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IMAGES

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GLOSSARY OF TERMS

WATER QUALITY TERMS

Water quality is a complex and technical subject. The following technical terms are used throughout this section to explain the current water quality conditions of the lakes.

Phosphorus: The "limiting nutrient" in lakes, meaning that the available quantity of this nutrient controls the pace at which algae and aquatic plants are produced. In appropriate quantities, phosphorus is used by vegetation and soil microbes for normal growth.

Chlorophyll-A: A measure of the amount of algae growing in a water body.

Water Clarity: A measure of how far down light penetrates in the lake. Clear waters are characterized by low concentrations of suspended soil particles and/or algae, whereas turbid waters are marked by high levels of suspended particles that cloud visibility.

Secchi Disk: A simple, standard tool used to measure water clarity.

Trophic State Index (TSI): A classification system designed to rate water bodies based on mean summer total phosphorus, chlorophyll-a concentrations, and Secchi Disk depth measurements to determine the amount of biological productivity they sustain. The TSI score places a lake into a category of oligotrophic, mesotrophic, or eutrophic.

Oligotrophic: lakes are generally very clear, deep, and cold. Nutrient levels are low, so the lake generally does not support large populations of aquatic plants, animals, or algae.

Mesotrophic: lakes contain moderate amounts of nutrients, and contain healthy, diverse populations of aquatic plants, algae, and fish. Occasional algae blooms may occur.

Eutrophic: lakes are very high in nutrients, and often exhibit large algae blooms, which may include dangerous levels of blue-green algae.

NATURAL RESOURCE TERMS

The following technical terms are used throughout this section to explain the basis of design and recommendations associated with natural resources. These definitions are from the MPRB Natural Areas Plan - Phase II document.

Biodiversity: The variety of life in a particular habitat or ecosystem, including plants and animals.

Cultural Land Cover/Vegetation: Developed or significantly altered land, typically used regularly and/or intensively by people (e.g., buildings, parking lots, roads, crop fields, turf lawns).

Ecological Enhancement: Improving an existing natural area, such as adding more native flower species to a prairie or removing an undesirable tree from an oak forest.

Ecological Restoration: As a general term, improving the natural environment by stabilizing and enhancing biodiversity, resilience, and ecosystem services. In contrast to Ecological Enhancement, Ecological Restoration typically refers to converting a non-natural area (e.g., turf grass or cropland) to a native plant community (e.g., prairie or wetland).

Ecosystem: An interdependent assemblage of species, interacting with the environment. An ecosystem can be any size—a tidal pool or the Amazon rainforest.

Ecosystem Services: The natural outputs of healthy ecosystems that benefit people—air and water purification, flood control, groundwater recharge, fish and wildlife production, soil building, recreation, food and fiber production, and spiritual renewal and recreational pleasure. Ecosystem services are worth trillions of dollars annually worldwide.

Habitat: The environment suitable for a species to carry out its entire life cycle. A turtle's habitat, for instance, includes an overwintering pond bottom, open water and aquatic vegetation for feeding, and sandy, open upland areas to lay eggs.

Invasive Species: Aggressive plant or animal species whose introduction does or is likely to cause environmental or economic harm.

Mesic: Moist, typically referring to soil conditions (as opposed to dry or wet).

Native or Natural Vegetation: Plants indigenous to a given area in geologic time. This includes plants that have developed, occur naturally, or existed for many years in an area.

Natural Resources Management Plan (NRMP): A plan that describes a site's existing natural resources, their ecological health, restoration and management goals, and the tasks to be implemented. Often developed for a specific site, such as a park.

Plant Community: An assemblage of plant species that characterize a vegetated area (e.g., a forest, savanna, or grassland).

Species of Greatest Conservation Need: Wildlife species, including state-listed and non-listed species, that are regionally rare or in decline, often as a result of habitat loss.

