

Date of Report: July 31, 2000
LCMR Workprogram Update Report

AUG 09 2000

Date of Next Status Report: none
Date of Work Program Approval: August 1, 1997
Project Completion Date: June 30, 2000

LCMR Work Program 1997

I. PROJECT TITLE: Lakeshore Restoration - Minneapolis Chain of Lakes B-19

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Total Biennial Project Budget:	\$450,000		
\$ LCMR:	300,000	\$ Match required:	150,000
-\$LCMR Amount Spent:	299,999	-\$ Match Amount Spent:	152,797.54
=\$ LCMR Balance:	1.00	=\$ Match Balance:	0

A. Legal Citation: ML 1997, [Chap. 216], [Sec. 15], Sudb. 6(g)
LAKESHORE RESTORATION - MINNEAPOLIS CHAIN OF LAKES
Appropriation Language This appropriation is from the trust fund to the Commissioner of Natural Resources for an agreement with the Minneapolis Park & Recreation Board to restore native plants on lake shores of the Chain of Lakes to improve water quality, wildlife habitat, and decrease erosion. This appropriation must be matched by at least \$150,000 of non-state money.

Sud. 25. Carryforward (a) The availability of the appropriations for the following projects is extended to June 30, 2000: ML 1997, [Chap. 216], [Sec. 15], Sudb. 6, paragraph (g) lakeshore restoration – Minneapolis chain of lakes .

B. Status of Match Requirement:

Match status to date:

Park Board budget (150-710-7160)	\$15,000 expended in 1997
	\$40,686.84 expended in 1998
	<u>\$35,789.96 expended in 1999</u>
	\$91,476.80 for grant period

NRP Funds - LiHNC	\$20,000 expended in 1997
KIAA	<u>\$ 7,500 in 2000</u>
	\$ 27,500

People for Parks Foundation	\$19,134.24 expended in 1997
	\$19,939.40 expended in 1998
	<u>\$ 2,429.10 expended in 1999</u>
	\$41,502.74

Total match expended \$152,979.54

II. PROJECT SUMMARY AND RESULTS:

The Chain of Lakes system is one of the most heavily-used regional park systems in the metropolitan area. Shoreline areas that have been severely impacted due to heavy visitor use or erosion will be restored so as to permit continued recreational use while mitigating negative environmental impacts. Smaller but comparable projects using bioengineering have been implemented in the Minneapolis Park system, and the techniques developed through these pilot projects will be drawn upon in the proposed project.

The lake shore areas of the Minneapolis Chain of Lakes have been impacted by soil compaction, shoreline erosion, urban runoff and loss of riparian plant communities and littoral wetlands. All these impacts have reduced the quality of the parks areas and have a negative impact on lake water quality. This project will undertake lake shore restoration through the use of biotechnical design principles. Bioengineering (biotechnical) is a distinct approach to shoreline stabilization and restoration. Bioengineering uses living plant materials in combination with engineering design criteria such as hydrology, hydraulics, geotechnical and plant ecology to allow natural processes to reestablish a natural plant community capable of responding to stress. Bioengineering solutions provide broad, environmentally responsible products which provide baseline stability and grow stronger and more diverse with age.

Lake shore restoration work will be completed on lakes Calhoun, Harriet, Isles and Cedar. Until initial surveys are completed and preliminary design is undertaken, the number of lineal feet of shoreline to be constructed on each lake is undetermined. Projects will be completed on lakeshore areas of all four lakes that have varying degrees of degradation. Areas identified for restoration through this project are Cedar Lake - southeast shoreline; Lake Calhoun - southwest and east shoreline; Lake Harriet - east and southwest shoreline; Lake of the Isles - east and northwest shoreline. Outcomes of the project include; 1) long-term shoreline erosion protection, 2) re-establishment of littoral wetland plant communities, 3) increase in native plant diversity, 4) improve lake water quality, and 5) creation of fish and wildlife habitat.

III. PROGRESS SUMMARY:

Result 1: Lake Harriet

Budget: \$162,000

Design: \$ 0 for design work completed in May 1997
Additional design work completed in October 1998 -
\$14,997.53 for Harriet delta and Cedar shoreline combined

Construction: \$ 124,924.75 LCMR funds

◇ Result 1a: Lake Harriet shoreline work completed

Expenditures: \$ 69,925

Design: \$ 0 (design work completed in May 1997)
Construction: \$ 69,925 LCMR funds expended to date
Construction completed Fall 1997 on 1315 lineal feet of shoreline
Planting - completed Fall 1997 on 1315 lineal feet of shoreline

◇ Result 1b: Lake Harriet delta completed on June 29, 1999

Expenditures: \$ 74,638.94

Design: \$ 14,997.53 design work completed in October 1998
Construction: \$ 54,999.75 LCMR funds expended
\$ 19,639.19 match funds expended
Construction - Winter/Spring 1999 completed
Planting - Summer 1999 completed

