

# Lessard-Sams Outdoor Heritage Council

## Laws of Minnesota 2015 Accomplishment Plan



**Date:** October 15, 2014

**Program or Project Title:** Lake Nokomis Shoreline Habitat Enhancements

**Funds Recommended:** \$ 444,000

**Manager's Name:** Adam Arvidson

**Title:** Project Manager

**Organization:** Minneapolis Parks and Recreation Board

**Address:** 2117 West River Road N

**City:** Minneapolis, MN 55411

**Office Number:** 612-230-6470

**Email:** aarvidson@minneapolisparcs.org

**Legislative Citation:**

**Appropriation Language:**

**County Locations:** Hennepin

**Regions in which work will take place:**

- Metro / Urban

**Activity types:**

- Enhance

**Priority resources addressed by activity:**

- Habitat

### Abstract:

MPRB requests \$444,000 to improve aquatic habitat in Lake Nokomis through integrated lake management. This project will enhance 4580 linear feet of shoreline.

### Design and scope of work:

The enhancement activity included in this project will improve habitat for fish, birds, reptiles, amphibians, and aquatic invertebrates in the entirety of Lake Nokomis. The lake measures 200 acres; approximately half is less than 15 feet deep. The lake is owned entirely by MPRB. Its shoreline consists of a combination of Works Progress Administration stone wall in varying condition along with stretches of turfgrass with poor quality native shoreline buffer and little emergent vegetation along the eroding lake edge. It is an important stop-over for migratory waterfowl, songbirds, and shorebirds that use the Mississippi River Flyway, such as wood ducks, loons, grebes, coots, warblers, vireos, grosbeaks, herons, rails, and sandpipers.

Lake Nokomis is limited in its habitat potential due primarily to its lack of clarity and lack of aquatic vegetation. The poor water clarity is attributable to a negative feedback cycle centered on an imbalance in the fish population. Periodic fish surveys have found that small black bullheads and small panfish are overabundant in the lake. There is not enough aquatic vegetation in the lake for these species' shelter and food needs (plants would serve as habitat to prey insects), so these species root in the substrate in search of food. Sediment re-suspension increases turbidity in the lake and also instigates algae blooms by releasing nutrients back into the water column. Sediment- and algae-based turbidity then further suppresses plant growth by preventing light penetration to the lakebed.

Aquatic and shoreline vegetation is critical to overall lake clarity and habitat. A study by Canfield and Hoyer (1992) has shown that lakes

with at least 40% vegetative coverage function as high quality habitat lakes with good water clarity. Lake Nokomis currently has 11% vegetative coverage. Plants grow only to lake depths up to 8 feet and not in the entire littoral (15-foot maximum depth) zone—which constitutes about half the lake.

This project will enhance of 4580 linear feet of shoreline by regrading banks to stabilize erosion, removing invasive plants in the shoreline buffer, and installing appropriate native emergent and shoreline plants.

This activity is proposed based on extensive scientific study of the lake. A variety of other previous efforts that have improved the lake's habitat. In 2001 MCWD and MPRB installed a weir between Lake Nokomis and Minnehaha Creek to reduce nutrient inflow to the lake from the creek, then modified that weir in 2012 to protect against zebra mussels. Also in 2001, MPRB, MCWD, and the City of Minneapolis installed several native species-planted storm water treatment ponds near the lake to pre-treat urban runoff and provide habitat for various animal species. Nearby residents and groups such as Friends of Lake Nokomis, Blue Water Commission, the Nokomis East Neighborhood Association, and the Hale Page Diamond Lake Neighborhood Association have historically supported efforts to improve lake water quality and habitat through participation in planning and with volunteer efforts.

Lake Nokomis has excellent habitat potential. MPRB and MCWD have been studying this generally shallow lake for years and have implemented some critical habitat improvements already. LSOHC funding would leverage MPRB and MCWD's efforts through each agency's general operations and maintenance funding. It would allow the next phase of habitat enhancement to occur.

## Crops:

Will there be planting of corn or any crop on OHF land purchased or restored in this program - **No**

## How does the request address MN habitats that have: historical value to fish and wildlife, wildlife species of greatest conservation need, MN County Biological Survey data, and/or rare, threatened and endangered species inventories:

According to the original land survey map of Hennepin County prior to the development of the city, Lake Nokomis was originally a shallow lake. It was likely full of emergent vegetation and was an effective spawning ground for fish. Dredging in the early 1900's disturbed Nokomis's littoral habitat. The concurrent construction of the storm sewer conveyance system added nutrients and sediment to the lake system. These two actions combined created a feedback loop that caused Lake Nokomis to switch to an algae dominated low-habitat-value system. Through projects completed by the Blue Water Partnership in the 2000's along with later nutrient reduction projects in the southern portion of the watershed, much of the external sediment and phosphorus load to the lake has been addressed. However, the lake remains locked in an algae-dominated state. The intent of the current project is to help push the lake back into a clear-water habitat-rich state. This will restore the historic function of the lake as an interconnected habitat system that benefits aquatic vegetation, aquatic invertebrates, fish, birds, reptiles, amphibians, and small mammals.

