

Lessard-Sams Outdoor Heritage Council

Laws of Minnesota 2015 Final Report



Date: September 17, 2018

Program or Project Title: Lake Bemidji South Shore Restoration and Enhancement

Funds Recommended: \$1,650,000

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Legislative Citation: ML 2015, First Sp. Session, Ch. 2, Art. 1, Sec. 2, Subd. 5(d)

Appropriation Language: \$1,650,000 in the first year is to the commissioner of natural resources for an agreement with the city of Bemidji to restore and enhance fish habitat on Lake Bemidji. A list of proposed restorations and enhancements must be provided as part of the required accomplishment plan.

County Locations: Beltrami

Regions in which work was completed:

- Northern Forest

Activity types:

- Restore
- Enhance
- Public Education

Priority resources addressed by activity:

- Habitat

Summary of Accomplishments:

After a century of industrial use, the project brought Lake Bemidji's South Shore to its original state. The city removed 1,144 tons of contaminated soil and sediment, 9,400 cubic yards of woody debris from the lake-bottom and planted native vegetation on the shoreline to restore and enhance aquatic habitat.

Process & Methods:

The Lake Bemidji South Shore Restoration and Enhancement project transformed a blighted shoreline and disturbed lake bed of one of northern Minnesota's finest urban lakes into a model of restoration to its native state, improving water quality and aquatic habitat. The project was the final step of a restoration effort led by the City of Bemidji, in partnership with the Minnesota DNR and DEED.

Lake Bemidji is the first major lake in the Upper Mississippi River watershed. It supports a diverse high quality fishery for walleye, northern pike, yellow perch and muskie. These species are dependent on high quality habitats.

The south shore of Lake Bemidji has a long history of industrial use which altered the shoreline and impacted water quality. The site housed several industries, primarily forestry companies. With their closing and/or relocation, the site became a blighted brownfield. Adjacent to downtown Bemidji, the project includes approximately 4/10 mile of shoreline.

From 2008-2014, the City of Bemidji partnered with DNR and DEED to clean-up the site and restore the shoreline to its native state. Specifically:

- The City purchased the site and placed it in the MPCA Voluntary Investigation and Clean-Up (VIC) Program, and using a DEED redevelopment grant, cleaned up roughly 50 acres of land.
- The DNR purchased land from the City and extended the Paul Bunyan State Trail through the site.
- The City permanently designated the lakeshore between the trail and the lake as public land.
- The DNR purchased a large parcel of the eastern shoreline as a DNR Aquatic Management Area.

Much work remained on the lakeshore and in lake bed. Approximately 9,400 cubic yards of woody debris from the old Crookston Lumber remained in the lake bottom and along the south shore. The debris covered 1,500 feet of lakeshore extending 200 feet from the shore and ranging from 1 to 4 feet deep.

The lakeshore needed to be restored to its original state, including native vegetation, trees, shrubs and natural erosion control. The land between the trail and the lake (3.1 acres) was replanted with native vegetation, improving water quality and habitat in the lake and 0.6 acre was restored for use by the public as a swimming beach, rest stop along the bike trail, and education area, totaling 3.7 acres restored for ecological and public use.

The project returned the south shore of Lake Bemidji to its native state for the first time in a century, improved the shoreline and addressed water quality and aquatic habitat issues in an urban-recreational setting.

Now that restoration and enhancement is complete, the City developed (with funding outside Outdoor Heritage Council support) a regional park that provides public education on water quality and aquatic habitat restoration. The park utilizes roughly 20 percent of the shoreline. The project balances environmental protection and enhancement and public use and education on one of northern Minnesota's premier lakes.

The following was completed with Outdoor Heritage Fund support:

Shoreline Restoration:

The historic industrial use of the site altered the south shoreline of Lake Bemidji. The effect was reduced water quality and compromised aquatic habitat. In May 2014, DNR specialists assessed the south shore site and determined the potential of restoring the site. The DNR recommended substantial clean-up and restoration work to improve water quality, habitat and erosion control.

The restoration plan included:

- Site monitoring
- Site preparation/treatment of weeds
- Installation of native seed mixes
- Installation of 10,000 native plugs
- Planting 800 (#2) shrubs
- Planting 10 (#10) native trees
- Weed control
- Installation of erosion control

The city is committed to maintaining the improvements long term through its parks and recreation department.

