concrete with pervious pavement increases ground water recharge and reduces polluted runoff to rivers and streams.

Vegetated River Corridor Protection

Removing unauthorized fill and re-grading the land to reconnecting the river and the floodplain helps reduce flooding and erosion.

Maintained corridors with native vegetation, discourage illegal dumping, provide wildlife habitat, help remove pollutants and encourage appropriate public uses.

APPENDIX L:
POTENTIAL FUNDING SOURCES

APPENDIX L. Funding and Technical Assistance for Watershed Projects & Programs

Last Updated: May 11, 2021

This list of potential funding sources is compiled from a variety of sources. Funding and program availability are contingent upon federal, state, and local budgets and appropriations for the budget year in which funding is being sought, so changes may have occurred that are not reflected in the list. Contact the program representative or funding agency for updates or changes to program details. Watershed-specific funding sources are identified where appropriate.

Reference Sources

Several grant search engines and organizations exist to help identify funding sources. Fees for services or products may be charged by these organizations. When searching, be sure to clarify whether charges will be incurred. For "do-it-your-selfers," local grant data collection centers are available throughout Illinois.

Resources	Reference information
Catalog of Federal Domestic Assistance (CFDA)	https://beta.sam.gov/search?index=cfda. The catalog lists all federal funding programs available, including those for conservation. All organizations applying for federal funding must have a Data Universal Numbering System (DUNS) identification number.
Federal Tax Incentives for Conservation	Owners of environmentally sensitive land that has been donated for conservation purposes, or has been placed in a conservation easement, or simply managed for conservation. Individuals, organizations, and others are all eligible. Website: https://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR, www.irs.gov/, www.ailt.org, and https://www.irs.gov/pub/irs-drop/n-04-41.pdf. You can also contact the Illinois EPA, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois, 62794-9276. Phone: 217-782-3397.
Illinois Catalog of State Financial Assistance	https://www2.illinois.gov/sites/GATA/Grants/SitePages/CSFA.aspx. The Catalog of State Financial Assistance (CSFA) is a single, authoritative, statewide, comprehensive source document of State financial assistance program information.
USEPA green infrastructure funding opportunities	https://www.epa.gov/green-infrastructure/green-infrastructure-funding-opportunities#Funding Tools
Environmental Grantmaker's Association	Provides a list of environmental grant foundations. http://www.ega.org
The Donor's Forum of Chicago	208 S. LaSalle St., suite 735, Chicago, il 60604. Phone: 312-578-0175. https://www.cof.org/content/donors-forum. E-mail: info@donorsforum.org
eCivis Grants Network	Assistance for local governments to improve their grants success through expert grant research, information, grant training, and technology. eCivis, Inc. 3452 E. Foothill Blvd, Floor 9, Pasadena, CA 91107. Phone: 877-232-4847. Email info@ecivis.com; http://www.ecivis.com/

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
U.S. Environmental Protection Agency (USEPA) - issues federal environmental regulations, enforces federal environmental law, and manages many grant programs. (https://www.epa.gov/grants)					
Brownfields Grants – Assessment Grants, Revolving Loan Fund Grant & Cleanup Grants	EPA's Brownfields program provides direct funding for Brownfields assessment, cleanup, revolving loans, and environmental job training. EPA's Brownfields Program collaborates with other EPA programs, other federal partners, and state agencies to identify and make available resources that can be used for Brownfields activities. In addition to direct Brownfields funding, EPA also provides technical information on Brownfields financing matters.	Local governments, private not-for-profit (501C3) groups, and others	Assessment: $300,000 - $600,000 Cleanup: Up to $500,000 per application Revolving Loan: 2 or more entities can receive up to $500,000 (see website link for more opportunities)	https://www.epa.gov/brownfields/types-epa-brownfield-grant-funding	EPA Region 5 Matthew Didier 77 West Jackson Boulevard Mail Code SB-5J Chicago, IL 60604-3507 Phone (312) 353-2112 Didier.Matthew@epa.gov
Environmental Education (EE) Grants	The EE Grants Program supports environmental education projects that promote environmental awareness and stewardship and help provide people with the skills to take responsible actions to protect the environment. This grant program provides financial support for projects that design, demonstrate, and/or disseminate environmental education practices, methods, or techniques.	Local and state educational organizations, private not-for profit groups, and local governments	3-4 annual grant projects chosen for $50,000 - $100,00 grant funding. Cost Sharing requirement of at least 25% of total costs from non-federal matching funds	https://www.epa.gov/education/environmental-education-ee-grants	Megan Gavin U.S. EPA, Region 5 77 West Jackson Boulevard Mail Code AT-18J Chicago, IL 60604 gavin.megan@epa.gov
Environmental Justice Small Grants Programs	Supports and empowers communities working on solutions to local environmental and public health issues. Projects include clean air projects, healthy waters projects, land revitalization projects and environmental health projects.	Educational organizations, private not-for profit groups	Projects up to $30,000, depending on the availability of funds in a given year.	https://www.epa.gov/environmentaljustice/environmental-justice-small-grants-program	US EPA, REGION 5 Kathy Triantafillou (triantafillou.kathy@epa.gov) 77 West Jackson Blvd. (E-19J) Chicago, IL 60604-3507 312-353-4293
Smart Growth Technical Assistance Opportunities	Offers grants to support activities that improve the quality of development and protect human health and the environment	Local governments, private not-for-profit groups, and others	In-kind contributions with assistance preferred	https://www.epa.gov/smartgrowth/epa-smart-growth-grants-and-other-funding	Office of Community Revitalization (MC 1807T) U.S. EPA 1200 Pennsylvania Avenue NW Washington, DC 20460 202-566-2878 smartgrowth@epa.gov

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Five Star Restoration Challenge Grants	Bring together citizen groups, corporations, youth groups and students, landowners, and government agencies to undertake projects that restore streambanks and wetlands. Projects must include a strong wetland or riparian restoration component, and should include education, outreach, and community stewardship.	Requires at least five or more partnering organizations	$10,000 to $40,000 (avg. $20,000) grant funding	https://www.epa.gov/wetlands/5-star-wetland-and-urban-waters-restoration-grants	Myra Price price.myra@epa.gov USEPA Wetlands Division Room 7410G (4502 T) 1200 Pennsylvania Avenue, NW Washington, DC 202-566-1225
USEPA Office of Wastewater Management (OWM)	OWM supports the Clean Water Act by promoting effective and responsible water use, wastewater treatment, disposal and management and by encouraging the protection and restoration of watersheds. OWM provides regulatory standards, voluntary management approaches, and financial and technical assistance to states, tribes, communities, and regulated entities to protect human health and aquatic ecosystems, reduce flooding, and protect the nation's infrastructure investment.	Varies	Informational only. Links available to multiple grant funding opportunities.	https://www.epa.gov/aboutepa/about-office-water#wastewater	Environmental Protection Agency 1200 Pennsylvania Avenue, N.W. Washington, DC 20460 202-564-0748 OWM.Comments@epa.gov
Wetland Program Development Grants (WPDG)	WPDGs provide eligible applicants an opportunity to conduct projects that promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys and studies relating to the causes, effects, extent, prevention, reduction and elimination of water pollution.	State, tribal, local government agencies and interstate/intertribal entities in building programs	$25,000 to $250,000 grants with 25 percent local match requirement	https://www.epa.gov/wetlands/wetland-program-development-grants	Dertera Collins collins.dertera@epa.gov EPA Region 5 77 West Jackson Blvd., MC WW16J Chicago, IL 60604 Phone: 312-353-6291
Great Lakes Restoration Initiative ***SPECIFIC TO LAKE MICHIGAN WATERSHED***	The Great Lakes Restoration Initiative accelerates efforts to protect and restore the Great Lakes. Since 2010 the multi-agency GLRI has provided funding to 16 federal organizations to strategically target the biggest threats to the Great Lakes ecosystem and to accelerate progress toward achieving long term goals related to fish consumption, safe drinking water, recreational water quality, Areas of Concern, invasive species, harmful algal blooms, and habitat protection.	States, tribes, local governments, universities, nongovernmental organizations	Varies by agency	https://www.glri.us/funding	Michael Russ russ.michael@epa.gov

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Illinois Environmental Protection Agency (Illinois EPA) administers state and federal environmental programs and regulations.					
Clean Water Act Section 319 Grants	Provide funding for implementing corrective and preventative best management practices on a watershed scale, for the demonstration of innovative BMPs on a sub-watershed scale, and the development of information and education nonpoint source pollution control programs.	State and local governments, nonprofits, individuals, businesses	Federal cost share at 60% maximum, 40% local match	https://www2.illinois.gov/epa/topics/water-quality/watershed-management/nonpoint-sources/Pages/grants.aspx	Illinois EPA, Bureau of Water Watershed Management Section Nonpoint Source Unit 1021 North Grand Avenue East P.O. Box 19276 Springfield, Illinois 62794-9276 (217) 782-3362
Green Infrastructure Grant Opportunities (GIGO)	The new GIGO Program funds projects to construct green infrastructure best management practices (BMPs) that prevent, eliminate, or reduce water quality impairments by decreasing stormwater runoff into Illinois' rivers, streams, and lakes. Projects that implement treatment trains and/or multiple BMPs within the same watershed may be more effective and efficient than a single large green infrastructure BMP.	State and local governments, nonprofits, individuals, businesses	Up to 75% cost share for approved project costs; 25% local match Assistance can vary for disadvantaged areas	https://www2.illinois.gov/epa/topics/grants-loans/water-financial-assistance/Pages/gigo.aspx	Illinois EPA, Bureau of Water Watershed Management Section Green Infrastructure Grant Opportunities 1021 North Grand Avenue East P.O. Box 19276 Springfield, Illinois 62794-9276 (217) 782-3362
Streambank Cleanup and Lakeshore Enhancement (SCALE)	Program provides funds to assist groups that have established a recurring stream or lakeshore cleanup. Funds can be used for safety attire, litter bags, event promotion, logistical needs and dumpster or landfill fees	Organizations that have an established streambank/ lakeshore cleanup events	100% cost share, awards range from $500 to $3,500	https://www2.illinois.gov/epa/topics/water-quality/surface-water/scale/Pages/default.aspx	
State Revolving Fund	Financial assistance for the design and construction of a wide variety of projects that protect or improve the quality of Illinois' water resources such as projects that address human health and failing water infrastructure. Eligible projects include new drinking water or wastewater infrastructure construction; upgrading or rehabilitating existing infrastructure; storm water-related projects that benefit water quality.	State and local governments, nonprofits, individuals, businesses	Funds projects at 100% Loan Interest Rate: 1.35%	https://www2.illinois.gov/epa/topics/grants-loans/state-revolving-fund/guidance/Pages/default.aspx	Illinois EPA, Infrastructure Financial Assistance Section 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois, 62794-9276. Phone: (217) 782-2027
Volunteer Lake Management Program (VLMP)	Currently suspended through the Illinois EPA, but Lake County is still actively supporting this program. VLMP serves as an educational program for Illinois citizens to learn about lake ecosystems and utilizes the time and talents of citizen volunteers to gather fundamental information on inland lakes.	Lake owners	Technical assistance; training and equipment available through LCHD	https://www2.illinois.gov/epa/topics/water-quality/monitoring/vlmp/Pages/default.aspx	Alana Bartolai, Lake County Health Department 500 W. Winchester Road, Unit 102 Libertyville, IL 60048 Phone: 847-377-8009

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Federal Emergency Management Agency (FEMA) manages programs that assist communities in disaster planning and hazard mitigation					
Flood Mitigation Assistance (FMA)	Helps states and communities identify and implement measures to reduce the risk of flood damage to structures insured under the National Flood Insurance Program (NFIP). These projects lessen the frequency or severity of flooding and decrease flood damages.	State agencies, NFIP communities, qualified local organizations, tribal governments	Federal cost share maximum of 75 percent, see website for funding caps	https://www.fema.gov/grants/mitigation/floods	FEMA Region 5, 536 South Clark Street, Chicago, IL 60605. Phone: 312-408-5500
Hazard Mitigation Grant Program (HMGP)	HMGP provides funding to state, local, tribal and territorial governments so they can rebuild in a way that reduces, or mitigates, future disaster losses in their communities. Funding assistance for implementing long-term hazard mitigation planning and projects follows a Presidential major disaster declaration.	State and local governments, qualified nonprofit organizations, tribal governments	Funding subject to a sliding scale formula. Federal cost share maximum of 75 percent.	https://www.fema.gov/grants/mitigation/hazard-mitigation	Sam M. AL-Basha Illinois Emergency Management Agency 1035 Outer Park Drive Springfield, Illinois 62704 Phone: (217) 785-9942 sam.m.al-basha@illinois.gov
National Flood Insurance, Increased Cost of Compliance Program (ICC)	Provides flood insurance policyholders with flood damaged homes and businesses in high-risk areas, also known as Special Flood Hazard Areas, with assistance to help pay the costs to bring their home or business into compliance with their community's floodplain ordinance, including building elevation, relocation, demolition, or floodproofing.	Flood insurance policy holders	Federal assistance up to $30,000	https://www.fema.gov/increased-cost-compliance-coverage	For more information on ICC coverage, call your insurance company or agent, or call the NFIP toll-free at 1-800-427-4661
Building Resilient Infrastructure and Communities (BRIC) *Replaced the Pre-Disaster Mitigation Program (PDM)*	BRIC program aims to categorically shift the federal focus away from reactive disaster spending and toward research-supported, proactive investment in community resilience. FEMA anticipates BRIC funding projects that demonstrate innovative approaches to partnerships, such as shared funding mechanisms, and/or project design.	State and local governments, universities, Tribal governments and agencies	Up to $600,000 per Applicant; Cost share maximum of 75 percent	https://www.fema.gov/grants/mitigation/pre-disaster	Sam M. AL-Basha Illinois Emergency Management Agency 1035 Outer Park Drive Springfield, Illinois 62704 Phone: (217) 785-9942 sam.m.al-basha@illinois.gov

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) partners with state conservationist offices and provides funding and technical assistance to landowners to promote soil and water conservation.					
Conservation Reserve Program (CRP)	CRP is a land conservation program administered by FSA. In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality.	Non-federal landowners engaged in farming or ranching	Annual rental payments, as well as certain incentive payments and cost share assistance.	https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/	McHenry-Lake County Soil & Water Conservation District Spring Duffey, Executive Director Spring.Duffey@il.nacdnet.net 1648 S. Eastwood Drive Woodstock, IL 60098 (815) 338-0099 x3
Conservation Stewardship Program (CSP)	Promotes the conservation of soil, water, air, energy, plant and animal life located on working lands. This program can help identify natural resource problems in your farming operation and provide technical and financial assistance to solve those problems or attain higher stewardship levels in an environmentally beneficial and cost-effective manner.	Individuals, organizations, and others.	Check with the county-based USDA Service Centers for application deadlines and most current information. In-kind services or operations are required	https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/csp/	
Conservation Partners Program (CPP)	The purpose of the CPP is to provide grants on a competitive basis that will support the adoption of conservation practices and regenerative agriculture principles on working lands. Funded projects will advance goals of: 1) NRCS's landscape conservation initiatives; 2) NFWF's conservation priorities; and 3) the NRCS–U.S. Fish and Wildlife Service partnership, Working Lands for Wildlife.	non-profit 501(c) organizations, farmer, commodity-led organizations, educational institutions, tribal governments, and state or local units of governments	$50,000 - $500,000 1:1 non-federal cash or in-kind	https://www.nfwf.org/programs/conservation-partners-program/conservation-partners-program-2021-request-proposal	Eric Forward Eric.Forward@nfwf.org 612-564-7285
Emergency Watershed Protection Program (EWP)	Provides assistance to reduce hazards to life and property in watersheds from erosion and flooding due to severe natural events. May be used to establish vegetative cover, open restricted channels, repair diversions and levees, and purchase floodplain easements on flooded land in non-urban areas. Applications must be submitted within 60 days of disaster or 10 days in an emergency	Public and private landowners with a project sponsor, i.e., a state or local government or special government district.	Up to 75 percent federal cost-share for projects	https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/	Emergency Watershed Protection Program State Points of Contact: Paula Hingson, paula.hingson@usda.gov, 217-353-6602

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Rural Development Water & Environmental Programs	WEP provides funding for the construction of water and waste facilities in rural communities and is proud to be the only Federal program exclusively focused on rural water and waste infrastructure needs.	Rural communities with populations of 10,000 or less	Varies	https://www.rd.usda.gov/programs-services/all-programs/water-environmental-programs	Molly K. Hammond, Acting State Director 2118 West Park Court, Suite A Champaign, IL 61821 Voice: 217-403-6200
Environmental Quality Incentives Program (EQIP)	Provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years in length. Funding can help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland.	Non-federal landowners engaged in farming or ranching	Federal share maximum of 75 percent; some exemptions may qualify for a 90 percent cost-share.	https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/	David Misek Acting District Conservationist Woodstock Service Center 1648 S Eastwood Dr Woodstock, IL 60098 (815) 338-0099 ext 3 david.misek@usda.gov
Streambank Stabilization Restoration Program	The Streambank Stabilization Restoration Program goals are to develop and demonstrate vegetative, stone structure and other low-cost bio-engineering techniques for stabilizing streambanks and to encourage the adoption of low-cost streambank stabilization practices by making available financial incentives, technical assistance and educational information to landowners with critically eroding streambanks.	All landowners and project sites (rural and urban) in each Illinois county	Check with the McHenry-Lake County Soil & Water Conservation District for details	https://www2.illinois.gov/sites/agr/Resources/Conservation/Pages/default.aspx	McHenry-Lake County Soil & Water Conservation District Spring Duffey, Executive Director Spring.Duffey@il.nacdnet.net 1648 S. Eastwood Drive Woodstock, IL 60098 (815) 338-0099 x3
Watershed and Flood Prevention Operations Program (WFPO)	The WFPO Program provides technical and financial assistance to States, local governments and Tribes (project sponsors) to plan and implement authorized watershed project plans.	Public sponsorship Watershed projects up to 250,000 acres.	Varies	https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/landscape/wfpo/?cid=nrcs143_008271	Watershed and Flood Prevention Operations Program State Points of Contact: Ruth Book ruth.book@usda.gov 217-353-6626

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
U.S. Department of Agriculture, Forest Service (USDA-FS) manages programs that promote forestry and natural enhancement of urban areas through urban forestry programs.					
Urban and Community Forestry (UCF) Program	UCF program provides technical, financial, research and educational services to local government, non profit organizations community groups, educational institutions, and tribal governments. • Conserve working forest landscapes, • Protect forests from harm, and • Enhance benefits associated with trees and forests.	Local governments, educational organizations, individuals, and others	Non-federal match of 50% required	https://www.fs.fed.us/managing-land/urban-forests/ucf/program	Michael Brunk - Illinois Urban Forestry Administrator Illinois Department of Natural Resources One Natural Resources Way Springfield, IL 62702 217-558-2517 | Michael.Brunk@illinois.gov
U.S. Department of Energy (USDOE) compiles and distributes a list of monthly funding opportunities relating to energy and the environment. Go to http://www.eere.energy.gov/ and click on financial opportunities.					

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
U.S. Department of the Interior, Fish and Wildlife Service (USFWS) manages programs to protect wildlife and habitat by means such as issuing rules for hunters and anglers, administering the Endangered Species Act, and awarding grants for environmental restoration.					
Chi-Cal Rivers Fund ***SPECIFIC TO CHICAGO RIVER WATERSHED***	The Chi-Cal Rivers Fund is a public-private partnership working to restore the health, vitality and accessibility of the waterways in the Chicago and Calumet region by supporting green stormwater infrastructure, habitat enhancement, and public-use improvements	Local, state, federal, and tribal governments and agencies, special districts, non-profit 501(c) organizations, and schools. Chi-Cal Grant: O*nly Chicago & Calumet region (watersheds) applicants eligible* *BBN: Priority Projects to Great Lakes native fishes*	$100,000 -$300,000; No match required but projects that meet 1:1 ratio are more competitive	http://www.nfwf.org/chi-cal/Pages/home.aspx	Traci Giefer Great Lakes Prgm. Manager 612-564-7296 traci.giefer@nfwf.org
Bring Back the Natives (BBN)	BBN seeks to restore, protect and enhance native fish species of conservation concern nationwide, especially in areas on or adjacent to federal agency lands. BBN awards grants to projects that conserve aquatic ecosystems, increase in-stream flows and build partnerships that benefit native fish species throughout the United States.		Up to $510,000; 1:1 nonfederal cash or in-kind contributions	https://www.nfwf.org/programs/bring-back-natives?activeTab=tab-1	Kirstin Neff Manager, Southwest Rivers Program kirstin.neff@nfwf.org 303-222-6485
Monarch Butterfly and Pollinators Conservation Fund	Monarch Butterfly and Pollinators Conservation Fund to protect, conserve and increase habitat for the monarch butterfly and other pollinators. This program supports implementation of technical assistance to increase pollinator conservation practices on private working lands and improves the availability of high-quality pollinator habitat.		$100,000 - $300,000; 1:1 nonfederal cash or in-kind contributions	https://www.nfwf.org/programs/monarch-butterfly-and-pollinators-conservation-fund?activeTab=tab-2	Crystal Boyd Manager, Pollinator Programs crystal.boyd@nfwf.org 612-564-7253
Partners for Fish and Wildlife Programs	The Partners for Fish and Wildlife Program provides technical and financial assistance to landowners interested in restoring and enhancing wildlife habitat on their land. Projects are custom designed to meet landowners' needs.	Non-state and non-federal landowners, individuals, local government, and non-government organizations	Varies	https://www.fws.gov/midwest/partners/getinvolved.html	One Natural Resources Way Springfield, IL 62702 217-557-4474 illinoisplo@fws.gov
Resilient Communities Program	The program will emphasizes community inclusion and assistance to traditionally underserved populations in vulnerable areas. Regional awards will provide both natural habitat enhancement and improved protections afforded by natural resources.	Eligible applicants include non-profit 501(c) organizations, local governments, Indian tribes.	Grants range from $100,000 to $500,000.	https://www.nfwf.org/programs/resilient-communities-program	Carrie Clingan Program Director, Community Stewardship and Youth carrie.clingan@nfwf.org 202-595-2471

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
National Park Service (NPS) manages the nation's system of national parks, historic sites, etc. and serves as a conduit for some recreation-related conservation funding. Https://www.nps.gov/index.htm					
Rivers, Trails, and Conservation Assistance Program	The NPS Rivers, Trails, and Conservation Assistance program provides their staff for free, on-location facilitation and planning expertise. This includes define project vision and goals, inventory and map community resources, identify and analyze key issues and opportunities, engage collaborative partners and stakeholders, design community outreach and participation strategies, develop concept plans for trails, parks, and natural areas, set priorities and build consensus, identify funding sources, and develop a sustainable organizational framework to support the project.	Nonprofit organizations, community groups, tribes or tribal governments, and local, state, or federal government agencies	Technical Assistance	https://www.nps.gov/orgs/rtca/index.htm	RTCA, NPS 25 E. Washington, Ste. 1650 Chicago, IL 60602 David Thomson, Program Manager mwr_rtca@nps.gov
U.S. Department of Transportation (DOT) regulates the federally mandated metropolitan planning process and administers federal transportation funding.					
Illinois Transportation Enhancement Program (ITEP)	These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity.	Local government units with taxing authority	80 percent federal share of project costs in general, 50 percent for acquisition. Awards up to $2 million	https://idot.illinois.gov/transportation-system/local-transportation-partners/county-engineers-and-local-public-agencies/funding-opportunities/ITEP	Illinois Department of Transportation Illinois Transportation Enhancement Program Room 307 2300 South Dirksen Parkway Springfield, Illinois 62764 (217)782-6289

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Illinois Department of Natural Resources (IDNR) manages, conserves and protects Illinois' natural, recreational and cultural resources, further the public's understanding and appreciation of those resources, and promotes the education, science and public safety of Illinois' natural resources for present and future generations.					
IDNR Grant Opportunities	Multiple Funding Opportunities. All grants administered by the Department are subject to available funding.	Varies	Varies	https://www2.illinois.gov/dnr/grants/pages/default.aspx	Illinois Department of Natural Resources 1 Natural Resources Way Springfield, IL 62702 217-782-6302 DNR.Grants@illinois.gov
Federal Recreational Trails Program (RTP)	This program provides funding assistance for acquisition, development, rehabilitation and maintenance of both motorized and non-motorized recreation trails. By law, 30% of each states' RTP funding must be earmarked for motorized trail projects, 30% for non-motorized trail projects and the remaining 40% for multi-use (diversified) motorized and non-motorized trails or a combination of either.	Federal, state and local government agencies, not-for-profits organizations and private operators of motorized recreational facilities open to the public.	This grant maximum represents a total minimum project cost of $250,000 per application. Up to 80% project funding.	https://www.dnr.illinois.gov/AEG/Pages/FederalRecreationalTrailsProgram.aspx	Illinois Department of Natural Resources, Office of Grant Management and Assistance One Natural Resources Way Springfield, Illinois 62702 dnr.grants@illinois.gov (217) 782-7481
Illinois Habitat Fund	The Illinois Habitat Fund Grant Program includes projects that are seeking to preserve, protect, acquire or manage habitat (all wetlands, woodlands, grasslands, and agricultural lands, natural or altered) in Illinois that have the potential to support populations of wildlife in any or all phases of their life cycles	Landowners	$10,000 - $400,000, no match requirement	https://www2.illinois.gov/dnr/grants/Pages/Habitat-Funding-Opportunity.aspx	Susan Duke, IDNR One Natural Resources Way Springfield, Illinois 62702-1271 susan.duke@illinois.gov (217) 785-4416
Open Space Lands Acquisition and Development (OSLAD) Program **Land & Water Conservation Fund program (LWCF)**	A state-financed grant program that provides funding assistance to local government agencies for acquisition and/or development of land for public parks and open space. Projects vary from small neighborhood parks or tot lots to large community and county parks and nature areas.	Local units of government	Up to 50% of approved project costs Up to $750,000 for acquisition projects; Up to $400,000 for Development/renovation projects	https://www2.illinois.gov/dnr/grants/Pages/OpenSpaceLandsAquisitionDevelopment-Grant.aspx	Illinois Department of Natural Resources One Natural Resources Way Springfield, IL 62702-1271 DNR.Grants@illinois.gov 217-785-2361

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Acres for Wildlife	Intended to encourage landowners to reforest land, increase wildlife, and control erosion (Division of Wildlife or Resource Protection and Stewardship)	Individuals; landowner must have an approved management / conservation plan	Technical Assistance, Education, Equipment and Native Plant Seeds	https://www.dnr.illinois.gov/conservation/wildlife/Pages/AcresWildlife.aspx	Stefanie Fitzsimons stefanie.fitzsimons@illinois.gov 815-675-2386 X 215
Schoolyard Habitat Action Grants	Support enhancement of wildlife habitat, with emphasis on youth involvement and education	Teachers, nature center personnel and adult youth group leaders	The maximum annual award is $1,000 per applicant.	https://www.dnr.illinois.gov/education/Pages/GrantsSHAG.aspx	Illinois Department of Natural Resources' Division of Education One Natural Resources Way Springfield, IL 62702-1271 Phone: 217-524-4126 dnr.teachkids@illinois.gov
Illinois Biodiversity Field Trip Grants & Free Educational Materials	Supports field trips for students to visit natural areas, natural history museums, and other natural resource related activities. Conservation education materials, including lesson plans, can be used separately.	Teachers of grades prekindergarten – 12	$500 limit per teacher	https://www.dnr.illinois.gov/education/Pages/GrantsIBFTG.aspx	
Illinois Coastal Management Program (CMP) Grants ***SPECIFIC TO LAKE MICHIGAN WATERSHED***	Protect, preserve, and restore the natural and cultural resources along the Illinois Lake Michigan shoreline. Funding is administered by CMP through a cooperative agreement between IDNR and the National Oceanic and Atmospheric Administration (NOAA)'s Office for Coastal Management. To receive funding, a project must advance CMP's priorities within the coastal area boundary. Habitat and low-cost construction projects (including signage) must be located entirely within the coastal area.	Local government, universities, and non-profit organizations. Habitat and construction projects must be located within the Illinois Coastal Zone	$1,000 to $150,000 (2021)	https://www2.illinois.gov/dnr/cmp/Pages/Grants.aspx	Ania Bayers, Program Manager Phone: 312-814-6384 DNR.CMP@illinois.gov
Illinois Department of Agriculture (IDOA)					
Sustainable Agriculture Grant Program	This grant program practices are aimed at maintaining producers' profitability while conserving soil, protecting water resources and controlling pests through means that are not harmful to natural systems, farmers or consumers. The grant program funds sustainable agriculture research, education and demonstration through conferences, training, on-farm research and educational outreach.	Organizations, governmental units, educational institutions, non-profit groups and individuals	Varies	https://www2.illinois.gov/sites/agr/Resources/Conservation/Pages/default.aspx	Illinois Department of Agriculture Bureau of Land and Water Resources State Fairgrounds P.O. Box 19281 Springfield, IL 62794-9281 217.782.6297

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Illinois State Board of Education (ISBE) Useful website to search for educational grants at https://www.isbe.net/.					
Lake County: https://www.lakecountyil.gov/553/Stormwater-Management-Commission					
Lake County SMC Watershed Management Board (WMB)	Watershed Management Board (WMB) grants provide up to 50% cost-share for pro-jects that address flood damage mitigation, water quality improvement and natural re-sources enhancement within Lake County (includes green infrastructure). Flood mitigation/ reduction criteria receive the greatest weight in determining funding awards.	WMB/SIRF: All project proposals must be signed and supported by a WMB member. A WMB Board Member can be: a Chief Elected Official of any Lake County Municipality, a Lake County Township Supervisor, the President of an Active Lake County Drainage District, a Lake County Board Member, or a Delegate of one of the above.	Cost-share at least 50% with funds or in-kind services or a combination of both.	http://www.lakecountyil.gov/3635/Watershed-Management-Board-WMB	Lake County Stormwater Management Commission, 500 W Winchester Road, Libertyville, Illinois, 60048 847-377-7710
Stormwater Infrastructure Repair Fund (SIRF)	The $100,000/year SIRF can assist local units of government in resolving interjurisdictional drainage and flooding related problems (i.e., stormwater management system infrastructure needs). The SIRF program is a 50/50 cost share match for SIRF eligible projects in Lake County.		$100,000 to $150,000 is available each year for planning, engineering analysis, alternate solution evaluation, design, capital construction, maintenance and repairs projects.		For information on WMB/SIRF programs Sharon Osterby 847.377.7706 sosterby@lakecountyil.gov
Stream & River Clean Up Projects	SMC offers small grants for stream and river clean-up projects.		Up to $500 for stream and river clean-up projects.		For information on Stream & River Cleanup Projects contact Angela Panateri, 847-377-7714 apanateri@lakecountyil.gov
Lake County Deicing Workshop	The Annual Lake County Deicing Workshop provides an opportunity to focus on sensible salting practices for roadways, parking lots and sidewalks. This workshop snow and ice removal presentations include the effects of weather conditions & storing materials, surface safety, environmental effects (chloride use), materials selection, maintenance best management practices and application rate & calibration.	All winter maintenance operators, planners, supervisors, product distributers, and maintenance personnel	Technical and informational assistance	http://www.lakecountyil.gov/2284/Winter-Maintenance-Best-Practices	For information on the Deicing Workshop Alana Bartolai 847-377-8009 ABartolai2@lakecountyil.gov
Lake County Voluntary Buyout Program	Using federal and state matching grants, SMC offers a voluntary buyout program for repetitively flood damaged structures in Lake County.	SMC maintains a list of properties that are candidates for buyouts when funds become available	Buyouts are typically 75% federal and 25% local cost share for qualified structures	http://www.lakecountyil.gov/2372/Voluntary-Floodplain-Buyout-Program	Contact Sharon Osterby 847.377.7706 sosterby@lakecountyil.gov

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Chicago Metropolitan Agency for Planning (CMAP)					
Local Technical Assistance Program (LTA)	Addressing local issues at the intersection of transportation, land use, and housing, including the natural environment (including green infrastructure components), economic growth, and community development. The program involves providing assistance to communities across the Chicago metropolitan region to undertake planning projects that advance the principles of GO TO 2040.	Local governments, nonprofits, and intergovernmental organizations	Technical Assistance & CMAP recommendations Local match between 5-20% of the value of the assistance from applicants	http://www.cmap.illinois.gov/programs-and-resources/lta	Chicago Metropolitan Agency for Planning 433 West Van Buren Street, Suite 450 Chicago, Illinois 60607 312-454-0400
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	A federally funded program of surface transportation improvements designed to improve air quality and mitigate congestion. The primary consideration for CMAQ projects is the cost-effectiveness of their air emissions reductions, measured as either the cost per kilogram of volatile organic compounds (VOC) reduced or the cost per kilogram of fine particulate matter (PM2.5) and nitrogen oxides (NOx) reduced.	State and local governments	80% federal / 20% local match	https://www.cmap.illinois.gov/mobility/strategic-investment/cmaq	Lake County: Mike Klemens, 847-377-7455 or Joseph Surdam, 847-377-7538 Cook County: Matthew Pasquini, 847-296-9200 x128
Transportation Alternatives Program (TAP-L)	The locally programed TAP-L is a federally funded program of surface transportation improvements designed to support non-motorized transportation. The TAP-L program is designed to fund non-motorized transportation projects and in northeastern Illinois those funds are focused on the completion of the Regional Greenways and Trails Plan. For TAP-L funding, only bicycle facility projects are eligible	Regional trans. authorities, transit agencies, natural resource or public land agencies, school districts, & local or regional gov't entities	65 -80% federal funding	http://www.cmap.illinois.gov/mobility/strategic-investment/transportation-alternatives	CMAP program manager Doug Ferguson 312.386.8824 dferguson@cmap.illinois.gov
Surface Transportation Program (STP)	The STP supports larger-scale regional projects that address regional performance measures and the goals of ON TO 2050. Project eligibility is focused on projects of significant cost and multijurisdictional projects in eight categories that address federal performance measures and priorities of ON TO 2050: bicycle and pedestrian barrier elimination, bus speed improvements, bridge rehabilitation or reconstruction, highway/rail grade crossing improvements, road reconstruction, road expansion, corridor or small area safety, transit station improvements, and truck route improvements.	Any state agency or unit of government having the authority to levy taxes.	Lake County: 80% federal/20% local STP funding match	https://www.cmap.illinois.gov/committees/advisory/council-of-mayors/stp	CMAP STP Program Manager Kama Dobbs kdobbs@cmap.illinois.gov