## What is the nature of urgency and why it is necessary to spend public money for this work as soon as possible:

Much work has been done at Lake Nokomis. We have the opportunity to ensure that habitat quality tips in the right direction, but a significant shoreline and emergent plant restoration is necessary to stabilize this critical component of the lake. Delay will unravel years of work.

## Describe the science based planning and evaluation model used:

MPRB will continue to regularly monitor phosphorous, nitrogen, chlorophyll-a, zooplankton, and phytoplankton and compare levels to historic data and MPCA standards. MPRB will also perform shoreline and emergent plant surveys within the enhancement areas.

## Which sections of the Minnesota Statewide Conservation and Preservation Plan are applicable to this project:

- H4 Restore and protect shallow lakes
- H6 Protect and restore critical in-water habitat of lakes and streams

## Which other plans are addressed in this proposal:

- Minnesota DNR Strategic Conservation Agenda
- National Fish Habitat Action Plan

## Which LSOHC section priorities are addressed in this proposal:

### Metro / Urban:

- Protect, enhance, and restore riparian and littoral habitats on lakes to benefit game and nongame fish species

## Relationship to other funds:

- Not Listed

The MCWD has been a past recipient of Clean Water Fund dollars, which it has used throughout the watershed on a variety of water quality improvement projects. Lake Nokomis is within the MCWD jurisdiction

## How does this proposal accelerate or supplement your current efforts in this area:

Since 2001 MPRB and MCWD have been working to improve the quality of habitat in Lake Nokomis through a variety of efforts. A weir between the lake and Minnehaha Creek installed in 2001 and modified in 2012 eliminates creek inflow, thereby reducing nutrients in the lake and protecting it from zebra mussels. Native-planted stormwater ponds installed in 2001 also mitigate urban runoff. The MCWD's Biomanipulation Study is addressing the prevalence of stunted bluegill sunfish and bullheads through stocking of predator walleye. LSOHC funding will allow for the complementary and necessary effort to significantly enhance the lake's shoreline. It will supplement the general operations and maintenance funding provided for the lake by MPRB and MCWD. It will allow for rapid implementation of shoreline enhancement.

## Describe the source and amount of non-OHF money spent for this work in the past:

Appropriation Year	Source	Amount
2000	Minnehaha Creek Watershed District	300,000
2010	Minnehaha Creek Watershed District	41,800
2013	Minnehaha Creek Watershed District	72,598
2014	Minnehaha Creek Watershed District	9,200

## How will you sustain and/or maintain this work after the Outdoor Heritage Funds are expended:

The stewardship plan for enhanced habitat at Lake Nokomis will be led by MPRB environmental stewardship staff. Their primary focus will be to continue to remove invasive tree and herbaceous species from the shoreline, monitor and repair any recurring erosion, and monitor and repair shoreline restoration areas as needed. MPRB may contract with Conservation Corps Minnesota and will also utilize its youth employment program, Teen Teamworks, to help with invasive removals. Teen Teamworks is a youth employment program that helps teens and young adults develop job skills focused on maintenance and natural resource management. Water resources staff will also conduct aquatic plant surveys. Volunteers from the Nokomis East Neighborhood Association and the Friends of Lake Nokomis will help sustain the enhanced habitat. After conclusion of the five-year grant, MPRB and MCWD will continue to maintain and improve lake habitat. MCWD will likely continue the predator stocking program for an additional five years.