Woody Debris Removal:

The City studied the woody debris issue and completed design plans that lowered the lake level with a temporary cofferdam (protecting the fish) and excavating the debris out of the lake.

The City received the following permits:

- DNR Water Permit
- Army Corps of Engineers Permit
- MPCA Solid Waste/Beneficial Reuse
- Section 106 Review

- Bois Forte Band and Leech Lake Band Clearance Letter

The construction work was publicly bid and specified the use of a water barrier cofferdam, Aquabarrier, Portadam, or equal. The Engineer reviewed these brands and permits were based on the specifications. MPCA VIC Program costs for remediation of contaminated soil/sediment is a fee program so costs were incurred for review.

Approximately 9,400 cubic yards of woody debris was removed and replaced with sand. The excavated area extended 200 feet out from the shore, covering 1,440 feet of shoreline and depth of 1 to 4 feet. Overall, 240,000 square feet of Lake Bemidji was cleaned up and restored.

The woody debris was sampled and primarily used as clean backfill on site or properly disposed of if contaminated. Approximately 400 tons of contaminated soil and 750 tons of contaminated sediment/wood debris was managed and disposed of at a permitted landfill.

The City spent \$63,800 in design and permitting. The estimated cost to restore the lake bed was \$1.5 million with vegetation restoration totaling \$150,000. The City used Landmark Environmental, LLC and Anderson Engineering of MN for construction management because they designed, assisted in bidding, and acquired permits. The City believed they provided high quality and reasonably priced services. Landmark has staff in Bemidji and engineers and staff traveled from Twin Cities to Bemidji for meetings and construction as needed.

Summary:

Lake Bemidji is one of northern Minnesota's most critical natural assets. The City of Bemidji requested and received \$1.65 million in Outdoor Heritage funding to complete the shoreline restoration and woody debris removal. The restoration and enhancement improves water quality and habitat to native conditions. The South Shore Lake Bemidji project was a finalist for a Minnesota Brownfields ReScape Award in 2017 for small city impact.

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:

Lake Bemidji is the first major lake in the Upper Mississippi River watershed. It supports a diverse, high quality fishery for walleye, northern pike, yellow perch and muskie. These species are dependent on high quality fish habitats. The south shore of Lake Bemidji has long a history of industrial use. These uses have altered the shoreline and impacted water quality. Efforts to remove woody debris from the lake bed and restore native vegetation along the south shore has improved the structural integrity of the shoreline and lake bed and addressed water quality issues in an urban-recreational setting.

The project restored the lake bottom and shoreline to match the existing lake which promotes wildlife expansion into this area. Also the project reduced exposure of wildlife to debris and to contaminated sediments and soil.

Describe the science based planning and evaluation model used:

The site was enrolled in the MPCA Brownfields Program and had soil and sediment contamination. The MPCA follows a risk-based approach and is based on risk to human health and the environment and uses risk assessment, soil physics, hydrogeology and remediation technologies and takes into account receptors and risk exposure pathways.

Explain Partners, Supporters, & Opposition:

The regulatory agencies were project supporters assisting as needed and included the DNR, Army Corps of Engineers, and MPCA. At the South Shore Park Grand Opening Ceremony, the blessing was provided by Helen Condo (Gagiige Bineski) Spiritual Advisor, remarks from Elaine Fleming, Chair of the Arts and Humanities Dept at Leech Lake Tribal College, and John Persell, former member of the Minnesota House of Representatives representing District 5A in northern Minnesota. Minnesota Brownfields recognized City of Bemidji as a finalist in the 2017 ReScape Awards.

Additional Comments:

Exceptional challenges, expectations, failures, opportunities, or unique aspects of program

Additional contaminated soil and sediment was encountered during the cleanup in 2015. Two additional soil/debris areas with petroleum contamination were discovered in the lakebed and needed to be excavated and properly disposed. Sections of the AquaBarrier also ripped and/or failed and needed to be replaced and reconstructed several times. This delayed the project initially, but the project finished in early November 2015 as anticipated. Because the majority of the debris was along the shoreline, the debris extended as deep as 4 feet in the lakebed near the shore. This required more clean sand to be backfilled in this area to reach existing elevations. Vegetation planting and maintenance needed to be extended an additional year to establish plants that needed to be replaced. Vegetation maintenance was completed in the summer of 2018. The City is now taking over the vegetative maintenance.