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Metropolitan Water Reclamation District of Greater Chicago (MWRD) – ***Eligible for Cook County Applicants Only***					
Green Infrastructure Partnership Opportunity Program	The MWRD's goals for the Green Infrastructure Partnership Opportunity Program are: build GI to reduce stormwater flows to local sewer systems and prevent combined sewer overflows; use GI to address local flooding and draining problems; promote GI as a complimentary way to manage stormwater with natural systems; aesthetically enhance public areas and increase a community's "green space"; and provide improvements in water quality.	Public entity able to enter into an IGA with the MWRD.	Varies, depends on the effectiveness of the proposed green infrastructure	https://mwrd.org/green-infrastructure-partnership-opportunity-program-0	Holly Sauter Senior Civil Engineer Metropolitan Water Reclamation District of Greater Chicago sauterH@mwrd.org
Stormwater Partnership Program	MWRD can assist communities in addressing flooding by directly supporting their efforts through our Stormwater Program. The program funds projects in Cook County that address flooding and drainage concerns. These projects utilize a variety of traditional engineered solutions such as localized detention, upsizing critical storm sewers and culverts, pumping stations, and establishing drainage ways, alongside green infrastructure.		Reimbursement of construction related costs only. Amount of funding based on stormwater benefits of the proposed project, the social-economic need of the community, & availability of funding	https://mwrd.org/stormwater-partnership-program	Richard Fisher Principal Civil Engineer Metropolitan Water Reclamation District of Greater Chicago 312-751-5479 FisherR@mwrd.org
Flood-Prone Property Acquisition	This program is comprised of three distinct components: Local Sponsor Assistance Program - MWRD's top priority will be to facilitate the Illinois Emergency Management Agency's federally funded program by assisting Local Sponsor communities in providing their share of the cost for property acquisition. MWRD Initiated Program - in communities where MWRD's Board of Commissioners approved capital projects from MWRD's Detailed Watershed Plans, should the cost of a property acquisition alternative be less than the capital project and provide equivalent benefits, the acquisition alternative will be pursued. Local Government Application Program - MWRD will consider applications directly from local governments requesting property acquisition of specific flood-prone structures.		MWRD will provide reimbursement for an agreed upon percentage of the purchase price only. MWRD will not reimburse for closing costs, attorneys' fees, demolition or other costs.	https://mwrd.org/flood-prone-property-acquisition	

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Other Public & Private Organizations					
Section 4 Capacity Building for Community Development and Affordable Housing Program	Enterprise Community Partners' (Enterprise) mission is to create opportunity for low- and moderate- income people through affordable housing in diverse, thriving communities. Enterprise recognizes that for housing to be a springboard to a life full of opportunity, it must be connected to the essential building blocks for success, including transportation, employment, supportive services, recreational opportunities, and food and retail services that support a healthy lifestyle. The purpose of the Section 4 program is to enhance the technical and administrative capacity of community development corporations (CDCs) and community housing development organizations (CHDOs) to carry out community development and affordable housing activities for the benefit of low income families.	CHDOs; CDCs; or organizations that meet the criteria on page 16 Appendix A (https://www.enterprisecommunity.org/sites/default/files/2020-08/enterprise_community_partners_grants_guide_aug2020.pdf)	Varies	https://www.hudexchange.info/programs/section-4-capacity-building/	Enterprise Community Partners, Inc. 70 Corporate Center 11000 Broken Land Parkway, Suite 700 Columbia, MD 21044 capacitybuilding@hud.gov.
Illinois Clean Energy Community Foundation	This program's mission is to improve energy efficiency, advance the development and use of renewable energy resources, and protect natural areas and wildlife habitat in communities all across Illinois.	Private not-for-profit organizations, educational organizations, local governments	Call for details, which change year to year	http://www.illinoiscleanenergy.org	Illinois Clean Energy 2 N. LaSalle St., Suite 1140 Chicago, IL 60602 Phone: 312-372-5191 info@illinoiscleanenergy.org
Riverwatch	Riverwatch is a volunteer-driven effort to collect stream data from Illinois streams and submit the data to the Illinois Natural History Survey. RiverWatch utilizes trained volunteers to collect quality assured data on wadeable streams and fosters coordination among groups involved in similar monitoring efforts.	All Illinois streams	Monitoring training, forms, and kits	http://www.ngrrec.org/riverwatch/about/	Danelle Haake, RiverWatch Director and Stream Ecologist NGRREC/L&C One Confluence Way East Alton, IL 62024 dhaake@lc.edu Phone: (618)468-2784
Trust for Public Lands (TPL)	From helping raise funds for conservation; to protecting and restoring natural spaces; to collaborating with communities to plan, design, and create parks, playgrounds, gardens, and trails; we work with communities to ensure that development happens for them, and not to them.	Local government, private not-for-profit organizations, educational organizations, and others	Technical and informational assistance to identify lands to be protected and assist in financing and land transactions	http://www.tpl.org	The Trust for Public Land 120 S. LaSalle Street, Suite 2000 Chicago, Illinois 60603 (312) 750-9820 chicago@tpl.org

FUNDING SOURCE	DESCRIPTION	ELIGIBILITY	ASSISTANCE	WEBSITE	CONTACT
Great Lakes Commission ***SPECIFIC TO LAKE MICHIGAN WATERSHED***	Great Lakes Sediment and Nutrient Reduction Program provides grants to reduce nutrients and sediments entering the Great Lakes.	Non-federal units of government or incorporated non-profit organizations	$200,000 cap per project	https://www.glc.org/work/sediment	Nicole Zacharda nzacharda@glc.org 734-971-9135
National Fish and Wildlife Foundation ***SPECIFIC TO LAKE MICHIGAN WATERSHED***	Sustain our Great Lakes (SOGL) is a public–private partnership designed to sustain, restore and protect fish, wildlife and habitat in the basin by leveraging funding, building conservation capacity, and focusing partners and resources toward key ecological issues.	Non-profit 501(c) organizations, state government agencies, local governments, municipal governments, Tribal governments and organizations, and educational institutions	Varies, has ranged from $50,000 to $1,000,000	https://www.nfwf.org/programs/sustain-our-great-lakes-program	Aislinn Gauchay aislinn.gauchay@nfwf.org

APPENDIX M:
MILESTONE EVALUATION SCORECARDS

Scoring Criteria			
	A = Met or exceeded milestone(s)	D = Milestone(s) 25% complete	N/D = No Data
	B = Milestone(s) 75% complete	F = No progress towards milestone(s)	
	C = Milestone(s) 50% complete	I/D = Insufficient Data (SMC will update as data becomes available)	

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE *July 2022 is baseline for Milestone Scorecard*	GRADE	COMMENTS (bold text indicates suggestions for tracking indicator)
1a	*Feet of stream, ravine, shoreline and bluff stabilization projects implemented.* ***Goal #1 Actions 1-4***	S	5,000		
		M	10,000		
		L	25,000		
1b	Feet of stream and ravine restoration/naturalization projects implemented. **Goal #1 Actions 1-10**	S	5,000		
		M	10,000		
		L	25,000		
1c	Feet of stream addressed by stream management/maintenance program. **Goal #1 Actions 8-9**	S	5,000		
		M	10,000		
		L	25,000		
1d	Acreage of ravine, bluff and beach restoration and management. **Goal #1 Action 14**	S	1,000		
		M	5,000		
		L	15,000		
1e	Miles of Lake Michigan shoreline protected from high water levels **Goal #1 Actions 11-13**	S	1		
		M	2		
		L	3		
	Number and cost of projects implemented to restore natural hydrology and improve climate resilience as a targeted outcome. **Goal #1 Actions 17-18**	S	3, cost variable		
		M	5, cost variable		
		L	10, cost variable		

Scoring Criteria			
	A = Met or exceeded milestone(s)	D = Milestone(s) 25% complete	N/D = No Data
	B = Milestone(s) 75% complete	F = No progress towards milestone(s)	
	C = Milestone(s) 50% complete	I/D = Insufficient Data (SMC will update as data becomes available)	

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE *July 2022 is baseline for Milestone Scorecard*	GRADE	COMMENTS (bold text indicates suggestions for tracking indicator)
2a	Number of flood problem areas positively affected by flood mitigation projects implemented. **Goal #2 Actions 17-24**	**S**	2		
		M	5		
		L	10		
	Number/value of claims filed each year per community in the watershed. **Goal #2 Actions 28-29**	**S**	Reduce by 5%		
		M	Reduce by 10%		
		L	Reduce by 25%		
2b	Runoff volume reduction and mitigation measures implemented. **Goal #2 Actions 1-3, 6, 7-11, 15, 16, 23, and 25-28**	**S**	Increase 2% from baseline (2022)		
		M	Increase 5%		
		L	Increase 10%		
2c	Number of local drainage system improvement projects implemented. **Goal #2 Actions 12-13**	**S**	5		
		M	10		
		L	25		
2d	Number of updated Federal Emergency Management Agency (FEMA) floodplain maps and local stormwater ordinances (less than 10 years old) and area impacted by them. **Goal #2 Actions 14-15**	**S**	2		
		M	4		
		L	Entire Planning Area		
2e	Number of Voluntary Floodplain/Hazard Mitigation Buyouts. **Goal #2 Actions 17-24**	**S**	5		
		M	10		
		L	25		

Scoring Criteria			
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	B = Milestone(s) 75% complete	F = No progress towards milestone(s)	
	C = Milestone(s) 50% complete	I/D = Insufficient Data (SMC will update as data becomes available)	

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE *July 2022 is baseline for Milestone Scorecard*	GRADE	COMMENTS (bold text indicates suggestions for tracking indicator)
3a	Number of waters from which Illinois EPA removes the aquatic life use impairment. **Goal #3 Actions 1-9**	**S**	1		
		M	2		
		L	5		
	Acres of invasive species removal/management projects. **Goal #3 Actions 1-9**	**S**	500		
		M	1,000		
		L	2,500		
3b	Acres of wetlands enhanced and/or restored. **Goal #3 Action 24**	**S**	10		
		M	50		
		L	100		
3c	Number of regional green infrastructure projects. **Goal #7 Actions 1-2, 4-5, 9, 13, 17-18**	**S**	1		
		M	2		
		L	3		
3d	Acres of coastal lake plain preserved, managed and/or restored. **Goal #1 Actions 28-43** **Goal #3 Actions 6-9**	**S**	500		
		M	1,500		
		L	4,000		
3e	Acres of protected natural areas (outside the coastal plain) preserved, managed and/or restored. **Goal #3 Action 10**	**S**	200		
		M	500		
		L	1,000		
3f	Area of tree canopy. **Goal #1 Actions 11-13**	**S**	1% above baseline (2022)		
		M	2% increase		
		L	5% increase		

Scoring Criteria			
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	B = Milestone(s) 75% complete	F = No progress towards milestone(s)	
	C = Milestone(s) 50% complete	I/D = Insufficient Data (SMC will update as data becomes available)	

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE *July 2022 is baseline for Milestone Scorecard*	GRADE	COMMENTS (bold text indicates suggestions for tracking indicator)
4a	Number of people reached by watershed outreach campaign. **Goal #1 Actions 28-43** **Goal #3 Actions 6-9** **Goal #4 Actions 2-4**	S	Establish outreach campaign		
		M	5,000		
		L	10,000		
4b	Number of public agencies and local private contractors attending the annual Lake County De-icing Workshop. **Goal #4 Actions 5-7, 9**	S	20 public agencies; 100 local private contractors		
		M	35 public agencies; 150 local private contractors		
		L	All public agencies with winter maintenance responsibilities; 200 local private contractors		
	Number of public agencies with winter maintenance responsibilities that use alternative de-icing products. **Goal #4 Actions 5 and 9**	S	$20		
		M	$35		
		L	All		
4c	Number of people that receive information about shoreline, bluff, and ravine management. **Goal #1 Actions 11-13** **Goal #4 Actions 8-9, 11**	S	500		
		M	1,000		
		L	2,000		
4d	Number of property owners implementing recommendations made through programs such as Conservation@Home and Rain Ready and/or number certified by the program(s). **Goal #4 Action 9**	S	50		
		M	100		
		L	250		
4e	Number of landowners that receive information about watershed programs and projects.	S	2,000		
		M	5,000		
		L	10,000		
	Number of workshops. **Goal #4 Actions 5 and 9**	S	10		
		M	20		
		L	30		
4f	Number of volunteers for stream, beach and natural area stewardship and maintenance. **Goal #4 Actions 10-11**	S	500		
		M	500		
		L	1,000		

Scoring Criteria			
	A = Met or exceeded milestone(s)	D = Milestone(s) 25% complete	N/D = No Data
	B = Milestone(s) 75% complete	F = No progress towards milestone(s)	
	C = Milestone(s) 50% complete	I/D = Insufficient Data (SMC will update as data becomes available)	

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE *July 2022 is baseline for Milestone Scorecard*	GRADE	COMMENTS (bold text indicates suggestions for tracking indicator)
5a	Number of water bodies meeting applicable standards. **Goal #5 Actions 1 and 2**	S	2		
		M	5		
		L	10		
5b	Site remediation projects completed. **Goal #1 Actions 1-4** **Goal #5 Action 3**	S	1		
		M	3		
		L	5		
5c	Implementation and support of watershed monitoring program. **Goal #5 Actions 4-6**	S	Develop monitoring program		
		M	Implement program		
		L	Continued implementation and adaptation of program		
	Regular reports on water quality monitoring to community and stakeholders. **Goal #5 Actions 7-8**	S	Develop monitoring program		
		M	Collect data, baseline report		
		L	Subsequent reporting		
5d	Monitoring data trends for common nonpoint source pollutants. **Goal #5 Action 4, 13**	S	Develop monitoring program		
		M	Collect data, baseline report		
		L	Nonpoint source pollutant trends decreasing		
5e	Winter Maintenance Program establishment including: policy and manual development, de-icing workshop attendance and certification. **Goal #5 Actions 9-11**	S	20% of municipal programs		
		M	40% of municipal programs		
		L	100% of municipal programs		
5f	Number of beach closures. **Goal #5 Actions 12-14**	S	5% below baseline 10-year avg. (2022)		
		M	10% below baseline		
		L	20% below baseline		
5g	Number of projects implemented to mitigate modified hydrology. **Goal #1 Action 2** **Goal #7 Actions 13**	S	3		
		M	5		
		L	10		

Scoring Criteria			
	A = Met or exceeded milestone(s)	D = Milestone(s) 25% complete	N/D = No Data
	B = Milestone(s) 75% complete	F = No progress towards milestone(s)	
	C = Milestone(s) 50% complete	I/D = Insufficient Data (SMC will update as data becomes available)	

OBJECTIVE ID	INDICATOR	TIMEFRAME	MILESTONE *July 2022 is baseline for Milestone Scorecard*	GRADE	COMMENTS (bold text indicates suggestions for tracking indicator)
6a	Number of municipalities, counties, agencies and organizations that adopt the Lake Michigan Watershed-Based Plan.	S	20 Agencies		
		M	All Agencies		
		L	All Agencies		
6b	Establishment of watershed planning committee with budget and executive committee.	S	1 lead organization		
		M			
		L			
	Number of projects advanced/undertaken with the support of the watershed planning committee. **Goal #6 Action 10**	S	25 recommendations/projects		
		M	100 recommendations/projects		
		L	250 recommendations/projects		
6c	Number of communities and organizations that have designated a representative to participate on the watershed planning committee.	S	10 communities/organizations		
		M	15 communities/organizations		
		L	All communities		
6d	Number of projects with alternative or multiple sources of sufficient funding. **Goal #6 Action 13**	S	5		
		M	10		
		L	25		
6e	Number of watershed stakeholders providing feedback for the watershed report cards. **Goal #6 Action 1, 8, 10, 13**	S	25		
		M	50		
		L	100		
	Number of action recommendations completed. **Goal #6 Actions 1-9, 11-12**	S	50		
		M	150		
		L	300		

APPENDIX N:
SITE SPECIFIC ACTION PLAN RECOMMENDATIONS

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0205	Benton Township	Kellogg Creek	Flood Risk Reduction	Preserve depressional storage area or incorporate into detention / storage for new development	1	each	M	L	2	PO	T, PB&D, SMC	$0		0.0	0.0	0.0	0.0	0.0	Y	Y
TBEN-GI	Benton Township	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	DOT, M	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-GI	Benton Township	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.0	acre	M	L	1,2,3,5	RR	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	23.5	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.6	acre	M	L	1,2,3,5	DOT, PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.8	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.4	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	88.3	acre	M	L	1,2,3,5	PO, RR	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
TBEN-GI	Benton Township	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TBEN-RSM	Benton Township	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
TBEN-RVR	Benton Township	Kellogg Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.1	acre	L	L	2,5	DOT, PO, T, PB&D	Illinois EPA	$19,000	$94,000	0.1	0.0	0.0	16.7	1.0	Y	Y
19-0708	Benton Township	Kellogg Creek	Stabilization	Stabilize erosion.	150	linear feet	M	M	1,5	PO	Illinois EPA, T, PB&D, SMC	$6,000	$33,000	7.5	3.7	3.7	N/A	N/A	N	N
19-0709	Benton Township	Kellogg Creek	Stabilization	Stabilize erosion.	150	linear feet	M	M	1,5	PO	Illinois EPA, T, PB&D, SMC	$6,000	$33,000	7.5	3.7	3.7	N/A	N/A	N	N
19-0209	Benton Township	Kellogg Creek	Stream/Ravine Restoration	Restore and widen the riparian habitat buffer and establish native riparian plant communities: control invasive species, plant native species, thin forest and shrub canopy, and manage vegetation such as prescribed burning.	2.9	acre	L	L	1,3,5,6	PO	Illinois EPA, M, T, PB&D, SMC	$12,000	$29,000	0.0	0.0	0.0	0.0	0.0	Y	Y
19-0176	Benton Township	Kellogg Creek	Water Infrastructure	Address erosion from 16th Street culvert crossing using bioengineering stabilization practices.	1	each	H	M	2,5	DOT	Illinois EPA, T, PB&D, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
19-0178	Benton Township	Kellogg Creek	Water Infrastructure	Repair discharge point and stabilize erosion.	1	each	H	M	2,5	DOT, PO	Illinois EPA, T, PB&D, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
19-0250	Benton Township	Kellogg Creek	Water Infrastructure	Address erosion at and surrounding the culvert outfall.	1	each	M	S	2,5	PO, DOT	Illinois EPA, T, PB&D, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0255	Benton Township	Kellogg Creek	Water Infrastructure	Address erosion at / around plastic pipe outfall using bioengineering stabilization measures.	1	each	M	S	2,5	PO	M	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
BEA-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO, DOT, M	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFP-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, SI	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	16.7	acre	L	L	3,5,6	IDNR	RR, USFWS, USACE, SMC	$167,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PD	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PD	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PD	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WHR-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO, M	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Benton Township	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	DOT, M	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
19-0296	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$30,000		0.4	0.1	0.0	13.1	1.1	Y	Y
19-0736	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$24,000		0.4	0.1	0.0	13.8	1.0	Y	N
19-0748	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	3.0	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$258,000		5.0	0.7	0.3	146.6	12.2	Y	N
19-0750	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	2.0	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$171,000		2.5	0.3	0.1	75.0	6.3	Y	N
19-0754	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	9.6	0.8	Y	N
19-0764	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$33,000		0.5	0.1	0.0	18.9	1.4	N	N
19-0765	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$46,000		0.7	0.1	0.0	27.0	2.0	N	N
19-0767	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$19,000		0.3	0.0	0.0	11.2	0.8	N	N
19-0793	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	1.8	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$160,000		2.5	0.4	0.2	92.8	6.7	N	N
19-0794	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.8	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$67,000		1.0	0.2	0.1	39.0	2.8	N	N
19-0795	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$32,000		0.5	0.1	0.0	18.4	1.3	N	N
19-0796	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	1.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$92,000		1.4	0.2	0.1	53.6	3.9	N	N
19-0800	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	4.7	0.4	Y	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0838	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$74,000		1.1	0.2	0.1	42.6	3.0	Y	N
19-0839	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	2.0	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$176,000		2.7	0.4	0.2	101.4	7.0	Y	N
19-0840	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$33,000		0.5	0.1	0.0	19.2	1.3	Y	N
19-0841	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$41,000		0.6	0.1	0.0	23.5	1.6	Y	N
19-0842	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$32,000		0.5	0.1	0.0	18.5	1.3	Y	N
19-0843	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$24,000		0.4	0.1	0.0	13.9	1.0	Y	N
19-0865	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$51,000		0.7	0.1	0.0	22.4	1.9	Y	N
19-0870	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$27,000		0.4	0.1	0.0	11.8	1.0	Y	N
19-0871	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	2.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$202,000		2.9	0.4	0.2	88.6	7.5	Y	N
19-0873	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	1.5	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$129,000		2.0	0.3	0.1	74.5	5.2	Y	N
19-0874	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$25,000		0.4	0.1	0.0	14.4	1.0	Y	N
19-0888	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	RR, PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$81,000		1.0	0.2	0.1	41.3	2.6	N	N
19-0927	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, T, PB&D, USFWS, USACE, SMC	$65,000		0.3	0.1	0.0	19.5	1.0	N	N
19-0957	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$16,000		0.2	0.0	0.0	6.9	0.6	Y	N
19-0967	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	3.8	0.3	Y	N
19-0968	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	5.3	0.4	N	N
19-1015	Benton Township	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	PO, RR	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	6.2	0.4	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0648	Benton Township, City of Zion	Kellogg Creek	Stream/Ravine Restoration	Restore instream habitat including installing pools and riffles. Restore and widen the riparian habitat buffer and establish native riparian plant communities: control invasive species, plant native species, and thin forest and shrub canopy.	3292.8	linear feet	L	L	1,3,5,6	PO, SI	DOT, Illinois EPA, M, T, PB&D, SMC	$988,000		49.1	24.5	24.3	0.0	0.0	Y	Y
19-0287	Benton Township, City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	13.2	acre	H	L	2,3,5	PO	Illinois EPA, M, T, PB&D, USFWS, USACE, SMC	$436,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0315	Benton Township, City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	11.0	acre	M	S	2,3,5	PO, SI	Illinois EPA, M, T, PB&D, USFWS, USACE, SMC	$364,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0645	Benton Township, City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	12.8	acre	H	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$1,118,000		21.6	3.0	1.3	636.0	52.9	Y	Y
19-0926	Benton Township, City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	RR, PO	Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$25,000		0.3	0.0	0.0	12.1	0.9	N	N
19-0303	Benton Township, City of Zion, Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion along entire channel using bioengineering stabilization practices. Restore the riparian forest habitat and establish native riparian plant ground cover communities: control invasive species, plant native species, and thin the forest and shrub canopy.	957.2	linear feet	M	M	1,3,5,6	PO. M	Illinois EPA, T, PB&D, SMC	$311,000		14.3	7.1	7.1	0.0	0.0	Y	Y
19-0614	Benton Township, City of Zion, Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	10.3	acre	L	S	2,3,5	PO, M	T, PB&D, USFWS, USACE, SMC	$341,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0634	Benton Township, City of Zion, Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	15.1	acre	H	M	2,3,5	M, PO	DOT, Illinois EPA, T, PB&D, USFWS, USACE, SMC	$497,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0302	Benton Township, City of Zion, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	3.6	acre	L	M	2,3,5,6	PO, M	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$310,000		4.5	0.6	0.3	136.0	11.5	Y	Y
19-0256	Benton Township, Village of Pleasant Prairie	Kellogg Creek	Stream/Ravine Restoration	Preserve, restore and manage native riparian habitat buffer and plant communities: control invasive species, plant native species, and thin forest and shrub canopy.	3.7	acre	L	S	1,3,5,6	PO	DOT, Illinois EPA, M, T, PB&D, SMC	$16,000	$37,000	0.0	0.0	0.0	0.0	0.0	Y	Y
19-0647	Benton Township, Village of Pleasant Prairie, Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion using bioengineering stabilization measures. Restore instream habitat by installing pools and riffles. Restore and manage native riparian habitat buffer and plant communities: control invasive species, plant native species, and thin forest and shrub canopy.	294.2	linear feet	M	M	1,3,5,6	PO	Illinois EPA, M, T, PB&D, SMC	$96,000		4.4	2.2	2.2	0.0	0.0	Y	Y
19-0189	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Restore instream habitat. Remove excess debris/concrete that is not necessary for grade stabilization. Restore and widen the riparian habitat buffer and establish native riparian plant communities, particularly along residential properties and within the ravines: control invasive species, plant native species, and thin forest and shrub canopy.	964.1	linear feet	H	S	1,3,5,6	PO	Illinois EPA, M, T, PB&D, SMC	$289,000		14.4	7.2	7.1	0.0	0.0	Y	Y
19-0293	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion and slumping along the entire reach, including the 20 ft high bluff approximately 0.1 miles downstream from Sheridan Road, using bioengineering stabilization practices. Restore and widen the riparian woodland habitat buffer and establish native riparian plant communities: control invasive species, plant native species, and thin the shrub canopy.	3172.1	linear feet	H	M	1,3,5,6	PO	DOT, Illinois EPA, RR, M, T, PB&D, SMC	$952,000		47.3	23.6	23.4	0.0	0.0	Y	Y
19-0297	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion using bioengineering stabilization practices. Address debris dumping, concrete armoring, and barrel. Restore and widen riparian/forested buffer and establish native plant communities. Control invasive species, plant native species, and thin forest and shrub canopy.	1125.0	linear feet	M	M	1,3,5,6	PO	DOT, Illinois EPA, M, T, PB&D, SMC	$569,000		28.3	14.1	14.0	0.0	0.0	Y	Y
19-0603	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.7	acre	L	S	2,3,5	PO	DOT, Illinois EPA, M, T, PB&D, USFWS, USACE, SMC	$122,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0604	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.1	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, T, PB&D, USFWS, USACE, SMC	$236,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0611	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.0	acre	L	M	2,3,5	PO	DOT, Illinois EPA, M, T, PB&D, USFWS, USACE, SMC	$231,000		0.0	0.0	0.0	0.0	0.0	Y	Y