CAC RECOMMENDATIONS

CAC WATER QUALITY RECOMMENDATIONS

Water Quality Goals for the Cedar-Isles Master Plan

Final Draft: July 21, 2022
Updated Final Draft: August 14, 2022

CAC Members of Water Quality Subcommittee
Anna Eleria (Subcommittee Lead)
Nan Dreher
Laura Kinkead
Drew McGovern
Constance Pepin
Jim Romlin
Win Rockwell (CAC Chair)
Craig Wilson

Water quality concerns surfaced as a top priority for the Cedar Lake – Lake of the Isles Master Plan Community Advisory Committee (CAC) during Phase I of master plan development. In response to this top priority, a water quality subcommittee, comprised of over half of the CAC members, was formed to better understand the current water quality conditions and trends in both lakes and outline metric-based water quality goals and objectives at the park master plan scale as well as lake management and watershed planning scales.

Based on presentations by the water quality consultants of the MPRB and discussions during the water quality subcommittee meetings, subcommittee members recommend water quality goals and strategies at three different levels: 1) lake management, 2) park master plan and 3) watershed. First, the subcommittee urges renewal of the rigorous in lake water quality goals established during the Clean Water Partnership by MPRB, Minnehaha Creek Watershed District, and Cities of Minneapolis and St. Louis Park (1989-2001) and implementation of water quality strategies that account for current water quality trends and mitigate the effects of climate change. The subcommittee also recommends park-specific water quality goals to minimize the impacts of paved surfaces, erosion, turf and other human- interventions within the parkland on lake health and demonstrate to the public ecologically sensitive practices that protect lake health. The size, imperviousness and land use practices in the watershed of each lake play an oversized role on water quality and calls for watershed goals and strategies to reduce stormwater volumes and pollutant loading from the land areas draining to each lake.

Finally, the subcommittee urges the MPRB to take on a stronger leadership role that brings together all stakeholders including relevant local, regional and state agencies to collaborate on coordinated actions to achieve watershed-wide mitigation of polluted stormwater runoff. As a nationally recognized municipal park system, the MPRB is strongly situated to lead this partnership. Such heightened leadership by MPRB would do three things: 1) increase the impact of its own efforts – and everyone's efforts – by addressing polluted stormwater runoff closer to its source; 2) materially increase the MPRB'S public reputation for good work by taking this necessary and effective step; and 3) significantly increase the case for funding of such partnership efforts by reason of the greater efficiency and impact of coordinated watershed actions.

Lake Management Plan-Level Goals

Goal: Manage Lake of the Isles as an ecologically healthy, shallow lake

- **maintain phosphorus levels below 40 micrograms per Liter (ug/L)**
- **establish and maintain diverse native and adapted, non-invasive aquatic plants**
- **establish and maintain aquatic food web**
- **prevent harmful blue-green algae blooms**

Objective: develop lake management plan for Lake of the Isles to assess lake health and the drivers of water quality and manage in-lake nutrients, littoral zone, and shoreline.

Goal: Manage Cedar Lake as an ecologically healthy, deep lake

- **phosphorus levels should be below 25 micrograms per liter (ug/L)**
- **establish and maintain diverse native and adapted, non-invasive aquatic plants**
- **establish and maintain an aquatic food web**
- **prevent harmful blue-green algae blooms**

Objective: develop lake management plan for Cedar Lake to assess lake health and the drivers of water quality and manage in-lake nutrients, littoral zone, and shoreline.

Park Master Plan Lake Goals

Goal: Address stormwater runoff from all hard surfaces on parkland

- Treat stormwater runoff from paved surfaces on parkland including parkways and parking lots before it runs into the lake
- Limit paved surfaces and, where appropriate, convert it to pervious
- Perform enhanced sweeping of all paved surfaces on park property
- Restore soil health, including restoring compacted soil that currently provides limited infiltration
- Eliminate exposed soil on park land except established beaches and turtle nesting areas

Goal: Reduce chloride, trash, sediment and other pollutants from entering the lakes

- Reduce chloride (salt) use through continuing to condense maintained paths within the winter networks
- Minimize to the extent practical, use of chloride-based de-icing materials on hard surfaces within the park
- Provide education to staff and the public around the impacts of chloride and training on the best practices and timing for deicing application
- Perform enhanced sweeping of all paved surfaces on park property to remove trash, leaves, sediment and other pollutants

Goal: Maintain and stabilize shoreline with native vegetation in all areas except for formal access points and identified viewsheds