Other Funds Received:

- City of Bemidji funds

How were the funds used to advanced the program:

The City requested Legacy Funds to develop a regional park on site but Legacy Funds were not awarded. The City of Bemidji ultimately funded the park. The park is a statewide model of successful balance between public access, economic interests and aquatic restoration activities.

What is the plan to sustain and/or maintain this work after the Outdoor Heritage Funds are expended:

The short term maintenance activities for the restoration project include weeding, watering, and supplemental planting. The City of Bemidji will provide labor for weeding and supplemental planting during the initial project years. The City Parks Department will water the site as needed utilizing the city water truck.

Long term maintenance will be a function of the City of Bemidji Parks Department and coordinated volunteer efforts to ensure the buffer area is properly weeded and planted (if necessary) into the long term. Weeding will take place at least twice a year – once in the spring and once in the fall to ensure the native species are thriving and invasive species are removed. The site will be evaluated on an annual basis. Watering and replanting will be done as needed.

Ongoing maintenance of the restoration work within Lake Bemidji will include annual clean-up of any additional woody debris that may have drifted in with the current. The City of Bemidji will be responsible for the annual maintenance of the site.

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

Year	Source of Funds	Step 1	Step 2	Step 3
2019+	City of Bemidji	Weed Control & Site Maintenance	Additional Woody Debris Removal as needed	

Outcomes:

The original accomplishment plan stated the program would

Programs in the northern forest region:

- Improved aquatic habitat indicators

How will the outcomes be measured and evaluated?

The outcome of the project is improved aquatic habitat indicators. In addition, the visitors to the park are educated about the history, cleanup process, and restoration and enhancement of shoreline vegetation.

Budget Spreadsheet

Final Budget line item reallocations are allowed up to 10% and do not need require an amendment to the Accomplishment Plan

Total Amount: \$1,650,000

Budget and Cash Leverage

BudgetName	Request	Spent	Cash Leverage (anticipated)	Cash Leverage (received)	Leverage Source	Total (original)	Total (final)
Personnel	\$10,000	\$8,500	\$0	\$0		\$10,000	\$8,500
Contracts	\$1,495,000	\$1,455,900	\$0	\$0		\$1,495,000	\$1,455,900
Fee Acquisition w/ PILT	\$0	\$0	\$0	\$0		\$0	\$0
Fee Acquisition w/o PILT	\$0	\$0	\$0	\$0		\$0	\$0
Easement Acquisition	\$0	\$0	\$0	\$0		\$0	\$0
Easement Stewardship	\$0	\$0	\$0	\$0		\$0	\$0
Travel	\$1,000	\$300	\$0	\$0		\$1,000	\$300
Professional Services	\$135,000	\$135,900	\$62,000	\$62,000	City of Bemidji	\$197,000	\$197,900
Direct Support Services	\$0	\$0	\$0	\$0		\$0	\$0
DNR Land Acquisition Costs	\$0	\$0	\$0	\$0		\$0	\$0
Capital Equipment	\$0	\$0	\$0	\$0		\$0	\$0
Other Equipment/Tools	\$6,000	\$0	\$0	\$0		\$6,000	\$0
Supplies/Materials	\$3,000	\$2,000	\$0	\$0		\$3,000	\$2,000
DNR IDP	\$0	\$0	\$0	\$0		\$0	\$0
To tal	\$1,650,000	\$1,602,600	\$62,000	\$62,000		\$1,712,000	\$1,664,600

Personnel

Position	FTE	Over # of years	Spent	Cash Leverage	Leverage Source	Total
City Engineer	0.00	0.00	\$8,500	\$0		\$8,500
Total	0.00	0.00	\$8,500	\$0		\$8,500

Amount of Request: \$1,650,000

Amount of Leverage: \$62,000

Leverage as a percent of the Request: 3.76%

Explain any budget challenges or successes:

More contaminated soil, sediment and debris was encountered than estimated, however, the project was completed under project budget.