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0612	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.9	acre	M	M	2,3,5	M, PO	DOT, Illinois EPA, T, PB&D, USFWS, USACE, SMC	$163,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0613	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.7	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, T, PB&D, USFWS, USACE, SMC	$122,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0636	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.2	acre	L	S	2,3,5	PO	DOT, Illinois EPA, RR, M, T, PB&D, USFWS, USACE, SMC	$238,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0080	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.9	acre	L	S	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$164,000		2.5	0.4	0.2	94.4	6.5	Y	Y
19-0111	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.8	acre	L	M	2,3,5,6	PO	Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$158,000		2.4	0.3	0.2	91.1	6.3	Y	Y
19-0254	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.5	acre	L	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$128,000		2.0	0.3	0.1	73.9	5.1	Y	Y
19-0271	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	3.8	acre	H	M	2,3,5,6	PO, M	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$335,000		4.8	0.7	0.3	147.0	12.4	Y	Y
19-0752	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	4.7	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$412,000		6.0	0.8	0.3	180.9	15.3	Y	N
19-0844	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$110,000		1.7	0.2	0.1	63.5	4.4	Y	N
19-0860	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	7.0	0.5	Y	N
19-0861	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$59,000		0.9	0.1	0.1	34.3	2.4	Y	N
19-0862	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$35,000		0.5	0.1	0.0	20.2	1.4	Y	N
19-0869	Benton Township, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, T, PB&D, USFWS, USACE, SMC	$80,000		1.2	0.2	0.1	35.3	3.0	Y	N
23-0137	City of Highland Park	Bluff/Ravine	Beach Management	Regrade upland portion of park and divert stormwater runoff to bottom of ravine to protect beach access path.	1	each	H	S	1	PD	M, SMC	$50,000	$75,000	0.0	0.0	0.0	0.0	0.0	Y	N
23-0615	City of Highland Park	Bluff/Ravine	Beach Management	Follow recommendations of Smith Group Beach Management Plan. Redirect runoff away from the beach using the appropriate green infrastructure techniques. Research the use of stormwater filtration devices.	1	each	H	S	1,5	PD	Illinois EPA, M, SMC	$551,000	$2,755,000	1.9	0.4	0.3	337.8	22.6	N	Y
23-0616	City of Highland Park	Bluff/Ravine	Beach Management	Implement erosion reduction infrastructure to further protect building and parking lot. Redirect runoff away from the beach using the appropriate green infrastructure techniques. Consider the use of filter strips and stormwater filtration devices. Continue deep grooming of the beach sand.	1	each	H	S	1, 5	PD	Illinois EPA, M	$676,000	$2,856,000	1.9	0.4	0.3	324.9	23.8	Y	Y
23-0048	City of Highland Park	Bluff/Ravine	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
23-0049	City of Highland Park	Bluff/Ravine	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
23-8005	City of Highland Park	Bluff/Ravine	Detention Basin Retrofit	Repair inlet	1	each	L	L	2	SI	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
23-0122	City of Highland Park	Bluff/Ravine	Flood Risk Reduction	Retrofit turf fields for bioinfiltration, stormwater interceptor facilities, prairie restoration, or native landscape. Modify local storm sewer infrastructure. Provide for recreation, interpretive, and partnering opportunities with landowner and local residents. See Bartlett Ravine Stormwater Planning (Open Lands and Stantec) for additional information.	1.4	acre	M	M	2,5	PO	Illinois EPA, M, SMC	$1,052,000		0.9	0.7	0.4	1065.6	20.2	N	Y
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO, HOA	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	RR, DOT, PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.7	acre	M	L	1,2,3,5	M, RR, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	54.6	acre	M	L	1,2,3,5	PO, PD, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PD	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	22.4	acre	M	L	1,2,3,5	PO, NSWRD, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	102.7	acre	M	L	1,2,3,5	PO, SI, PD	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-GI	City of Highland Park	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	21.5	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	31.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	35.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	14.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	35.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RSM	City of Highland Park	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-RVR	City of Highland Park	Bluff/Ravine	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.2	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$55,000	$276,000	0.2	0.0	0.0	26.6	2.7	Y	N
23-0127	City of Highland Park	Bluff/Ravine	Shoreline Stabilization	Repair or replace the boat launch with a structure of similar length to maintain the boating facility beach. Per PDHP beach management plan, cost to be determined through further investigation.	1	each	M	M	2	PD	Illinois EPA, M	$0		0.0	0.0	0.0	0.0	0.0	N	N
23-0128	City of Highland Park	Bluff/Ravine	Shoreline Stabilization	Repair and install scour protection around the North Shore Yacht Club boat parking lot pad.	0.1	acre	M	M	2,5	PD	Illinois EPA, M	$309,000		0.0	0.0	0.0	0.0	0.0	N	N
23-0129	City of Highland Park	Bluff/Ravine	Shoreline Stabilization	Address bluff erosion.	410.3	linear feet	L	L	1,3,5	PD	Illinois EPA, M, SMC	$821,000		0.0	0.0	0.0	0.0	0.0	N	N
23-0011	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	10	linear feet	M	L	1,5	M. PO	Illinois EPA, SMC	$6,000	$33,000	0.5	0.2	0.2	N/A	N/A	N	N
23-0012	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	10	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.5	0.2	0.2	N/A	N/A	Y	N
23-0013	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	10	linear feet	M	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.5	0.2	0.2	N/A	N/A	N	N
23-0014	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	10	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.5	0.2	0.2	N/A	N/A	Y	N
23-0016	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	12	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.6	0.3	0.3	N/A	N/A	N	N
23-0017	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	6	linear feet	L	L	1,5	M, PD, PO	Illinois EPA, SMC	$6,000	$33,000	0.3	0.1	0.1	N/A	N/A	N	N
23-0018	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	10	linear feet	M	L	1,5	M	Illinois EPA, SMC	$6,000	$33,000	0.5	0.2	0.2	N/A	N/A	N	N
23-0020	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	10	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.5	0.2	0.2	N/A	N/A	N	N
23-0021	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	15	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.7	0.4	0.4	N/A	N/A	N	N
23-0022	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	10	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.5	0.2	0.2	N/A	N/A	N	N
23-0055	City of Highland Park	Bluff/Ravine	Stabilization	Stabilize erosion.	125	linear feet	M	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	6.2	3.1	3.1	N/A	N/A	N	N
23-0057	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Control grade of eroding ravine bed, spot treat eroding banks/slopes following recommendations from USACE feasibility study.	4448.8	linear feet	L	L	1,5	PD, PO	DOT, Illinois EPA, M, SMC	$1,335,000		66.3	33.2	32.8	0.0	0.0	N	N
23-0059	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Spot treat erosion.	414.5	linear feet	M	M	1,5	PD, PO, M	DOT, Illinois EPA, M, SMC	$20,000		1.0	0.5	0.5	0.0	0.0	N	N
23-0075	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	305.1	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$92,000		4.5	2.3	2.3	0.0	0.0	Y	N
23-0076	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1297.4	linear feet	L	L	1,5	PO, PD	DOT, Illinois EPA, M, SMC	$389,000		19.3	9.7	9.6	0.0	0.0	N	N
23-0077	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine. Inspect exposed sanitary sewer pipes in ravine and determine if problematic. Repair access pathway.	7519.9	linear feet	H	M	1,5	PD, M, PO	DOT, Illinois EPA, SMC	$2,256,000	$3,356,000	112.1	56.1	55.5	0.0	0.0	N	N
23-0080	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Spot treat eroding ravine bed and bank areas, including outfall and headwall at head of ravine.	1257.1	linear feet	M	M	1,5	PO	DOT, Illinois EPA, M, SMC	$285,000		14.2	7.1	7.0	0.0	0.0	N	N
23-0081	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Spot treat eroding bed and banks of ravine	459.8	linear feet	M	L	1,5	PO	Illinois EPA, M, SMC	$116,000		5.7	2.9	2.8	0.0	0.0	N	N
23-0082	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize eroding ravine bed and banks	262.0	linear feet	L	L	1,5	PD, PO	Illinois EPA, M, SMC	$75,000		3.7	1.9	1.8	0.0	0.0	N	N
23-0092	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	2496.3	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$749,000		37.2	18.6	18.4	0.0	0.0	N	N
23-0093	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1485.6	linear feet	L	L	1,5	PO	DOT, Illinois EPA, M, SMC	$446,000		22.1	11.1	11.0	0.0	0.0	N	N
23-0094	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1109.6	linear feet	L	L	1,5	PO	DOT, Illinois EPA, M, SMC	$333,000		16.5	8.3	8.2	0.0	0.0	N	N
23-0095	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1343.8	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$403,000		20.0	10.0	9.9	0.0	0.0	N	N
23-0096	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	2621.8	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$300,000		4.2	2.1	2.1	0.0	0.0	Y	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
23-0097	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	435.8	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$131,000		6.5	3.2	3.2	0.0	0.0	N	N
23-0098	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1128.2	linear feet	L	L	1,5	PO	DOT, Illinois EPA, M, SMC	$338,000		16.8	8.4	8.3	0.0	0.0	N	N
23-0099	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	585.9	linear feet	L	L	1,5	PO	DOT, Illinois EPA, M, SMC	$176,000		8.7	4.4	4.3	0.0	0.0	N	N
23-0101	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1780.1	linear feet	L	L	1,5	PO	DOT, Illinois EPA, M, SMC	$534,000		26.5	13.3	13.1	0.0	0.0	N	N
23-0102	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	134.4	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$40,000		2.0	1.0	1.0	0.0	0.0	N	N
23-0103	City of Highland Park	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	449.0	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$135,000		6.7	3.3	3.3	0.0	0.0	N	N
23-0031	City of Highland Park	Bluff/Ravine	Water Infrastructure	Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	N	N
23-0032	City of Highland Park	Bluff/Ravine	Water Infrastructure	Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	N	N
23-0033	City of Highland Park	Bluff/Ravine	Water Infrastructure	Pipe is broken and most likely the cause of the discoloration and oil in stream. Investigate potential illicit discharge.	1	each	M	M	5	LCHD, M		$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0036	City of Highland Park	Bluff/Ravine	Water Infrastructure	Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	N	N
23-0037	City of Highland Park	Bluff/Ravine	Water Infrastructure	Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	N	N
23-0038	City of Highland Park	Bluff/Ravine	Water Infrastructure	Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	N	N
23-0039	City of Highland Park	Bluff/Ravine	Water Infrastructure	Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	N	N
23-0040	City of Highland Park	Bluff/Ravine	Water Infrastructure	Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	N	N
23-0041	City of Highland Park	Bluff/Ravine	Water Infrastructure	Exposed pipe crossing stream. Investigate and determine if problematic.	1	each	M	M	2	M		$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0042	City of Highland Park	Bluff/Ravine	Water Infrastructure	Stream draining into a hole below a manhole cover causing substantial erosion. Repair failing structure.	1	each	H	S	2	M	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0044	City of Highland Park	Bluff/Ravine	Water Infrastructure	Substantial gray discharge. Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	Y	N
23-0045	City of Highland Park	Bluff/Ravine	Water Infrastructure	Appears to be discharging sewage. Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	N	N
23-0056	City of Highland Park	Bluff/Ravine	Water Infrastructure	Substantial spalling on box culvert. Investigate and determine if problematic.	1	each	H	S	2	M, DOT	PO	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO, RR	M, SMC, USFWS, USACE	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	SI	M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	Y	N
HLD-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	M	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
HLD-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	M	L	3,5,6	PO	DOT, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	LCFPD, PO	USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	11.1	acre	L	L	3,5,6	LCFPD, PO	DOT, USFWS, USACE, SMC	$111,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	14.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$144,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO, M	DOT, M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LKB-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO, RR	M, SMC, USFWS, USACE	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	3,5,6	RR, IL	M, SMC, USFWS, USACE	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	Y	N
NCH-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	3,5,6	PO	DOT, USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$76,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	M	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	DOT, PO	DOT, M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO, PD, C	M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.4	acre	L	L	3,5,6	M, PO, PD	USFWS, USACE, SMC	$74,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	10.5	acre	L	L	3,5,6	PO, PD, M, DOT	USFWS, USACE, SMC	$105,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	10.6	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$106,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	10.8	acre	L	L	3,5,6	M, NSWRD, PO	USFWS, USACE, SMC	$108,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	M	L	3,5,6	DOT, M	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	M	L	3,5,6	PO, DOT, M	USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	M	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WHR-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.1	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
WHR-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	10.7	acre	L	L	3,5,6	M, PO, RR	DOT, SMC, USFWS, USACE	$107,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	3,5,6	PO	DOT, RR, M, USFWS, USACE, SMC	$12,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Highland Park	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	15.1	acre	M	L	3,5,6	M, PD	USFWS, USACE, SMC	$151,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0113	City of Highwood	Bluff/Ravine	Detention Basin Retrofit	Retrofit dry basin to wet or wetland detention. See Bartlett Ravine Stormwater Planning (Open Lands and Stantec) for additional information.	1	each	M	S	2,5	HOA	DOT, Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
23-0124	City of Highwood	Bluff/Ravine	Detention Basin Retrofit	Retrofit dry basin to wet or wetland detention. See Bartlett Ravine Stormwater Planning (Open Lands and Stantec) for additional information.	1	each	M	S	2,5	HOA	DOT, Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	Y
23-8004	City of Highwood	Bluff/Ravine	Detention Basin Retrofit	Inventory detention basin	1	each	L	L	2	M	SMC	$0		0.0	0.0	0.0	0.0	0.0	N	N
23-0117	City of Highwood	Bluff/Ravine	Flood Risk Reduction	Install rain garden/infiltration area with native vegetation. Consider modifying storm sewer inlets and subgrades to increase detention capacity. See Bartlett Ravine Stormwater Planning (Open Lands and Stantec) for additional information.	0.5	acre	M	M	2,5	M	DOT, Illinois EPA, SMC	$339,000		0.3	0.2	0.1	343.7	6.5	N	Y
23-0118	City of Highwood	Bluff/Ravine	Flood Risk Reduction	Retrofit turf fields for bioinfiltration, stormwater interceptor facilities, prairie restoration or native landscape. Modify local storm sewer infrastructure. See Bartlett Ravine Stormwater Planning (Open Lands and Stantec) for additional information.	5.5	acre	H	M	2,5	M	DOT, Illinois EPA, SMC	$4,074,000		3.6	2.9	1.5	4127.5	78.3	N	Y
23-0119	City of Highwood	Bluff/Ravine	Flood Risk Reduction	Modify roadway drainage to direct surface water to bioinfiltration areas and reduce flooding in adjacent sub-grade garages. Retrofit gutters and gutter inlets. See Bartlett Ravine Stormwater Planning (Open Lands and Stantec) for additional information.	1	each	L	L	2,5	DOT, M	Illinois EPA, SMC	$500,000		0.0	0.0	0.0	0.0	0.0	N	Y
23-0120	City of Highwood	Bluff/Ravine	Flood Risk Reduction	Convert turf fields for additional detention/storage volume, incorporate wet prairie/wetland or native landscape. Retrofit existing outfalls to increase attenuation of peak flows. See Bartlett Ravine Stormwater Planning (Open Lands and Stantec) for additional information.	2.9	acre	H	M	2,3,5	HOA	Illinois EPA, M, SMC	$2,108,000		1.9	1.5	0.8	2135.3	40.5	N	Y
HWD-GI	City of Highwood	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-GI	City of Highwood	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	HOA, PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-GI	City of Highwood	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-GI	City of Highwood	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-GI	City of Highwood	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-GI	City of Highwood	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RSM	City of Highwood	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HWD-RVR	City of Highwood	Bluff/Ravine	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.2	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$73,000	$367,000	0.6	0.1	0.1	59.8	3.9	N	N
23-0125	City of Highwood	Bluff/Ravine	Stream/Ravine Restoration	Repair and enhance existing stream stabilization measures to reduce velocity in the stream channel. Augment existing rock riffles to establish a step-pool channel profile. See Bartlett Ravine Stormwater Planning (Open Lands and Stantec) for additional information.	364.4	linear feet	M	L	1,5	HOA, OL	Illinois EPA, M, SMC	$118,000		10.9	5.4	5.4	0.0	0.0	N	Y
BEA-WLE	City of Highwood	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	8.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$82,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Highwood	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	8.0	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$80,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0614	City of Lake Forest	Bluff/Ravine	Beach Management	Redirect runoff away from the beach using the appropriate green infrastructure techniques. Research the use of stormwater filtration devices. Reduce gull contribution to nearshore E. coli concentrations.	1	each	M	M	1,5	M	Illinois EPA	$166,000	$788,000	0.4	0.1	0.1	71.5	5.9	N	Y
23-0046	City of Lake Forest	Bluff/Ravine	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0047	City of Lake Forest	Bluff/Ravine	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0050	City of Lake Forest	Bluff/Ravine	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0052	City of Lake Forest	Bluff/Ravine	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0053	City of Lake Forest	Bluff/Ravine	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
23-8002	City of Lake Forest	Bluff/Ravine	Detention Basin Retrofit	Stabilize side slope erosion.	1	each	L	L	2,5	SI	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
23-0131	City of Lake Forest	Bluff/Ravine	Flood Risk Reduction	Implement flood reduction measures. Scheduled for construction in 2022.	1	each	H	S	2	M	DOT, Illinois EPA, SMC, PO	$0		0.0	0.0	0.0	0.0	0.0	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	15.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	7.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	M, RR		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-GI	City of Lake Forest	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	191.1	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	15.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFT-RSM	City of Lake Forest	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFT-RVR	City of Lake Forest	Bluff/Ravine	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.6	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$171,000	$855,000	0.9	0.2	0.1	141.0	10.0	N	N
23-0085	City of Lake Forest	Bluff/Ravine	Shoreline Stabilization	Stabilize and revegetate shoreline.	895.6	linear feet	H	S	1,5	PD, PO	Illinois EPA, M	$1,791,000		0.0	0.0	0.0	0.0	0.0	N	N
23-0139	City of Lake Forest	Bluff/Ravine	Shoreline Stabilization	Stabilize bluff erosion.	674.2	linear feet	M	L	1,3,5	M, PO	Illinois EPA, SMC	$1,348,000		0.0	0.0	0.0	0.0	0.0	N	N
23-0023	City of Lake Forest	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	100	linear feet	M	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	N	N
23-0054	City of Lake Forest	Bluff/Ravine	Stabilization	Stabilize erosion.	75	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	3.7	1.9	1.8	N/A	N/A	N	N
23-0060	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Remove concrete channel.	970.7	linear feet	L	L	1,3,5,6	M, PO	DOT, Illinois EPA, SMC	$291,000		14.5	7.2	7.2	0.0	0.0	N	N
23-0061	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize eroding streambank.	116.1	linear feet	M	L	1,5	PO, DOT	Illinois EPA, M, SMC	$35,000		1.7	0.9	0.9	0.0	0.0	N	N
23-0062	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize eroding streambank.	342.8	linear feet	H	S	1,5	M, PO	Illinois EPA, SMC	$103,000		5.1	2.6	2.5	0.0	0.0	N	Y
23-0063	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Spot treat streambank and ravine erosion.	47.0	linear feet	L	L	1,5	M, PO	Illinois EPA, SMC	$14,000		0.7	0.4	0.3	0.0	0.0	N	N
23-0065	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream. Inspect exposed sanitary sewer in ravine and determine if problematic.	10921.9	linear feet	H	M	1,5	M, SI, PO	DOT, Illinois EPA, SMC	$3,277,000		162.8	81.4	80.6	0.0	0.0	N	N
23-0066	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Remove debris . Raise the stream bed to cover sanitary sewer . Stabilize stream banks and bed. Repair ravine slopes and restore with native vegetation.	1069.0	linear feet	H	M	1,3,5,6	M, SI, PO	Illinois EPA, SMC	$1,750,000		15.9	8.0	7.9	0.0	0.0	N	N
23-0067	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Remove debris. Raise stream bed to cover sanitary sewer. Stabilize stream banks and bed. Repair ravine slopes and restore with native vegetation.	1394.8	linear feet	H	M	1,3,5,6	M, PO	Illinois EPA, SMC	$2,250,000		20.8	10.4	10.3	0.0	0.0	N	N
23-0068	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Storm sewer from road has separated joint undermining structure and causing erosion. Recommendations: 1. Remove debris and concrete headwall 2. Install a new energy dissipation structure/manhole 3. Install new outfall pipe with concrete headwall 4. Provide cover over sanitary sewer. 5. Install stone plunge pool with 2 sets of rock riffles and stone step pools along the ravine downstream of the outfall. 6. Stabilize streambanks and repair ravine slopes and restore with native vegetation	361.5	linear feet	H	M	2,5	M, PO	Illinois EPA, SMC	$450,000		5.4	2.7	2.7	0.0	0.0	N	N
23-0086	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize streambed and banks to reduce downcutting.	1330.2	linear feet	H	S	1,5	PD, M, PO	DOT, Illinois EPA, M, SMC	$399,000		19.8	9.9	9.8	0.0	0.0	N	N
23-0090	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1387.7	linear feet	M	L	1,5	PO	Illinois EPA, M, SMC	$416,000		20.7	10.3	10.2	0.0	0.0	N	N
23-0105	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1679.4	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$504,000		25.0	12.5	12.4	0.0	0.0	N	N
23-0106	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	6557.7	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$1,967,000		97.8	48.9	48.4	0.0	0.0	N	N
23-0107	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1010.8	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$303,000		15.1	7.5	7.5	0.0	0.0	N	N
23-0108	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	227.7	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$68,000		3.4	1.7	1.7	0.0	0.0	N	N
23-0109	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1341.0	linear feet	L	L	1,5	PO	DOT, Illinois EPA, M, SMC	$135,000		6.7	3.4	3.3	0.0	0.0	N	N
23-0110	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	1438.0	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$324,000		16.1	8.1	8.0	0.0	0.0	N	N
23-0111	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	151.1	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$45,000		2.3	1.1	1.1	0.0	0.0	N	N
23-0112	City of Lake Forest	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	174.2	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$52,000		2.6	1.3	1.3	0.0	0.0	N	N
23-0001	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Determine function of hydraulic structure. Remove if it is a legacy structure.	1	each	L	L	2	M, PO	Illinois EPA	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0002	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Determine if suspended pipe is a legacy structure or still in use. Remove pipe and supports if it is a legacy structure. If still in use, repair supports and pipe, or bury pipe. Stabilize nearby erosion to prevent future damage.	1	each	H	S	2,5	M, SI	Illinois EPA	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0003	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Repair or remove damaged culvert.	1	each	L	L	2	M	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0004	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Repair failing discharge point and stabilize erosion.	1	each	L	L	2,5	M, PO	Illinois EPA, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0005	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Repair failed structure.	1	each	L	L	2	M, PO	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0006	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Remove legacy structure.	1	each	L	L	2	M, PO	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0007	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Repair broken sanitary sewage service line that is actively discharging sewage into the ravine.	1	each	H	S	5	M	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0024	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Storm sewer from road has separated joint undermining structure and causing severe erosion Recommendations: 1. Remove debris/concrete chute 2. Line outfall pipe from road to outlet. 3. Install energy dissipation structure/manhole 4. Install new outfall pipe with tie rods back to the dissipation structure 5. Install stone plunge pool with 2 sets of rock riffles and stone step pools along the ravine and stabilize streambanks 6. Repair ravine slopes and restore with native vegetation.	1	each	H	S	2,5	M, PO	Illinois EPA, SMC	$350,000		N/A	N/A	N/A	N/A	N/A	N	Y
23-0025	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Repair broken sanitary sewage service line that is actively discharging sewage into the ravine.	1	each	H	S	5	M	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
23-0028	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Identify and eliminate upstream sources of sediment.	1	each	H	M	5	LFOL, M	Illinois EPA, DOT	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0029	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Stabilize erosion and head cutting near force main.	1	each	H	M	2,5	M, PO	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0030	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Investigate potential illicit discharge.	1	each	H	S	5	LCHD, M		$500		N/A	N/A	N/A	N/A	N/A	N	N
23-0034	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Repair failed structure.	1	each	L	L	2	PO	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0035	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Repair failed structure.	1	each	L	L	2	M, DOT	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0043	City of Lake Forest	Bluff/Ravine	Water Infrastructure	Stabilize erosion. Repair failing structure.	1	each	M	M	2,5	M, PO	SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	M	L	3,5,6	PO, DOT	M, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	PO, M	USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$27,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$31,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$31,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.1	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$41,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.4	acre	L	L	3,5,6	PO, M, DOT	USFWS, USACE, SMC	$44,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$47,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$23,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$27,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.0	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$30,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.1	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$31,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.3	acre	M	L	3,5,6	PD	M, USFWS, USACE, SMC	$33,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.5	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$35,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$42,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.5	acre	M	L	3,5,6	PD, PO	DOT, M, USFWS, USACE, SMC	$45,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.9	acre	L	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$49,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	LCFPD, PO	DOT, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.4	acre	L	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$24,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.5	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$25,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.7	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$27,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.7	acre	L	L	3,5,6	LCFPD, PO, M	USFWS, USACE, SMC	$27,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.8	acre	L	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$28,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.8	acre	M	L	3,5,6	PO, PD	USFWS, USACE, SMC	$28,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.9	acre	L	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$29,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.4	acre	M	L	3,5,6	PO, PD	DOT, USFWS, USACE, SMC	$34,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.4	acre	L	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$44,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.0	acre	L	L	3,5,6	M, PO	USFWS, USACE, SMC	$50,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.5	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$35,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LKB-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.8	acre	L	L	3,5,6	PD, RR	DOT, M, SMC, USFWS, USACE	$38,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.9	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$49,000		N/A	N/A	N/A	N/A	N/A	N	N
NAV-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.3	acre	L	L	3,5,6	PO, NAVY	USFWS, USACE, SMC	$23,000		N/A	N/A	N/A	N/A	N/A	N	N
NAV-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.0	acre	L	L	3,5,6	NAVY	USFWS, USACE, SMC	$50,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	NAVY	USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$23,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.3	acre	L	L	3,5,6	PO, IDNR	USFWS, USACE, SMC	$23,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$24,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$24,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$25,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$25,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$27,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.7	acre	L	L	3,5,6	IDNR, PO, M, SMC, RR	USFWS, USACE, SMC	$27,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$28,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$28,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.9	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$29,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.9	acre	L	L	3,5,6	IDNR	RR, USFWS, USACE, SMC	$29,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.0	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$30,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$31,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$31,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$31,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$32,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$34,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$37,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$38,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$42,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$42,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$43,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$44,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$44,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$45,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$48,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.9	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$49,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.3	acre	L	L	3,5,6	IDNR, M	USFWS, USACE, SMC	$53,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$55,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.7	acre	L	L	3,5,6	RR, IDNR	USFWS, USACE, SMC	$57,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.9	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$59,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.9	acre	L	L	3,5,6	IDNR, RR	USFWS, USACE, SMC	$59,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$61,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	13.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$137,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	63.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$637,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.9	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$29,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.6	acre	L	L	3,5,6	T, PO, RR, Navy	DOT, T, PB&D, USFWS, USACE, SMC	$26,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.2	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$32,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.2	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$42,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.4	acre	L	L	3,5,6	T, PO	DOT, PB&D, USFWS, USACE, SMC	$54,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.4	acre	M	L	3,5,6	PD, PO	M, USFWS, USACE, SMC	$24,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.8	acre	L	L	3,5,6	PO, PD, M	USFWS, USACE, SMC	$28,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.9	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$29,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.9	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$29,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.9	acre	L	L	3,5,6	PO, PD, M	USFWS, USACE, SMC	$29,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.0	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$30,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$44,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.9	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$49,000		N/A	N/A	N/A	N/A	N/A	N	N
ARM-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.7	acre	L	L	3,5,6	OL, ARMY	USFWS, USACE, SMC	$37,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	M	L	3,5,6	M, PO	DOT, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.1	acre	M	L	3,5,6	M	DOT, USFWS, USACE, SMC	$31,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.8	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$38,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.1	acre	M	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$51,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.1	acre	L	L	3,5,6	M	DOT, USFWS, USACE, SMC	$61,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.7	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$27,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
ZIO-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.1	acre	L	L	3,5,6	PO, HOA, M	DOT, USFWS, USACE, SMC	$51,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Lake Forest	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.5	acre	M	L	3,5,6	M, PD	USFWS, USACE, SMC	$55,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0141	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO, M	Illinois EPA, IDNR, USFWS, USACE, SMC	$25,000		0.3	0.1	0.0	14.3	1.0	N	N
23-0143	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$58,000		1.1	0.2	0.1	45.8	3.7	N	N
23-0144	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$44,000		1.0	0.2	0.1	39.9	2.7	N	N
23-0145	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	1.0	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$83,000		2.0	0.3	0.1	75.8	5.1	N	N
23-0146	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.2	0.0	0.0	8.3	0.6	N	N
23-0147	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$49,000		1.2	0.2	0.1	44.9	3.0	N	N
23-0148	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	1.5	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$127,000		2.3	0.4	0.2	101.0	5.7	N	N
23-0149	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	1.6	acre	M	L	2,3,5,6	SI	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$140,000		2.7	0.4	0.2	108.8	7.5	N	N
23-0150	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.6	0.1	0.0	25.6	1.8	N	N
23-0151	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.9	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$75,000		1.0	0.2	0.1	42.7	2.9	N	N
23-0152	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		0.6	0.1	0.0	22.5	1.5	N	N
23-0158	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	6.2	0.4	N	N
23-0159	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$51,000		0.6	0.1	0.0	28.7	2.0	N	N
23-0160	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$62,000		0.8	0.1	0.1	34.9	2.4	N	N
23-0161	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$29,000		0.4	0.1	0.0	16.3	1.1	N	N
23-0162	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	8.1	0.6	N	N
23-0163	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	2.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$183,000		3.5	0.5	0.2	142.2	9.8	N	N
23-0164	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$24,000		0.5	0.1	0.0	18.7	1.3	N	N
23-0165	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	2.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$193,000		3.4	0.5	0.2	141.5	11.6	N	N
23-0170	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	7.1	0.5	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
23-0171	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$19,000		0.2	0.0	0.0	10.6	0.7	N	N
23-0172	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.2	0.0	0.0	6.3	0.6	N	N
23-0174	City of Lake Forest	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.4	0.1	0.0	16.5	1.1	N	N
23-0138	City of Lake Forest, Village of Lake Bluff	Bluff/Ravine	Shoreline Stabilization	Stabilize eroding bluff.	712.5	linear feet	M	M	1,2,5	PO	Illinois EPA, M, SMC	$1,425,000		0.0	0.0	0.0	0.0	0.0	N	N
23-0064	City of Lake Forest, Village of Lake Bluff	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	689.8	linear feet	H	M	1,5	M, PO	Illinois EPA, SMC	$370,000		29.0	14.5	14.4	0.0	0.0	N	N
23-0083	City of Lake Forest, Village of Lake Bluff	Bluff/Ravine	Stream/Ravine Restoration	Control grade of eroding channel and spot treat eroding slopes	823.6	linear feet	M	M	1,5	HOA, PO	Illinois EPA, M, SMC	$225,000		11.2	5.6	5.5	0.0	0.0	N	N
23-8006	City of Lake Forest, Village of Lake Bluff	Bluff/Ravine	Stream/Ravine Restoration	Stabilize eroding ravine and remove accumulated debris.	669.3	linear feet	M	M	1,2,5	PO	Illinois EPA, M, SMC	$218,000		20.0	10.0	9.9	0.0	0.0	N	N
22-8005	City of North Chicago	Pettibone Creek	Detention Basin Retrofit	Stabilize erosion near parking lot inlet.	1	each	L	L	2,5	SI	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
22-8006	City of North Chicago	Pettibone Creek	Detention Basin Retrofit	Inventory detention basin	1	each	L	L	2	NAVY	<Null>	$0		0.0	0.0	0.0	0.0	0.0	N	N
22-8007	City of North Chicago	Pettibone Creek	Detention Basin Retrofit	Stabilize shoreline erosion.	1	each	L	L	2,5	SI	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
22-8024	City of North Chicago	Pettibone Creek	Detention Basin Retrofit	Inventory detention basin. Determine if basin is functioning properly.	1	each	H	S	2	DOT, Navy, M	<Null>	$0		0.0	0.0	0.0	0.0	0.0	N	N
22-0006	City of North Chicago	Pettibone Creek	Flood Risk Reduction	Investigate options for reducing roadway flooding	1	each	H	S	2	DOT, M, Navy	SMC	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
22-0007	City of North Chicago	Pettibone Creek	Flood Risk Reduction	Investigate options for reducing structure flooding	1	each	H	S	2	M, Navy	SMC	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
22-0008	City of North Chicago	Pettibone Creek	Flood Risk Reduction	Install stormwater detention.	1	each	H	S	2,5	M, PO	SMC	$3,500,000		0.0	0.0	0.0	0.0	0.0	N	N
22-0009	City of North Chicago	Pettibone Creek	Flood Risk Reduction	Expand existing detention to adjacent city-owned parcels, if feasible	1	each	M	L	2	M	SMC	$500,000		0.0	0.0	0.0	0.0	0.0	Y	N
22-0010	City of North Chicago	Pettibone Creek	Flood Risk Reduction	Consider installing stormwater detention if adjacent properties are redeveloped.	1	each	L	L	2,5	M	DOT, SMC	$500,000		0.0	0.0	0.0	0.0	0.0	Y	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.0	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.9	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PD, PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.8	acre	M	L	1,2,3,5	NAVY	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.9	acre	M	L	1,2,3,5	SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	NAVY, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	12.3	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO, NSWRD	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-GI	City of North Chicago	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	15.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	19.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	25.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	13.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	19.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	16.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	9.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
NCH-RSM	City of North Chicago	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	9.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
NCH-RVR	City of North Chicago	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	1.0	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$317,000	$1,586,000	2.0	0.4	0.3	331.9	17.9	Y	N
NCH-RVR	City of North Chicago	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.1	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$34,000	$170,000	0.3	0.1	0.0	23.2	1.5	Y	N
NCH-RVR	City of North Chicago	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.1	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$22,000	$108,000	0.2	0.0	0.0	16.2	0.9	N	N
NCH-RVR	City of North Chicago	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.1	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$28,000	$139,000	0.2	0.0	0.0	22.5	1.1	N	N
NCH-RVR	City of North Chicago	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.3	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$98,000	$491,000	0.7	0.1	0.1	52.1	3.2	N	N
NCH-RVR	City of North Chicago	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.2	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$64,000	$318,000	0.4	0.1	0.1	68.9	3.8	Y	N
NCH-RVR	City of North Chicago	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.3	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$78,000	$392,000	0.5	0.1	0.1	91.7	4.4	Y	N
NCH-RVR	City of North Chicago	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.4	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$111,000	$555,000	0.6	0.1	0.1	122.6	6.5	Y	N
BEA-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	NSWRD, PD, M	SFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	HOA, PO	USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	IDNR, RR	USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	PO	USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO	DOT, RR, M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	PD, SI	DOT, M, USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	Y	N
TMOR-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	OL, ARMY	T, PB&D, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of North Chicago	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of North Chicago	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	M	L	3,5,6	PO	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of North Chicago	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	City of North Chicago	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
21-0099	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	1.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$94,000		1.2	0.2	0.1	62.3	2.8	N	N
22-0016	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.5	0.1	0.0	22.7	1.3	N	N
22-0017	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.3	0.0	0.0	12.4	0.7	Y	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
22-0018	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		0.8	0.1	0.1	35.2	1.9	Y	N
22-0019	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	1.0	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$85,000		2.4	0.3	0.2	102.2	5.7	N	N
22-0020	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	SI	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.3	0.0	0.0	14.4	0.8	N	N
22-0021	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	5.6	acre	L	L	2,3,5,6	SI, PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$489,000		10.9	1.7	0.8	367.8	20.3	N	N
22-0022	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	0.9	acre	L	L	2,3,5,6	M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$76,000		1.7	0.3	0.1	56.9	3.1	N	N
22-0023	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	SI	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$52,000		1.5	0.2	0.1	63.5	3.2	N	N
22-0047	City of North Chicago	Pettibone Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.4	0.1	0.0	14.8	0.8	N	N
21-0102	City of North Chicago	Waukegan River	Wetland Restoration	Create new wetland.	1.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$117,000		1.5	0.3	0.1	77.8	3.5	N	N
21-0203	City of North Chicago	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	8.0	0.4	N	N
22-0046	City of North Chicago	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.4	0.1	0.0	17.6	0.9	N	N
20-0597	City of Waukegan	Dead River	Beach Management	Consider annual shoreline sand harvesting to manage lakeward accretion. See City of Waukegan Beach Management Plan (2016) for additional information.	1	each	L	L	1	M, PD	Illinois EPA	$0		0.0	0.0	0.0	0.0	0.0	N	Y
20-0598	City of Waukegan	Dead River	Beach Management	Create public access that provides ingress and egress for the beach while preserving the stormwater function of the sensitive dune/wetland. Implement invasive species control plan. Encourage additional stakeholder participation in the Lake Plain Partnership. See City of Waukegan Beach Management Plan (2016) for additional information.	1	each	H	L	1,2,3,4,5,6	M, PD	Illinois EPA	$42,000	$52,000	0.0	0.0	0.0	0.0	0.0	N	Y
20-0602	City of Waukegan	Dead River	Beach Management	Survey beach and determine optimal beach grade. Grade beach to minimize standing water. Groom beach, 2-3 times per week as needed in recreation season and once per week in shoulder season, between dune markers and 5 ft from open water. Reduce gull contribution to nearshore E. coli concentrations.	1	each	H	S	1,5	M, PD	Illinois EPA	$40,000	$120,000	0.0	0.0	0.0	0.0	0.0	N	Y
20-0603	City of Waukegan	Dead River	Beach Management	Establish Dune Protection Area to prevent grooming and preserve the stormwater function of the sensitive dune/wetland area. See City of Waukegan Beach Management Plan (2016) for additional information.	1	each	H	S	1	M, PD	<Null>	$300		0.0	0.0	0.0	0.0	0.0	N	Y
20-0605	City of Waukegan	Dead River	Beach Management	Install approximately 6 ft wide and 1 ft deep bioswale. See "Waukegan Harbor AOC 2015-2016 Sustainable Shoreline Plane Illinois Coastal Management Plan Grant 15-048-N14-19 Final Report" for additional information.	0.7	acre	H	L	2,5	M, PD	DOT, Illinois EPA, M, SMC	$542,000		0.7	0.4	0.2	448.9	14.1	N	Y
20-0619	City of Waukegan	Dead River	Beach Management	Establish dune by installing snow fence to capture aeolian transported sand. Once established, stabilize dune with native vegetation. See City of Waukegan Beach Management Plan (2016) for additional information.	1	each	M	M	1	M, PD	Illinois EPA	$3,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0624	City of Waukegan	Dead River	Beach Management	Establish dune by installing snow fence to capture aeolian transported sand. Once established, stabilize dune with native vegetation. See City of Waukegan Beach Management Plan (2016) for additional information.	1	each	M	M	1	M, PD	Illinois EPA	$3,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0625	City of Waukegan	Dead River	Beach Management	Establish dune by installing snow fence to capture aeolian transported sand. Once established, stabilize dune with native vegetation. See City of Waukegan Beach Management Plan (2016) for additional information.	1	each	M	M	1	M, PD	Illinois EPA	$3,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0626	City of Waukegan	Dead River	Beach Management	Install dune protection markers at regular intervals to mark the limits of beach grooming. See City of Waukegan Beach Management Plan (2016) for additional information.	1	each	M	M	1	M, PD	<Null>	$300		0.0	0.0	0.0	0.0	0.0	N	Y

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0627	City of Waukegan	Dead River	Beach Management	Install dune protection markers at regular intervals to mark the limits of beach grooming. See City of Waukegan Beach Management Plan (2016) for additional information.	1	each	M	M	1	M, PD	<Null>	$300		0.0	0.0	0.0	0.0	0.0	N	Y
20-0501	City of Waukegan	Dead River	Critical Infrastructure	For Waukegan Airport Property, implement the spill prevention and response plan and reduce the use of salt and/or deicers. Install filtration and infiltration BMPs to capture and treat runoff from airport landscapes, particularly impervious surfaces such as runways and fueling areas, before being discharged to the stream system of Bull Creek.	1	each	M	S	2,5	PO	Illinois EPA, M	$0		N/A	N/A	N/A	N/A	N/A	Y	Y
20-0703	City of Waukegan	Dead River	Critical Infrastructure	Assess risk of fluctuating Lake Michigan water levels to water treatment plant.	1	each	H	L	1,2	M	Illinois EPA	$75,000		N/A	N/A	N/A	N/A	N/A	N	N
21-0051	City of Waukegan	Waukegan River	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
21-0052	City of Waukegan	Waukegan River	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	SI	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
21-0053	City of Waukegan	Waukegan River	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
20-8005	City of Waukegan	Dead River	Detention Basin Retrofit	1. Stabilize shoreline and side slope erosion. 2. Remove sediment from outlet.	1	each	L	L	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
20-8010	City of Waukegan	Dead River	Detention Basin Retrofit	Stabilize swale inlet/outlets and side slopes.	1	each	M	M	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0004	City of Waukegan	Waukegan River	Detention Basin Retrofit	1. Repair damaged inlet. 2. Unclog all inlets/outlets.	1	each	L	L	2	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0007	City of Waukegan	Waukegan River	Detention Basin Retrofit	Stabilize and repair damaged inlet.	1	each	M	M	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0009	City of Waukegan	Waukegan River	Detention Basin Retrofit	Inventory detention basin	1	each	L	L	2	M	SMC	$0		0.0	0.0	0.0	0.0	0.0	Y	N
21-0011	City of Waukegan	Waukegan River	Detention Basin Retrofit	Stabilize and repair damaged inlet.	1	each	M	M	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0012	City of Waukegan	Waukegan River	Detention Basin Retrofit	Inventory detention basin	1	each	L	L	2	M	SMC	$0		0.0	0.0	0.0	0.0	0.0	N	N
21-0013	City of Waukegan	Waukegan River	Detention Basin Retrofit	1. Stabilize side slope erosion 2.Stabilize and repair damaged inlets.	1	each	L	L	2,5	HOA, PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0023	City of Waukegan	Waukegan River	Detention Basin Retrofit	Remove accumulated sediment and debris from outlet and inlet.	1	each	L	L	2,5	M		$5,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0024	City of Waukegan	Waukegan River	Detention Basin Retrofit	1. Stabilize and repair damaged inlet. 2. Stabilize side-slope erosion 3. Remove accumulated sediment and debris from outlet and inlet.	1	each	L	L	2,5	M	Illinois EPA, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0039	City of Waukegan	Waukegan River	Detention Basin Retrofit	Stabilize side-slope erosion	1	each	L	L	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0042	City of Waukegan	Waukegan River	Detention Basin Retrofit	Stabilize inlet erosion	1	each	L	L	2,5	PO	DOT, Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0045	City of Waukegan	Waukegan River	Detention Basin Retrofit	Remove accumulated sediment in inlet.	1	each	L	L	2,5	PO	M	$5,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0046	City of Waukegan	Waukegan River	Detention Basin Retrofit	Remove accumulated sediment in outlet.	1	each	M	M	2,5	PO	M	$5,000		0.0	0.0	0.0	0.0	0.0	Y	N
21-8000	City of Waukegan	Waukegan River	Detention Basin Retrofit	Stabilize side-slope erosion. Establish regular maintenance schedule to remove debris and other obstructions to flow.	1	each	L	L	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
21-8008	City of Waukegan	Waukegan River	Detention Basin Retrofit	Remove sediment from outlet.	1	each	L	L	2,5	PO	M	$5,000		0.0	0.0	0.0	0.0	0.0	Y	N
20-0733	City of Waukegan	Dead River	Flood Risk Reduction	Identify stormwater infrastructure improvements needed to reduce flooding in this area.	1	each	M	M	2	DOT, M	SMC	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
21-0067	City of Waukegan	Waukegan River	Flood Risk Reduction	Conduct detailed study to identify solutions to multiple interconnected drainage and flooding problems in this area.	1	each	H	M	2	DOT, M	SMC, PD	$100,000		0.0	0.0	0.0	0.0	0.0	Y	N
21-0068	City of Waukegan	Waukegan River	Flood Risk Reduction	Identify stormwater infrastructure improvements needed to reduce flooding in this area.	1	each	M	L	2	DOT, M	SMC, PO	$75,000		0.0	0.0	0.0	0.0	0.0	Y	N
21-0069	City of Waukegan	Waukegan River	Flood Risk Reduction	Identify stormwater and sanitary infrastructure improvements needed to reduce flooding in this area.	1	each	H	S	2	DOT, M	SMC, PO	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
20-0502	City of Waukegan	Dead River	Golf Course Management	Reduce impacts of surrounding golf course and park property such as landscape waste dumping, turf grass stream edges. Filter and infiltrate runoff from parking lots, such as those in with BMPs. Consider modifying water features to minimize impact to sediment, thermal, and flow regimes and allow easy passage for fish and aquatic life.	1	each	L	L	1,3,5,6	M, PD, PO	SMC	$0		0.0	0.0	0.0	0.0	0.0	Y	Y
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	26.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	NSWRD	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	24.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.6	acre	M	L	1,2,3,5	PO, NSWRD, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	9.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO, M, PD		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	37.5	acre	M	L	1,2,3,5	PO, HOA, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	6.9	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.4	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO, HOA	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	5.5	acre	M	L	1,2,3,5	PO, HOA	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.4	acre	M	L	1,2,3,5	IL	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.2	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.4	acre	M	L	1,2,3,5	PO, DOT, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-GI	City of Waukegan	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	68.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	74.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	12.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	14.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	26.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	12.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	17.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	23.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	13.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	14.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	14.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	33.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	22.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	16.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	16.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	13.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	40.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	33.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	32.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	18.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	19.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	15.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	33.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	34.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	34.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	18.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	21.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	12.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	12.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	15.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	44.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	City of Waukegan	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RVR	City of Waukegan	Dead River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.4	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$108,000	$542,000	1.0	0.2	0.1	139.9	7.0	Y	Y