All of the shoreline work specified in the original workplan (1315 lineal feet) was completed in 1997 at a cost of \$53 per lineal foot of shoreline. Permitting problems and the higher than anticipated bids for the work prevented the delta work from being undertaken 1997. We are presently working with DNR - Waters and Minnehaha

Creek Watershed District on the permits; we have retained a consultant team to work with the contractor selected for the other work on Harriet to adjust specified design and get a new bid price; this work will be completed by June 1999. We may need to ask for a six month extension on this portion of the project due to these delays. This workplan was changed to reflect the amount to be spent at Lake Harriet with an increase from \$140,000 to \$162,000. This increase will be from LCMR and matching funds. DNR and MCWD permits obtained for the work in November. Design work completed and bid documents prepared by Kestrel Design Group and Westwood Engineering. Bids were advertised and low bid accepted from Jay Brothers. Construction for this work has been completed and follow-up plant maintenance is continuing. Five percent retainage yet to be paid to contractors. "Vegetation Restoration" signs developed for sites, in five languages - English, Spanish, Russian, Hmong, Vietnamese. Signs installed on site to reduce impacts from park users. Some reconstruction completed following severe storms in early summer. Plant replacements made in May for warranty work and final payment will be made to contractor at end of warranty period.

◇ **Result 2: Lake Calhoun shoreline - work completed**

Budget: \$ 175,000

Design: \$ 0 (design work completed in May 1997)

Construction: \$139,927.00 LCMR funds expended

\$ 15,000 MPRB match funds expended

\$ 20,000 NPR match funds expended

Construction completed Fall 1997 on 2300 lineal feet of shoreline

Planting - completed Summer 1998

All of the shoreline work specified in the original workplan for Lake Calhoun (2300 lineal feet) was completed in 1997, but the unit prices were higher than projected (\$76 per lineal foot of shoreline vs. \$53/foot at Calhoun). Thus the total amount spent at Lake Calhoun was greater than originally specified. Money will be transferred from Cedar Lake to Lake Calhoun to complete the quantity specified in the workplan. This workplan was changed to reflect a change in the amount to be spent at Lake Calhoun - an increase from \$95,000 to \$174,927. This increase will be from LCMR funds to \$139,927 from \$60,000, with the matching contribution remaining at \$35,000. Sentence to serve crew removed un-sprouted willow stakes from south shore of lake in May. Willow stakes installed in fall did not survive well as compared to the spring installation at Lake Harriet.

◇ **Result 3: Lake of the Isles shoreline**

Budget: \$98,555

Design: \$ 0

Construction: \$ 35,000 LCMR

\$ 63,555 match funds

Expenditures: \$ 50,762.27

Construction: \$ 0 LCMR funds expended

\$ 50,762.27 match funds expended

Construction - Summer 1998 – Spring 2000

Planting in Summers of 1998-99 and Spring 2000

Planting site preparation started in July of 1997 at Lake of the Isles, but rising lake levels stopped work in mid-July and high lake levels until November prevented any further work on the sites. A Citizens Advisory Committee was convened in December 1997 to work with staff and consultants to develop a lakeshore restoration

plan for the entirety of Lake of the Isles shoreline areas. This approach will allow for a more comprehensive approach to the shoreline restoration. Costs related to design work on this (for consultant expenses) have been borne by the MPRB. The citizen committee's work was completed in March 1998 and work is proceeding in the summer of 1998 on the original sites, plus one additional site using the combination of old/new design elements. Site preparation work has been started and plants ordered. This workplan was changed for the amount to be spent at Lake of the Isles – this will be an overall increase from \$65,000 to \$98,555. This increase will be from LCMR and matching funds, with the matching contribution increasing from \$45,000 to \$ 63,555 while the LCMR contribution will increase to \$ 35,000. Working Kenwood-Isles Area Association to raise additional funds for completion of shoreline areas in the Kenilworth Lagoon area in summer of 1999. KIAA has committed to \$7500 of additional funds for the project. Planting was completed on three sites in August, plant protection fencing installed and plant orders for 1999 submitted to suppliers. Design work started for additional shoreline work. Sanders Wacker Bergly retained to completed the design and monitor construction (additional design costs provided outside of this project). This shoreline work to be bid in March and constructed in spring. Additional planting work completed on southwest Isles site by volunteers from the University of St. Thomas and the University of Minnesota. Sentence to serve crews weeded all sites an removed protective fences in late spring. In May 76 volunteers from Delloitte Consulting completed the plantings, removed last of protective fences, and did additional weeding of the sites.