- Establish a naturalized lake buffer with a minimum height of one feet in all areas where water and land access is not needed. (above shoreline)
- Naturalize the littoral fringe with emergent vegetation in all areas where lake access is not needed (below shore)
- Reduce sedimentation into the lake from adjacent erosion and runoff by ensuring park soils and slopes remain stabilized and vegetated
- Formalize the location of water access points and ensure they are clearly identified

Goal: Maximize and restore habitat (terrestrial and aquatic) to improve health of the lake and have spaces for wildlife

- Restore and improve natural areas that have no interaction with park visitors (ie islands at LOI) to higher functioning plant communities for improved wildlife habitat
- Restore and improve natural areas that interact with park visitors (ie NE forest at Cedar Lake) to higher functioning plant communities
- Consider fisheries sampling to routinely determine the Fish-based Index of Biological Integrity (F-IBI)
- Determine target wildlife species for each lake and develop biological monitoring program
- Reestablish native, non-invasive and adapted rooted aquatic vegetation communities
- Control invasive aquatic plant species including watermilfoil and curlyleaf pondweed to improve water quality and maintain recreational access

Goal: Continue to meet state aquatic recreation standards at Cedar Lake and Lake of the Isles

- Reduce water quality impacts from pets, geese and anthropogenic sources

Watershed Goals

- **Goal: Utilize the water quality focused Cedar-Isles Master Plan with specific measurable goals, objectives and outcomes as an MPRB case study on how to track and evaluate implementation of park master plan**

- **Goal: Formalize a committee with regional community and agency representation to continue monitoring and developing rapid solutions for water quality and quantity in the face of a changing climate**

- **Goal: Reinvigorate the Clean Water Partnership and renew efforts by partners to meet the CWP goals and assist the MPRB to achieve the lake water quality goals defined in this master plan**
  - Establish new regulatory controls aimed at eliminating the introduction of pollutants into water bodies
  - Monitor and evaluate existing watershed infrastructure to ensure it's still working and has the capacity to convey runoff safely under a changing climate
  - Reduce all pollutants (chloride, phosphorous, trash, and sediment) from entering each lake
  - Conduct watershed water quality and quantity modeling study to determine priority areas for reducing stormwater volumes and pollutant loading and identify new opportunities and locations to implement stormwater management strategies

- **Goal: Achieve broad community knowledge and understanding about the health of each lake, the factors impacting lake health and ways they can help protect the lakes**

Additional Cedar-Isles Water Quality Subcommittee Recommendations

Approved by subcommittee at Water Quality Meeting, July 21, 2022

Design Changes to Preferred Park Concept

- Add BMP treatment adjacent to Lake of the Isles dog park in EOR-recommended location
- Extend littoral edge areas in locations where littoral edge is not shown, pending review of feasibility
- Incorporate the triangle of green space west of France Ave (near Cedar Meadows Wetland) as an additional opportunity for water quality treatment that has a stacked function of wildlife habitat, pending review of feasibility

Recommendations to add into narrative of master plan document

- Consistently address invasive species for existing and new landscape features
- Develop and implement invasive species management strategy
- Funding requests will include sufficient maintenance
- Water quality public education programming
  - Aligned/consistent with other plans (Ex: Ecological System Plan, Parks for All)
    - Embed strategies from other plans to connect the dots/reinforce work at Cedar-Isles
    - Prioritize those strategies be implemented sooner

CAC CIRCULATION RECOMMENDATIONS

Minneapolis Park & Recreation Board

Circulation CAC Subcommittee Recommendations Approved by Full CAC
Cedar Lake and Lake of the Isles Master Plan

Participating CAC Members: Aaron Shaffer, Adam Braun, Alice Lehman, Anna Eleria, Constance Pepin, Craig Wilson (Subcommittee Chair), Jim Romlin, Joshua Christensen, Laura Kinkead, Linda Mack, Michaela West, Nan Dreher, Win Rockwell (CAC Chair)

SUBCOMMITEE PURPOSE AND GOALS

The purpose of this subcommittee is to reach consensus on circulation aspects for the Master Plan.

Goals:

1. Align circulation infrastructure and amenities with the Master Plan vision and guiding principles.
2. Improve circulation and access for park visitors while protecting water quality and wildlife habitat and prioritizing visitor safety in this order: pedestrians, bicycles/roller skaters/skateboarders, electric micro-mobility (ex: scooters, bikes, hover boards), motorized vehicles.
3. Clarify circulation networks and links among people, wildlife, and natural resources with low-impact signage and other tools.