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-RVR	City of Waukegan	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs	1.3	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$383,000	$1,915,000	2.0	0.4	0.3	336.2	22.1	Y	N
WAK-RVR	City of Waukegan	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs	0.6	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$186,000	$932,000	1.0	0.2	0.2	156.2	10.1	Y	N
WAK-RVR	City of Waukegan	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs	1.1	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$322,000	$1,611,000	2.3	0.5	0.4	401.2	16.9	Y	Y
WAK-RVR	City of Waukegan	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs	1.7	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$511,000	$2,553,000	2.4	0.5	0.3	379.3	25.4	Y	N
WAK-RVR	City of Waukegan	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs	0.4	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$128,000	$642,000	0.7	0.2	0.1	138.8	7.7	Y	N
WAK-RVR	City of Waukegan	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs	0.7	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$226,000	$1,131,000	1.5	0.3	0.2	120.1	7.3	N	Y
WAK-RVR	City of Waukegan	Waukegan River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs	1.7	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$523,000	$2,615,000	3.0	0.6	0.4	444.0	30.3	Y	N
20-0720	City of Waukegan	Dead River	Stabilization	Stabilize eroding ravine slope	10	linear feet	M	M	1,5	PO	Illinois EPA. SMC	$6,000	$33,000	0.5	0.2	0.2	N/A	N/A	N	N
21-0054	City of Waukegan	Waukegan River	Stabilization	Stabilize erosion.	125	linear feet	H	S	1,5	PD	Illinois EPA, M, SMC	$6,000	$33,000	6.2	3.1	3.1	N/A	N/A	N	N
21-0055	City of Waukegan	Waukegan River	Stabilization	Stabilize erosion.	100	linear feet	M	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	N	N
21-0056	City of Waukegan	Waukegan River	Stabilization	Stabilize erosion.	125	linear feet	M	L	1,5	M	Illinois EPA, SMC	$6,000	$33,000	6.2	3.1	3.1	N/A	N/A	N	N
21-0060	City of Waukegan	Waukegan River	Stabilization	Stabilize eroding ravine slope	100	linear feet	H	S	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	N	N
20-0223	City of Waukegan	Dead River	Stream/Ravine Restoration	Stabilize bank erosion using bioengineering stabilization measures. Restore and manage the native riparian buffer plant communities along this reach by controlling invasive species, planting native species, thinning forest and shrub vegetation to allow more ground vegetation, and managing vegetation such as through prescribed burning. Replace mown turf grass to the edge of the stream with a minimum 10 foot native vegetation buffer. Naturalize the stream channel near Miraflores Ave. by replacing poured concrete and riprap with bioengineering stabilization measures. cease yard waste dumping.	4360.3	linear feet	M	S	1,3,5,6	PD, PO	DOT, Illinois EPA, RR, M, SMC	$1,308,000		65.0	32.5	32.2	0.0	0.0	Y	Y
20-0233	City of Waukegan	Dead River	Stream/Ravine Restoration	Restore a 5 foot wide native riparian buffer and replace turf grass lawn edges to native riparian plant communities as is feasible within the golf course.	1.7	acre	M	S	1,5	PO	Illinois EPA, M, SMC	$8,000		1.9	0.4	0.2	335.6	16.6	Y	Y
20-0236	City of Waukegan	Dead River	Stream/Ravine Restoration	Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, and managing vegetation.	14.4	acre	L	M	1,3,5,6	PO, M	DOT, Illinois EPA, SMC	$62,000	$144,000	0.0	0.0	0.0	0.0	0.0	Y	Y
20-0724	City of Waukegan	Dead River	Stream/Ravine Restoration	Spot treat erosion.	284.6	linear feet	L	L	1,5	PD	Illinois EPA, M, SMC	$148,000		7.4	3.7	3.6	0.0	0.0	Y	N
20-0727	City of Waukegan	Dead River	Stream/Ravine Restoration	Stabilize ravine and stream.	306.1	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$92,000		4.6	2.3	2.3	0.0	0.0	N	N
20-0728	City of Waukegan	Dead River	Stream/Ravine Restoration	Stabilize eroding ravine slopes	777.1	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$233,000		11.6	5.8	5.7	0.0	0.0	N	N
21-0061	City of Waukegan	Waukegan River	Stream/Ravine Restoration	Stabilize eroding streambank.	1086.8	linear feet	L	L	1,5	PD	Illinois EPA, M, SMC	$326,000		16.2	8.1	8.0	0.0	0.0	N	N
21-0062	City of Waukegan	Waukegan River	Stream/Ravine Restoration	Stabilize ravine and stream.	43.3	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$13,000		0.6	0.3	0.3	0.0	0.0	N	N
21-0063	City of Waukegan	Waukegan River	Stream/Ravine Restoration	Stabilize ravine and stream.	1054.5	linear feet	L	L	1,5	PO	DOT, Illinois EPA, M, SMC	$316,000		15.7	7.9	7.8	0.0	0.0	N	N
21-0064	City of Waukegan	Waukegan River	Stream/Ravine Restoration	Remove accumulated silt and debris to improve conveyance. Stabilize ravine and stream.	716.8	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$215,000		10.7	5.3	5.3	0.0	0.0	N	N
21-0065	City of Waukegan	Waukegan River	Stream/Ravine Restoration	Stabilize ravine and stream.	1212.7	linear feet	L	L	1,5	M, PO	Illinois EPA, SMC	$364,000		18.1	9.0	8.9	0.0	0.0	N	N
21-0066	City of Waukegan	Waukegan River	Stream/Ravine Restoration	Stabilize ravine and stream.	75.4	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$23,000		1.1	0.6	0.6	0.0	0.0	Y	N
20-0205	City of Waukegan	Dead River	Water Infrastructure	Repair or replace the steel Beach Road culvert that is eroding around the edges and beneath, possibly due in part to the additional plastic drain pipe.	1	each	M	M	2,5	DOT, M	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0297	City of Waukegan	Dead River	Water Infrastructure	Stabilize erosion of the steel culvert experiencing erosion around and underneath using bioengineering stabilization measures.	1	each	H	S	2,5	DOT, M	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0300	City of Waukegan	Dead River	Water Infrastructure	Stabilize erosion around clay drain pipe outfall using bioengineering stabilization measures.	1	each	L	L	2,5	PD	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0507	City of Waukegan	Dead River	Water Infrastructure	Stabilize erosion undercutting the concrete-lined channel outfall/dam	1	each	L	M	2,5	PO	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	Y	Y
21-0047	City of Waukegan	Waukegan River	Water Infrastructure	Repair failing structure.	1	each	H	S	2	PD	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
21-0048	City of Waukegan	Waukegan River	Water Infrastructure	Water drains into this hole in the ground instead of in culvert. Investigate and determine if problematic.	1	each	L	M	2	M, SI		$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
21-0049	City of Waukegan	Waukegan River	Water Infrastructure	Stabilize erosion. Repair failing structure.	1	each	H	M	2,5	M, PD	Illinois EPA, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
21-0050	City of Waukegan	Waukegan River	Water Infrastructure	Stabilize erosion. Repair failing structure.	1	each	M	M	2,5	M, PO	Illinois EPA, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
21-0057	City of Waukegan	Waukegan River	Water Infrastructure	Culvert is discharging out of the side and causing erosion Investigate and determine if problematic.	1	each	H	S	2	DOT	M	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	Y	N
21-0058	City of Waukegan	Waukegan River	Water Infrastructure	Substantial spalling on railroad bridge. Investigate and determine if problematic.	1	each	M	L	2	RR	M	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
21-0059	City of Waukegan	Waukegan River	Water Infrastructure	Repair damaged pipe and clear debris from culvert.	1	each	H	S	2	DOT, M, PD	SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
20-0197	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.2	acre	L	L	2,3,5	PO, RR	DOT, Illinois EPA, USFWS, USACE, SMC	$237,000		0.0	0.0	0.0	0.0	0.0	Y	Y
20-0216	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	20.9	acre	M	L	2,3,5	PO, M	DOT, Illinois EPA, USFWS, USACE, SMC	$690,000		0.0	0.0	0.0	0.0	0.0	Y	Y
20-0240	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	18.7	acre	M	L	2,3,5	PO, SI	DOT, Illinois EPA, M, USFWS, USACE, SMC	$619,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0285	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	8.0	acre	H	S	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$265,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0287	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	M	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$52,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0557	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	2,3,5	PO, PD	DOT, Illinois EPA, M, USFWS, USACE, SMC	$33,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0573	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	M	L	2,3,5	SI	Illinois EPA, M, USFWS, USACE, SMC	$27,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0592	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.1	acre	M	M	2,3,5	PD, PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$69,000		0.0	0.0	0.0	0.0	0.0	N	Y
BEA-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	LCFPD, PO	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	SI	DOT, M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	16.1	acre	L	L	3,5,6	LCFPD, M, PO	USFWS, USACE, SMC	$161,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	RR, DOT	M, SMC, USFWS, USACE	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PD, M	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	Y	N
NCH-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR, C, PO, RR	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC, PO	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	20.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$207,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	25.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$255,000		N/A	N/A	N/A	N/A	N/A	Y	N
TWAK-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	M	L	3,5,6	PD, PO	DOT, M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO, M, DOT	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	M, PO, DOT	USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO, DOT, M	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	M	L	3,5,6	PD, M	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	HOA	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	M	L	3,5,6	M, PD	USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	25.8	acre	L	L	3,5,6	PD, PO	RR, M, USFWS, USACE, SMC	$258,000		N/A	N/A	N/A	N/A	N/A	Y	N
20-0578	City of Waukegan	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	44.8	acre	H	S	2,3,5	LCFPD, PO, PD	DOT, Illinois EPA, RR, M, USFWS, USACE, SMC	$1,477,000		0.0	0.0	0.0	0.0	0.0	Y	Y
21-0071	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.4	acre	M	M	2,3,5	PD, M	DOT, Illinois EPA, USFWS, USACE, SMC	$113,000		0.0	0.0	0.0	0.0	0.0	Y	N
21-0073	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.3	acre	M	L	2,3,5	PD, M	Illinois EPA, USFWS, USACE, SMC	$175,000		0.0	0.0	0.0	0.0	0.0	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
21-0074	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	M	2,3,5	PO	DOT, Illinois EPA, USFWS, USACE, SMC, M	$7,000		0.0	0.0	0.0	0.0	0.0	N	n
BEA-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	M, PO	DOT, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	M	L	3,5,6	PD, HOA, PO, M	DOT, RR, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	SI	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO, SI	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	M, PO	DOT, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	RR, SI	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	DOT, RR, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	RR	DOT, M, SMC, USFWS, USACE	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO, LBOL	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	RR, DOT	M, SMC, USFWS, USACE	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
NAV-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	NAVY, PO	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	Y	N
NAV-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	NAVY	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	IDNR, C	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
TWAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
TWAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO, T, RR	PB&D, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PD, PO	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PD, C	DOT, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PD, PO	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$8,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO, DOT	M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	RR	DOT, M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	M	L	3,5,6	DOT, M	USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	M	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Waukegan	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
20-0214	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	L	L	2,3,5,6	PO, PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$74,000		1.3	0.2	0.1	54.6	3.5	Y	Y
20-0561	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$17,000		0.4	0.1	0.0	11.9	0.9	N	Y
20-0738	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$12,000		0.2	0.0	0.0	8.9	0.6	Y	N
20-0739	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$37,000		0.6	0.1	0.0	27.5	1.7	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0740	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	11.0	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$956,000		16.3	2.5	1.2	706.8	44.9	Y	N
20-0741	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	8.5	acre	M	L	2,3,5,6	PD, SI	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$739,000		12.6	2.0	0.9	546.4	34.7	Y	N
20-0742	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$26,000		0.4	0.1	0.0	19.3	1.2	Y	N
20-0748	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	M, PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$62,000		1.5	0.2	0.1	46.6	2.9	N	N
20-0749	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	5.1	acre	M	L	2,3,5,6	M, PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$440,000		10.0	1.3	0.6	228.9	19.4	N	N
20-0750	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.3	acre	M	L	2,3,5,6	NSWRD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$114,000		2.6	0.3	0.2	59.0	5.0	N	N
20-0751	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$44,000		1.0	0.1	0.1	22.9	1.9	N	N
20-0752	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	8.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$725,000		16.5	2.1	1.0	377.0	32.0	N	N
20-0753	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	3.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$281,000		6.4	0.8	0.4	146.1	12.4	N	N
20-0754	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$67,000		1.5	0.2	0.1	34.8	3.0	N	N
20-0755	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.5	acre	M	L	2,3,5,6	DOT, RR	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$129,000		3.1	0.4	0.2	96.7	6.1	N	N
20-0756	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	DOT, RR	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$62,000		1.5	0.2	0.1	46.8	2.9	N	N
20-0757	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	DOT, RR	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$54,000		1.3	0.2	0.1	40.5	2.5	N	N
20-0758	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.0	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$83,000		1.9	0.2	0.1	43.2	3.7	N	N
20-0759	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$35,000		0.9	0.1	0.1	26.6	1.7	N	N
20-0760	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.0	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$91,000		2.2	0.3	0.1	68.1	4.3	N	N
20-0761	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	2.1	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$180,000		4.4	0.6	0.3	135.6	8.5	N	N
20-0762	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.0	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$89,000		2.2	0.3	0.1	67.0	4.2	N	N
20-0763	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	5.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$470,000		10.7	1.3	0.6	244.5	20.8	N	N
20-0764	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$44,000		1.1	0.1	0.1	33.3	2.1	N	N
20-0765	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	2.9	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$252,000		5.7	0.7	0.3	131.3	11.2	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0766	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.8	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$159,000		3.6	0.5	0.2	82.9	7.0	N	N
20-0767	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$92,000		2.2	0.3	0.1	69.5	4.4	Y	N
20-0768	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	3.9	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$342,000		7.8	1.0	0.5	177.7	15.1	N	N
20-0771	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO, M	Illinois EPA, IDNR, USFWS, USACE, SMC	$33,000		0.6	0.1	0.0	24.6	1.6	Y	N
20-0772	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	M, PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$81,000		1.4	0.2	0.1	59.8	3.8	Y	N
20-0773	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	M	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$26,000		0.4	0.1	0.0	18.9	1.2	Y	N
20-0782	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.5	acre	M	L	2,3,5,6	SI	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$132,000		2.2	0.4	0.2	97.5	6.2	Y	N
20-0783	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PO, PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$72,000		1.2	0.2	0.1	53.2	3.4	Y	N
20-0784	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		0.6	0.1	0.0	24.9	1.6	Y	N
20-0785	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		0.6	0.1	0.0	25.1	1.6	Y	N
20-0786	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$57,000		1.0	0.2	0.1	42.2	2.7	Y	N
20-0810	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$36,000		0.5	0.1	0.0	20.1	1.3	N	N
20-0813	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$58,000		1.9	0.2	0.1	39.8	4.1	N	N
20-0823	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$21,000		0.4	0.1	0.0	14.5	1.1	N	N
20-0837	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$103,000		1.4	0.2	0.1	57.5	3.8	N	N
20-0838	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$72,000		1.0	0.2	0.1	40.3	2.7	N	N
20-0839	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		1.0	0.1	0.1	19.9	2.1	N	N
20-0842	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.0	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$86,000		2.9	0.3	0.2	59.0	6.1	N	N
20-0844	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$126,000		4.2	0.5	0.2	86.7	9.0	N	N
20-0851	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$27,000		0.5	0.1	0.0	19.9	1.3	Y	N
20-0855	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$80,000		1.2	0.2	0.1	49.2	3.7	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0856	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$56,000		1.0	0.1	0.1	41.4	2.6	Y	N
20-0857	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.0	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$89,000		1.5	0.2	0.1	65.6	4.2	Y	N
20-0858	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.0	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$84,000		1.4	0.2	0.1	62.1	3.9	Y	N
20-0860	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$32,000		0.5	0.1	0.0	23.6	1.5	Y	N
20-0863	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$53,000		0.9	0.1	0.1	38.8	2.5	Y	N
20-0914	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$82,000		1.4	0.2	0.1	60.5	3.8	Y	N
20-0915	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.5	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$128,000		1.9	0.3	0.1	80.0	4.8	N	N
20-0961	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.7	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$149,000		2.5	0.4	0.2	110.3	7.0	Y	N
20-0968	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$40,000		0.6	0.1	0.0	25.2	1.5	N	N
20-0975	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	8.6	0.6	N	N
20-0976	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	5.3	0.4	N	N
20-0981	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.8	0.1	0.0	13.4	1.7	N	N
20-0995	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	7.8	0.5	N	N
20-1018	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.3	0.0	0.0	6.7	0.6	N	N
20-1019	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$11,000		0.3	0.0	0.0	6.0	0.5	N	N
20-1020	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	9.7	0.6	Y	N
20-1023	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO, M	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.3	0.1	0.0	14.5	0.9	Y	N
20-1024	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO, SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	10.6	0.7	Y	N
20-1025	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	M, PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$15,000		0.3	0.0	0.0	11.3	0.7	Y	N
20-1026	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.2	0.0	0.0	4.6	0.4	N	N
20-1027	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	5.0	0.4	N	N

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20-1028	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.5	0.1	0.0	14.8	0.9	N	N
20-1036	City of Waukegan	Dead River	Wetland Restoration	Create new wetland.	1.1	acre	M	L	2,3,5	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$93,000		1.9	0.3	0.1	65.0	4.9	N	Y
20-0774	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.0	acre	M	L	2,3,5,6	SI	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$84,000		1.4	0.2	0.1	62.0	3.9	Y	N
20-0820	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$46,000		0.8	0.1	0.1	34.0	2.2	Y	N
21-0072	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	6.7	acre	M	L	2,3,5,6	PD, M	Illinois EPA, IDNR, USFWS, USACE, SMC	$584,000		18.8	2.4	1.1	453.4	41.4	Y	N
21-0075	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$45,000		1.1	0.2	0.1	46.0	3.0	N	N
21-0076	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$11,000		0.3	0.0	0.0	10.9	0.7	N	N
21-0077	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.0	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$91,000		1.1	0.2	0.1	36.9	2.8	N	N
21-0078	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	7.2	acre	L	L	2,3,5,6	SI, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$628,000		15.6	2.2	1.2	643.8	42.4	N	N
21-0079	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.4	acre	L	L	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$118,000		1.4	0.2	0.1	47.7	3.7	N	N
21-0080	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$32,000		1.0	0.1	0.1	25.2	2.3	Y	N
21-0081	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	9.4	0.6	N	N
21-0082	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	SI	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$55,000		1.4	0.2	0.1	54.7	3.7	Y	N
21-0083	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	3.4	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$292,000		5.8	0.9	0.4	248.9	15.9	N	N
21-0084	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.7	0.1	0.0	28.4	1.8	N	N
21-0085	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$73,000		1.5	0.2	0.1	62.1	4.0	N	N
21-0086	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	DOT	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.3	0.0	0.0	12.2	0.8	N	N
21-0087	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PD, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$66,000		0.8	0.1	0.1	26.9	2.1	N	N
21-0092	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$54,000		0.9	0.1	0.1	38.2	2.4	N	N
21-0093	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$24,000		0.5	0.1	0.0	15.6	1.2	N	N
21-0094	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$23,000		0.5	0.1	0.0	21.8	1.3	N	N

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21-0098	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	9.1	0.6	N	N
21-0104	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$35,000		0.9	0.1	0.1	27.2	1.8	N	N
21-0105	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.9	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$161,000		4.0	0.6	0.3	124.2	8.4	N	N
21-0106	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$37,000		0.9	0.1	0.1	28.2	1.9	N	N
21-0107	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	9.0	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$779,000		19.5	2.7	1.3	601.2	40.5	N	N
21-0108	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$21,000		0.5	0.1	0.0	20.2	1.1	N	N
21-0109	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$49,000		1.2	0.2	0.1	38.1	2.6	N	N
21-0110	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	2.6	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$228,000		6.0	0.8	0.4	226.0	15.4	Y	N
21-0112	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.8	acre	L	L	2,3,5,6	PO, PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$70,000		1.3	0.2	0.1	45.4	3.6	N	N
21-0114	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.4	0.1	0.0	14.5	1.1	N	N
21-0116	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$59,000		1.0	0.2	0.1	42.2	2.7	N	N
21-0117	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$41,000		0.7	0.1	0.1	28.9	1.8	N	N
21-0118	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	11.3	0.8	N	N
21-0119	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$21,000		0.2	0.0	0.0	10.3	0.8	N	N
21-0120	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.1	0.0	0.0	5.8	0.4	N	N
21-0121	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.6	0.1	0.0	24.0	1.5	N	N
21-0122	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$66,000		1.5	0.2	0.1	62.9	3.9	N	N
21-0129	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		0.6	0.1	0.0	22.2	1.7	N	N
21-0130	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		0.5	0.1	0.0	18.7	1.5	N	N
21-0131	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.5	0.1	0.0	16.2	1.3	N	N
21-0132	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$51,000		1.0	0.1	0.1	33.2	2.6	N	N

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21-0133	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.9	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$167,000		3.2	0.5	0.2	109.3	8.6	N	N
21-0134	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		0.4	0.1	0.0	11.9	0.9	N	N
21-0135	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO, PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.2	0.0	0.0	7.9	0.6	N	N
21-0136	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.4	acre	M	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$126,000		3.1	0.4	0.2	102.0	8.6	N	N
21-0137	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$28,000		0.7	0.1	0.0	23.0	1.9	N	N
21-0138	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.6	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$141,000		3.5	0.5	0.2	114.0	9.6	N	N
21-0139	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		1.1	0.1	0.1	26.0	2.4	Y	N
21-0142	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		0.4	0.1	0.0	15.0	1.1	N	N
21-0143	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$38,000		0.5	0.1	0.0	19.5	1.4	N	N
21-0146	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$32,000		0.4	0.1	0.0	21.3	0.9	N	N
21-0147	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	3.0	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$257,000		3.3	0.6	0.3	170.3	7.6	N	N
21-0148	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.2	0.0	0.0	12.2	0.5	N	N
21-0149	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	9.9	0.4	N	N
21-0150	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$47,000		0.6	0.1	0.0	31.2	1.4	N	N
21-0151	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	3.5	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$304,000		3.9	0.7	0.3	201.9	9.0	N	N
21-0152	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	4.5	acre	M	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$388,000		12.5	1.6	0.7	301.1	27.5	Y	N
21-0154	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$119,000		3.8	0.5	0.2	92.4	8.4	Y	N
21-0155	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$40,000		1.3	0.2	0.1	30.7	2.8	Y	N
21-0156	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	HOA	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	11.4	0.8	N	N
21-0157	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.5	0.1	0.0	17.3	1.3	N	N
21-0161	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	3.0	acre	M	L	2,3,5,6	PO, SI	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$257,000		3.5	0.5	0.2	132.8	9.7	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
21-0162	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$115,000		2.3	0.3	0.2	97.9	6.3	N	N
21-0163	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$42,000		0.8	0.1	0.1	35.6	2.3	N	N
21-0164	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$36,000		0.7	0.1	0.1	31.1	2.0	N	N
21-0169	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$36,000		0.5	0.1	0.0	23.7	1.1	N	N
21-0172	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.3	0.0	0.0	11.1	0.7	N	N
21-0173	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$23,000		0.5	0.1	0.0	20.2	1.4	N	N
21-0174	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	1.7	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$150,000		3.9	0.6	0.3	148.6	10.1	Y	N
21-0175	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	10.6	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$922,000		19.9	3.0	1.4	800.4	53.6	N	N
21-0176	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.5	0.1	0.0	21.4	1.4	N	N
21-0177	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.3	0.0	0.0	12.6	0.8	N	N
21-0178	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.3	0.0	0.0	11.4	0.8	N	N
21-0179	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	3.6	acre	L	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$311,000		5.9	0.9	0.4	203.3	16.0	N	N
21-0180	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	SI	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.6	0.1	0.0	24.3	1.6	N	N
21-0181	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$21,000		0.5	0.1	0.0	20.6	1.3	N	N
21-0182	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.5	0.1	0.0	17.8	1.2	N	N
21-0183	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.8	0.1	0.1	31.7	1.9	N	N
21-0184	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$16,000		0.3	0.0	0.0	10.6	0.8	N	N
21-0185	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	7.9	0.6	N	N
21-0189	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	5.3	0.4	N	N
21-0191	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	10.5	0.7	N	N
21-0195	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	8.7	0.6	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
21-0196	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	M, PD, PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$22,000		0.4	0.1	0.0	18.3	1.2	N	N
21-0197	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	5.3	0.4	N	N
21-0198	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.3	0.0	0.0	9.6	0.7	N	N
21-0199	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	6.2	0.5	N	N
21-0201	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	5.4	0.4	N	N
21-0205	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	7.5	0.5	N	N
21-0208	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$16,000		0.4	0.1	0.0	13.0	1.1	N	N
21-0209	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.5	0.1	0.0	21.0	1.4	N	N
21-0210	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.3	0.0	0.0	13.4	0.7	N	N
21-0212	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.0	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$2,000		0.1	0.0	0.0	1.7	0.2	Y	N
21-0213	City of Waukegan	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$7,000		0.2	0.0	0.0	5.5	0.5	Y	N
20-0215	City of Waukegan, Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	8.2	acre	M	L	2,3,5	LCFPD, PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$269,000		0.0	0.0	0.0	0.0	0.0	Y	Y
20-0787	City of Waukegan, Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		0.6	0.1	0.0	25.1	1.6	Y	N
20-0854	City of Waukegan, Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$44,000		0.8	0.1	0.1	32.6	2.1	Y	N
21-0091	City of Waukegan, Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	1.0	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$90,000		2.9	0.4	0.2	70.1	6.4	Y	N
20-0289	City of Waukegan, Village of Beach Park	Dead River	Stream/Ravine Restoration	Stabilize and restore stream channel and improve instream habitat. Stabilize streambank erosion (4-6 ft in places) using bioengineering stabilization measures. Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, and thinning forest and shrub vegetation.	1579.0	linear feet	H	S	1,3,5,6	PO, M, PD	DOT, Illinois EPA, SMC	$444,000		22.1	11.0	10.9	0.0	0.0	N	Y
20-0301	City of Waukegan, Village of Beach Park	Dead River	Stream/Ravine Restoration	Restore stream channel and improve instream habitat by addressing streambank erosion using bioengineering stabilization measures, enhancing pools and riffles, and installing boulders, large rocks, and/or rootwads. Restore and manage the native riparian buffer by controlling invasive species, planting native species, thinning forest and shrub vegetation, and management measures such as controlled burns. Inspect footbridges and armored / concrete-lined banks for impacts on the stream corridor and remediated if necessary.	570.1	linear feet	M	M	1,3,5,6	PO	Illinois EPA, M, SMC	$390,000		19.4	9.7	9.6	0.0	0.0	N	Y
20-0589	City of Waukegan, Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$49,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0590	City of Waukegan, Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$7,000		0.0	0.0	0.0	0.0	0.0	N	Y

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0556	City of Waukegan, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.8	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$159,000		2.6	0.4	0.2	119.7	8.6	N	Y
20-0558	City of Waukegan, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	H	S	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$66,000		1.1	0.2	0.1	49.6	3.6	N	Y
20-0562	City of Waukegan, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.1	acre	M	L	2,3,5,6	M, PO, SI	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$182,000		3.8	0.6	0.2	127.0	9.6	N	Y
20-0789	City of Waukegan, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.4	acre	L	L	2,3,5,6	PD, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$121,000		2.4	0.3	0.2	80.9	7.1	N	N
20-0790	City of Waukegan, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$206,000		4.0	0.6	0.3	138.0	12.1	N	N
20-0791	City of Waukegan, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	DOT, M	Illinois EPA, IDNR, USFWS, USACE, SMC	$26,000		0.5	0.1	0.0	22.7	1.6	N	N
20-0792	City of Waukegan, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$101,000		1.6	0.3	0.1	75.5	5.4	N	N
21-0140	City of Waukegan, Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$44,000		1.4	0.2	0.1	34.3	3.1	Y	N
21-0153	City of Waukegan, Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$52,000		1.7	0.2	0.1	40.2	3.7	Y	N
21-0088	City of Waukegan, Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		0.7	0.1	0.0	29.1	1.9	N	N
21-0113	City of Waukegan, Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$72,000		1.4	0.2	0.1	47.1	3.7	N	N
21-0145	City of Waukegan, Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		0.4	0.1	0.0	15.1	1.1	N	N
21-0158	City of Waukegan, Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	1.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$105,000		1.4	0.2	0.1	54.3	4.0	N	N
21-0160	City of Waukegan, Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$43,000		0.9	0.1	0.1	36.5	2.3	N	N
19-0701	City of Zion	Kellogg Creek	Debris Jam	Remove debris restricting conveyance and establish regular inspection schedule.	1	each	H	M	2	DOT, M		$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
19-0718	City of Zion	Kellogg Creek	Debris Jam	Remove debris from culvert.	1	each	H	M	2	DOT, PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
20-0024	City of Zion	Dead River	Detention Basin Retrofit	Clear sediment and debris from outlet.	1	each	L	L	2	HOA	M, SMC	$5,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0025	City of Zion	Dead River	Detention Basin Retrofit	Repair restrictor.	1	each	M	L	2	HOA, PD	M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
20-0732	City of Zion	Dead River	Detention Basin Retrofit	Remove invasive vegetation and excess sediment to restore positive drainage in basin. See CBBEL Project No. 20-0358 memorandum for additional information.	1	each	H	S	2,5	M	<Null>	$311,000		0.0	0.0	0.0	0.0	0.0	N	N
20-8003	City of Zion	Dead River	Detention Basin Retrofit	Implement sediment control measures in unvegetated area that drains to the basin.	1	each	M	S	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
20-8004	City of Zion	Dead River	Detention Basin Retrofit	Implement sediment control measures in unvegetated area that drains to the basin.	1	each	M	S	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
20-8008	City of Zion	Dead River	Detention Basin Retrofit	Stabilize erosion from sump pump discharges.	1	each	L	L	5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
20-8013	City of Zion	Dead River	Detention Basin Retrofit	Stabilize erosion around the outlet	1	each	L	L	2,5	HOA	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
19-0017	City of Zion	Kellogg Creek	Detention Basin Retrofit	1. Stabilize shoreline and side slopes. 2. Repair broken inlet.	1	each	M	S	2,5	PD	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0020	City of Zion	Kellogg Creek	Detention Basin Retrofit	Clear debris from inlets and outlets.	1	each	M	S	2	HOA	DOT, M, SMC	$5,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0021	City of Zion	Kellogg Creek	Detention Basin Retrofit	Repair and stabilize outlet.	1	each	M	S	2,5	SI	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
19-0026	City of Zion	Kellogg Creek	Detention Basin Retrofit	Stabilize side slope erosion	1	each	L	L	2,5	HOA	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
19-0028	City of Zion	Kellogg Creek	Detention Basin Retrofit	Repair damaged inlet	1	each	M	S	2	PO, PD	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-0029	City of Zion	Kellogg Creek	Detention Basin Retrofit	Stabilize side slope erosion	1	each	M	M	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0031	City of Zion	Kellogg Creek	Detention Basin Retrofit	Investigate potential illicit discharge from east inlet.	1	each	L	M	5	LCHD, PO	M	$500		0.0	0.0	0.0	0.0	0.0	Y	N
19-0032	City of Zion	Kellogg Creek	Detention Basin Retrofit	Remove vegetation and debris from inlets.	1	each	L	L	2,5	PO	M	$5,000		0.0	0.0	0.0	0.0	0.0	Y	Y

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0034	City of Zion	Kellogg Creek	Detention Basin Retrofit	Stabilize shoreline erosion	1	each	L	L	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0194	City of Zion	Kellogg Creek	Detention Basin Retrofit	Stabilize side slope erosion	1	each	L	L	2,5	HOA	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0277	City of Zion	Kellogg Creek	Detention Basin Retrofit	Potential leachate and contaminated runoff from the landfill within this subbasin should be addressed with filtration and infiltration BMPs, possibly to include naturalized detention basins, to improve runoff quality and reduce pollutant loading to the stream and nearby wetlands.	1	each	H	M	5	PD	Illinois EPA, M	$55,000		N/A	N/A	N/A	N/A	N/A	Y	Y
19-8005	City of Zion	Kellogg Creek	Detention Basin Retrofit	1. Stabilize side slopes. 2. Investigate cause of high turbidity.	1	each	M	M	2,5	SI	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
19-8018	City of Zion	Kellogg Creek	Detention Basin Retrofit	Remove sediment from inlet.	1	each	M	M	2,5	PO	M	$5,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-8022	City of Zion	Kellogg Creek	Detention Basin Retrofit	Stabilize eroded area caused by sheet flow from parking lot.	1	each	L	L	5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
19-8025	City of Zion	Kellogg Creek	Detention Basin Retrofit	Stabilize erosion near outlet	1	each	L	L	2,5	PO	DOT, Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
19-8026	City of Zion	Kellogg Creek	Detention Basin Retrofit	Repair broken PVC outlet pipe	1	each	L	L	2	PO	M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-0288	City of Zion	Kellogg Creek	Filter Strip	Implement agricultural BMPs on lands adjacent to the stream corridor to reduce pollutant loading.	2.3	acre	M	S	5	PO	Illinois EPA, M, SMC	$10,000		2.9	0.5	0.3	341.5	22.1	Y	Y
20-0730	City of Zion	Dead River	Flood Risk Reduction	Reduce or eliminate flooding impacts to nearby roads and buildings.	1	each	H	S	2	PD, M	SMC	$500,000		0.0	0.0	0.0	0.0	0.0	N	N
20-0731	City of Zion	Dead River	Flood Risk Reduction	Consider identifying and disconnecting illicit sump pump connections to sanitary system to reduce sanitary backup into structures.	1	each	L	L	2,5	M		$25,000		0.0	0.0	0.0	0.0	0.0	N	N
19-0722	City of Zion	Kellogg Creek	Flood Risk Reduction	Consider increasing basin storage capacity to reduce flooding of downstream overland flow route.	1	each	H	M	2	M, PD	SMC	$200,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-0723	City of Zion	Kellogg Creek	Flood Risk Reduction	Upsize existing stormsewer capacity to accommodate up to the 1% annual chance flood as described in the Christopher B. Burke Engineering, LTD. 20th St. Drainage Investigation Memorandum (CBBEL Project 180384)	1	each	H	S	2	DOT, M	SMC	$5,359,000		0.0	0.0	0.0	0.0	0.0	N	N
20-0021	City of Zion	Kellogg Creek	Golf Course Management	Manage the golf course grounds and detention / water features in Shiloh Park for water quality and habitat benefits, including installation of a 5 foot riparian buffer along shoreline / banks of water features.	1	each	L	L	2,5	M, PD	SMC	$0		0.0	0.0	0.0	0.0	0.0	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.6	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.3	acre	M	L	1,2,3,5	PO, HOA, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.4	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	257.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.4	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PD	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.3	acre	M	L	1,2,3,5	PO, HOA, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	HOA	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO, HOA	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO, PD	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO, RR, PD	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-GI	City of Zion	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	151.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	9.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	19.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	18.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	9.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	16.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	30.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	9.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	12.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	19.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	18.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	16.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	17.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	12.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	48.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	34.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ZIO-RSM	City of Zion	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-RVR	City of Zion	Dead River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	1.0	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$302,000	$1,512,000	1.4	0.3	0.2	270.0	16.2	N	Y
ZIO-RVR	City of Zion	Dead River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.1	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$36,000	$178,000	0.2	0.0	0.0	47.6	2.1	N	Y
19-0721	City of Zion	Kellogg Creek	Runoff Volume Reduction	Consider installing green infrastructure to reduce stormwater discharges to Beulah Park. Special consideration should be given to the high visibility and potential cultural significance of the boulevard system to the community. The displayed polygon depicts potential areas where green infrastructure could be placed, not the project extent. Cost and pollutant load estimates assume 1.31 acres of green infrastructure.	1.3	acre	H	M	2,5	PD, M	DOT, Illinois EPA, SMC	$400,000	$2,000,000	1.9	0.4	0.3	367.2	18.6	N	N
ZIO-RVR	City of Zion	Kellogg Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.6	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$194,000	$970,000	0.9	0.2	0.1	172.0	10.2	N	Y
ZIO-RVR	City of Zion	Kellogg Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.2	acre	L	L	2,5	DOT, M, PO	Illinois EPA	$49,000	$247,000	0.3	0.1	0.0	55.5	2.7	N	Y
19-0703	City of Zion	Kellogg Creek	Stabilization	Stabilize erosion.	125	linear feet	M	M	1,5	PD	Illinois EPA, M, SMC	$6,000	$33,000	6.2	3.1	3.1	N/A	N/A	Y	N
19-0704	City of Zion	Kellogg Creek	Stabilization	Stabilize erosion.	150	linear feet	H	M	1,5	PD	Illinois EPA, M, SMC	$6,000	$33,000	7.5	3.7	3.7	N/A	N/A	N	N
19-0705	City of Zion	Kellogg Creek	Stabilization	Stabilize erosion.	100	linear feet	H	M	1,5	PD	Illinois EPA, M, SMC	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	N	N
20-0033	City of Zion	Dead River	Stream/Ravine Restoration	Stabilize channel erosion using bioengineering stabilization measures. Address streambank erosion, some of which may threaten buried sewer lines, using bioengineering stabilization measures. Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, and thinning forest and shrub vegetation. Manage and restore the wooded ravine.	2000.7	linear feet	L	L	1,3,5,6	SI, PO, PD	DOT, Illinois EPA, M, SMC	$600,000		29.8	14.9	14.8	0.0	0.0	N	Y
20-0043	City of Zion	Dead River	Stream/Ravine Restoration	Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, and thinning forest and shrub vegetation.	2.6	acre	L	M	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$11,000	$26,000	16.6	8.3	8.2	0.0	0.0	N	Y
20-0723	City of Zion	Dead River	Stream/Ravine Restoration	Remove debris obstructing flow using American Fisheries Society guidelines.	604.4	linear feet	M	L	2	M, SI	<Null>	$11,000		0.0	0.0	0.0	0.0	0.0	N	N
20-0729	City of Zion	Dead River	Stream/Ravine Restoration	Stabilize and reduce downcutting of the incised channel. Use bioengineering stabilization measures if possible, and more structural measures if necessary. Restore and manage the ravine woodland system.	365.6	linear feet	L	L	1,3,5,6	PD	DOT, Illinois EPA, M, SMC	$119,000		5.4	2.7	2.7	0.0	0.0	N	Y
20-1037	City of Zion	Dead River	Stream/Ravine Restoration	Stabilize streambanks. See CBBEL Project No. 20-0358 memorandum for additional information.	400.0	linear feet	H	S	1,5	M, DOT	PO	$166,000		6.0	3.0	3.0	0.0	0.0	N	N
19-0039	City of Zion	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion and slumping using bioengineering stabilization practices, to provide for greater channel and corridor stability, and to minimize damage to property and infrastructure from erosion, including residential structures, stormwater outfalls and headwalls. Restore the riparian forest habitat and establish native riparian plant ground cover communities: control invasive species, plant native species, thin the forest and shrub canopy, restore ground vegetation. Preserve and enhance habitat for T&E species.	7698.5	linear feet	H	M	1,3,5,6	PD, PO	Illinois EPA, M, SMC	$2,786,000		138.4	69.2	68.5	0.0	0.0	Y	Y
19-0057	City of Zion	Kellogg Creek	Stream/Ravine Restoration	Restore the riparian habitat buffer and establish native riparian plant communities: control invasive species, plant native species, thin forest and shrub canopy, and manage vegetation such as prescribed burning.	12.9	acre	L	L	1,3,5,6	PD, PO	DOT, Illinois EPA, M, SMC	$56,000	$129,000	0.0	0.0	0.0	0.0	0.0	Y	Y
19-0065	City of Zion	Kellogg Creek	Stream/Ravine Restoration	Restore and widen the riparian habitat buffer and establish native riparian plant communities: control invasive species, plant native species, thin forest and shrub canopy, and manage vegetation such as prescribed burning	7.9	acre	M	S	1,3,5,6	PD, PO, SI	DOT, Illinois EPA, M, SMC	$34,000	$79,000	0.0	0.0	0.0	0.0	0.0	Y	Y
19-0068	City of Zion	Kellogg Creek	Stream/Ravine Restoration	Restore and widen the riparian habitat buffer and establish native riparian plant communities: control invasive species, plant native species, and manage vegetation such as prescribed burning.	3.6	acre	M	S	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$16,000	$36,000	0.0	0.0	0.0	0.0	0.0	Y	Y