## Explain the things you will do in the future to maintain project outcomes:

Year	Source of Funds	Step 1	Step 2	Step 3
2021 and thereafter	MPRB General Operating	continued maintenance of shoreline restoration areas	continued water sampling	

## Activity Details:

If funded, this proposal will meet all applicable criteria set forth in MS 97A.056 - **Yes**

Will restoration and enhancement work follow best management practices including MS 84.973 Pollinator Habitat Program - **Yes**

Is the activity on permanently protected land per 97A.056, subd 13(f), tribal lands, and/or public waters per MS 103G.005, Subd. 15 - **Yes (County/Municipal, Public Waters, no)**

## Accomplishment Timeline:

Activity	Approximate Date Completed
Restore and enhance 4580 linear feet of riparian habitat (2016 - 2020)	2020
Monitor and evaluate results annually through plant surveys	2020

**Date of Final Report Submission:** 6/26/2020

## Federal Funding:

Do you anticipate federal funds as a match for this program - **No**

## Outcomes:

### Programs in metropolitan urbanizing region:

- Improved aquatic habitat indicators *Increased diversity and quantity of native emergent and shoreline plants will be assessed through annual point-intercept plant surveys. Regular water sampling will provide nutrient loading information.*

# Budget Spreadsheet

*Budget reallocations up to 10% do not require an amendment to the Accomplishment Plan*

**How will this program accommodate the reduced appropriation recommendation from the original proposed requested amount**

Eliminate biomanipulation and in-lake plant propagation from project scope. Reduce linear feet of restored shoreline from 4800 to 4580.

**Total Amount of Request: \$ 444000**

**Budget and Cash Leverage**

BudgetName	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Personnel	\$0	\$115,600	MPRB General Operating, MPRB General Operating, MPRB General Operating & Teen Teamworks, MPRB General Operating & Teen Teamworks	\$115,600
Contracts	\$67,300	\$0		\$67,300
Fee Acquisition w/ PILT	\$0	\$0		\$0
Fee Acquisition w/o PILT	\$0	\$0		\$0
Easement Acquisition	\$0	\$0		\$0
Easement Stewardship	\$0	\$0		\$0
Travel	\$0	\$0		\$0
Professional Services	\$157,500	\$0		\$157,500
Direct Support Services	\$0	\$0		\$0
DNR Land Acquisition Costs	\$0	\$0		\$0
Capital Equipment	\$0	\$0		\$0
Other Equipment/Tools	\$0	\$0		\$0
Supplies/Materials	\$219,200	\$0		\$219,200
DNR IDP	\$0	\$0		\$0
<b>Total</b>	<b>\$444,000</b>	<b>\$115,600</b>		<b>\$559,600</b>

**Personnel**

Position	FTE	Over # of years	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Water Quality Staff	0.03	5.00	\$0	\$15,000	MPRB General Operating	\$15,000
Landscape Architect/Project Manager	0.06	5.00	\$0	\$45,000	MPRB General Operating	\$45,000
Youth Crew Supervisor	0.05	5.00	\$0	\$8,800	MPRB General Operating & Teen Teamworks	\$8,800
Youth Worker(s)	0.50	5.00	\$0	\$46,800	MPRB General Operating & Teen Teamworks	\$46,800
<b>Total</b>	<b>0.64</b>	<b>20.00</b>	<b>\$0</b>	<b>\$115,600</b>		<b>\$115,600</b>

Amount of Request: \$444,000

Amount of Leverage: \$115,600

Leverage as a percent of the Request: 26.04%

## Output Tables

**Table 1a. Acres by Resource Type**

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	0	0	0	0	0
Protect in Fee with State PILT Liability	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0
Protect in Easement	0	0	0	0	0
Enhance	0	0	0	2	2
Total	0	0	0	2	2

**Table 2. Total Requested Funding by Resource Type**

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	\$0	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$0	\$444,000	\$444,000
Total	\$0	\$0	\$0	\$444,000	\$444,000

**Table 3. Acres within each Ecological Section**

Type	Metro Urban	ForestPrairie	SE Forest	Prairie	N Forest	Total
Restore	0	0	0	0	0	0
Protect in Fee with State PILT Liability	0	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0
Enhance	2	0	0	0	0	2
Total	2	0	0	0	0	2

**Table 4. Total Requested Funding within each Ecological Section**

Type	Metro Urban	ForestPrairie	SE Forest	Prairie	N Forest	Total
Restore	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0	\$0
Enhance	\$444,000	\$0	\$0	\$0	\$0	\$444,000
Total	\$444,000	\$0	\$0	\$0	\$0	\$444,000

**Table 5. Average Cost per Acre by Resource Type**

Type	Wetlands	Prairies	Forest	Habitats
Restore	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$0	\$222000

**Table 6. Average Cost per Acre by Ecological Section**

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest
Restore	\$0	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0
Enhance	\$222000	\$0	\$0	\$0	\$0

**Target Lake/Stream/River Feet or Miles**

.86 shoreline miles

# Parcel List

For restoration and enhancement programs ONLY: Managers may add, delete, and substitute projects on this parcel list based upon need, readiness, cost, opportunity, and/or urgency so long as the substitute parcel/project forwards the constitutional objectives of this program in the Project Scope table of this accomplishment plan. The final accomplishment plan report will include the final parcel list.