APPROVED RECOMMENDATIONS

Lake of the Isles - Crossing at SE Corner of Lake of the Isles Parkway

a. Redesign the existing paved turnoffs from the Greenway to clarify and differentiate pedestrian and bicycle pathways
b. Move the large port-a-potty to the flat area east of the connector paths to open up sightlines.

Lake of the Isles - Pedestrian connection at SE Isles to Midtown Greenway

a. Move pedestrian connection from the west side of dog park to the east side.

Lake of the Isles - Bike Access from Lake of the Isles to Kenilworth Regional Trail

Possible changes to preferred design concept to reduce hardscape and preserve green space while improving access:

a. Improve existing bike path from Lake of the Isles to Kenilworth Trail via Dean Parkway.

Lake of the Isles - Two-Way Bike Lanes

a. Reject the Preferred Concept's two segments of "two-way" bike trail on Lake of the Isles as impractical and unsafe.

b. Amend the Preferred Concept to formalize, with paint or other cues, a bicycle right of way going with the existing direction of traffic on the parkway.
c. When the parkway is fully reconstructed, consider narrowing the existing Lake of the Isles Parkway to create a raised counterclockwise bicycle path around Lake of the Isles, off the parkway.

Cedar Lake - Southeast Cedar Shoreline Restoration

a. End all encroachments within 10 years with the removal of all non-MPRB infrastructure.
b. After shoreline is naturalized, consider public access path if deemed feasible.

Cedar Lake - East Cedar Woods Restoration and Trails

a. Retain and improve shoreline soft surface pedestrian path to reduce erosion.
b. Prioritize creation of a Natural Resources Management Plan to guide the removal of invasive species and replacement with native plantings and support human circulation while protecting wildlife and habitat.

Cedar Lake - Northwest Cedar Trails

a. Reject a shared trail between the "Y" and the Cedar Lake Regional Trail and proposes separated bicycle and pedestrian paths in that segment.
d. Prioritize safety for pedestrians by widening existing paved paths to a minimum of 6 feet for pedestrians and 8 feet for two-way biking, keeping separate paths and using the least intrusive methods, considering a boardwalk only as a last resort.

General - Land Acquisition of Approximately 20 Acres Below Kenwood/Lowry Hill

a. Conserve and enhance this parcel for wildlife and habitat to offset fragmentation accelerated by SW LRT.
b. Formalize the existing trail connecting Kenwood Parkway and Douglas Avenue and the Bryn Mawr LRT stop at Penn Avenue and Cedar Lake Trail.

General - Additional Pedestrian Safety Improvements

- Address safety issues and conflicts between pedestrians and bikers on West Cedar Lake Parkway near Cedar Point Beach and Cedar Meadows wetland, while minimizing any new pavement and runoff.

General - Wayfinding and Signage (including restrooms)

Create and maintain a significantly improved method of wayfinding to provide consistent, clear signs to major destinations. Include references to Indigenous history and education about the value of the park and preservation of its natural features. Accommodate digital connectivity, remove obsolete signs, and replace old signs to achieve a unified signage look and aesthetic across the full master plan area.

TIED VOTE RECOMMENDATION

Cedar Lake - East Cedar Woods Restoration and Trails

c. Include a soft-surface bike path, entirely separated from pedestrian paths through the woods to Cedar Lake Regional Trail.

WORK GROUP CEDAR LAKE MANAGEMENT

Cedar Lake Park Natural Resources Management Recommendations

recommended by the Cedar Lake Park Working Group
for inclusion in the Cedar-Isles Master Plan

Work Group Members

Amanda Vallone
Amy Sanborn
Angela Erdrich
Barry Schade
Beth Swedberg
Bob Day
Brian Crotteau
Catherine Gunsbury
Catherine Zimmer
Cherise Regehr
Claire Ruebeck
Constance Pepin
Craig Wilson
Curt Gunsbury
David Klopp
David Shirley
Elizabeth Nelson
Holly Buchanan
Jeanette Colby
Jeff Paulsen
Jocelyn Hale
Kathy Low
Keith Prussing
Mark Brown
Mark Schmidt
Mary Pattock
Meredith Montgomery
Neil Trembly
Phil Deering
Rich Harrison
Sarah Nettleton
Stephen Greenfield
Steve Kotvis
Steven Rosenzweig
Stuart Chazin
Will Stensrud
Win Rockwell