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0011	City of Zion	Dead River	Water Infrastructure	Manage the culvert outflow at the upstream end of the reach for energy dissipation and pollutant removal, possibly with a settling basin or small constructed wetland.	1	each	M	S	2,5	PD, DOT	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0015	City of Zion	Dead River	Water Infrastructure	Remove concrete debris and remove or repair failed headwall and outfall pipe.	1	each	M	S	2	PD, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0018	City of Zion	Dead River	Water Infrastructure	Stabilize bank erosion caused by stormwater outfall using bioengineering stabilization measures.	1	each	H	S	2,5	PD, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0019	City of Zion	Dead River	Water Infrastructure	Inspect and, if necessary, repair five culverts under trail, which may be crushed and/or failing.	1	each	L	S	2	PO	Illinois EPA, M	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0037	City of Zion	Dead River	Water Infrastructure	Stabilize significant erosion and exposure of manhole and sewer infrastructure using bioengineering stabilization measures and other hardscape solutions to ensure protection of the infrastructure elements.	1	each	H	M	2,5	PD, M	Illinois EPA, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0038	City of Zion	Dead River	Water Infrastructure	Stabilize erosion creating open channel at discharge point using bioengineering stabilization measures.	1	each	H	S	2,5	PD, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0040	City of Zion	Dead River	Water Infrastructure	Stabilize erosion at outfall that is creating an open channel using bioengineering stabilization measures.	1	each	H	S	2,5	PD, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0041	City of Zion	Dead River	Water Infrastructure	Stabilize major erosion, headwall, and outfall pipe failure using bioengineering stabilization measures.	1	each	H	S	2,5	PD, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0701	City of Zion	Dead River	Water Infrastructure	Determine if culvert size is sufficient for stormwater conveyance during flood events. Establish maintenance schedule to clear debris obstructing flow through culvert.	1	each	M	M	2	DOT, M	SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
20-0702	City of Zion	Dead River	Water Infrastructure	Repair failing stormwater outfall and stabilize erosion.	1	each	M	L	2,5	DOT, PD	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
20-0704	City of Zion	Dead River	Water Infrastructure	Stormwater infrastructure overflows and floods multiuse path. Repair failing storm drains.	1	each	H	M	2	IDNR, PO	M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
20-0705	City of Zion	Dead River	Water Infrastructure	Investigate cause of high turbidity. Establish regular debris removal schedule to reduce flooding of multiuse trail.	1	each	H	M	2,5	IDNR, PO	M	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
19-0049	City of Zion	Kellogg Creek	Water Infrastructure	Address major erosion and undercutting of concrete outfall using bioengineering stabilization practices, if feasible, and more structural measures if necessary.	1	each	M	L	2,5	PD	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
19-0050	City of Zion	Kellogg Creek	Water Infrastructure	Repair heavy erosion at outfall pipe and concrete headwall failure using structural measures.	1	each	H	S	2,5	PD, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
19-0051	City of Zion	Kellogg Creek	Water Infrastructure	Repair heavy erosion at outfall pipe and concrete headwall failure using structural measures.	1	each	H	S	2,5	PD, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0052	City of Zion	Kellogg Creek	Water Infrastructure	Remediate heavy erosion and plunge pool created by 4-6' outfall distance above grade using bioengineering stabilization practices.	1	each	H	S	2,5	PD, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0076	City of Zion	Kellogg Creek	Water Infrastructure	Remove abandoned culvert	1	each	L	M	2	PO	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
19-0311	City of Zion	Kellogg Creek	Water Infrastructure	Determine if this is a sewer or water main or other utility. If it is a main or utility, determine whether it can be raised or lowered to reduce risk of damage by floating debris and high flows	1	each	L	S	2	M, PO		$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	Y	Y
20-0583	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$51,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0606	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	M	2,3,5	PD	DOT, Illinois EPA, M, USFWS, USACE, SMC	$13,000		0.0	0.0	0.0	0.0	0.0	N	Y
BEA-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	PO, M	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	RR	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	RR	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	SI	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFT-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	RR	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	DOT, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	PD	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	M, DOT	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Zion	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
19-0006	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	M	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$43,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0008	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.4	acre	H	L	2,3,5	PD, PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$245,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0064	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.3	acre	L	S	2,3,5	SI	DOT, Illinois EPA, M, USFWS, USACE, SMC	$77,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0275	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	14.9	acre	M	L	2,3,5	PO, PD	DOT, Illinois EPA, M, USFWS, USACE, SMC	$491,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0542	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	M	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$33,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0601	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$25,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0602	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	17.0	acre	L	L	2,3,5	PD, PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$560,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0606	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	M	S	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$22,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0607	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	2,3,5	PO	Illinois EPA, M, USFWS, USACE, SMC	$3,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0608	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.9	acre	M	S	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$97,000		0.0	0.0	0.0	0.0	0.0	N	Y

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0609	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	M	M	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$49,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0620	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$20,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0621	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.5	acre	L	M	2,3,5	PO, PD	Illinois EPA, M, USFWS, USACE, SMC	$149,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0627	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	18.2	acre	L	M	2,3,5	PD, PO	DOT, Illinois EPA, RR, M, USFWS, USACE, SMC	$601,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0639	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	H	L	2,3,5	PO	Illinois EPA, M, USFWS, USACE, SMC	$6,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-1027	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$72,000		0.0	0.0	0.0	0.0	0.0	Y	Y
BEA-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	RR	DOT, M, SMC, USFWS, USACE	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
NCH-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
NCH-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, DOT	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
NCH-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, DOT	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	17.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$177,000		N/A	N/A	N/A	N/A	N/A	Y	N
TBEN-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
TWAK-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
TWAK-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WHR-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	City of Zion	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
20-0529	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$28,000		0.2	0.1	0.0	14.3	0.7	N	Y
20-0545	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.8	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$154,000		2.0	0.3	0.1	101.5	6.3	N	Y
20-0599	City of Zion	Dead River	Wetland Restoration	Create new wetland.	2.9	acre	L	L	2,3,5,6	PD, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$251,000		4.9	0.7	0.4	228.2	14.7	N	Y
20-0747	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.5	acre	M	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$132,000		2.9	0.4	0.2	137.3	8.3	N	N
20-0769	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.2	0.0	0.0	13.0	0.7	N	N
20-0770	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$26,000		0.2	0.1	0.0	13.2	0.7	N	N
20-0796	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.3	0.0	0.0	12.5	0.8	N	N
20-0797	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$56,000		1.1	0.2	0.1	50.5	3.2	N	N
20-0816	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$37,000		0.5	0.1	0.0	17.7	1.1	N	N
20-0817	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$60,000		0.9	0.1	0.1	28.5	1.8	N	N
20-0818	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.4	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$123,000		1.8	0.3	0.1	58.4	3.8	N	N
20-0819	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$53,000		0.8	0.1	0.0	25.0	1.6	N	N
20-0822	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$41,000		0.6	0.1	0.0	25.3	1.7	N	N
20-0826	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	9.1	0.5	N	N
20-0827	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	11.2	0.7	N	N
20-0828	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$38,000		0.9	0.1	0.1	40.0	2.4	N	N
20-0829	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.3	0.1	0.0	16.0	0.6	N	N
20-0830	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$43,000		0.7	0.1	0.1	34.0	1.3	N	N
20-0831	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.4	0.1	0.0	16.2	0.6	N	N

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20-0832	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$47,000		0.8	0.1	0.1	37.0	1.4	N	N
20-0833	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$55,000		1.0	0.2	0.1	43.8	1.7	N	N
20-0873	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	5.3	0.3	N	N
20-0894	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$43,000		0.6	0.1	0.0	20.2	1.3	N	N
20-0895	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.3	0.0	0.0	13.9	0.8	N	N
20-0898	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$57,000		0.8	0.1	0.1	40.6	2.3	N	N
20-0899	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.3	0.0	0.0	12.9	0.7	N	N
20-0900	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$39,000		0.5	0.1	0.0	25.7	1.6	N	N
20-0901	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$41,000		0.7	0.1	0.0	19.3	1.5	N	N
20-0902	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$60,000		0.8	0.1	0.1	39.8	2.5	N	N
20-0903	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$53,000		0.7	0.1	0.0	35.3	2.2	N	N
20-0904	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.5	0.1	0.0	15.3	1.2	N	N
20-0908	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		0.5	0.1	0.0	15.8	1.2	N	N
20-0910	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$74,000		1.0	0.2	0.1	52.8	3.0	N	N
20-0911	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.7	acre	L	L	2,3,5,6	PO, M	Illinois EPA, IDNR, USFWS, USACE, SMC	$145,000		2.0	0.3	0.1	103.4	5.8	N	N
20-0912	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PO, PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$72,000		1.0	0.2	0.1	47.9	3.0	N	N
20-0913	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$105,000		1.4	0.2	0.1	69.3	4.3	N	N
20-0939	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	10.6	0.7	N	N
20-0940	City of Zion	Dead River	Wetland Restoration	Create new wetland.	5.5	acre	H	M	2,3,5,6	PO, PD	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$476,000		6.9	1.0	0.4	225.4	14.6	N	N
20-0941	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$49,000		0.7	0.1	0.0	23.3	1.5	N	N
20-0942	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$66,000		1.0	0.1	0.1	31.3	2.0	N	N

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20-0943	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	5.6	0.4	N	N
20-0944	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$36,000		0.5	0.1	0.0	17.1	1.1	N	N
20-0945	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$24,000		0.4	0.1	0.0	11.4	0.7	N	N
20-0946	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.4	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$125,000		1.8	0.3	0.1	59.4	3.8	N	N
20-0947	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$81,000		1.2	0.2	0.1	38.5	2.5	N	N
20-0948	City of Zion	Dead River	Wetland Restoration	Create new wetland.	2.0	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$170,000		2.5	0.4	0.2	80.5	5.2	N	N
20-0949	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$76,000		1.1	0.2	0.1	35.8	2.3	N	N
20-0950	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	M, RR	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$45,000		0.6	0.1	0.0	21.1	1.4	N	N
20-0951	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$76,000		1.1	0.2	0.1	36.1	2.3	N	N
20-0952	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$46,000		0.7	0.1	0.0	21.7	1.4	N	N
20-0953	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.5	0.1	0.0	15.7	1.0	N	N
20-0954	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	10.3	0.7	N	N
20-0955	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$63,000		0.9	0.1	0.1	30.0	1.9	N	N
20-0957	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		0.5	0.1	0.0	16.2	1.0	N	N
20-0958	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$82,000		1.2	0.2	0.1	38.8	2.5	N	N
20-0959	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$69,000		1.0	0.1	0.1	32.9	2.1	N	N
20-0960	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$37,000		0.5	0.1	0.0	17.7	1.1	N	N
20-0962	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$43,000		0.6	0.1	0.0	20.3	1.3	N	N
20-0963	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$43,000		0.6	0.1	0.0	20.4	1.3	N	N
20-0964	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.7	acre	M	L	2,3,5,6	PD, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$150,000		2.2	0.3	0.1	70.9	4.6	N	N
20-0965	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.7	acre	M	L	2,3,5,6	PD, M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$145,000		2.1	0.3	0.1	68.5	4.4	N	N

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20-0966	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.8	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$155,000		2.3	0.3	0.1	73.3	4.7	N	N
20-0974	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	6.2	0.4	N	N
20-0977	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$17,000		0.3	0.0	0.0	8.1	0.6	N	N
20-0978	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$21,000		0.3	0.1	0.0	10.0	0.8	N	N
20-0985	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	7.3	0.5	N	N
20-0986	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	6.9	0.5	N	N
20-0987	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	6.1	0.4	N	N
20-0988	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	8.1	0.5	N	N
20-0989	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	5.0	0.3	N	N
20-0996	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	9.5	0.5	N	N
20-0997	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$18,000		0.3	0.0	0.0	12.7	0.7	N	N
20-0998	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$17,000		0.2	0.0	0.0	11.1	0.7	N	N
20-0999	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	9.0	0.6	N	N
20-1001	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	4.3	0.3	N	N
20-1002	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.3	0.0	0.0	8.9	0.6	N	N
20-1031	City of Zion	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	6.1	0.4	N	N
20-1032	City of Zion	Dead River	Wetland Restoration	Create new wetland.	1.4	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$125,000		1.8	0.3	0.1	59.4	3.8	N	N
20-1034	City of Zion	Dead River	Wetland Restoration	Create new wetland.	6.7	acre	H	M	2,3,5,6	PO, RR, IDNR	DOT, Illinois EPA, M, USFWS, USACE, SMC	$584,000		8.5	1.2	0.5	276.4	17.9	N	N
19-0056	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	6.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$547,000		14.8	2.0	1.0	392.3	27.2	N	Y
19-0061	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	8.4	acre	M	S	2,3,5,6	PD, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$730,000		14.1	1.9	0.9	415.4	34.5	Y	Y
19-0535	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	S	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$37,000		0.9	0.1	0.1	43.8	2.2	N	Y

