

# CHAPTER SEVEN: PLAN IMPLEMENTATION AND EVALUATION

## LAKE MICHIGAN WATERSHED-BASED PLAN

### CONTENTS

7	Plan Implementation and Evaluation.....	7-4
7.1	Estimate of Pollutant Load Reductions and Targets.....	7-4
7.1.1	Reduction Estimates for Site Specific Actions .....	7-6
7.1.1.1	Load Reduction Targets.....	7-7
7.2	Cost Estimates.....	7-8
7.3	Next Steps for Plan Implementation.....	7-10
7.3.1	Plan Adoption .....	7-10
7.3.2	Establish, Support and Maintain a Watershed Planning Committee .....	7-11
7.3.3	Stakeholder Participation and Engagement.....	7-11
7.3.4	Identify Implementation Champions .....	7-11
7.3.5	Resources and Funding .....	7-12
7.3.6	Implementation Partners .....	7-12
7.4	Evaluating Plan Performance .....	7-13
7.4.1	Evaluating Plan Implementation Performance .....	7-13
7.4.2	Measureable Milestones and Scorecard System .....	7-13
7.4.3	Plan Implementation Schedule.....	7-15
7.5	Water Quality Monitoring Strategy .....	7-16
7.5.1	BMP Effectiveness Monitoring .....	7-17
7.5.2	Riverwatch Volunteer Program .....	7-18
7.5.3	Lake Monitoring.....	7-19
7.5.3.1	LCHD Lake Monitoring.....	7-19
7.5.3.2	Illinois Volunteer Lake Monitoring Program (VLMP) .....	7-19
7.5.3.3	Lake Monitoring Recommendations .....	7-20
7.5.4	Ravine Monitoring and Strategic Subwatershed Identification Process.....	7-20
7.6	Plan Implementation Milestones.....	7-21
7.6.1	Watershed Goal #1 Milestones: Stream, Ravine and Coastal Restoration and Management .....	7-21
7.6.2	Watershed Goal #2 Milestones: Flood Risk, Flood Damage and Stormwater Management .....	7-22

## LAKE MICHIGAN WATERSHED-BASED PLAN 2022

7.6.3	Watershed Goal #3 Milestones: Natural Resources and Habitat.....	7-23
7.6.4	Watershed Goal #4 Milestones: Watershed Education and Communication .....	7-24
7.6.5	Watershed Goal #5 Milestones: Water Quality .....	7-25
7.6.6	Watershed Goal #6 Milestones: Watershed Coordination and Partnerships.....	7-26
7.7	Updating the Watershed-Based Plan.....	7-27
7.8	References.....	7-27

## LIST OF TABLES

Table 7-1:	Project Categories Inclusive of Load Reduction Estimates.....	7-5
Table 7-2:	Best Management Practice Average Expected Load Reduction Efficiencies .....	7-6
Table 7-3:	Estimated Annual BMP Load Reductions. Table only includes actions with pollutant load reduction estimates.....	7-6
Table 7-4:	Nonpoint and Point Source Load Reduction Targets .....	7-7
Table 7-5:	Estimated Nonpoint Source (NPS) Pollutant Load Reductions from BMPs .....	7-8
Table 7-6:	Cost Estimates for Site-Specific Action Recommendations .....	7-9
Table 7-7:	Year One Plan Implementation Priorities.....	7-10
Table 7-8:	Example Indicators and Milestones for Each Goal .....	7-14
Table 7-9:	General Implementation Schedule.....	7-15
Table 7-10:	Summary of Monitoring Categories and Recommendations.....	7-17
Table 7-11:	Baseline Water Quality Analysis Parameters .....	7-18
Table 7-12:	Monitoring Tiers of the Illinois VLMP .....	7-20
Table 7-13:	Stream, Ravine and Coastal Restoration and Management Milestones .....	7-21
Table 7-14:	Flood Risk, Flood Damage, and Stormwater Management Milestones.....	7-22
Table 7-15:	Natural Resources and Habitat Milestones.....	7-23
Table 7-16:	Watershed Education and Communication Milestones.....	7-24
Table 7-17:	Water Quality Milestones.....	7-25
Table 7-18:	Watershed Coordination and Partnerships Milestones.....	7-26
Table 7-19:	Plan Update Elements and Responsibilities .....	7-27

## **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  
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 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 <sup>1</sup>
Critical Infrastructure	No
Debris Jam	No
Detention basin retrofit	No
Filter Strip	Yes
Flood Risk Reduction	Yes <sup>1</sup>
Golf Course Management	No
Green Infrastructure	No
Road Salt Management	No
Runoff Volume Reduction	Yes <sup>1</sup>
Shoreline Stabilization	No
Stabilization	Yes
Stream/Ravine Restoration	Yes <sup>1</sup>
Water Infrastructure	No
Wetland Enhancement	No
Wetland Restoration	Yes