During the Cedar-Isles master planning process, discussions about community input and long-term stewardship by neighborhood and regional groups led to the formation of the Cedar Lake Park Working Group to develop a set of goals focused on protecting and enhancing land in Cedar Lake Park. This group requests that the CAC include these goals in the Cedar-Isles Master Plan, as an important complement to the CAC's Water Quality Subcommittee's Goals for protecting and enhancing water quality.

According to MPRB's "Parks for All" Comprehensive Plan, "By nearly all scientific accounts, Earth is amidst the sixth significant extinction event in global history. Species diversity is dropping precipitously around the world, with plant and animal extinctions likely occurring daily." In 2019, scientists concluded that today there are three billion fewer birds in North America than 50 years ago—a loss of almost 1/3 of all birds. Insect populations are drastically declining. In a recent study scientists found a "terrifying" decline in flying insects and concluded that "We cannot put off action any longer, for the health and wellbeing of future generations ... It is essential that we halt biodiversity decline now."

Volunteer Park Stewards at Cedar Lake have long understood the necessity to care for our natural resources, which enhance our quality of life and ensure our very survival. The current crises of climate change and declining biodiversity make the Cedar Lake Park Association's Nurture Nature philosophy more relevant than ever: "With more stress being imposed upon natural ecosystems by increasing urbanization, our future will depend on redeveloping cities which function more harmoniously with nature."

As stated in the Park Board's Natural Areas Plan [pp. 5-6]:

> "Natural areas are vital to city residents and park visitors for several reasons besides the economic value they provide. Wetlands and forested areas along rivers and streams help reduce downstream flooding, and prairies and forests on the landscape absorb huge quantities of rainfall, which in turn shrinks the amount of runoff and eroded sediment that reaches a watershed's streams and lakes...natural landscapes recharge groundwater and return the majority of precipitation to the air (through evapotranspiration), resulting in less runoff and associated erosion, water pollution, and flooding. Natural areas also absorb and store carbon from the air, helping to reduce greenhouse gasses. Schools, organizations, and families use natural areas to learn about the natural world; this is especially important for young children who otherwise spend more time making virtual connections indoors. The quality of life in urban areas is better simply because natural areas give citizens and visitors places to stroll, bike, take in the scenery, or simply relax in a natural setting."

The goals proposed by the Cedar Lake Work Group will strengthen efforts to sustain biodiversity and adapt to climate change while offering nature-based recreation in Cedar Lake Park as part of the Chain of Lakes Regional Park. These goals reflect Cedar Lake Park's location in the Chain of Lakes Important Bird Area and align with the Park Board's approved Parks for All Comprehensive Plan, Ecological Systems Plan, and Phase II Natural Areas Plan, as well as the Minneapolis Stormwater Management Plan and the Natural Areas/Wetlands Subcommittee's Recommendations to the MPRB Board of Commissioners for Natural Areas Management.

Land Management Goals

Goal: Manage natural resources in and adjacent to Cedar Lake Park as an ecologically healthy landscape for people, plants and wildlife, by developing and implementing (as stated in the Park Board's Phase II Natural Areas Plan) a detailed Natural Resource Management Plan (NRMP) for Cedar Lake Park.