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0536	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	1.3	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$109,000		2.5	0.4	0.2	127.8	6.5	N	Y
19-0545	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	2.8	acre	M	S	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$245,000		6.6	0.9	0.4	175.6	12.2	N	Y
19-0546	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	1.3	acre	M	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$111,000		3.0	0.4	0.2	79.4	5.5	N	Y
19-0553	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	7.0	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$607,000		11.8	1.6	0.7	345.4	28.7	Y	Y
19-0555	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$27,000		0.5	0.1	0.0	17.3	1.2	N	Y
19-0557	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	2.0	acre	L	L	2,3,5,6	PD, SI, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$176,000		3.4	0.5	0.2	99.9	8.3	Y	Y
19-0565	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	1.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$98,000		1.9	0.3	0.1	56.0	4.7	Y	Y
19-0638	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PD, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$64,000		1.2	0.2	0.1	36.4	3.0	Y	Y
19-0729	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$29,000		0.6	0.1	0.0	16.2	1.4	Y	N
19-0730	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$27,000		0.5	0.1	0.0	15.6	1.3	Y	N
19-0734	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$23,000		0.3	0.0	0.0	11.7	0.8	N	N
19-0737	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.4	0.0	0.0	10.5	0.9	Y	N
19-0738	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$82,000		1.6	0.2	0.1	46.5	3.9	Y	N
19-0741	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	4.8	0.4	Y	N
19-0742	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PD, PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$65,000		1.3	0.2	0.1	36.9	3.1	Y	N
19-0743	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	1.2	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$108,000		2.1	0.3	0.1	61.4	5.1	Y	N
19-0744	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.0	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$2,000		0.0	0.0	0.0	0.9	0.1	Y	N
19-0745	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.8	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$67,000		1.3	0.2	0.1	38.2	3.2	Y	N
19-0747	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	11.7	0.6	N	N
19-0753	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.5	0.1	0.0	14.1	1.2	Y	N
19-0762	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$30,000		0.5	0.1	0.0	17.4	1.3	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0763	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	5.2	0.4	N	N
19-0766	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$42,000		0.7	0.1	0.0	24.4	1.8	N	N
19-0768	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	7.7	0.6	N	N
19-0769	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	2.8	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$248,000		3.9	0.6	0.3	144.1	10.5	N	N
19-0770	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.5	0.1	0.0	25.7	1.5	N	N
19-0771	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$50,000		1.1	0.2	0.1	51.6	3.1	N	N
19-0775	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.6	0.1	0.0	19.0	1.6	Y	N
19-0776	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.4	0.1	0.0	12.6	1.0	Y	N
19-0777	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.3	0.0	0.0	16.5	0.8	N	N
19-0778	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$28,000		0.7	0.1	0.1	32.9	1.7	Y	N
19-0779	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$60,000		1.5	0.2	0.1	72.7	3.5	N	N
19-0780	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$62,000		1.5	0.2	0.1	75.4	3.6	N	N
19-0781	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$55,000		1.3	0.2	0.1	67.0	3.2	N	N
19-0782	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$63,000		1.5	0.2	0.1	76.4	3.6	N	N
19-0783	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$76,000		1.8	0.3	0.1	92.1	4.4	N	N
19-0784	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.4	0.1	0.0	21.5	1.0	N	N
19-0785	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$17,000		0.4	0.1	0.0	18.8	1.0	N	N
19-0786	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	2.4	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$211,000		4.5	0.7	0.4	226.7	11.5	N	N
19-0787	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.7	0.1	0.1	35.7	1.8	N	N
19-0788	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	M, DOT	Illinois EPA, IDNR, USFWS, USACE, SMC	$12,000		0.3	0.0	0.0	13.9	0.7	N	N
19-0789	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.2	0.0	0.0	10.3	0.5	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0790	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$44,000		0.8	0.1	0.1	24.8	2.1	Y	N
19-0791	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	1.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$96,000		1.9	0.3	0.1	54.6	4.5	Y	N
19-0799	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$38,000		0.7	0.1	0.0	21.7	1.8	Y	N
19-0848	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	5.9	0.5	Y	N
19-0849	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$75,000		1.4	0.2	0.1	42.5	3.5	Y	N
19-0853	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		0.7	0.1	0.0	22.0	1.5	N	N
19-0858	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	1.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$106,000		1.6	0.2	0.1	61.0	4.2	Y	N
19-0863	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	5.3	0.4	Y	N
19-0877	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.6	0.1	0.0	15.5	1.1	N	N
19-0878	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	3.5	acre	L	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$302,000		8.2	1.1	0.5	216.8	15.0	N	N
19-0882	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	1.3	acre	H	M	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$115,000		2.3	0.4	0.2	126.6	5.4	N	N
19-0883	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	PO, IDNR	DOT, Illinois EPA, M, USFWS, USACE, SMC	$34,000		0.3	0.0	0.0	11.5	0.6	N	N
19-0898	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$58,000		0.7	0.1	0.0	28.4	2.0	N	N
19-0925	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$36,000		0.3	0.1	0.0	12.4	0.6	N	N
19-0953	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	5.3	0.3	N	N
19-0959	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.2	0.0	0.0	6.4	0.4	Y	N
19-0960	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.4	0.0	0.0	9.5	0.7	N	N
19-0961	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$16,000		0.4	0.1	0.0	17.0	1.0	N	N
19-0980	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.3	0.0	0.0	10.7	0.8	N	N
19-1016	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	M, PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$18,000		0.4	0.1	0.0	18.4	1.1	N	N
19-1017	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.3	0.0	0.0	8.1	0.7	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-1024	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	11.0	0.5	N	N
20-0834	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	4.3	acre	M	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$378,000		6.5	1.1	0.5	299.8	11.7	N	N
20-0956	City of Zion	Kellogg Creek	Wetland Restoration	Create new wetland.	2.1	acre	M	L	2,3,5,6	M, PD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$183,000		2.7	0.4	0.2	86.9	5.6	N	N
20-1033	City of Zion, State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$30,000		0.4	0.1	0.0	14.4	0.9	N	N
20-0534	City of Zion, Village of Beach Park	Dead River	Stream/Ravine Restoration	Address streambank erosion along entire reach using bioengineering stabilization measures, which may help reduce the silt and sediment load. Manage and restore the wooded ravine.	706.4	linear feet	L	M	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$577,000		28.7	14.3	14.2	0.0	0.0	N	Y
20-0528	City of Zion, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	5.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$442,000		3.9	0.9	0.3	225.5	11.6	N	Y
20-0610	City of Zion, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.5	acre	M	L	2,3,5,6	PD, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$133,000		1.9	0.3	0.1	75.0	6.4	N	Y
20-0776	City of Zion, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$126,000		1.8	0.3	0.1	71.2	6.1	N	N
19-0637	City of Zion, Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	16.0	acre	H	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$1,396,000		27.5	3.9	1.8	900.5	61.0	N	Y
19-0852	City of Zion, Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	1.7	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$146,000		2.9	0.4	0.2	94.4	6.4	N	N
19-0308	City of Zion, Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.5	acre	M	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$128,000		2.0	0.3	0.1	74.6	5.4	Y	Y
19-0626	City of Zion,Village of Beach Park	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	2,3,5	PO	Illinois EPA, M, USFWS, USACE, SMC	$38,000		0.0	0.0	0.0	0.0	0.0	Y	Y
LFP-RSM	Lake County Forest Preserve District	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFP-RSM	Lake County Forest Preserve District	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFP-RSM	Lake County Forest Preserve District	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFP-RSM	Lake County Forest Preserve District	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFP-RSM	Lake County Forest Preserve District	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFP-RSM	Lake County Forest Preserve District	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
LFP-RSM	Lake County Forest Preserve District	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFP-RSM	Lake County Forest Preserve District	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFP-RSM	Lake County Forest Preserve District	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LFP-RSM	Lake County Forest Preserve District	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
19-0204	Lake County Forest Preserve District	Kellogg Creek	Water Infrastructure	Monitor culvert for blockage causing ponded water and algae growth, which may require drainage improvements or culvert remediation.	1	each	H	S	2	LCFPD	RR	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.7	acre	L	L	3,5,6	PO	M, RR, SMC, USFWS, USACE	$67,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.4	acre	L	L	3,5,6	PO, RR, SMC	DOT, M, USFWS, USACE	$74,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
HLD-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.2	acre	L	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$62,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.5	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$65,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	9.3	acre	L	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$93,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$64,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$68,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.0	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$70,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	9.2	acre	L	L	3,5,6	IDNR	RR, USFWS, USACE, SMC	$92,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	5.8	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$58,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Lake County Forest Preserve District	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
20-0261	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	17.8	acre	M	M	2,3,5	LCFPD	DOT, Illinois EPA, USFWS, USACE, SMC	$589,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0523	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.0	acre	M	M	2,3,5	LCFPD	Illinois EPA, USFWS, USACE, SMC	$197,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0524	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	M	M	2,3,5	LCFPD, PO	Illinois EPA, USFWS, USACE, SMC	$30,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0525	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.6	acre	M	M	2,3,5	LCFPD, PO	Illinois EPA, USFWS, USACE, SMC	$84,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0526	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	9.0	acre	M	M	2,3,5	LCFPD, PO	DOT, Illinois EPA, USFWS, USACE, SMC	$296,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0576	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	L	L	2,3,5	LCFPD, PO	Illinois EPA, USFWS, USACE, SMC	$73,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0579	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.8	acre	M	M	2,3,5	LCFPD	Illinois EPA, USFWS, USACE, SMC	$126,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0584	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	8.7	acre	L	L	2,3,5	LCFPD, PO	DOT, Illinois EPA, USFWS, USACE, SMC	$288,000		0.0	0.0	0.0	0.0	0.0	N	Y
HLD-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	M	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	OL	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	SI, PO	DOT, M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	DOT, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	17.0	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$170,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	85.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$855,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WHR-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	M	L	3,5,6	M, PO	DOT, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	24.6	acre	L	L	3,5,6	PO, RR	DOT, M, SMC, USFWS, USACE	$246,000		N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Lake County Forest Preserve District	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	M	DOT, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	M, PO	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	M	DOT, RR, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO, M	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	DOT	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO, HOA	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
NAV-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	NAVY	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
TWAK-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	C, PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Lake County Forest Preserve District	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	M, PO	DOT, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	Y	N
HLD-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO, M	USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	RR, HOA	M, SMC, USFWS, USACE	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	146.3	acre	L	L	3,5,6	IDNR, PO	DOT, USFWS, USACE, SMC	$1,463,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	345.8	acre	L	L	3,5,6	IDNR, PO, RR	USFWS, USACE, SMC	$3,458,000		N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	C, PD	DOT, M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	L	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$9,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	28.6	acre	L	L	3,5,6	NSWRD, PO	M, USFWS, USACE, SMC	$286,000		N/A	N/A	N/A	N/A	N/A	N	N
TMOR-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	3,5,6	OL	T, PB&D, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	M, PD	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	M	L	3,5,6	M, PD	USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Lake County Forest Preserve District	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$10,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0175	Lake County Forest Preserve District	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	5.2	0.1	N	N
20-0067	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$56,000		0.9	0.1	0.1	34.5	2.6	N	Y
20-0522	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	8.6	0.5	N	Y
20-0530	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	1.4	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$120,000		1.1	0.2	0.1	61.4	3.2	N	Y
20-0580	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	2.1	acre	M	S	2,3,5,6	LCFPD, PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$180,000		2.7	0.4	0.2	112.6	6.8	N	Y
20-0806	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$81,000		0.7	0.2	0.0	41.3	2.1	N	N
20-0807	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$53,000		0.5	0.1	0.0	27.3	1.4	N	N
20-0809	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$26,000		0.4	0.1	0.0	16.1	1.1	N	N
20-0812	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.0	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$1,000		0.0	0.0	0.0	0.6	0.0	N	N
20-0814	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	1.3	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$112,000		1.0	0.2	0.1	57.1	2.9	N	N
20-0824	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	LCFPD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$74,000		1.0	0.2	0.1	41.2	2.7	N	N
20-0825	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$79,000		1.1	0.2	0.1	43.8	2.9	N	N
20-0835	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$31,000		0.3	0.1	0.0	16.0	0.8	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0836	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$35,000		0.3	0.1	0.0	17.9	0.9	N	N
20-0850	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$41,000		0.4	0.1	0.0	21.1	1.1	N	N
20-0852	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$71,000		1.2	0.2	0.1	52.8	3.4	Y	N
20-0853	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$18,000		0.3	0.0	0.0	11.1	0.8	N	N
20-0881	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$32,000		0.5	0.1	0.0	20.3	1.2	N	N
20-0884	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	LCFPD, PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$42,000		0.6	0.1	0.0	26.0	1.6	N	N
20-0984	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$14,000		0.1	0.0	0.0	7.2	0.4	N	N
20-0991	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	4.9	0.3	N	N
20-0992	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$20,000		0.2	0.0	0.0	10.3	0.5	N	N
20-0993	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$18,000		0.2	0.0	0.0	9.1	0.5	N	N
20-0994	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$12,000		0.1	0.0	0.0	6.2	0.3	N	N
20-1014	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$15,000		0.1	0.0	0.0	7.9	0.4	N	N
20-1029	Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$16,000		0.3	0.0	0.0	11.6	0.7	Y	N
19-0921	Lake County Forest Preserve District	Kellogg Creek	Wetland Restoration	Create new wetland.	1.1	acre	H	M	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$95,000		0.3	0.1	0.0	18.5	1.0	N	N
19-0922	Lake County Forest Preserve District	Kellogg Creek	Wetland Restoration	Create new wetland.	0.8	acre	H	M	2,3,5,6	LCFPD	Illinois EPA, IDNR, RR, USFWS, USACE, SMC	$69,000		0.2	0.1	0.0	13.3	0.7	N	N
19-0923	Lake County Forest Preserve District	Kellogg Creek	Wetland Restoration	Create new wetland.	1.0	acre	H	M	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$85,000		0.2	0.1	0.0	16.6	0.9	N	N
19-0924	Lake County Forest Preserve District	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	H	M	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$48,000		0.1	0.0	0.0	9.4	0.5	N	N
19-0956	Lake County Forest Preserve District	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	LCFPD, IDNR	Illinois EPA, USFWS, USACE, SMC	$12,000		0.0	0.0	0.0	2.3	0.1	N	N
21-0101	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	LCFPD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$8,000		0.1	0.0	0.0	5.2	0.2	N	N
21-0103	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	LCFPD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$23,000		0.3	0.1	0.0	15.4	0.7	N	N
21-0111	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	LCFPD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$31,000		0.5	0.1	0.0	21.9	1.4	N	N
21-0115	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$9,000		0.2	0.0	0.0	6.4	0.4	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
21-0170	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	LCFPD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$61,000		0.8	0.1	0.1	40.2	1.8	N	N
21-0171	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	LCFPD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$24,000		0.4	0.1	0.0	17.2	1.1	N	N
21-0204	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	LCFPD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	7.2	0.3	N	N
21-0206	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	LCFPD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$16,000		0.3	0.0	0.0	11.2	0.7	N	N
21-0207	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	LCFPD	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$17,000		0.2	0.0	0.0	11.0	0.5	N	N
21-0211	Lake County Forest Preserve District	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	LCFPD	Illinois EPA, IDNR, USFWS, USACE, SMC	$16,000		0.2	0.0	0.0	10.7	0.5	N	N
20-0268	Lake County Forest Preserve District, Village of Beach Park	Dead River	Stream/Ravine Restoration	Restore native riparian buffer by controlling invasive species, planting native species, thinning forest and shrub canopy, and managing vegetation.	2.7	acre	L	L	1,3,5,6	LCFPD, PO	DOT, Illinois EPA, M, SMC	$12,000	$27,000	0.0	0.0	0.0	0.0	0.0	N	Y
20-0805	Lake County Forest Preserve District, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.2	acre	M	L	2,3,5,6	LCFPD, M, PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$102,000		0.9	0.2	0.1	51.9	2.7	N	N
20-0849	Lake County Forest Preserve District, Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.4	acre	M	L	2,3,5,6	LCFPD, PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$125,000		1.1	0.2	0.1	63.9	3.3	N	N
BEA-WLE	Moraine Township	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	9.9	acre	L	L	3,5,6	RR, PO	M, SMC, USFWS, USACE	$99,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Moraine Township	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	8.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$84,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Moraine Township	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Moraine Township	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$78,000		N/A	N/A	N/A	N/A	N/A	N	N
OPE-RSM	Openlands	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
OPE-RSM	Openlands	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
23-0015	Openlands	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	15	linear feet	M	L	1,5	OL	Illinois EPA. SMC	$6,000	$33,000	0.7	0.4	0.4	N/A	N/A	N	N
23-0019	Openlands	Bluff/Ravine	Stabilization	Stabilize eroding ravine slope	15	linear feet	L	L	1,5	OL	Illinois EPA. SMC	$6,000	$33,000	0.7	0.4	0.4	N/A	N/A	N	N
23-0087	Openlands	Bluff/Ravine	Stream/Ravine Restoration	Replace antiquated drainage system and asphalt road in Bartlett Ravine with daylighted and to the degree possible naturalized drainage that features pools, native vegetation, and permeable trail.	3932.2	linear feet	H	M	1,2,5	OL	Illinois EPA, SMC	$1,180,000		58.6	29.3	29.0	0.0	0.0	N	N
23-0104	Openlands	Bluff/Ravine	Stream/Ravine Restoration	Control grade of eroding bed and spot treat eroding slopes	225.7	linear feet	M	M	1,5	OL	Illinois EPA, M, SMC	$68,000		3.4	1.7	1.7	0.0	0.0	N	N
23-0176	Openlands	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	OL	Illinois EPA, IDNR, USFWS, USACE, SMC	$13,000		0.4	0.1	0.0	7.9	0.4	N	N
TSHT-GI	Shields Township	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	T, RR	PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TSHT-GI	Shields Township	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TSHT-GI	Shields Township	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	T	PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TSHT-GI	Shields Township	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.8	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TSHT-GI	Shields Township	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TSHT-RSM	Shields Township	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TSHT-RSM	Shields Township	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TSHT-RSM	Shields Township	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TSHT-RSM	Shields Township	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TSHT-RSM	Shields Township	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
22-0026	Shields Township	Pettibone Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$45,000		1.3	0.2	0.1	31.5	1.8	N	N
22-0027	Shields Township	Pettibone Creek	Wetland Restoration	Create new wetland.	1.6	acre	M	L	2,3,5,6	T	DOT, Illinois EPA, IDNR, PB&D, USFWS, USACE, SMC	$141,000		4.1	0.6	0.3	98.4	5.7	N	N
22-0044	Shields Township	Pettibone Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, T, PB&D, USFWS, USACE, SMC	$55,000		1.0	0.2	0.1	41.3	2.6	N	N
22-0045	Shields Township	Pettibone Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	T	DOT, Illinois EPA, IDNR, RR, PB&D, USFWS, USACE, SMC	$25,000		0.7	0.1	0.1	17.2	1.0	N	N
22-0052	Shields Township	Pettibone Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$18,000		0.2	0.0	0.0	11.7	0.6	N	N
22-0053	Shields Township	Pettibone Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	5.0	0.2	N	N
22-0005	Shields Township, Village of Glencoe	Pettibone Creek	Flood Risk Reduction	Investigate options for reducing flooding	1	each	H	S	2	RR, PO, T	DOT, PB&D, SMC	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
22-0011	Shields Township, Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, T, PB&D, M, USFWS, USACE, SMC, IDNR	$13,000		0.2	0.0	0.0	6.0	0.3	N	N
22-0042	Shields Township, Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.8	acre	L	L	2,3,5,6	HOA, PO	DOT, Illinois EPA, IDNR, T, PB&D, M, USFWS, USACE, SMC	$66,000		1.2	0.2	0.1	50.4	3.1	N	N
20-0608	State of Illinois	Dead River	Beach Management	Reduce gull contribution to nearshore E. coli concentrations.	1	each	L	L	1,5	IDNR	Illinois EPA	$10,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0214	State of Illinois	Kellogg Creek	Beach Management	Create and implement a Stormwater Pollution Prevention Plan for commercial marina, harbor, and associated activities. Install filtration and infiltration source control and lot level BMPs to capture and treat runoff from these areas, including parking lots, boat storage areas, and other areas that may contribute pollutants.	1	each	H	S	1,5	IDNR	LCFPD, Illinois EPA	$367,000	$1,433,000	0.1	0.1	0.0	35.4	1.7	N	Y
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
SIL-RSM	State of Illinois	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
19-0232	State of Illinois	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion using bioengineering stabilization measures. Restore stream channel by reducing/remediating channelization in lower reaches. Restore native riparian buffer and manage native riparian plant communities by controlling invasive species, planting native species, and thinning forest and shrub canopy. A wider, partially forested buffer is appropriate in the lower parts of the reach; thinning of the forest canopy is more	2151.9	linear feet	H	M	1,3,5,6	IDNR, PO, C	Illinois EPA, M, SMC	$1,785,000		88.7	44.4	43.9	0.0	0.0	N	Y
19-0221	State of Illinois	Kellogg Creek	Water Infrastructure	Provide energy dissipation for overflow / point discharge from water treatment facility and reduce severe erosion problems on opposite bank, currently addressed with rip rap.	1	each	M	S	5	PO	Illinois EPA, IDNR, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0222	State of Illinois	Kellogg Creek	Water Infrastructure	Repair broken outfall pipe and surrounding erosion using bioengineering stabilization measures.	1	each	M	S	2,5	DOT	Illinois EPA, IDNR, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
19-0224	State of Illinois	Kellogg Creek	Water Infrastructure	Inspect broken concrete armoring around outfall pipe. Remediate if necessary following inspection.	1	each	M	S	2	IL	IDNR, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
19-0720	State of Illinois	Kellogg Creek	Water Infrastructure	Repair or replace failing seawall.	380.8	linear feet	H	M	1,5	IL, M, PO	Illinois EPA, IDNR	$762,000		0.0	0.0	0.0	0.0	0.0	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	M, PO	DOT, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	DOT, PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	M	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	OL, M	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	LCFPD, OL	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	SI	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO, LBOL	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	SI	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	RR	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	RR	DOT, M, SMC, USFWS, USACE	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	DOT, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR, PO	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PD	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	IDNR, RR	USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	RR	T, PB&D, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	RR	T, PB&D, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	T, PO	DOT, PB&D, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	15.5	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$155,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	C, PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO, M	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	DOT	RR, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
ARM-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	ARMY	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	M	DOT, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	DOT	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	L	3,5,6	DOT, M	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	IDNR	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PD, PO, SI	DOT, M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.5	acre	L	L	3,5,6	PD, PO, SI	DOT, M, USFWS, USACE, SMC	$5,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, M	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	RR	M, SMC, USFWS, USACE	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD, HOA, PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD, HOA, PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFP-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO, SI	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	SI	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	SI	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	RR	M, SMC, USFWS, USACE	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
NAV-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.05	acre	L	L	3,5,6	NAVY	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	RR	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	DOT, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
TWAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	RR	T, PB&D, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, HOA	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO, DOT, M	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	RR	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO, M	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WHR-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO, DOT	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	State of Illinois	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
20-0743	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$58,000		0.7	0.1	0.0	33.7	1.8	N	N
20-0744	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	1.9	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$162,000		0.3	0.1	0.0	35.9	0.7	N	N
20-0871	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$58,000		0.8	0.1	0.1	27.6	1.8	N	N
20-0872	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	H	M	2,3,5,6	PO, IDNR	Illinois EPA, USFWS, USACE, SMC	$61,000		0.9	0.1	0.1	29.1	1.9	N	N
20-0874	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$23,000		0.3	0.0	0.0	11.1	0.7	N	N
20-0875	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$24,000		0.3	0.1	0.0	11.3	0.7	N	N
20-0876	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$13,000		0.0	0.0	0.0	2.9	0.1	N	N
20-0877	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$22,000		0.0	0.0	0.0	4.9	0.1	N	N
20-0880	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$58,000		0.2	0.1	0.0	13.3	0.5	N	N
20-0916	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO, IDNR	Illinois EPA, USFWS, USACE, SMC	$15,000		0.1	0.0	0.0	2.9	0.2	N	N
20-0918	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$27,000		0.2	0.0	0.0	7.5	0.5	N	N
20-0919	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	RR	DOT, Illinois EPA, IDNR, USFWS, USACE, USFWS, USACE, SMC	$82,000		0.7	0.1	0.0	22.5	1.6	N	N
20-0921	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$28,000		0.4	0.1	0.0	13.7	1.2	N	N
20-0922	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$61,000		0.8	0.1	0.0	29.3	2.5	N	N
20-0923	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$47,000		0.6	0.1	0.0	22.5	2.0	N	N
20-0924	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$35,000		0.5	0.1	0.0	16.9	1.5	N	N
20-0925	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$32,000		0.4	0.1	0.0	15.2	1.3	N	N
20-0926	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	5.3	0.5	N	N
20-0927	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$42,000		0.5	0.1	0.0	20.1	1.7	N	N
20-0928	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$49,000		0.6	0.1	0.0	23.8	2.1	N	N
20-0929	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	1.6	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$143,000		1.8	0.3	0.1	68.9	6.0	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0930	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$27,000		0.3	0.1	0.0	15.5	0.8	N	N
20-0931	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$44,000		0.5	0.1	0.0	25.8	1.3	N	N
20-0932	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	3.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, RR, USFWS, USACE, SMC	$308,000		3.6	0.6	0.3	180.2	9.4	N	N
20-0933	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	5.5	0.3	N	N
20-0934	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$45,000		0.6	0.1	0.0	21.1	1.4	N	N
20-0935	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$74,000		1.1	0.2	0.1	35.2	2.3	N	N
20-0936	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	1.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$92,000		1.3	0.2	0.1	43.3	2.8	N	N
20-0937	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$27,000		0.4	0.1	0.0	13.0	0.8	N	N
20-0938	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	1.9	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, RR, USFWS, USACE, USFWS, USACE, SMC	$168,000		2.4	0.4	0.2	79.6	5.1	N	N
20-0969	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$23,000		0.0	0.0	0.0	5.0	0.1	N	N
20-0970	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$18,000		0.2	0.0	0.0	10.7	0.6	N	N
20-0971	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$10,000		0.0	0.0	0.0	2.3	0.0	N	N
20-0972	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	6.3	0.4	N	N
20-0973	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	6.5	0.4	N	N
20-1003	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	5.6	0.4	N	N
20-1004	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	6.2	0.4	N	N
20-1005	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$17,000		0.2	0.0	0.0	7.9	0.5	N	N
20-1006	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$13,000		0.1	0.0	0.0	7.5	0.4	N	N
20-1007	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	5.5	0.3	N	N
20-1008	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	6.6	0.6	N	N
20-1009	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	6.4	0.6	N	N
20-1010	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$13,000		0.1	0.0	0.0	3.5	0.3	N	N
20-1011	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	2.6	0.2	N	N
20-1012	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$10,000		0.0	0.0	0.0	2.4	0.1	N	N
20-1017	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	IDNR	Illinois EPA, RR, USFWS, USACE, SMC	$13,000		0.1	0.0	0.0	3.4	0.2	N	N
20-1030	State of Illinois	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	H	M	2,3,5,6	PO, IDNR	Illinois EPA, USFWS, USACE, SMC	$77,000		1.1	0.2	0.1	36.3	2.3	N	N
19-0725	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	15.0	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$1,304,000		6.8	1.5	0.4	390.7	19.6	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0758	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$10,000		0.0	0.0	0.0	2.9	0.1	N	N
19-0759	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PD	Illinois EPA, IDNR, USFWS, USACE, SMC	$19,000		0.1	0.0	0.0	5.0	0.1	N	N
19-0760	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	2.2	acre	H	M	2,3,5,6	PD, IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$188,000		0.5	0.2	0.0	48.4	1.1	N	N
19-0761	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	5.6	0.4	N	N
19-0807	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$35,000		0.1	0.0	0.0	8.1	0.2	N	N
19-0808	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$75,000		0.2	0.1	0.0	19.4	0.4	N	N
19-0809	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$13,000		0.0	0.0	0.0	3.3	0.1	N	N
19-0810	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$22,000		0.0	0.0	0.0	5.1	0.1	N	N
19-0811	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$37,000		0.1	0.0	0.0	8.6	0.2	N	N
19-0812	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	3.6	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$312,000		0.7	0.2	0.1	72.5	1.4	N	N
19-0813	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$26,000		0.1	0.0	0.0	6.7	0.1	N	N
19-0814	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	1.4	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$126,000		0.3	0.1	0.0	29.3	0.5	N	N
19-0815	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$10,000		0.0	0.0	0.0	2.4	0.0	N	N
19-0816	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$23,000		0.1	0.0	0.0	5.4	0.1	N	N
19-0817	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$34,000		0.1	0.0	0.0	7.9	0.1	N	N
19-0818	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$26,000		0.1	0.0	0.0	7.8	0.4	N	N
19-0819	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	1.9	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$162,000		0.4	0.1	0.0	37.6	0.7	N	N
19-0820	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	3.2	acre	M	L	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$279,000		0.8	0.2	0.1	71.7	1.6	N	N
19-0821	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$23,000		0.3	0.0	0.0	11.4	0.8	N	N
19-0822	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$24,000		0.1	0.0	0.0	5.6	0.1	N	N
19-0823	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$12,000		0.0	0.0	0.0	3.0	0.1	N	N
19-0824	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$32,000		0.1	0.0	0.0	8.3	0.2	N	N
19-0825	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$23,000		0.1	0.0	0.0	6.0	0.1	N	N
19-0826	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$68,000		0.2	0.1	0.0	17.6	0.4	N	N
19-0827	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$54,000		0.2	0.0	0.0	13.8	0.3	N	N
19-0828	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$35,000		0.1	0.0	0.0	8.9	0.2	N	N
19-0829	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$34,000		0.1	0.0	0.0	8.9	0.2	N	N
19-0830	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$36,000		0.5	0.1	0.0	24.1	1.4	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0831	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$20,000		0.3	0.0	0.0	13.3	0.8	N	N
19-0832	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	14.6	0.9	N	N
19-0881	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$34,000		0.1	0.0	0.0	8.8	0.2	N	N
19-0884	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$22,000		0.2	0.0	0.0	7.5	0.4	N	N
19-0885	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$33,000		0.3	0.0	0.0	11.4	0.6	N	N
19-0886	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$39,000		0.3	0.1	0.0	13.5	0.7	N	N
19-0887	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$31,000		0.4	0.1	0.0	15.9	1.0	N	N
19-0889	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$40,000		0.5	0.1	0.0	20.5	1.3	N	N
19-0890	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	10.7	0.8	N	N
19-0891	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	6.2	0.4	N	N
19-0892	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	7.1	0.5	N	N
19-0893	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.8	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$73,000		0.9	0.1	0.1	35.8	2.6	N	N
19-0894	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$25,000		0.3	0.0	0.0	12.3	0.9	N	N
19-0895	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	1.1	acre	H	M	2,3,5,6	C	Illinois EPA, IDNR, USFWS, USACE, SMC	$92,000		1.2	0.2	0.1	44.9	3.2	N	N
19-0896	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$52,000		0.7	0.1	0.0	25.4	1.8	N	N
19-0897	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$17,000		0.2	0.0	0.0	8.3	0.6	N	N
19-0899	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$63,000		0.8	0.1	0.1	30.7	2.2	N	N
19-0900	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	1.0	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$89,000		1.1	0.2	0.1	43.4	3.1	N	N
19-0901	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$77,000		1.0	0.2	0.1	37.6	2.7	N	N
19-0902	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	1.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$132,000		1.7	0.3	0.1	64.5	4.6	N	N
19-0903	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$82,000		1.1	0.2	0.1	40.0	2.9	N	N
19-0904	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$57,000		0.7	0.1	0.0	27.9	2.0	N	N
19-0905	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$25,000		0.3	0.1	0.0	12.3	0.9	N	N
19-0906	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$30,000		0.4	0.1	0.0	14.7	1.1	N	N
19-0907	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	C	Illinois EPA, IDNR, USFWS, USACE, SMC	$38,000		0.5	0.1	0.0	18.4	1.3	N	N
19-0909	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	7.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$619,000		8.0	1.2	0.5	303.1	21.8	N	N
19-0910	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$29,000		0.2	0.0	0.0	8.7	0.4	N	N
19-0911	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, RR, USFWS, USACE, SMC	$23,000		0.1	0.0	0.0	6.9	0.3	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0912	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$33,000		0.2	0.0	0.0	9.8	0.5	N	N
19-0913	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$27,000		0.1	0.0	0.0	8.1	0.4	N	N
19-0914	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$34,000		0.2	0.0	0.0	10.2	0.5	N	N
19-0915	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, RR, USFWS, USACE, SMC	$39,000		0.2	0.0	0.0	11.8	0.6	N	N
19-0916	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$42,000		0.0	0.0	0.0	7.5	0.1	N	N
19-0918	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	Illinois EPA, RR, USFWS, USACE, SMC	$23,000		0.3	0.1	0.0	15.4	0.9	N	N
19-0919	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, RR, USFWS, USACE, SMC	$41,000		0.6	0.1	0.0	27.3	1.6	N	N
19-0928	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO, PD	Illinois EPA, IDNR, USFWS, USACE, SMC	$53,000		0.2	0.0	0.0	13.7	0.3	N	N
19-0929	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO, PD	Illinois EPA, IDNR, USFWS, USACE, SMC	$18,000		0.1	0.0	0.0	4.7	0.1	N	N
19-0930	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$43,000		0.6	0.1	0.0	28.6	1.7	N	N
19-0931	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$41,000		0.1	0.0	0.0	6.4	0.3	N	N
19-0932	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$63,000		0.8	0.1	0.1	30.7	2.2	N	N
19-0933	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$60,000		0.8	0.1	0.0	29.5	2.1	N	N
19-0934	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	1.1	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$93,000		0.2	0.1	0.0	21.7	0.4	N	N
19-0935	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$73,000		0.9	0.1	0.1	35.6	2.6	N	N
19-0936	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$25,000		0.3	0.0	0.0	12.2	0.9	N	N
19-0937	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$40,000		0.1	0.0	0.0	9.4	0.2	N	N
19-0938	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$79,000		1.0	0.2	0.1	38.9	2.8	N	N
19-0939	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$49,000		0.1	0.0	0.0	11.3	0.2	N	N
19-0940	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$40,000		0.2	0.0	0.0	11.9	0.6	N	N
19-0941	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	2.7	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$237,000		0.5	0.2	0.0	55.2	1.0	N	N
19-0942	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	1.3	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$109,000		1.4	0.2	0.1	53.4	3.8	N	N
19-0943	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$37,000		0.2	0.0	0.0	11.0	0.6	N	N
19-0944	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$17,000		0.2	0.0	0.0	8.8	0.6	N	N
19-0945	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$56,000		0.7	0.1	0.0	28.4	1.8	N	N
19-0946	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$46,000		0.6	0.1	0.0	23.6	1.5	N	N
19-0947	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$30,000		0.4	0.1	0.0	15.3	1.0	N	N
19-0948	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	4.8	0.3	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0949	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$45,000		0.6	0.1	0.0	22.7	1.5	N	N
19-0950	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	7.2	0.5	N	N
19-0952	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$14,000		0.1	0.0	0.0	4.7	0.2	N	N
19-0954	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$14,000		0.1	0.0	0.0	4.8	0.2	N	N
19-0955	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$11,000		0.0	0.0	0.0	2.0	0.0	N	N
19-0971	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$21,000		0.3	0.0	0.0	14.0	0.8	N	N
19-0972	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	6.1	0.4	N	N
19-0973	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	2.9	0.2	N	N
19-0977	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$19,000		0.2	0.0	0.0	9.3	0.7	N	N
19-0979	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$18,000		0.1	0.0	0.0	5.5	0.3	N	N
19-0982	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	3.3	0.2	N	N
19-0983	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$17,000		0.1	0.0	0.0	5.2	0.3	N	N
19-0984	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$9,000		0.0	0.0	0.0	2.7	0.1	N	N
19-0985	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$12,000		0.1	0.0	0.0	3.6	0.2	N	N
19-0986	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$12,000		0.1	0.0	0.0	3.5	0.2	N	N
19-0987	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$14,000		0.1	0.0	0.0	4.1	0.2	N	N
19-0988	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$9,000		0.0	0.0	0.0	2.7	0.1	N	N
19-0989	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	5.1	0.4	N	N
19-0990	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$14,000		0.1	0.0	0.0	4.3	0.2	N	N
19-0991	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$13,000		0.1	0.0	0.0	3.9	0.2	N	N
19-0992	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$13,000		0.1	0.0	0.0	3.8	0.2	N	N
19-0993	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	3.1	0.2	N	N
19-0994	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$13,000		0.1	0.0	0.0	3.8	0.2	N	N
19-0995	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$16,000		0.1	0.0	0.0	4.9	0.2	N	N
19-0996	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$18,000		0.1	0.0	0.0	5.5	0.3	N	N
19-0997	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$12,000		0.1	0.0	0.0	3.5	0.2	N	N
19-0998	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$17,000		0.1	0.0	0.0	5.2	0.3	N	N
19-0999	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$21,000		0.0	0.0	0.0	4.8	0.1	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-1000	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$15,000		0.0	0.0	0.0	3.6	0.1	N	N
19-1001	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$14,000		0.0	0.0	0.0	3.2	0.1	N	N
19-1002	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	7.5	0.5	N	N
19-1003	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	Illinois EPA USFWS, USACE, SMC	$21,000		0.3	0.0	0.0	10.1	0.7	N	N
19-1004	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	C	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	4.4	0.3	N	N
19-1005	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$16,000		0.2	0.0	0.0	7.9	0.6	N	N
19-1006	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$20,000		0.3	0.0	0.0	9.7	0.7	N	N
19-1007	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$23,000		0.3	0.0	0.0	11.3	0.8	N	N
19-1008	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$18,000		0.2	0.0	0.0	9.0	0.6	N	N
19-1009	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$19,000		0.2	0.0	0.0	6.7	0.3	N	N
19-1010	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$21,000		0.2	0.0	0.0	7.3	0.4	N	N
19-1011	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$44,000		0.6	0.1	0.0	22.6	1.4	N	N
19-1012	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$10,000		0.0	0.0	0.0	2.6	0.1	N	N
19-1013	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	5.5	0.4	N	N
19-1014	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	5.3	0.4	N	N
19-1018	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$14,000		0.1	0.0	0.0	4.8	0.2	N	N
19-1019	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$15,000		0.1	0.0	0.0	5.3	0.3	N	N
19-1020	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	3.5	0.2	N	N
19-1021	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	3.0	0.1	N	N
19-1022	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	DOT, Illinois EPA, USFWS, USACE, SMC	$9,000		0.0	0.0	0.0	2.3	0.1	N	N
19-1023	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO, PD	Illinois EPA, IDNR, USFWS, USACE, SMC	$14,000		0.0	0.0	0.0	3.6	0.1	N	N
19-1026	State of Illinois	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	IDNR	Illinois EPA, USFWS, USACE, SMC	$6,000		0.0	0.0	0.0	1.9	0.1	N	N
19-0231	State of Illinois, Lake County Forest Preserve District	Kellogg Creek	Stream/Ravine Restoration	Maintain hydrologic connectivity to Lake Michigan.	1	each	L	S	2	IDNR	Illinois EPA	$0		0.0	0.0	0.0	0.0	0.0	N	Y
23-0121	United states Department of the Army	Bluff/Ravine	Flood Risk Reduction	Construct a surface water interceptor and bioinfiltration basin to direct overland flows from adjacent military facilities away from ravine slopes. Increase storage capacity and modify existing storm sewer infrastructure. See Bartlett Ravine Stormwater Planning (Open Lands and Stantec) for additional information.	1	each	H	S	2,5	PO	Illinois EPA, SMC	$810,000		0.0	0.0	0.0	0.0	0.0	N	Y
ARM-GI	United States Department of the Army	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	Army		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-GI	United States Department of the Army	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	107.1	acre	M	L	1,2,3,5	Army		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
ARM-RSM	United States Department of the Army	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
23-0123	United states Department of the Army	Bluff/Ravine	Runoff Volume Reduction	Include stormwater BMPs in site redevelopment. BMP cost is dependent on redevelopment costs.	1	each	H	M	2,5	ARMY	SMC	$0		0.0	0.0	0.0	0.0	0.0	N	Y
23-0140	United states Department of the Army	Bluff/Ravine	Runoff Volume Reduction	Include stormwater BMPs in site redevelopment. BMP cost is dependent on redevelopment costs.	1	each	H	M	2,5	PO	SMC	$0		0.0	0.0	0.0	0.0	0.0	N	N
ARM-RVR	United States Department of the Army	Bluff/Ravine	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs	0.1	acre	L	L	2,5	DOT, Army, PO	Illinois EPA	$18,000	$92,000	0.1	0.0	0.0	15.0	1.0	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
22-0001	United States Department of the Army	Pettibone Creek	Water Infrastructure	Conduct an illicit discharge investigation to determine source of discolored discharged during storm events.	1	each	H	S	5	LCHD, NAVY	Illinois EPA	$500		N/A	N/A	N/A	N/A	N/A	N	N
22-0002	United States Department of the Army	Pettibone Creek	Water Infrastructure	Conduct an illicit discharge investigation to determine source of discolored discharged.	1	each	H	S	5	LCHD, NAVY	Illinois EPA	$500		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	United States Department of the Army	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	9.9	acre	L	L	3,5,6	LCFPD, PO	DOT, USFWS, USACE, SMC	$99,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	United States Department of the Army	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	10.4	acre	L	L	3,5,6	PO, HOA	DOT, M, USFWS, USACE, SMC	$104,000		N/A	N/A	N/A	N/A	N/A	N	N
22-8021	United States Department of the Navy	Pettibone Creek	Detention Basin Retrofit	Inventory detention basin	1	each	L	L	2	NAVY	<Null>	$0		0.0	0.0	0.0	0.0	0.0	N	N
NAV-GI	United States Department of the Navy	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	Navy		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-GI	United States Department of the Navy	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	Navy		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-GI	United States Department of the Navy	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	Navy		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-GI	United States Department of the Navy	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	Navy		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	10.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RSM	United States Department of the Navy	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
NAV-RVR	United States Department of the Navy	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.2	acre	L	L	2,5	Navy, PO	Illinois EPA	$64,000	$318,000	0.5	0.1	0.1	43.5	2.8	N	N
NAV-RVR	United States Department of the Navy	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.1	acre	L	L	2,5	Navy, PO	Illinois EPA	$36,000	$182,000	0.3	0.1	0.1	27.5	1.5	N	N
NAV-RVR	United States Department of the Navy	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.0	acre	L	L	2,5	DOT, Navy, PO	Illinois EPA	$9,000	$46,000	0.1	0.0	0.0	7.5	0.4	N	N
NAV-RVR	United States Department of the Navy	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.1	acre	L	L	2,5	Navy, PO	Illinois EPA	$21,000	$103,000	0.2	0.0	0.0	14.1	0.9	N	N
NAV-RVR	United States Department of the Navy	Pettibone Creek	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs.	0.1	acre	L	L	2,5	DOT, Navy, PO	Illinois EPA	$19,000	$94,000	0.1	0.0	0.0	10.0	0.6	N	N
22-0003	United States Department of the Navy	Pettibone Creek	Stream/Ravine Restoration	Stabilize ravine and streambank erosion.	951.2	linear feet	H	M	1,5	Navy	Illinois EPA, SMC	$285,000		14.2	7.1	7.0	0.0	0.0	N	N
BEA-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	11.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$113,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	12.4	acre	L	L	3,5,6	PO, RR	DOT, M, SMC, USFWS, USACE	$124,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	PO, M	DOT, M, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.8	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$18,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	11.6	acre	L	L	3,5,6	PO	DOT, RR, USFWS, USACE, SMC	$116,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.8	acre	L	L	3,5,6	NSWRD	M, USFWS, USACE, SMC	$18,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.8	acre	L	L	3,5,6	PO, NSWRD	M, USFWS, USACE, SMC	$18,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.8	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$18,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	United States Department of the Navy	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.8	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$18,000		N/A	N/A	N/A	N/A	N/A	N	N
20-0139	Village of Beach Park	Dead River	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	N	Y
20-0070	Village of Beach Park	Dead River	Detention Basin Retrofit	Repair the outlet and restrictor.	1	each	L	L	2	PO	M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
20-8009	Village of Beach Park	Dead River	Detention Basin Retrofit	Implement sediment control measure in unvegetated area that drains to the basin.	1	each	M	S	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-8011	Village of Beach Park	Dead River	Detention Basin Retrofit	1. Stabilize side slopes. 2. Remove sediment and debris from inlet.	1	each	L	L	2,5	M	Illinois EPA, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	N	N
20-0734	Village of Beach Park	Dead River	Flood Risk Reduction	Identify stormwater infrastructure improvements needed to reduce flooding in this area.	1	each	L	L	2	DOT, M	SMC, PO	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
20-0735	Village of Beach Park	Dead River	Flood Risk Reduction	Investigate options for reducing flooding.	1	each	H	S	2	DOT, M	SMC, PO	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
20-0736	Village of Beach Park	Dead River	Flood Risk Reduction	Undersized stormwater drain surcharges during high precipitation events. Identify stormwater infrastructure improvements needed to reduce flooding in this area without having an adverse impact downstream.	1	each	H	M	2	DOT, M	SMC, PO	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	190.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	5.6	acre	M	L	1,2,3,5	SI, PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO, SI	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.7	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-GI	Village of Beach Park	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	13.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	12.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	11.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Dead River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
BEA-RSM	Village of Beach Park	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RSM	Village of Beach Park	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
BEA-RSM	Village of Beach Park	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
BEA-RVR	Village of Beach Park	Dead River	Runoff Volume Reduction	Reduce stormwater runoff from impervious surfaces by 1% using rain gardens, rain barrels, permeable asphalt, permeable pavement, bioretention, or other green infrastructure BMPs	0.0	acre	L	L	2,5	DOT, PO	Illinois EPA, M	$15,000	$73,000	0.1	0.0	0.0	13.1	0.8	N	Y
20-0706	Village of Beach Park	Dead River	Stabilization	Stabilize severe erosion.	100	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	N	N
20-0707	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	150	linear feet	H	S	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	7.5	3.7	3.7	N/A	N/A	N	N
20-0708	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	125	linear feet	H	S	1,5	PO, DOT	Illinois EPA, M, SMC	$6,000	$33,000	6.2	3.1	3.1	N/A	N/A	N	N
20-0709	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	150	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	7.5	3.7	3.7	N/A	N/A	N	N
20-0710	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	75	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	3.7	1.9	1.8	N/A	N/A	N	N
20-0711	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	85	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	4.2	2.1	2.1	N/A	N/A	N	N
20-0712	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	110	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	5.5	2.7	2.7	N/A	N/A	N	N
20-0713	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	185	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	9.2	4.6	4.6	N/A	N/A	N	N
20-0714	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	100	linear feet	H	S	1,5	SMC	Illinois EPA, M	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	N	N
20-0715	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	140	linear feet	M	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	7.0	3.5	3.4	N/A	N/A	N	N
20-0716	Village of Beach Park	Dead River	Stabilization	Stabilize eroding ravine slope	15	linear feet	M	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.7	0.4	0.4	N/A	N/A	N	N
20-0717	Village of Beach Park	Dead River	Stabilization	Stabilize eroding ravine slope	10	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.5	0.2	0.2	N/A	N/A	N	N
20-0718	Village of Beach Park	Dead River	Stabilization	Stabilize eroding ravine slope	25	linear feet	M	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	1.2	0.6	0.6	N/A	N/A	N	N
20-0719	Village of Beach Park	Dead River	Stabilization	Stabilize eroding ravine slope	7	linear feet	M	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.3	0.2	0.2	N/A	N/A	N	N
20-0721	Village of Beach Park	Dead River	Stabilization	Stabilize eroding ravine slope	15	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.7	0.4	0.4	N/A	N/A	N	N
20-0722	Village of Beach Park	Dead River	Stabilization	Stabilize eroding ravine slope	15	linear feet	M	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.7	0.4	0.4	N/A	N/A	N	N
20-1038	Village of Beach Park	Dead River	Stabilization	Stabilize erosion.	150	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	9.2	4.6	4.6	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0077	Village of Beach Park	Dead River	Stream/Ravine Restoration	Stabilize ravine & streambank erosion. Restore stream channel and improve instream habitat by installing and enhancing pools and riffles. Restore and manage the native riparian buffer plant communities along this reach by controlling invasive species, planting native species, and thinning forest and shrub vegetation.	895.3	linear feet	H	S	1,3,5,6	PO, M	DOT, Illinois EPA, M, SMC	$269,000		13.3	6.7	6.6	0.0	0.0	N	Y
20-0087	Village of Beach Park	Dead River	Stream/Ravine Restoration	Restore stream channel and improve instream habitat by installing and enhancing pools and riffles according to the American Fisheries Society guidelines. Address streambank erosion and slumping using bioengineering stabilization measures, which may help reduce the instream silt/sedimentation load. Manage and restore the wooded ravine. Restore and manage the native riparian buffer plant communities along this reach by controlling invasive species,	730.5	linear feet	H	M	1,3,5,6	PO, M	Illinois EPA, M, SMC	$237,000		10.9	5.4	5.4	0.0	0.0	N	Y
20-0104	Village of Beach Park	Dead River	Stream/Ravine Restoration	Conduct major channel restoration by removing debris and restoring a natural channel to this concrete-lined drainage ditch. Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, and thinning forest and shrub vegetation.	1009.2	linear feet	H	S	1,3,5,6	PO, DOT	Illinois EPA, M, SMC	$303,000		15.0	7.5	7.4	0.0	0.0	N	Y
20-0110	Village of Beach Park	Dead River	Stream/Ravine Restoration	Inspect footbridges and armored / concrete-lined banks along this reach for impacts on the stream corridor and remediate if necessary. Naturalize stream channel and improve instream habitat by enhancing pools and riffles. Stabilize streambank erosion and slumping using bioengineering stabilization measures. Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, and thinning forest and shrub vegetation.	2274.0	linear feet	M	M	1,3,5,6	PO, PD	DOT, Illinois EPA, DOT, Illinois EPA, M, SMCM	$682,000		33.9	17.0	16.8	0.0	0.0	N	Y
20-0115	Village of Beach Park	Dead River	Stream/Ravine Restoration	Restore a minimum 5 foot wide, deep-rooted native plant buffer to the stream edge within the golf course.	1.2	acre	M	M	1,5	PD, PO	Illinois EPA, M, SMC	$5,000		2.7	0.4	0.3	219.1	17.6	N	Y
20-0129	Village of Beach Park	Dead River	Stream/Ravine Restoration	Address streambank erosion and downcutting, some threatening homes and property. Stabilize major erosion and slumping of ravine bank using bioengineering stabilization measures. Remove debris jams. Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, and thinning forest and shrub vegetation. Manage and restore the wooded ravine.	2810.3	linear feet	H	M	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$843,000		41.9	20.9	20.7	0.0	0.0	N	Y
20-0143	Village of Beach Park	Dead River	Stream/Ravine Restoration	Restore stream channel and improve instream habitat by installing and enhancing pools and riffles and installing boulders, large rocks, and/or rootwads. Stabilize streambank erosion and slumping using bioengineering stabilization measures. Restore the native riparian buffer including thinning shrub layer, controlling invasive species, and planting native species. Manage and restore the wooded ravine.	2825.5	linear feet	H	M	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$1,541,000		76.6	38.3	37.9	0.0	0.0	N	Y
20-0159	Village of Beach Park	Dead River	Stream/Ravine Restoration	Stabilize streambank erosion and slumping using bioengineering stabilization measures. Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, and thinning forest and shrub vegetation. Manage and restore the wooded ravine.	279.0	linear feet	H	M	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$91,000		4.2	2.1	2.1	0.0	0.0	N	Y
20-0169	Village of Beach Park	Dead River	Stream/Ravine Restoration	Stabilize streambank erosion and slumping using bioengineering stabilization measures. Stabilize channel erosion and downcutting. Restore and manage the native riparian buffer plant communities along this reach by controlling invasive species, planting native species, and thinning forest and shrub vegetation. Manage and restore the wooded ravine.	1681.0	linear feet	H	M	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$504,000		25.1	12.5	12.4	0.0	0.0	N	Y
20-0176	Village of Beach Park	Dead River	Stream/Ravine Restoration	Restore stream channel and improve instream habitat by installing and enhancing pools/riffles. Stabilize streambank erosion and slumping using bioengineering stabilization measures. Stabilize channel erosion and downcutting . Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, thinning forest and shrub vegetation. Manage wooded ravine.	2528.0	linear feet	L	S	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$1,389,000		69.0	34.5	34.2	0.0	0.0	N	Y
20-0187	Village of Beach Park	Dead River	Stream/Ravine Restoration	Restore and manage the native riparian buffer plant communities controlling invasive species, planting native species, and thinning forest and shrub vegetation.	3.6	acre	L	M	1,3,5,6	PO	Illinois EPA, M, SMC	$16,000	$36,000	0.0	0.0	0.0	0.0	0.0	N	Y
20-0319	Village of Beach Park	Dead River	Stream/Ravine Restoration	Stabilize streambank erosion using bioengineering stabilization measures. Restore and manage the native riparian buffer plant communities by controlling invasive species, planting native species, thinning forest and shrub vegetation to allow more ground vegetation.	1228.5	linear feet	M	M	1,3,5,6	PO	Illinois EPA, M, SMC	$1,029,000		51.1	25.6	25.3	0.0	0.0	N	Y
20-0725	Village of Beach Park	Dead River	Stream/Ravine Restoration	Concrete channel is failing. Replace using bioengineering stabilization practices where feasible.	177.4	linear feet	H	S	1,5	M, PO	DOT, Illinois EPA, SMC	$53,000		2.6	1.3	1.3	0.0	0.0	N	N
20-0063	Village of Beach Park	Dead River	Water Infrastructure	Inspect culverts for damage and debris.	1889.5	linear feet	M	L	2	M, DOY	Illinois EPA	$0		0.0	0.0	0.0	0.0	0.0	N	Y
20-0100	Village of Beach Park	Dead River	Water Infrastructure	Address failed concrete wall armoring and major erosion behind the armoring by removing the concrete and using bioengineering stabilization measures.	1	each	H	S	2,5	PO	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0102	Village of Beach Park	Dead River	Water Infrastructure	Stabilize erosion at and below outfall using bioengineering stabilization measures.	1	each	H	S	2,5	PO, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0103	Village of Beach Park	Dead River	Water Infrastructure	Repair failed clay outfall pipe and address erosion around outfall using bioengineering stabilization measures.	1	each	H	S	2,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0118	Village of Beach Park	Dead River	Water Infrastructure	Remove debris blocking culvert and repair, remediate, and/or stabilize the exposed culvert.	1	each	M	S	2,5	DOT, PO	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0119	Village of Beach Park	Dead River	Water Infrastructure	Stabilize erosion undermining the culvert.	1	each	M	S	2,5	PD	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0132	Village of Beach Park	Dead River	Water Infrastructure	Repair broken cement outfall pipe and stabilize surrounding erosion using bioengineering stabilization measures.	1	each	M	L	2,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0158	Village of Beach Park	Dead River	Water Infrastructure	Stabilize erosion around capped outfall pipe using bioengineering stabilization measures.	1	each	L	L	2,5	PO, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0163	Village of Beach Park	Dead River	Water Infrastructure	Remove debris from outfall channel and assess armoring for impact on stream; if negative impact is found, remove armoring and stabilize with bioengineering approach.	1	each	M	S	2,5	PO, DOT	Illinois EPA, M	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0181	Village of Beach Park	Dead River	Water Infrastructure	Stabilize significant erosion and remove attempted stabilization debris around culvert using bioengineering stabilization measures.	1	each	M	M	2,5	PO	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0184	Village of Beach Park	Dead River	Water Infrastructure	Stabilize erosion around culvert using bioengineering stabilization measures.	1	each	M	M	2,5	DOT	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0186	Village of Beach Park	Dead River	Water Infrastructure	Repair or remediate cracked concrete armoring at outfall.	1	each	L	L	2	PO, DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0210	Village of Beach Park	Dead River	Water Infrastructure	Stabilize and strengthen the incised discharge channel.	1	each	H	S	2,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	Y
20-0726	Village of Beach Park	Dead River	Water Infrastructure	Continue to maintain the artificial subterranean section of Bull Creek and create a long-term replacement or removal plan.	569.0	linear feet	H	S	2,5	M	DOT, Illinois EPA, SMC, PO	$75,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0552	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$23,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0564	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$12,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0575	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.9	acre	L	L	2,3,5	LCFPD, PO	Illinois EPA, M, USFWS, USACE, SMC	$229,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0582	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	6.1	acre	L	L	2,3,5	PO, SI	DOT, Illinois EPA, M, USFWS, USACE, SMC	$202,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0585	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.2	acre	L	L	2,3,5	PO, PD	Illinois EPA, M, USFWS, USACE, SMC	$39,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0588	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	M	M	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$22,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0591	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.8	acre	L	L	2,3,5	M, PO	DOT, Illinois EPA, USFWS, USACE, SMC	$26,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0593	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.6	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$85,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0594	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.0	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$33,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0595	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.1	acre	M	L	2,3,5	PO, M	DOT, Illinois EPA, M, USFWS, USACE, SMC	$135,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0596	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.0	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$97,000		0.0	0.0	0.0	0.0	0.0	N	Y
20-0607	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	19.0	acre	M	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$626,000		0.0	0.0	0.0	0.0	0.0	N	Y
BEA-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	SI	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO, DOT	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
HLD-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$6,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	L	3,5,6	PO, PD	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	20.3	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$203,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	89.6	acre	L	L	3,5,6	LCFPD	RR, USFWS, USACE, SMC	$896,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	103.7	acre	M	L	3,5,6	LCFPD, PO	DOT, USFWS, USACE, SMC	$1,037,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	RR, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.3	acre	L	L	3,5,6	RR	M, USFWS, USACE, SMC	$3,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR, DOT	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	DOT, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR, DOT	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR, RR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PD	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	DOT, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	DOT, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR, NSWRD	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	20.2	acre	L	L	3,5,6	RR, PO, IDNR	USFWS, USACE, SMC	$202,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	96.9	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$969,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PD, PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	L	3,5,6	PD, PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	17.8	acre	M	L	3,5,6	PO, RR	DOT, M, USFWS, USACE, SMC	$178,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	M	L	3,5,6	DOT	M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WHR-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Beach Park	Dead River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$7,000		N/A	N/A	N/A	N/A	N/A	N	N
19-0630	Village of Beach Park	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.2	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$105,000		0.0	0.0	0.0	0.0	0.0	Y	Y
HLD-WLE	Village of Beach Park	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	SI	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Beach Park	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Beach Park	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Beach Park	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	RR	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Beach Park	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
20-0045	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	17.4	acre	H	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$1,510,000		21.8	3.4	1.4	837.9	73.8	N	Y
20-0527	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$24,000		0.4	0.1	0.0	14.9	0.9	N	Y
20-0531	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.4	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$207,000		2.8	0.4	0.2	92.3	7.2	N	Y
20-0553	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.0	acre	H	M	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$86,000		2.9	0.4	0.2	59.5	6.1	N	Y
20-0554	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.4	acre	M	S	2,3,5,6	PO, PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$123,000		4.1	0.5	0.2	85.1	8.8	N	Y
20-0555	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.8	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$241,000		8.1	1.0	0.5	165.8	17.1	N	Y
20-0559	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO, M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$40,000		0.7	0.1	0.0	29.9	2.1	N	Y