<sup>1</sup>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% <sup>1</sup>	40%-55% <sup>1</sup>	15%-45% <sup>1</sup>	60% <sup>1</sup>	45% <sup>1</sup>
Filter Strip	25%	35%	15%	53%	35%
Flood Risk Reduction	10% <sup>1</sup>	55% <sup>1</sup>	45% <sup>1</sup>	65% <sup>1</sup>	45% <sup>1</sup>
Runoff Volume Reduction	25%	40%	15%	60%	45%
Stabilization	100%	100%	0%	100%	0%
Stream/Ravine Restoration	100% <sup>1</sup>	100% <sup>1</sup>	0%	100% <sup>1</sup>	0%
Wetland Restoration	33%	35%	5%	40%	15%

<sup>1</sup>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 (lbs/yr)	PHOSPHORUS REDUCTION (lbs/yr)	SEDIMENT REDUCTION (tons/yr)	CHLORIDE REDUCTION (lbs/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
Runoff Volume Reduction	15 acres	27.6	6.5	4.3	5,113	269
Stabilization	3,905 linear feet	195.8	97.9	96.9	0	0

BMP	QUANTITY (area / number / length)	NITROGEN REDUCTION (lbs/yr)	PHOSPHORUS REDUCTION (lbs/yr)	SEDIMENT REDUCTION (tons/yr)	CHLORIDE REDUCTION (lbs/yr)	BACTERIA REDUCTION (BILLION CFU/YR)
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
<b>TOTAL REDUCTION</b>		<b>3,658</b>	<b>1,407</b>	<b>1,292</b>	<b>65,195</b>	<b>3,885</b>

#### 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 (lbs/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 (lbs/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).

## LAKE MICHIGAN WATERSHED-BASED PLAN 2022

**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 (%)
<b>Nitrogen (lbs/yr)</b>	176,601	<b>3,658</b>	<b>2.1</b>
<b>Phosphorus (lbs/yr)</b>	24,630	<b>1,407</b>	<b>5.7</b>
<b>Sediment (tons/yr)</b>	10,073	<b>1,292</b>	<b>12.8</b>
<b>Chloride (lbs/yr)</b>	43,803,178	<b>65,195</b>	<b>0.2</b>
<b>Bacteria (billion CFU)</b>	977,069	<b>3,885</b>	<b>0.4</b>

## 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 - \$252 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	\$38,467,000
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
<b>Total</b>		<b>4,194</b>	<b>\$216,352,800- \$252,310,800</b>

### 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

## LAKE MICHIGAN WATERSHED-BASED PLAN 2022

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 stream 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 7-10). 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	<ul style="list-style-type: none"> <li>• Incorporate monitoring for algal toxins.</li> <li>• Sample and assess Dugdale Lake and Sand Pond in the same year and on the same schedule.</li> <li>• Collect storm-event water quality samples from all lake inlets as part of program; install staff gages.</li> <li>• Determine if data suggest full support of aesthetic quality designated use</li> </ul>
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

## LAKE MICHIGAN WATERSHED-BASED PLAN 2022

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 $\mu$ S/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 located on public land and are a 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 Table 7-18 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

## LAKE MICHIGAN WATERSHED-BASED PLAN 2022

### 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

## LAKE MICHIGAN WATERSHED-BASED PLAN 2022

### 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

## LAKE MICHIGAN WATERSHED-BASED PLAN 2022

### 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
<b>Watershed Characterization</b>	<ul style="list-style-type: none"> <li>• Land use information</li> <li>• Water quality data/analysis</li> <li>• Stream/lake impairments</li> <li>• Climate</li> <li>• Demographics</li> <li>• Jurisdictions</li> <li>• Pollution loading</li> <li>• Ravine Inventory</li> </ul>	Lake County SMC	<ul style="list-style-type: none"> <li>• Jurisdictions (Chapter 6)</li> <li>• ICMP</li> <li>• Watershed Planning Committee and subwatershed planning groups</li> </ul>
<b>Action and Implementation Plan Components</b>	<ul style="list-style-type: none"> <li>• Project recommendations</li> <li>• Expected load reductions</li> <li>• Milestones, timeframes, and priorities</li> <li>• Responsible parties and support partners</li> <li>• Monitoring plan</li> </ul>	Lake County SMC	<ul style="list-style-type: none"> <li>• Jurisdictions (Chapter 6)</li> <li>• Watershed Planning Committee and subwatershed planning groups</li> <li>• ICMP</li> </ul>

## 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