- Build staff expertise and capacity for effective natural resources management by adding ecologists, biologists and other qualified technical personnel.
- Expand staff and institutional capacity and skills to increase and sustain volunteer engagement in restoration and management.
- Improve the health of existing tree stands and expand the tree canopy with native and adapted North American species.
- Establish diverse native and adapted native plants for each type of plant community.
- Support pollinators and other wildlife by minimizing use of any pesticides by any agency, and evaluate opting out of MMCD treatments to protect the food web.
- Use non-toxic best management practices to control invasive species whenever possible.
- Strengthen and protect a terrestrial and aquatic food web (including littoral zones) with diverse native species of site-appropriate trees and plants.
- Monitor informal trails and lake access points and take action when necessary to protect wildlife habitat and prevent or mitigate damage to the shoreline and plants.
- Acquire remnant SWLRT land for use as an undeveloped natural area with site-appropriate native and adapted vegetation.
- Design and locate appropriately-scaled service corridors that blend with the natural environment.
- Manage trash/refuse and address sanitation needs year-round with high-quality, well-maintained facilities, while considering aesthetics and the visitor experience in addition to accessibility for people and vehicles.
- Adopt a measurement system to monitor, evaluate and report the ecological health of Cedar Lake parkland (in addition to existing water quality reporting) on a regular basis.
- Implement a policy and procedure for quickly mobilizing to address immediate threats such as jumping worms.

Master Plan Level Goals

Goal: Prioritize the need to maintain ecologically thriving parkland as the foundation of recreational opportunities for park visitors.

- Establish metrics for carrying capacity of the natural resources linked to recreational activities and amenities (such as boats, docks and beaches) to ensure sustainable usage.
- Maintain and stabilize native plant communities and prevent erosion using trails, natural borders, and designated access points and activities.
- Design low-profile naturalistic signage to provide way-finding and park guidelines.
- Formalize a natural/soft surface low-impact trail network for pedestrians that protects plant communities and wildlife habitat.
- Direct bikers to regional bike trails (Cedar Lake, Kenilworth, and Grand Rounds) with signage and other tools.
- Minimize human artifacts and limit built structures in the Park, and design and site amenities within the context of the natural environment and a natural shoreline.

Goal: Maximize and restore habitat (terrestrial and aquatic) to improve the health of the parkland and lake and ensure healthy spaces for wildlife and nature-based recreation.

- Enhance natural areas to ensure high–functioning native and adapted plant communities.
- Conduct bi-annual wildlife inventories to determine populations, trends and threats, as part of a comprehensive biological and ecological monitoring program.
- Establish and maintain natural areas in a manner that prioritizes the protection and enhancement of habitat for wildlife likely to use the areas.
- Apply best management practices to reduce threats to birds and other wildlife, including reducing lighting and noise pollution, with expanded protections during nesting and migration periods.
- Apply science-based monitoring and protocols to minimize pesticide use.
- Address physical barriers to access by mobility-challenged park visitors, in appropriate locations and while minimizing hardscape.

Goal: Provide inclusive and innovative programming that builds community and connects diverse park visitors with each other and to Nature while protecting the natural environment.

- Establish and use effective outreach and communication channels to inform visitors and the general public about events, programs, and other park activities.
- Use outreach and communication channels, including an updated MPRB webpage, to inform and educate people about the park as a natural area.
- Maintain and support existing nature-based programs for youth (such as the School Forest) that inspire, educate and equip people to become stewards of our parks.
- Reduce barriers to program participation by people of all abilities.
- Partner with organizations to conduct outreach and offer programs, including nearby neighborhood associations (e.g., Cedar-Isles-Dean, Bryn Mawr, Kenwood), stewardship groups (e.g., Cedar Lake Park Association, Friends of Cedar Lake, Friends of Cedar Lake Point Beach), and others (such as the Loppet Foundation, Audubon Chapter of Minneapolis, and environmental justice organizations).
- Recognize and actively support volunteer Park Stewards and organizations in their efforts to positively impact ecological function.

High-Level Regional Park Goal

Goal: Achieve broad community understanding and support of the environment and ecological challenges at Cedar Lake Park, factors impacting biodiversity, and ways people can help protect our parklands.

- Maintain a low-impact pedestrian trail network with naturalistic signage, fencing and other cues of care to protect plants and wildlife habitat.
- Implement strategies and practices to limit the spread of invasive species into natural areas, such as establishing buffer zones, limiting access, and selectively removing fruiting species.
- Work with the community to develop and deliver site-specific and seasonal nature-based education programs and outdoor events (e.g., naturalist, birding, canoeing).
- Promote enjoyment of Cedar Lake Park for its unique character as a naturalistic environment.
- Encourage and enable visitors to help protect Nature, manage trash, and reduce damage.
- Educate people about the "leave no trace" approach to recreation: take only pictures, leave only footprints.