All revenues received by the recipient that have been generated from activities on land with money from the OHF:

Total Revenue: \$0

Revenue Spent: \$0

Revenue Balance: \$0

Output Tables

Table 1a. Acres by Resource Type

Type	Wetlands (original)	Wetlands (final)	Prairies (original)	Prairies (final)	Forest (original)	Forest (final)	Habitats (original)	Habitats (final)	Total (original)	Total (final)
Restore	0	0	0	0	0	0	6	6	6	6
Protect in Fee with State PILT Liability	0	0	0	0	0	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0	0	0	0	0
Enhance	0	0	0	0	0	0	3	3	3	3
Total	0	0	0	0	0	0	9	9	9	9

Table 2. Total Funding by Resource Type

Type	Wetlands (original)	Wetlands (final)	Prairies (original)	Prairies (final)	Forest (original)	Forest (final)	Habitats (original)	Habitats (final)	Total (original)	Total (final)
Restore	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500,000	\$1,452,600	\$1,500,000	\$1,452,600
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$0	\$0	\$0	\$0	\$150,000	\$150,000	\$150,000	\$150,000
Total	\$0	\$0	\$0	\$0	\$0	\$0	\$1,650,000	\$1,602,600	\$1,650,000	\$1,602,600

Table 3. Acres within each Ecological Section

Type	Metro Urban (original)	Metro Urban (final)	ForestPrairie (original)	Forest Prairie (final)	SE Forest (original)	SE Forest (final)	Prairie (original)	Prairie (final)	N Forest (original)	N Forest (final)	Total (original)	Total (final)
Restore	0	0	0	0	0	0	0	0	6	6	6	6
Protect in Fee with State PILT Liability	0	0	0	0	0	0	0	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0	0	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0	0	0	0	0	0	0
Enhance	0	0	0	0	0	0	0	0	3	3	3	3
Total	0	0	0	0	0	0	0	0	9	9	9	9

Table 4. Total Funding within each Ecological Section

Type	Metro Urban (original)	Metro Urban (final)	ForestPrairie (original)	Forest Prairie (final)	SE Forest (original)	SE Forest (final)	Prairie (original)	Prairie (final)	N Forest (original)	N Forest (final)	Total (original)	Total (final)
Restore	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500,000	\$1,452,600	\$1,500,000	\$1,452,600
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$150,000	\$150,000	\$150,000	\$150,000
Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,650,000	\$1,602,600	\$1,650,000	\$1,602,600

Table 5. Average Cost per Acre by Resource Type

Type	Wetlands (original)	Wetlands (final)	Prairies (original)	Prairies (final)	Forest (original)	Forest (final)	Habitats (original)	Habitats (final)	Total (original)	Total (final)
Restore	\$0	\$0	\$0	\$0	\$0	\$0	\$250,000	\$242,100		
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
Protect in Easement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
Enhance	\$0	\$0	\$0	\$0	\$0	\$0	\$50,000	\$50,000		

Table 6. Average Cost per Acre by Ecological Section

Type	Metro Urban (original)	Metro Urban (final)	ForestPrairie (original)	Forest Prairie (final)	SE Forest (original)	SE Forest (final)	Prairie (original)	Prairie (final)	N Forest (original)	N Forest (final)	Total (original)	Total (final)
Restore	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$250,000	\$242,100		
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
Protect in Easement	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
Enhance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,000	\$50,000		

Target Lake/Stream/River Feet or Miles (original)

4/10 mile of lakeshore

Target Lake/Stream/River Feet or Miles (final)

4/10 mile of lakeshore

Explain the success/shortage of acre goals:

The amount of lakeshore cleanup was completed as planned.

Parcel List

Section 1 - Restore / Enhance Parcel List

Beltrami

Name	TRDS	Acres	Total Cost	Existing Protection?	Description
South Shore of Lake Bemidji	14633215	9	\$1,650,000	Yes	Lake Bemidji Shoreline owned by City of Bemidji and designated as permanently public

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.

Completed Parcel: South Shore of Lake Bemidji

# of Total Acres:	9
County:	Beltrami
Township:	146
Range:	33
Direction:	2
Section:	15
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shoreline:	
Name of Adjacent Body of Water (if applicable):	
Has there been signage erected at the site:	
Total cost of Restoration/Enhancement:	\$1,650,000

Parcel Map

Lake Bemidji South Shore Restoration and Enhancement