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0560	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.3	0.0	0.0	13.6	1.0	N	Y
20-0563	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.8	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$160,000		3.0	0.5	0.2	133.3	9.4	N	Y
20-0565	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO, M	Illinois EPA, IDNR, USFWS, USACE, SMC	$25,000		0.5	0.1	0.0	20.8	1.5	N	Y
20-0566	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	4.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$404,000		7.5	1.1	0.5	336.0	23.7	N	Y
20-0567	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$179,000		3.3	0.5	0.2	148.7	10.5	N	Y
20-0568	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$101,000		1.9	0.3	0.1	83.8	5.9	N	Y
20-0569	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$20,000		0.3	0.0	0.0	12.0	0.9	N	Y
20-0570	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$21,000		0.3	0.1	0.0	13.1	1.0	N	Y
20-0571	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.5	0.1	0.0	20.3	1.5	N	Y
20-0572	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO, PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		1.0	0.1	0.1	20.3	2.1	N	Y
20-0604	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	M	Illinois EPA, IDNR, USFWS, USACE, SMC	$24,000		0.4	0.1	0.0	18.0	1.3	N	Y
20-0737	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.1	acre	M	L	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$179,000		2.6	0.4	0.2	101.1	8.6	N	N
20-0745	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$22,000		0.3	0.0	0.0	12.2	1.1	N	N
20-0746	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$49,000		0.7	0.1	0.0	27.3	2.3	N	N
20-0775	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.4	0.1	0.0	12.2	1.1	N	N
20-0778	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO, DOT	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$24,000		0.5	0.1	0.0	15.9	1.4	N	N
20-0779	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$82,000		1.1	0.2	0.1	45.5	3.0	N	N
20-0780	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$201,000		2.8	0.4	0.2	112.3	7.4	N	N
20-0781	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$228,000		10.3	1.2	0.6	167.0	21.2	N	N
20-0788	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$23,000		0.3	0.1	0.0	12.7	1.1	N	N
20-0793	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$42,000		0.6	0.1	0.0	23.6	2.0	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0794	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$79,000		1.2	0.2	0.1	44.3	3.8	N	N
20-0795	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$32,000		0.6	0.1	0.0	29.3	1.9	N	N
20-0798	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.3	0.1	0.0	11.3	0.9	N	N
20-0799	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	5.0	0.4	N	N
20-0800	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$196,000		2.7	0.4	0.2	87.1	6.8	N	N
20-0801	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$49,000		0.7	0.1	0.0	21.9	1.7	N	N
20-0802	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	4.0	0.3	N	N
20-0803	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$116,000		1.6	0.2	0.1	51.6	4.0	N	N
20-0804	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$16,000		0.2	0.0	0.0	7.0	0.5	N	N
20-0808	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PD, PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$72,000		1.0	0.1	0.1	31.9	2.5	N	N
20-0811	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$98,000		1.4	0.2	0.1	54.8	3.6	N	N
20-0815	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$38,000		0.3	0.1	0.0	19.5	1.0	N	N
20-0840	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$37,000		0.5	0.1	0.0	20.7	1.4	N	N
20-0841	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	12.0	0.8	N	N
20-0843	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$21,000		0.3	0.0	0.0	11.8	0.8	N	N
20-0845	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$34,000		0.5	0.1	0.0	19.1	1.3	N	N
20-0846	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$38,000		0.5	0.1	0.0	21.1	1.4	N	N
20-0847	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	5.0	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$437,000		6.1	1.0	0.4	243.9	16.1	N	N
20-0848	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	2.9	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$251,000		3.5	0.6	0.2	140.0	9.2	N	N
20-0859	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	6.5	0.5	N	N
20-0861	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$37,000		0.6	0.1	0.0	22.5	1.7	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0862	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	9.3	0.7	N	N
20-0864	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$140,000		2.1	0.3	0.1	86.2	6.5	N	N
20-0865	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.2	0.0	0.0	8.0	0.6	N	N
20-0866	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO, DOT, M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$27,000		0.5	0.1	0.0	22.3	1.6	N	N
20-0867	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$60,000		1.0	0.2	0.1	44.8	3.2	N	N
20-0868	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.0	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$91,000		1.4	0.2	0.1	55.8	4.2	N	N
20-0869	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	M	Illinois EPA, IDNR, USFWS, USACE, SMC	$38,000		0.5	0.1	0.0	21.0	1.9	N	N
20-0870	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.8	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$69,000		1.0	0.2	0.1	38.1	3.4	N	N
20-0878	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$39,000		0.3	0.0	0.0	10.1	0.7	N	N
20-0879	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.4	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$125,000		0.9	0.2	0.1	32.1	2.1	N	N
20-0882	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	5.5	0.4	N	N
20-0883	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$27,000		0.4	0.1	0.0	16.5	1.2	N	N
20-0885	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$93,000		1.4	0.2	0.1	58.2	3.5	N	N
20-0886	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$30,000		0.4	0.1	0.0	16.2	1.0	N	N
20-0887	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.2	0.0	0.0	9.1	0.6	N	N
20-0888	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$36,000		0.8	0.1	0.1	36.3	2.3	N	N
20-0889	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	9.7	0.6	N	N
20-0890	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.3	0.1	0.0	15.7	1.0	N	N
20-0891	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	10.2	0.6	N	N
20-0892	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.2	0.0	0.0	10.8	0.7	N	N
20-0893	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$110,000		1.6	0.2	0.1	52.3	3.4	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
20-0896	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.7	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$144,000		2.3	0.3	0.1	67.3	5.2	N	N
20-0905	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$41,000		0.7	0.1	0.0	19.0	1.5	N	N
20-0906	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.3	0.0	0.0	9.1	0.7	N	N
20-0907	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$79,000		1.3	0.2	0.1	36.7	2.8	N	N
20-0909	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$23,000		0.3	0.1	0.0	14.1	0.9	N	N
20-0917	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	RR	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$48,000		0.6	0.1	0.0	25.8	1.6	N	N
20-0920	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO, RR	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$24,000		0.3	0.0	0.0	11.7	1.0	N	N
20-0967	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	1.3	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$113,000		1.4	0.2	0.1	61.5	3.8	N	N
20-0979	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.4	0.1	0.0	19.5	1.2	N	N
20-0980	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.3	0.0	0.0	15.3	1.0	N	N
20-0982	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.3	0.0	0.0	11.2	0.7	N	N
20-0983	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	4.6	0.4	N	N
20-0990	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$17,000		0.2	0.0	0.0	9.6	0.6	N	N
20-1013	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$17,000		0.3	0.1	0.0	15.7	1.0	N	N
20-1015	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.3	0.0	0.0	10.0	0.9	N	N
20-1016	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.3	0.0	0.0	8.3	0.6	N	N
20-1021	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$16,000		0.2	0.0	0.0	9.9	0.7	N	N
20-1022	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	8.5	0.5	N	N
20-1035	Village of Beach Park	Dead River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$40,000		0.7	0.1	0.1	33.1	2.3	N	Y
19-0284	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		0.6	0.1	0.0	18.6	1.3	N	Y
19-0314	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	7.2	acre	H	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$625,000		12.1	1.6	0.8	355.5	29.6	Y	Y

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0746	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	1.3	acre	M	L	2,3,5,6	PO, M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$112,000		2.2	0.3	0.1	72.3	4.9	N	N
19-0757	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$30,000		0.6	0.1	0.0	19.6	1.3	N	N
19-0851	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	4.3	acre	M	L	2,3,5,6	PO, SI	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$376,000		7.4	1.0	0.5	242.4	16.4	N	N
19-0854	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.3	0.0	0.0	8.9	0.6	N	N
19-0855	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$49,000		1.0	0.1	0.1	31.6	2.1	N	N
19-0856	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.2	0.0	0.0	6.2	0.4	N	N
19-0857	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	1.4	acre	M	L	2,3,5,6	SI	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$124,000		2.4	0.3	0.2	80.2	5.4	N	N
19-0879	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	2.8	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$240,000		4.7	0.7	0.3	155.0	10.5	N	N
19-0880	Village of Beach Park	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.3	0.0	0.0	9.7	0.7	N	N
21-0089	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$23,000		0.7	0.1	0.0	17.8	1.6	Y	N
21-0090	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	1.0	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$86,000		2.8	0.4	0.2	66.6	6.1	Y	N
21-0096	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.9	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$81,000		1.4	0.2	0.1	69.2	4.0	N	N
21-0097	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	1.8	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$159,000		2.7	0.4	0.2	136.9	7.9	N	N
21-0123	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.4	0.1	0.0	16.7	1.0	N	N
21-0124	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.5	0.1	0.0	21.1	1.3	N	N
21-0125	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO, M	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$38,000		0.9	0.1	0.1	35.5	2.2	N	N
21-0126	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.6	0.1	0.0	23.4	1.5	N	N
21-0127	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$55,000		1.3	0.2	0.1	52.1	3.3	N	N
21-0128	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.8	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$72,000		1.7	0.2	0.1	68.5	4.3	N	N
21-0192	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$17,000		0.3	0.0	0.0	15.0	0.9	N	N
21-0193	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$20,000		0.5	0.1	0.0	18.9	1.2	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
21-0194	Village of Beach Park	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$21,000		0.5	0.1	0.0	20.3	1.3	N	N
20-0897	Village of Beach Park, City of Zion	Dead River	Wetland Restoration	Create new wetland.	2.0	acre	M	L	2,3,5,6	PO, M	Illinois EPA, IDNR, USFWS, USACE, SMC	$173,000		2.5	0.4	0.2	106.2	7.0	N	N
20-0821	Village of Beach Park, Lake County Forest Preserve District	Dead River	Wetland Restoration	Create new wetland.	2.7	acre	M	L	2,3,5,6	LCFPD, PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$232,000		3.3	0.6	0.2	142.3	9.4	N	N
23-0133	Village of Glencoe	Bluff/Ravine	Beach Management	Conduct illicit discharge investigations for sewage sources in nearby storm sewers. Mitigate stormwater flow to nearby storm sewers or from direct drainage using Green Infrastructure . Reduce gull contribution to nearshore E. coli concentrations.	1	each	M	M	1,5	PD, M	<Null>	$1,000,000	$4,893,000	4.0	0.9	0.5	661.2	53.2	N	Y
23-0027	Village of Glencoe	Bluff/Ravine	Critical Infrastructure	Monitor lake level impacts to water treatment infrastructure to determine if remedial action is necessary.	1	each	H	L	1,2	M	Illinois EPA	$75,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0051	Village of Glencoe	Bluff/Ravine	Debris Jam	Remove debris obstructing flow using American Fisheries Society guidelines.	1	each	H	M	2	PO	M, MWRD	$11,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0132	Village of Glencoe	Bluff/Ravine	Flood Risk Reduction	Follow recommendations of flood reduction study that was being conducted by Glencoe at the time of the Watershed-Based Plan update.	1	each	H	M	2	M	DOT, MWRD, PO			0.0	0.0	0.0	0.0	0.0	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	37.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	33.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	21.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	21.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	21.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	21.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	21.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-GI	Village of Glencoe	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	Village of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
GLN-RSM	VIllage of Glencoe	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
23-0069	Village of Glencoe	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and streambank erosion.	169.8	linear feet	M	L	1,5	M, PO	Illinois EPA, SMC	$62,000		3.1	1.5	1.5	0.0	0.0	N	N
23-0071	Village of Glencoe	Bluff/Ravine	Stream/Ravine Restoration	Stabilize gully erosion.	84.4	linear feet	L	L	1,5	M, PO	Illinois EPA, MWRD	$25,000		1.3	0.6	0.6	0.0	0.0	N	N
23-0072	Village of Glencoe	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and streambank erosion.	205.4	linear feet	M	L	1,5	M, PO	Illinois EPA, MWRD	$62,000		3.1	1.5	1.5	0.0	0.0	N	N
23-0073	Village of Glencoe	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and streambank erosion.	93.4	linear feet	M	L	1,5	M, PO	Illinois EPA, MWRD	$28,000		1.4	0.7	0.7	0.0	0.0	N	N
23-0074	Village of Glencoe	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and streambank erosion.	119.3	linear feet	M	L	1,5	M, PO	DOT, Illinois EPA, MWRD	$36,000		1.8	0.9	0.9	0.0	0.0	N	N
23-0078	Village of Glencoe	Bluff/Ravine	Stream/Ravine Restoration	Stabilize eroding ravine bed and banks.	550.7	linear feet	M	L	1,5	M, PO	Illinois EPA, MWRD	$150,000		7.5	3.7	3.7	0.0	0.0	N	N
23-0079	Village of Glencoe	Bluff/Ravine	Stream/Ravine Restoration	Spot treat eroding gullies and slopes.	228.7	linear feet	M	L	1,5	M, PO	Illinois EPA, MWRD	$15,000		0.7	0.4	0.4	0.0	0.0	N	N
23-0091	Village of Glencoe	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine and stream.	433.4	linear feet	L	L	1,5	PO	Illinois EPA, M, MWRD	$130,000		6.5	3.2	3.2	0.0	0.0	N	N
23-0008	Village of Glencoe	Bluff/Ravine	Water Infrastructure	Remove legacy structure.	1	each	L	L	2	M, PO	Illinois EPA, MWRD	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0009	Village of Glencoe	Bluff/Ravine	Water Infrastructure	Repair stormwater outlet, install energy dissipating BMP and stabilize erosion.	1	each	M	L	2,5	M, PO	Illinois EPA, MWRD	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0010	Village of Glencoe	Bluff/Ravine	Water Infrastructure	Consider moving outfall discharge north of beach to reduce nearshore water quality impact at bathing beach.	1	each	L	L	5	M	Illinois EPA, MWRD	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0026	Village of Glencoe	Bluff/Ravine	Water Infrastructure	Stabilize erosion near stormwater energy dissipating structure.	1	each	M	M	2,5	M, PO	Illinois EPA, MWRD	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	N	N
23-0070	Village of Glencoe	Bluff/Ravine	Water Infrastructure	Investigate potential alternative options for sanitary sewer line under ravine.	1	each	L	L	1,5	M	MWRD, PO	$0		0.0	0.0	0.0	0.0	0.0	N	N
23-0613	Village of Lake Bluff	Bluff/Ravine	Beach Management	Conduct adequate maintenance at the sanitary sewer lift station to prevent overflows. Reduce gull contribution to nearshore E. coli concentrations. Improve deep grooming of the beach sand.	1	each	M	M	1,3,5	PD, M	Illinois EPA	$36,000		0.0	0.0	0.0	0.0	0.0	N	Y
23-0114	Village of Lake Bluff	Bluff/Ravine	Flood Risk Reduction	Install stormwater infrastructure to reduce flood risk to 2% probability (50 year) flood event.	1	each	H	S	2	DOT, M	SMC	$16,000,000		0.0	0.0	0.0	0.0	0.0	N	N
22-0004	Village of Lake Bluff	Pettibone Creek	Flood Risk Reduction	Investigate options for reducing flooding in the vicinity of Tangley Oaks and Campbell Ct.	1	each	H	S	2	M, HOA, PO	DOT, SMC	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	DOT	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.1	acre	M	L	1,2,3,5	PO, HOA, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	2.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.4	acre	M	L	1,2,3,5	M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO, HOA	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO, HOA	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	67.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.0	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.9	acre	M	L	1,2,3,5	PO, HOA	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO, RR	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO, M, RR		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-GI	Village of Lake Bluff	Pettibone Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	32.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	18.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LKB-RSM	Village of Lake Bluff	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	25.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	8.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	9.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	16.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
LKB-RSM	Village of Lake Bluff	Pettibone Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
23-0084	Village of Lake Bluff	Bluff/Ravine	Stream/Ravine Restoration	Stabilize eroding ravine bed and slopes	638.4	linear feet	M	M	1,5	PO	Illinois EPA, M, SMC	$165,000		8.2	4.1	4.1	0.0	0.0	N	N
23-0116	Village of Lake Bluff	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine erosion. Repair and stabilize failing outfalls/culverts. Reduce flood risk near the intersection of Birch Rd. and Blodgett Ave.	698.0	linear feet	H	S	1,3,5	M, PO	Illinois EPA, SMC	$227,000		20.8	10.4	10.3	0.0	0.0	N	N
BEA-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	HOA, PO	DOT, M, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$22,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.9	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$39,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.0	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$40,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	M	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	31.9	acre	L	L	3,5,6	LCFPD, IDNR	USFWS, USACE, SMC	$319,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	PO, HOA	M, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$37,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.9	acre	L	L	3,5,6	IDNR, RR, PO	USFWS, USACE, SMC	$39,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.0	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$40,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$41,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	13.4	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$134,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	40.8	acre	L	L	3,5,6	IDNR	DOT, USFWS, USACE, SMC	$408,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	83.4	acre	L	L	3,5,6	IDNR, RR, PO	DOT, USFWS, USACE, SMC	$834,000		N/A	N/A	N/A	N/A	N/A	N	N
TBEN-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	M	L	3,5,6	PO	DOT, T, PB&D, USFWS, USACE, SMC	$22,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WAK-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	PO, HOA	DOT, M, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	PD	DOT, M, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.6	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$36,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.7	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$37,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	12.6	acre	M	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$126,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.5	acre	L	L	3,5,6	M, PO, RR	DOT, SMC, USFWS, USACE	$35,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.1	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$41,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Lake Bluff	Bluff/Ravine	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.3	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$23,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	M	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	PO, HOA	DOT, M, USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.8	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$18,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	PO	DOT, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$22,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	SI, PO	M, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.0	acre	L	L	3,5,6	PO, SI, M	DOT, USFWS, USACE, SMC	$20,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	L	L	3,5,6	SI, PO, M	DOT, USFWS, USACE, SMC	$22,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	PO, M	DOT, M, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$13,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	PD, PO	DOT, M, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.0	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$20,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.1	acre	L	L	3,5,6	PD, PO	DOT, M, USFWS, USACE, SMC	$21,000		N/A	N/A	N/A	N/A	N/A	N	N
NAV-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	NAVY	USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
NCH-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	IDNR	DOT, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	IDNR, PD	DOT, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	PO	USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.0	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$20,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.0	acre	L	L	3,5,6	IDNR, PO	USFWS, USACE, SMC	$20,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$21,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$21,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.1	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$21,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$22,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	L	L	3,5,6	PO, IDNR	USFWS, USACE, SMC	$22,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	30.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$303,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	56.8	acre	L	L	3,5,6	IDNR, PO	DOT, RR, USFWS, USACE, SMC	$568,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.8	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$18,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	PO, RR	DOT, M, USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$22,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	42.3	acre	L	L	3,5,6	PO, PD, M	USFWS, USACE, SMC	$423,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.0	acre	M	L	3,5,6	M	DOT, USFWS, USACE, SMC	$20,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.1	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$21,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.5	acre	L	L	3,5,6	RR, M	DOT, USFWS, USACE, SMC	$15,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.8	acre	L	L	3,5,6	RR	M, USFWS, USACE, SMC	$18,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	PO, IDNR	M, USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Lake Bluff	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.1	acre	L	L	3,5,6	SI	M, USFWS, USACE, SMC	$21,000		N/A	N/A	N/A	N/A	N/A	N	N
23-0142	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$63,000		1.3	0.2	0.1	58.7	3.6	N	N
23-0153	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.3	0.0	0.0	9.4	0.9	N	N
23-0154	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$56,000		1.2	0.2	0.1	52.3	3.2	N	N
23-0155	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$39,000		0.8	0.1	0.1	35.8	2.2	N	N
23-0156	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.9	acre	L	L	2,3,5,6	PD	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$77,000		1.6	0.2	0.1	71.1	4.3	N	N
23-0157	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PD	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$39,000		0.8	0.1	0.1	36.4	2.2	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
23-0166	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.0	0.0	0.0	2.4	0.1	N	N
23-0167	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$13,000		0.3	0.0	0.0	15.0	0.8	N	N
23-0168	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	1.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$103,000		2.3	0.4	0.2	116.0	6.2	N	N
23-0169	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$44,000		0.2	0.0	0.0	10.2	0.4	N	N
23-0173	Village of Lake Bluff	Bluff/Ravine	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$13,000		0.3	0.0	0.0	12.0	0.7	N	N
22-0012	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$31,000		0.4	0.1	0.0	20.2	1.0	N	N
22-0013	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	3.5	acre	M	L	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$306,000		3.7	0.7	0.3	199.3	9.6	N	N
22-0014	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$35,000		0.4	0.1	0.0	23.0	1.1	N	N
22-0015	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	PO	Illinois EPA, M, USFWS, USACE, SMC, IDNR	$35,000		0.4	0.1	0.0	22.7	1.1	N	N
22-0024	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.8	acre	L	L	2,3,5,6	HOA, PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$71,000		0.9	0.2	0.1	46.5	2.2	N	N
22-0025	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	HOA	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$16,000		0.3	0.0	0.0	12.2	0.8	N	N
22-0028	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$27,000		0.3	0.1	0.0	17.6	0.8	N	N
22-0029	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$45,000		0.5	0.1	0.0	29.5	1.4	N	N
22-0030	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$62,000		0.8	0.1	0.1	40.6	2.0	N	N
22-0031	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	14.0	0.7	N	N
22-0032	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.6	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$50,000		0.6	0.1	0.0	32.9	1.6	N	N
22-0033	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$53,000		0.6	0.1	0.0	34.9	1.7	N	N
22-0034	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.1	0.0	0.0	7.5	0.4	N	N
22-0035	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$43,000		0.5	0.1	0.0	28.4	1.4	N	N
22-0036	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	1.8	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$154,000		1.9	0.3	0.1	100.7	4.9	N	N
22-0037	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.4	0.1	0.0	21.2	1.0	N	N

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
22-0038	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.4	0.1	0.0	17.0	1.1	N	N
22-0039	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$30,000		0.6	0.1	0.0	23.1	1.4	N	N
22-0040	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	HOA, PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$38,000		0.7	0.1	0.0	29.2	1.8	N	N
22-0041	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	HOA, PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$32,000		0.6	0.1	0.0	24.5	1.5	N	N
22-0043	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$59,000		0.7	0.1	0.1	38.7	1.9	N	N
22-0048	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	7.5	0.4	N	N
22-0049	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	6.6	0.3	N	N
22-0050	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.1	0.0	0.0	7.8	0.4	N	N
22-0051	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.1	0.0	0.0	7.4	0.4	N	N
22-0054	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$16,000		0.2	0.0	0.0	10.5	0.5	N	N
22-0055	Village of Lake Bluff	Pettibone Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$17,000		0.2	0.0	0.0	10.9	0.5	N	N
19-0716	Village of Pleasant Prairie	Kellogg Creek	Debris Jam	Remove debris from culvert	1	each	H	M	2	DOT	M	$11,000		N/A	N/A	N/A	N/A	N/A	Y	N
19-8001	Village of Pleasant Prairie	Kellogg Creek	Detention Basin Retrofit	Inventory detention basin	1	each	L	L	2	M	PO	$0		0.0	0.0	0.0	0.0	0.0	N	N
19-8002	Village of Pleasant Prairie	Kellogg Creek	Detention Basin Retrofit	Inventory detention basin	1	each	L	L	2	M	PO	$0		0.0	0.0	0.0	0.0	0.0	Y	N
19-8009	Village of Pleasant Prairie	Kellogg Creek	Detention Basin Retrofit	Inventory detention basin	1	each	L	L	2	M	PO	$0		0.0	0.0	0.0	0.0	0.0	N	N
19-8010	Village of Pleasant Prairie	Kellogg Creek	Detention Basin Retrofit	Inventory detention basin	1	each	L	L	2	M	PO	$0		0.0	0.0	0.0	0.0	0.0	N	N
19-0610	Village of Pleasant Prairie	Kellogg Creek	Filter Strip	Install agricultural BMPs to reduce pollutant / sediment loading. Details reflect installation of filter strips.	1.5	acre	M	S	5	PO	Illinois EPA, M, SMC	$54,000		57.8	10.9	6.4	8675.7	468.0	Y	Y
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	11.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	43.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	56.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	79.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-GI	Village of Pleasant Prairie	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
PLP-RSM	Village of Pleasant Prairie	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	3.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
PLP-RSM	Village of Pleasant Prairie	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
19-0196	Village of Pleasant Prairie	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion along entire reach using bioengineering stabilization practices.	294.6	linear feet	L	M	1,5	PO	Illinois EPA, M, SMC	$96,000		4.4	2.2	2.2	0.0	0.0	Y	Y
19-0200	Village of Pleasant Prairie	Kellogg Creek	Water Infrastructure	Remove silt / sedimentation from discharge pipe.	1	each	L	L	2	PO	M	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0259	Village of Pleasant Prairie	Kellogg Creek	Water Infrastructure	Address significant erosion at / around clay pipe outfall using bioengineering stabilization measures.	1	each	M	S	2,5	PO	M	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
23-0134	Village of Winnetka	Bluff/Ravine	Beach Management	Utilize beach sanitary surveys to determine potential sources of E. coli. Mitigate runoff from impervious surfaces directly connected to the beach. Reduce gull contribution to nearshore E. coli concentrations.	1	each	L	L	1,5	PD, M	<Null>	$51,000	$216,000	0.1	0.0	0.0	10.7	1.9	N	Y

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
23-0135	Village of Winnetka	Bluff/Ravine	Beach Management	Utilize beach sanitary surveys to determine potential sources of E. coli, including some sampling north of the beach to determine if the neighboring industrial facility is impacting E. coli conditions. This sampling is suggested based on aerial photographs that show a sediment plume near the cooling ponds associated with this facility. Mitigate runoff from impervious surfaces directly connected to the beach. Reduce gull contribution to nearshore E. coli concentrations.	1	each	L	L	1,5	PD, M	<Null>	$47,000	$197,000	0.1	0.0	0.0	9.7	1.7	N	Y
23-0136	Village of Winnetka	Bluff/Ravine	Beach Management	Utilize beach sanitary surveys to determine potential sources of E. coli. Mitigate runoff from impervious surfaces direct connected to the beach. Reduce gull contribution to nearshore E. coli concentrations.	1	each	L	L	1,5	PD, M	<Null>	$27,000	$96,000	0.1	0.0	0.0	4.4	0.8	N	Y
WKA-GI	Village of Winnetka	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WKA-GI	Village of Winnetka	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WKA-GI	Village of Winnetka	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	45.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WKA-GI	Village of Winnetka	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	45.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WKA-GI	Village of Winnetka	Bluff/Ravine	Green Infrastructure	Preserve the green infrastructure benefits of this area.	45.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WKA-RSM	Village of Winnetka	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WKA-RSM	Village of Winnetka	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	5.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WKA-RSM	Village of Winnetka	Bluff/Ravine	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
23-0126	Village of Winnetka	Bluff/Ravine	Stream/Ravine Restoration	Stabilize ravine.	692.5	linear feet	M	L	1,3,5,6	PO	Illinois EPA, M, MWRD	$225,000		20.6	10.3	10.2	0.0	0.0	N	N
23-0088	Village of Winnetka	Bluff/Ravine	Water Infrastructure	Install relief sewer. See Village of Winnetka Stormwater Master Plan for additional information.	1	each	H	M	2	M	DOT, MWRD	$1,163,000		0.0	0.0	0.0	0.0	0.0	N	N
23-0089	Village of Winnetka	Bluff/Ravine	Water Infrastructure	Install storm sewer outlet. See Village of Winnetka Stormwater Master Plan for additional information.	1	each	H	M	2	M	MWRD	$399,000		0.0	0.0	0.0	0.0	0.0	N	N
19-0644	Village of Winthrop Harbor	Kellogg Creek	Beach Management	Update beach management plan to account for varying Lake Michigan water levels. Reduce gull contribution to nearshore E. coli concentrations.. Conduct deep beach grooming. Increase the slope of the beach to improve beach drainage and minimize saturated areas.	1	each	H	S	1,5	M	Illinois EPA	$135,000	$215,000	0.0	0.0	0.0	0.0	0.0	N	Y
19-0183	Village of Winthrop Harbor	Kellogg Creek	Debris Jam	Remove debris jam obstructing flow using American Fisheries Society guidelines. Assumes debris causes Low streambank erosion.	1	each	H	M	2	PO	M	$11,000		N/A	N/A	N/A	N/A	N/A	Y	Y
19-0082	Village of Winthrop Harbor	Kellogg Creek	Detention Basin Retrofit	1. Stabilize erosion from southern inlet 2. Repair SW inlet	1	each	L	L	2,5	M	Illinois EPA, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-0085	Village of Winthrop Harbor	Kellogg Creek	Detention Basin Retrofit	Stabilize shoreline erosion	1	each	M	M	2,5	HOA	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-0086	Village of Winthrop Harbor	Kellogg Creek	Detention Basin Retrofit	Unclog restrictor	1	each	M	L	2	PO	M	$5,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-0167	Village of Winthrop Harbor	Kellogg Creek	Detention Basin Retrofit	1. Repair outlet 2. Stabilize severe erosion around restrictor	1	each	M	M	2,5	SI	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-0168	Village of Winthrop Harbor	Kellogg Creek	Detention Basin Retrofit	1. Stabilize shoreline erosion 2. Unclog restrictor	1	each	M	M	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-8012	Village of Winthrop Harbor	Kellogg Creek	Detention Basin Retrofit	1. Repair gap between E inlet FES and pipe. 2. Stabilize erosion from sump pump discharges.	1	each	L	L	2,5	PO	Illinois EPA, M, SMC	$55,000		0.0	0.0	0.0	0.0	0.0	Y	N
19-8020	Village of Winthrop Harbor	Kellogg Creek	Detention Basin Retrofit	Investigate potential illicit discharge.	1	each	M	S	5	LCHD	M	$500		0.0	0.0	0.0	0.0	0.0	Y	N
19-0276	Village of Winthrop Harbor	Kellogg Creek	Filter Strip	Install agricultural BMPs to reduce pollutant / sediment loading. Details reflect installation of filter strips.	1.3	acre	M	S	5	PO	Illinois EPA, M, SMC	$42,000		13.5	2.4	1.4	1620.2	106.4	Y	Y
19-0077	Village of Winthrop Harbor	Kellogg Creek	Flood Risk Reduction	Implement flood reduction measures.	1	each	H	S	2	M	SMC	$2,000,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0724	Village of Winthrop Harbor	Kellogg Creek	Flood Risk Reduction	Identify stormwater infrastructure improvements needed to reduce localized flooding in this area.	1	each	M	L	2	M	DOT, SMC, PO	$75,000		0.0	0.0	0.0	0.0	0.0	N	N
19-0726	Village of Winthrop Harbor	Kellogg Creek	Flood Risk Reduction	Install green infrastructure or other flood reduction practices where feasible.	1	each	M	L	2,5	PO, M	SMC	$0		0.0	0.0	0.0	0.0	0.0	Y	N
19-0727	Village of Winthrop Harbor	Kellogg Creek	Flood Risk Reduction	Investigate options for reducing flooding.	1	each	H	S	2	M, PO	SMC	$75,000		0.0	0.0	0.0	0.0	0.0	Y	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.6	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.5	acre	M	L	1,2,3,5	PO, HOA	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.2	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	5.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	6.8	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.9	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.1	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.3	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	240.5	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	240.5	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	240.5	acre	M	L	1,2,3,5	PO, RR, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Kellogg Creek	Green Infrastructure	Preserve the green infrastructure benefits of this area.	240.5	acre	M	L	1,2,3,5	PO, M		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-GI	Village of Winthrop Harbor	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.8	acre	M	L	1,2,3,5	PO	M	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.4	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.9	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.3	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	49.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	35.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	29.0	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.6	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	2.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	4.7	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WHR-RSM	Village of Winthrop Harbor	Kellogg Creek	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	7.2	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
19-0157	Village of Winthrop Harbor	Kellogg Creek	Runoff Volume Reduction	Install filtration BMPs for parking lot and roof runoff.	0.2	acre	M	S	2,5	PO	Illinois EPA, M, SMC	$136,000		1.1	0.8	0.3	980.4	27.5	Y	Y
19-0702	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize erosion.	75	linear feet	H	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	3.7	1.9	1.8	N/A	N/A	Y	N
19-0706	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize erosion.	150	linear feet	H	S	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	7.5	3.7	3.7	N/A	N/A	Y	N
19-0707	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize erosion.	50	linear feet	H	S	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	2.5	1.2	1.2	N/A	N/A	Y	N
19-0710	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize erosion.	150	linear feet	M	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	7.5	3.7	3.7	N/A	N/A	N	N
19-0711	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize erosion.	100	linear feet	M	M	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	N	N
19-0712	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize erosion.	100	linear feet	M	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	Y	N
19-0713	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize erosion.	100	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	Y	N
19-0714	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize erosion.	100	linear feet	H	S	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	5.0	2.5	2.5	N/A	N/A	Y	N
19-0715	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize erosion.	50	linear feet	H	S	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	2.5	1.2	1.2	N/A	N/A	Y	N
19-0719	Village of Winthrop Harbor	Kellogg Creek	Stabilization	Stabilize eroding ravine slope	5	linear feet	L	L	1,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	0.2	0.1	0.1	N/A	N/A	Y	N
19-0096	Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion and slumping using bioengineering stabilization measures.	3340.3	linear feet	M	M	1,5	PO	DOT, Illinois EPA, M, SMC	$993,000		49.3	24.7	24.4	0.0	0.0	Y	Y
19-0121	Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Restore instream habitat with pools & riffles. Preserve, restore, and manage riparian habitat buffer and ravine woodland and establish native riparian plant communities: control invasive species, plant native species, and thin forest canopy.	1923.1	linear feet	M	M	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$577,000		28.7	14.3	14.2	0.0	0.0	N	Y
19-0142	Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion and slumping using bioengineering stabilization practices. Implement major channel restoration work. Cease yard waste dumping. Preserve the ravine system. Restore and widen the riparian habitat buffer and establish native riparian plant communities, particularly along residential properties: control invasive species, plant native species, and thin forest	1403.2	linear feet	L	L	1,3,5,6	PO	Illinois EPA, M, SMC	$456,000		20.9	10.5	10.4	0.0	0.0	Y	Y
19-0145	Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Address ravine and streambank erosion using bioengineering stabilization practices. Restore and manage riparian habitat buffer and establish native riparian plant communities, particularly along residential properties: control invasive species, plant native species, and thin shrubs	2054.3	linear feet	M	S	1,3,5,6	PO	Illinois EPA, M, SMC	$668,000		30.6	15.3	15.2	0.0	0.0	Y	Y