## Section 1 - Restore / Enhance Parcel List

Hennepin

Name	TRDS	Acres	Est Cost	Existing Protection?
No ko mis Lake	02824213	192	\$785,600	Yes

## Section 2 - Protect Parcel List

No parcels with an activity type protect.

### Section 2a - Protect Parcel with Bldgs

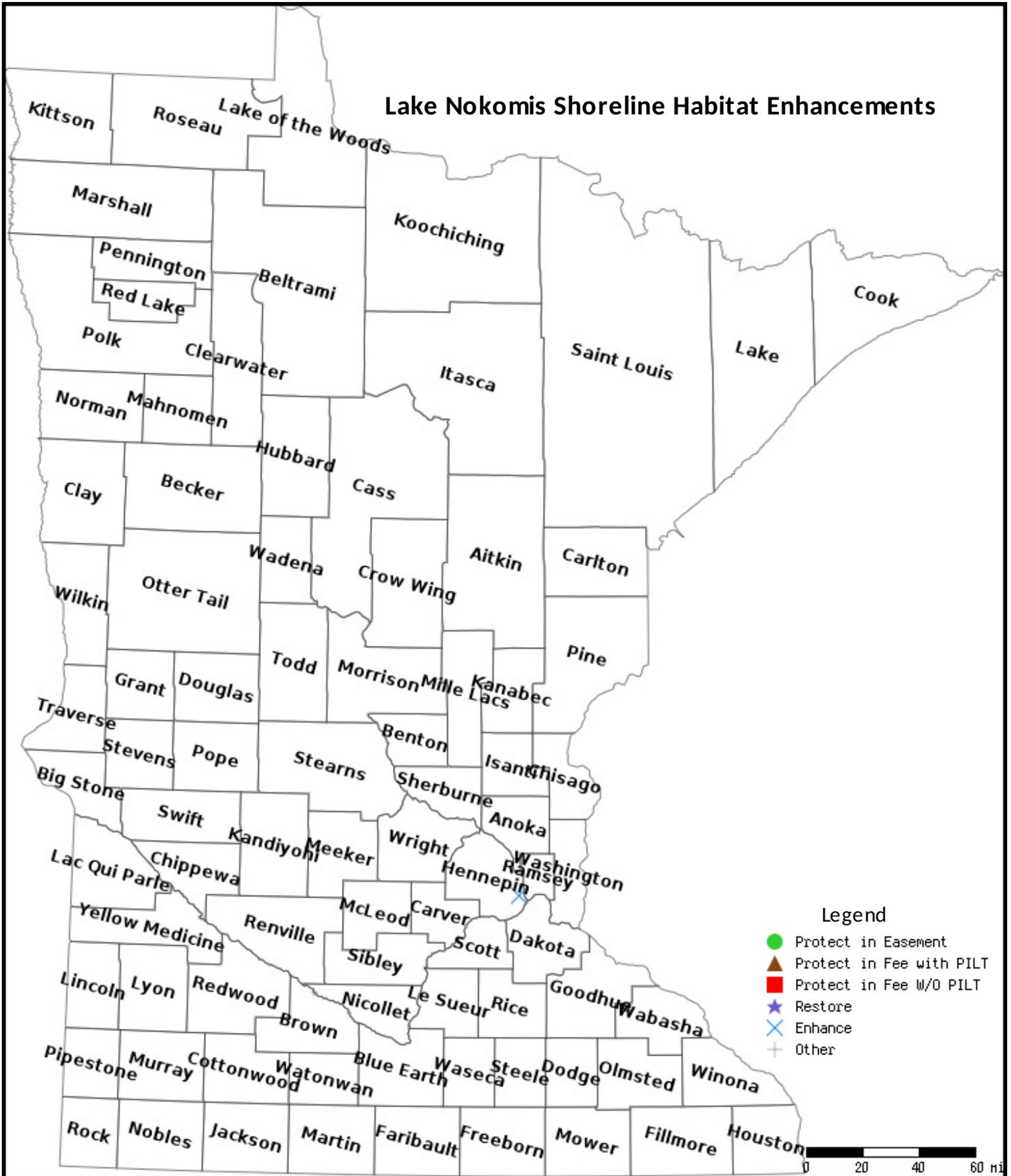
No parcels with an activity type protect and has buildings.

## Section 3 - Other Parcel Activity

No parcels with an other activity type.

# Parcel Map

## Lake Nokomis Shoreline Habitat Enhancements



Data Generated From Parcel List