LAKE MICHIGAN WATERSHED SITE-SPECIFIC ACTION PLAN RECOMMENDATIONS

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0153	Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Restore instream habitat with pools and riffles and installing boulders, large rocks, and/or rootwads. Restore and widen the riparian habitat buffer and establish native riparian plant communities: control invasive species, plant native species, and thin forest and shrub canopy.	2195.9	linear feet	L	L	1,3,5,6	PO, SI	DOT, Illinois EPA, M, SMC	$659,000		32.7	16.4	16.2	0.0	0.0	Y	Y
19-0260	Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Address streambank erosion, using bioengineering stabilization measures. Preserve the instream habitat and meandering channel from modification. Enhance channel with pool and riffles. Cease yard waste dumping in the stream channel and along banks. Remove yard debris . Restore, and manage the riparian ravine woodland habitat buffer and ravine woodland.	457.5	linear feet	M	M	1,3,5,6	PO, DOT	Illinois EPA, M, SMC	$149,000		6.8	3.4	3.4	0.0	0.0	N	Y
19-0266	Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Restore and widen riparian habitat buffer and establish native riparian plant communities: control invasive species, plant native species, and thin forest and shrub canopy.	4.1	acre	L	S	1,3,5,6	PO	DOT, Illinois EPA, M, SMC	$18,000	$41,000	0.0	0.0	0.0	0.0	0.0	Y	Y
19-0306	Village of Winthrop Harbor	Kellogg Creek	Stream/Ravine Restoration	Restore and widen the riparian habitat buffer and establish native riparian plant communities: control invasive species, plant native species, and thin forest and shrub canopy.	2.4	acre	L	L	1,3,5,6	M	DOT, Illinois EPA, SMC	$10,000	$24,000	0.0	0.0	0.0	0.0	0.0	Y	Y
19-0095	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Stabilize the culvert outfall and reduce bank erosion to protect the road pavement at the Thompson Avenue crossing between 3rd St and 4th St. Use bioengineering stabilization measures if feasible.	1	each	H	S	2,5	DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0104	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Redirect plastic footing and/or roof drains away from eroding streambanks and channel or install flow attenuation structures or BMPs.	1	each	H	S	2,5	PO	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0105	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Address headcutting and erosion below outfall using bioengineering stabilization measures, if feasible, and more structural measures if bioengineering is not feasible.	1	each	L	L	2,5	DOT	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0141	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Address significant channel erosion at outfall using bioengineering stabilization practices. Implementation details assume a High erosion problem at this location.	1	each	H	S	2,5	DOT, PO	M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0149	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Address erosion problem by replacing failed cinder block armoring with a bioengineered approach, remediating stormwater outfall discharge, and stopping yard waste dumping.	1	each	H	S	2,5	PO	Illinois EPA, M, SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0150	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Replace or repair exposed CMP culvert.	1	each	L	L	2	PO	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0158	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Investigate and remediate the drainage issue at the western end of 13th street, west of intersection with Monroe Ave.	1	each	L	S	2	DOT, M	SMC	$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0161	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Investigate / address hydrology where ponded water fails to drain. May require culvert replacement or retrofit.	1	each	L	S	2	DOT, M		$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0184	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Address minor erosion at outfall using bioengineering stabilization practices.	1	each	M	S	2	PO	Illinois EPA, M, SMC	$6,000	$33,000	N/A	N/A	N/A	N/A	N/A	Y	Y
19-0717	Village of Winthrop Harbor	Kellogg Creek	Water Infrastructure	Small hole in the road above culvert. Likely due to culvert. The municipality is aware of the hole in the road. Continue to monitor and repair if deemed problematic.	1	each	L	L	2	DOT, M		$11,000	$87,000	N/A	N/A	N/A	N/A	N/A	Y	N
19-0071	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.9	acre	L	S	2,3,5	PO, RR, DOT	Illinois EPA, M, USFWS, USACE, SMC	$95,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0162	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	3.5	acre	M	S	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$115,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0170	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	15.3	acre	H	S	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$506,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0188	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.1	acre	L	L	2,3,5	PO	Illinois EPA, M, USFWS, USACE, SMC	$68,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0263	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.2	acre	M	L	2,3,5	M, PO	DOT, Illinois EPA, RR, USFWS, USACE, SMC	$73,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0605	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.3	acre	L	S	2,3,5	PO	Illinois EPA, M, USFWS, USACE, SMC	$44,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0623	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$12,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0624	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	8.6	acre	H	M	2,3,5	M, PO	DOT, Illinois EPA, USFWS, USACE, SMC	$283,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0628	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.6	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$21,000		0.0	0.0	0.0	0.0	0.0	Y	Y

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0629	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	7.9	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$260,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0631	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	9.7	acre	L	L	2,3,5	PO, M	DOT, Illinois EPA, USFWS, USACE, SMC	$320,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0632	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	M	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$46,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0633	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.9	acre	M	S	2,3,5	PO, RR	Illinois EPA, M, USFWS, USACE, SMC	$29,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0635	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.7	acre	L	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$155,000		0.0	0.0	0.0	0.0	0.0	Y	Y
19-0640	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	4.1	acre	L	S	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$136,000		0.0	0.0	0.0	0.0	0.0	N	Y
19-0643	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.8	acre	M	L	2,3,5	PO	DOT, Illinois EPA, M, USFWS, USACE, SMC	$59,000		0.0	0.0	0.0	0.0	0.0	Y	Y
BEA-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO, PD	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, DOT	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
BEA-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
HLD-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD, HOA, PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
HLD-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
HLD-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	Y	N
HWD-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	HOA, PO, OL	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
HWD-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	HOA, OL	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	DOT, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFP-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFT-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO, M	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	M, PO	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	M, PO	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO, M	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	SI, PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	RR	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
LFT-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	DOT	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
LKB-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
NAV-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	NAVY	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
NAV-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	NAVY	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
SIL-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	121.1	acre	L	L	3,5,6	IDNR, C, PO	RR, USFWS, USACE, SMC	$1,211,000		N/A	N/A	N/A	N/A	N/A	Y	N
TBEN-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
TBEN-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
TWAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.4	acre	L	L	3,5,6	PO	T, PB&D, USFWS, USACE, SMC	$4,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PD	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	M	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PD	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO, M, C	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
WAK-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	N	N
TMOR-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	OL	T, PB&D, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
TMOR-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	OL	T, PB&D, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
WHR-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WHR-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	RR	M, SMC, USFWS, USACE	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
WHR-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	M	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	Y	N
WHR-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
WHR-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
WHR-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.1	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
ZIO-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	L	L	3,5,6	PO	DOT, M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
ZIO-WLE	Village of Winthrop Harbor	Kellogg Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.2	acre	M	L	3,5,6	PO	M, USFWS, USACE, SMC	$2,000		N/A	N/A	N/A	N/A	N/A	Y	N
19-0132	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$10,000		0.1	0.0	0.0	4.4	0.4	Y	Y
19-0155	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.3	0.0	0.0	8.3	0.7	Y	Y
19-0164	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	3.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$270,000		3.9	0.5	0.2	118.5	10.0	Y	Y
19-0208	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.4	acre	L	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$119,000		1.7	0.2	0.1	52.2	4.4	Y	Y
19-0242	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.2	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$109,000		1.0	0.2	0.1	34.4	4.1	N	Y
19-0268	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	11.4	acre	H	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$993,000		14.4	2.0	0.8	436.2	36.8	Y	Y
19-0558	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		0.4	0.1	0.0	17.0	1.2	Y	Y
19-0559	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	12.7	0.9	Y	Y
19-0560	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$38,000		0.6	0.1	0.0	22.0	1.5	Y	Y
19-0561	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$36,000		0.5	0.1	0.0	20.6	1.4	Y	Y
19-0563	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$7,000		0.1	0.0	0.0	3.9	0.3	Y	Y
19-0642	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	M, PO	Illinois EPA, IDNR, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	6.8	0.5	Y	Y
19-0728	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	H	M	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$37,000		0.5	0.1	0.0	16.3	1.4	Y	N
19-0731	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$27,000		0.4	0.1	0.0	12.1	1.0	Y	N
19-0732	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	5.2	0.4	Y	N
19-0733	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$25,000		0.4	0.1	0.0	11.1	0.9	Y	N
19-0735	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	10.1	0.6	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0739	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$40,000		0.6	0.1	0.0	17.8	1.5	Y	N
19-0740	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	9.8	0.8	Y	N
19-0749	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$114,000		1.7	0.2	0.1	50.1	4.2	Y	N
19-0751	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$33,000		0.5	0.1	0.0	14.3	1.2	Y	N
19-0755	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$29,000		0.4	0.1	0.0	16.9	1.2	Y	N
19-0756	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$52,000		0.8	0.1	0.0	23.0	1.9	Y	N
19-0772	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$23,000		0.3	0.0	0.0	10.2	0.9	Y	N
19-0773	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$44,000		0.6	0.1	0.0	19.2	1.6	Y	N
19-0774	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.3	0.0	0.0	7.7	0.7	Y	N
19-0792	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$26,000		0.4	0.1	0.0	14.9	1.1	N	N
19-0797	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$24,000		0.3	0.0	0.0	10.5	0.9	Y	N
19-0798	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$43,000		0.6	0.1	0.0	18.7	1.6	Y	N
19-0801	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$28,000		0.4	0.1	0.0	12.3	1.0	Y	N
19-0802	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.8	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$154,000		2.2	0.3	0.1	67.7	5.7	Y	N
19-0803	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$45,000		0.6	0.1	0.0	19.7	1.7	Y	N
19-0804	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$54,000		0.8	0.1	0.0	23.5	2.0	Y	N
19-0805	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$43,000		0.6	0.1	0.0	19.1	1.6	Y	N
19-0806	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$135,000		2.0	0.3	0.1	59.3	5.0	Y	N
19-0833	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$50,000		0.8	0.1	0.0	28.9	2.0	Y	N
19-0834	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.7	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$63,000		1.0	0.1	0.1	36.2	2.5	Y	N
19-0835	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$125,000		1.9	0.3	0.1	72.4	5.0	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0836	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$38,000		0.6	0.1	0.0	21.7	1.5	Y	N
19-0837	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$27,000		0.4	0.1	0.0	15.5	1.1	Y	N
19-0845	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$40,000		0.6	0.1	0.0	23.4	1.6	Y	N
19-0846	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$32,000		0.5	0.1	0.0	18.3	1.3	Y	N
19-0847	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	10.9	0.8	N	N
19-0850	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.9	acre	L	L	2,3,5,6	PO, M	Illinois EPA, IDNR, USFWS, USACE, SMC	$80,000		0.8	0.1	0.0	25.5	3.0	N	N
19-0859	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$21,000		0.3	0.0	0.0	12.1	0.8	Y	N
19-0864	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$40,000		0.6	0.1	0.0	12.5	1.1	N	N
19-0866	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$53,000		0.8	0.1	0.0	23.4	2.0	Y	N
19-0867	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.4	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$38,000		0.6	0.1	0.0	16.8	1.4	Y	N
19-0868	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.3	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$117,000		1.7	0.2	0.1	51.3	4.3	Y	N
19-0872	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.6	acre	M	L	2,3,5,6	M	DOT, Illinois EPA, IDNR, USFWS, USACE, SMC	$53,000		0.8	0.1	0.1	30.3	2.1	Y	N
19-0875	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	1.8	acre	L	L	2,3,5,6	SI	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$154,000		2.3	0.3	0.1	88.8	6.2	Y	N
19-0876	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	8.3	0.6	Y	N
19-0908	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$43,000		0.2	0.0	0.0	12.8	0.6	N	N
19-0917	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.3	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$26,000		0.4	0.1	0.0	17.7	1.0	N	N
19-0920	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.8	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$67,000		0.9	0.2	0.1	45.2	2.7	N	N
19-0951	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.3	0.0	0.0	10.9	0.8	Y	N
19-0958	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	DOT, M	Illinois EPA, IDNR, USFWS, USACE, SMC	$21,000		0.3	0.0	0.0	9.1	0.8	Y	N
19-0962	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	7.4	0.5	N	N
19-0963	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$16,000		0.2	0.0	0.0	7.1	0.6	Y	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
19-0964	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	5.1	0.4	Y	N
19-0965	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$9,000		0.1	0.0	0.0	4.1	0.3	Y	N
19-0966	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	6.3	0.5	Y	N
19-0969	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	M	Illinois EPA, IDNR, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	6.6	0.6	Y	N
19-0970	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$13,000		0.1	0.0	0.0	4.2	0.5	N	N
19-0974	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$19,000		0.3	0.0	0.0	6.0	0.5	N	N
19-0975	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	6.5	0.4	Y	N
19-0976	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	6.7	0.6	Y	N
19-0978	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	H	M	2,3,5,6	PO	Illinois EPA, IDNR, RR, M, USFWS, USACE, SMC	$14,000		0.2	0.0	0.0	9.3	0.6	N	N
19-0981	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.1	acre	L	L	2,3,5,6	DOT	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	4.8	0.4	Y	N
19-1025	Village of Winthrop Harbor	Kellogg Creek	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, M, USFWS, USACE, SMC	$18,000		0.3	0.0	0.0	5.5	0.5	N	N
TWAK-GI	Waukegan Township	Dead River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	48.4	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	Y
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.0	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.2	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.1	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.8	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	3.8	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.3	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	1.2	acre	M	L	1,2,3,5	PO, T	PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	6.5	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	4.9	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-GI	Waukegan Township	Waukegan River	Green Infrastructure	Preserve the green infrastructure benefits of this area.	0.4	acre	M	L	1,2,3,5	PO	T, PB&D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-RSM	Waukegan Township	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-RSM	Waukegan Township	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	1.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	Y	N
TWAK-RSM	Waukegan Township	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.5	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-RSM	Waukegan Township	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	6.1	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
TWAK-RSM	Waukegan Township	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
WAK-RSM	Waukegan Township	Waukegan River	Road Salt Management	Implement road salt management BMP's to reduce environmental impacts while maintaining transportation safety.	0.8	acre	H	M	5,6	PC, DOT, M, PO		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	M	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	PO, M	DOT, USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	N	N
HLD-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	M	L	3,5,6	PO, PD	DOT, M, USFWS, USACE, SMC	$17,000		N/A	N/A	N/A	N/A	N/A	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
LFP-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	PO	started.	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
LFT-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.4	acre	L	L	3,5,6	PO	RR, M, USFWS, USACE, SMC	$14,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.7	acre	L	L	3,5,6	RR, DOT	DOT, M, SMC, USFWS, USACE	$17,000		N/A	N/A	N/A	N/A	N/A	N	N
LKB-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
NAV-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	L	L	3,5,6	NAVY	USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	2.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$23,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.6	acre	L	L	3,5,6	PO	DOT, RR, M, USFWS, USACE, SMC	$16,000		N/A	N/A	N/A	N/A	N/A	N	N
WAK-WLE	Waukegan Township	Pettibone Creek	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	1.9	acre	M	L	3,5,6	PD, PO	M, USFWS, USACE, SMC	$19,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	PD	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
BEA-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.03	acre	L	L	3,5,6	PO	M, USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
LFP-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.01	acre	L	L	3,5,6	LCFPD	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.02	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	0.04	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$1,000		N/A	N/A	N/A	N/A	N/A	N	N
SIL-WLE	Waukegan Township	Waukegan River	Wetland Enhancement	Enhance existing wetland to improve or increase wetland functions/services.	26.3	acre	L	L	3,5,6	IDNR	USFWS, USACE, SMC	$263,000		N/A	N/A	N/A	N/A	N/A	N	N
21-0095	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$17,000		0.3	0.0	0.0	14.2	0.8	N	N
21-0141	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.9	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$78,000		1.1	0.2	0.1	40.3	2.9	N	N
21-0144	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	7.5	0.5	N	N
21-0159	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.5	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$41,000		0.8	0.1	0.1	35.3	2.3	N	N
21-0165	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	L	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$15,000		0.2	0.0	0.0	7.8	0.6	N	N
21-0166	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	1.2	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$108,000		1.5	0.2	0.1	56.0	4.1	N	N
21-0167	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.3	acre	L	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$25,000		0.3	0.1	0.0	13.1	1.0	N	N
21-0168	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.7	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$58,000		0.8	0.1	0.1	29.9	2.2	N	N

Plan ID	Jurisdiction	Subwatershed	BMP Type	Action	Quantity	Quantity Unit	Priority	Time Frame	Plan Goals Addressed	Lead Partners	Supporting Partners	Cost Estimate (Low)	Cost Estimate (High)	Nitrogen Reduction (lb/yr)	Phosphorus Reduction (lb/yr)	Sediment Reduction (ton/yr)	Chloride Reduction (lb/yr)	Bacteria Reduction (billion CFU/yr)	In Critical Area?	In Previous Plan?
21-0186	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$19,000		0.3	0.0	0.0	9.7	0.7	N	N
21-0187	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	T	DOT, Illinois EPA, IDNR, PB&D, USFWS, USACE, SMC	$11,000		0.2	0.0	0.0	5.7	0.4	N	N
21-0188	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.1	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$12,000		0.2	0.0	0.0	6.5	0.5	N	N
21-0190	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	DOT, Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$19,000		0.4	0.1	0.0	16.5	1.1	N	N
21-0202	Waukegan Township	Waukegan River	Wetland Restoration	Create new wetland.	0.2	acre	M	L	2,3,5,6	PO	Illinois EPA, IDNR, T, PB&D, USFWS, USACE, SMC	$22,000		0.3	0.0	0.0	11.2	0.8	N	N

Lake Michigan Watershed Site-Specific Action Plan
North Boundary to 20th Street (Zion)

Site-Specific Actions (Points)
BMP Type
- Critical Infrastructure
- Debris Jam
- Detention Basin Retrofit
- Stabilization
- Water Infrastructure

Site-Specific Actions (Linear)
BMP Type
- Beach Management
- Shoreline Stabilization
- Stream/Ravine Restoration
- Water Infrastructure

Site-Specific Actions (Polygons)
BMP Type
- Beach Management
- Detention Basin Retrofit
- Filter Strip
- Flood Risk Reduction
- Golf Course Management
- Runoff Volume Reduction
- Shoreline Stabilization
- Stream/Ravine Restoration
- Wetland Enhancement
- Wetland Restoration
- <all other values>

Basin-Wide Runoff Volume Reduction
- Basin-Wide Runoff Volume Reduction

Basin-Wide Wetland Enhancement
- Basin-Wide Wetland Enhancement

Basin-Wide Green Infrastructure
- Basin-Wide Green Infrastructure

Basin-Wide Road Salt Reduction
- Basin-Wide Road Salt Reduction
- Jurisdictional Boundaries
- Subwatersheds

STORMWATER MANAGEMENT COMMISSION

See Appendix A for data sources.
This map is provided for general locational information only.
Map features have been derived from various sources,
each of which has its own scale and accuracy.
The locations of all features are approximate.
Lake County Stormwater Management Commission, 2022

0 200 400 600 1,200 1,800 2,400 3,000 FEET

Village of Pleasant Prairie
Village of Winthrop Harbor
Benton Township
City of Zion
State Line
LCFPD
Lake Michigan

Lake Michigan Watershed Site-Specific Action Plan
20th Street (Zion) to Yorkhouse Road (Beach Park/Waukegan)

Site-Specific Actions (Points)

BMP Type
- Critical Infrastructure
- Debris Jam
- Detention Basin Retrofit
- Stabilization
- Water Infrastructure

Site-Specific Actions (Linear)

BMP Type
- Beach Management
- Shoreline Stabilization
- Stream/Ravine Restoration
- Water Infrastructure

Site-Specific Actions (Polygons)

BMP Type
- Beach Management
- Detention Basin Retrofit
- Filter Strip
- Flood Risk Reduction
- Golf Course Management
- Runoff Volume Reduction
- Shoreline Stabilization
- Stream/Ravine Restoration
- Wetland Enhancement
- Wetland Restoration
- <all other values>

Basin-Wide Runoff Volume Reduction
- Basin-Wide Runoff Volume Reduction

Basin-Wide Wetland Enhancement
- Basin-Wide Wetland Enhancement

Basin-Wide Green Infrastructure
- Basin-Wide Green Infrastructure

Basin-Wide Road Salt Reduction
- Basin-Wide Road Salt Reduction
- Jurisdictional Boundaries
- Subwatersheds

STORMWATER MANAGEMENT COMMISSION

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Lake County Stormwater Management Commission, 2022

0 160 320 480 960 1,440 1,920 2,400 FEET

City of Zion
City of Waukegan
Village of Beach Park
Benton Township
Waukegan Township
LCFPD
ZIO-RVR
BEA-RVR
IL
Lake Michigan

Lake Michigan Watershed Site-Specific Action Plan

Yorkhouse Road (Beach Park/Waukegan) to Grand Avenue (Waukegan)

Site-Specific Actions (Points)

BMP Type

- Critical Infrastructure
- Debris Jam
- Detention Basin Retrofit
- Stabilization
- Water Infrastructure

Site-Specific Actions (Linear)

BMP Type

- Beach Management
- Shoreline Stabilization
- Stream/Ravine Restoration
- Water Infrastructure

Site-Specific Actions (Polygons)

BMP Type

- Beach Management
- Detention Basin Retrofit
- Filter Strip
- Flood Risk Reduction
- Golf Course Management
- Runoff Volume Reduction
- Shoreline Stabilization
- Stream/Ravine Restoration
- Wetland Enhancement
- Wetland Restoration
- <all other values>

Basin-Wide Runoff Volume Reduction

- Basin-Wide Runoff Volume Reduction

Basin-Wide Wetland Enhancement

- Basin-Wide Wetland Enhancement

Basin-Wide Green Infrastructure

- Basin-Wide Green Infrastructure

Basin-Wide Road Salt Reduction

- Basin-Wide Road Salt Reduction
- Jurisdictional Boundaries
- Subwatersheds

STORMWATER MANAGEMENT COMMISSION

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Lake County Stormwater Management Commission, 2022

0 160 320 480 960 1,440 1,920 2,400 FEET

Lake Michigan

Village of Beach Park

City of Waukegan

Waukegan Township

LCFPD

IL

WAK-RVR

Lake Michigan Watershed Site-Specific Action Plan
Grand Avenue (Waukegan) to Argonne Drive (North Chicago)

Site-Specific Actions (Points)
BMP Type
- Critical Infrastructure
- Debris Jam
- Detention Basin Retrofit
- Stabilization
- Water Infrastructure

Site-Specific Actions (Linear)
BMP Type
- Beach Management
- Shoreline Stabilization
- Stream/Ravine Restoration
- Water Infrastructure

Site-Specific Actions (Polygons)
BMP Type
- Beach Management
- Detention Basin Retrofit
- Filter Strip
- Flood Risk Reduction
- Golf Course Management
- Runoff Volume Reduction
- Shoreline Stabilization
- Stream/Ravine Restoration
- Wetland Enhancement
- Wetland Restoration
- <all other values>

Basin-Wide Runoff Volume Reduction
- Basin-Wide Runoff Volume Reduction

Basin-Wide Wetland Enhancement
- Basin-Wide Wetland Enhancement

Basin-Wide Green Infrastructure
- Basin-Wide Green Infrastructure

Basin-Wide Road Salt Reduction
- Basin-Wide Road Salt Reduction
- Jurisdictional Boundaries
- Subwatersheds

STORMWATER MANAGEMENT COMMISSION

See Appendix A for data sources.

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Lake County Stormwater Management Commission, 2022

0 200 400 600 1,200 1,800 2,400 3,000 FEET

Lake Michigan

Lake Michigan Watershed Site-Specific Action Plan
Argonne Drive (North Chicago) to Spruce Avenue (Lake Forest)

Site-Specific Actions (Points)
BMP Type
- Critical Infrastructure
- Debris Jam
- Detention Basin Retrofit
- Stabilization
- Water Infrastructure

Site-Specific Actions (Linear)
BMP Type
- Beach Management
- Shoreline Stabilization
- Stream/Ravine Restoration
- Water Infrastructure

Site-Specific Actions (Polygons)
BMP Type
- Beach Management
- Detention Basin Retrofit
- Filter Strip
- Flood Risk Reduction
- Golf Course Management
- Runoff Volume Reduction
- Shoreline Stabilization
- Stream/Ravine Restoration
- Wetland Enhancement
- Wetland Restoration
- <all other values>

Basin-Wide Runoff Volume Reduction
- Basin-Wide Runoff Volume Reduction

Basin-Wide Wetland Enhancement
- Basin-Wide Wetland Enhancement

Basin-Wide Green Infrastructure
- Basin-Wide Green Infrastructure

Basin-Wide Road Salt Reduction
- Basin-Wide Road Salt Reduction
- Jurisdictional Boundaries
- Subwatersheds

STORMWATER MANAGEMENT COMMISSION

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each of which has its own scale and accuracy.
The locations of all features are approximate.
Lake County Stormwater Management Commission, 2022

0 200 400 600 1,200 1,800 2,400 3,000 FEET

22-0016 22-0020 22-0008 22-0019 22-0018 22-0017 22-0009 NCH-RVR 22-0010 NAV-RVR 22-0002 US Navy 22-0001 22-0003 22-8021 22-0006 22-8024 22-0007 22-8007 22-8006 22-8005 22-0027 22-0026 22-0045 22-0005 22-0044 22-0042 22-0041 22-0025 22-0040 22-0004 22-0024 22-0039 22-0038 22-0051 22-0034 22-0055 22-0033 22-0032 22-0035 22-0031 22-0030 22-0050 22-0054 22-0029 22-0028 22-0011 22-0053 22-0052 22-0015 22-0043 22-0049 22-0048 22-0014 22-0013 22-0012 22-0037 22-0036 23-0084 23-0168 23-0169 23-0166 23-0167 23-0116 23-0114 23-0613 23-0142 23-0157 23-0156 23-0155 23-0154 23-0153 23-0173 23-0046 23-0110 23-0090 23-0053 23-0052 23-0083 23-8006 23-0138 23-0112 23-0064 23-0131 23-0047 23-0060 23-0061 23-0109 23-0001 23-0143

City of North Chicago
Village of Lake Bluff
Shields Township
City of Lake Forest
Lake Michigan

Lake Michigan Watershed Site-Specific Action Plan
Spruce Avenue (Lake Forest) to Walker Avenue (Highland Park/Highwood)

Site-Specific Actions (Points)
BMP Type
- Critical Infrastructure
- Debris Jam
- Detention Basin Retrofit
- Stabilization
- Water Infrastructure

Site-Specific Actions (Polygons)
BMP Type
- Beach Management
- Detention Basin Retrofit
- Filter Strip
- Flood Risk Reduction
- Golf Course Management
- Runoff Volume Reduction
- Shoreline Stabilization
- Stream/Ravine Restoration
- Wetland Enhancement
- Wetland Restoration
- <all other values>

Site-Specific Actions (Linear)
BMP Type
- Beach Management
- Shoreline Stabilization
- Stream/Ravine Restoration
- Water Infrastructure

Basin-Wide Runoff Volume Reduction
- Basin-Wide Runoff Volume Reduction

Basin-Wide Wetland Enhancement
- Basin-Wide Wetland Enhancement

Basin-Wide Green Infrastructure
- Basin-Wide Green Infrastructure

Basin-Wide Road Salt Reduction
- Basin-Wide Road Salt Reduction
- Jurisdictional Boundaries
- Subwatersheds

STORMWATER MANAGEMENT COMMISSION

See Appendix A for data sources.
This map is provided for general locational information only.
Map features have been derived from various sources,
each of which has its own scale and accuracy.
The locations of all features are approximate.
Lake County Stormwater Management Commission, 2022

0 200 400 600 1,200 1,800 2,400 3,000 FEET

Lake Michigan

Lake Michigan Watershed Site-Specific Action Plan
Walker Avenue (Highland Park/Highwood) to County Line Road (Highland Park/Glencoe)

Site-Specific Actions (Points)
BMP Type
- Critical Infrastructure
- Debris Jam
- Detention Basin Retrofit
- Stabilization
- Water Infrastructure

Site-Specific Actions (Linear)
BMP Type
- Beach Management
- Shoreline Stabilization
- Stream/Ravine Restoration
- Water Infrastructure

Site-Specific Actions (Polygons)
BMP Type
- Beach Management
- Detention Basin Retrofit
- Filter Strip
- Flood Risk Reduction
- Golf Course Management
- Runoff Volume Reduction
- Shoreline Stabilization
- Stream/Ravine Restoration
- Wetland Enhancement
- Wetland Restoration
- <all other values>

Basin-Wide Runoff Volume Reduction
- Basin-Wide Runoff Volume Reduction

Basin-Wide Wetland Enhancement
- Basin-Wide Wetland Enhancement

Basin-Wide Green Infrastructure
- Basin-Wide Green Infrastructure

Basin-Wide Road Salt Reduction
- Basin-Wide Road Salt Reduction
- Jurisdictional Boundaries
- Subwatersheds

STORMWATER MANAGEMENT COMMISSION

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Lake County Stormwater Management Commission, 2022

0 200 400 600 1,200 1,800 2,400 3,000 FEET

HWD-RVR
ARM-RVR
US Army
Openlands
City of Highwood
Highwood
Highland Park
City of Highland Park
CCFPD
VIllage of Glencoe
HLD-RVR
Lake Michigan

23-0057 23-0082 23-0032 23-0033 23-0031 23-0049 23-0077 23-8005 23-0103 23-0102 23-0020 23-0127 23-0128 23-0018 23-0059 23-0615 23-0038 23-0039 23-0040 23-0041 23-0101 23-0013 23-0099 23-0045 23-0098 23-0036 23-0037 23-0081 23-0011 23-0017 23-0076 23-0021 23-0016 23-0022 23-0080 23-0012 23-0014 23-0075 23-0044 23-0056 23-0616 23-0137 23-0096 23-0048 23-0095 23-0094 23-0093 23-0042 23-0092 23-0055 23-0079 23-0009 23-0078 23-0074

Lake Michigan Watershed Site-Specific Action Plan
County Line Road (Highland Park/Glencoe) to South Boundary

Site-Specific Actions (Points)
BMP Type
- Critical Infrastructure
- Debris Jam
- Detention Basin Retrofit
- Stabilization
- Water Infrastructure

Site-Specific Actions (Linear)
BMP Type
- Beach Management
- Shoreline Stabilization
- Stream/Ravine Restoration
- Water Infrastructure

Site-Specific Actions (Polygons)
BMP Type
- Beach Management
- Detention Basin Retrofit
- Filter Strip
- Flood Risk Reduction
- Golf Course Management
- Runoff Volume Reduction
- Shoreline Stabilization
- Stream/Ravine Restoration
- Wetland Enhancement
- Wetland Restoration
- <all other values>

Basin-Wide Runoff Volume Reduction
- Basin-Wide Runoff Volume Reduction

Basin-Wide Wetland Enhancement
- Basin-Wide Wetland Enhancement

Basin-Wide Green Infrastructure
- Basin-Wide Green Infrastructure

Basin-Wide Road Salt Reduction
- Basin-Wide Road Salt Reduction
- Jurisdictional Boundaries
- Subwatersheds

LAKE COUNTY STORMWATER MANAGEMENT COMMISSION

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Lake County Stormwater Management Commission, 2022

0 200 400 600 1,200 1,800 2,400 3,000 FEET

23-0009
23-0010
23-0026
23-0027
23-0042
23-0051
23-0055
23-0069
23-0070
23-0071
23-0072
23-0073
23-0074
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23-0093
23-0126
23-0132
23-0133
23-0134
23-0135
23-0136

City of Highland Park
CCFPD
Village of Glencoe
Village of Winnetka
Hubbard Woods
Glencoe
Winnetka

Lake Michigan