◇ **Result 4: Cedar Lake shoreline work completed**

Budget: \$ 22,000

Expenditures: \$ 57,525.27

Design/Survey: completed 1998 (see Harriet delta)

Construction: \$ 35,148.00 LCMR funds

\$ 22,377.27 match funds expended

Design - Summer 1998

Construction – Summer 1999 completed

Planting; Aquatic - July 1999

Woody - July 1999

Rising lake levels during the summer of 1997 prevented any design work on the sites. The site survey work has been completed and an RFP for consultant services was issued in March 1998. Based upon neighborhood meetings with adjoining residents, the scope of the project at Cedar Lake has been reduced with the scope now to include design standards for the shoreline to be developed and 90 feet of shoreline to be constructed as a demonstration area. This workplan was changed for the amount to be spent at Cedar Lake- this will be an overall decrease from \$150,000 to \$22,000. This decrease will be from LCMR funds - a decrease from \$80,000 to \$ 0, with the matching contribution decreasing from \$70,000 to \$22,000. Permits obtained for the work in November. Design work completed and bid documents prepared by Kestrel Design Group and Westwood Engineering. Bids were let in November and work awarded to Jay Brothers Construction. Shoreline grading for restoration, protective fencing and soil preparation work completed in June. Change order submitted and approved for some additional shoreline shaping and erosion control. "Vegetation Restoration" signs developed for sites, in five languages - English, Spanish, Russian, Hmong, Vietnamese. Signs installed on site to reduce impacts from park users. Plant replacements made in May for warranty work and final payment will be made to contractor at end of warranty period.

IV. OUTLINE OF PROJECT RESULTS:

◇ Result 1: Lake Harriet shoreline/delta

Budget: \$162,000
Design: \$ 14,997.53 match - design work August 1998 - completed
10/98 for both Harriet and Cedar
Construction: \$124,924.75 LCMR + \$ 34,636.72 match expended
Shoreline Construction - Fall 1997 - Summer 1998 - Completed
Planting - Summer 1998 - Completed
Delta Construction - Fall 1998 - Summer 1999 - Completed
Planting - Summer 1999 - Completed
Completion Date: Summer 1999
Deliverables: 1300 lineal feet of shoreline completed
0.48 acres of delta restoration

◇ Result 2: Lake Calhoun shoreline

Budget: \$175,000
Design: \$ 0 - design work completed in May 1997
Construction: \$139,927 LCMR expended
\$ 35,000 match expended
Construction - Fall 1997 - May 1998 - Completed
Planting - May 1998 - Completed
Completion Date: May 1998
Deliverables: 2300 lineal feet of shoreline completed

◇ Result 3: Lake of the Isles shoreline

Budget: \$98,555
Design: \$ 0 (design work completed in March 1998)
Construction: \$ 0 LCMR expended
\$ 50,762.27 match expended
Construction - Spring 1998 and Fall 1999 - spring 2000
Planting in Summer of 1998 - spring 2000
Completion Date: May 2000
Deliverables: 2200 lineal feet of shoreline
1.8 acres wetland revegetation

◇ Result 4: Cedar Lake shoreline

Budget: \$ 22,000
Design/Survey Completed 10/98 for both Harriet and Cedar
Construction: \$ 35,148.00 LCMR funds
\$ 22,377.27 match expended
Design - August 1998 - Completed
Construction - Winter 1998/99 - Completed
Planting; Aquatic - Spring 1999
Woody - Spring 1999
Completion Date: Summer 1999
Deliverables: 90 lineal feet of shoreline and littoral wetland

V. DISSEMINATION:

Project information and results will be disseminated through project reports, presentations, site visits and photographs. A final project report describing techniques, photographs and design documents will be completed.

VI. CONTEXT:

A. Significance:

This project will undertake lake shore restoration through the use of biotechnical design principles. Bioengineering uses living plant materials in combination with engineering principles to allow natural process was reestablish a natural plant community capable of responding to stress. Bioengineering solutions provide broad, environmentally responsible products which grow stronger and more diverse with age.

Due to the limited experience with lake shore bio restoration work in Minnesota, the costs of construction activities associated with this type of work can only be considered rough estimates. Until survey work is completed on each site and the magnitude of the work projected for each location, the actual per foot cost of each project cannot be estimated. This project will better define those costs and refine the plant material selections for Minnesota.

B. Time: Completion date ~~June 1999~~ Summer 1999

C. Budget Context:

The Minneapolis Park and Recreation Board has undertaken a variety of lakeshore stabilization and restoration efforts over the years. Most of the prior lakeshore stabilization efforts used standard engineering approached. A portion of the Lake of the Isles lakeshore was stabilized used standard engineering approached in late 1994. In 1995 a Metropolitan Council grant (\$195,000) was used for a combination bioengineering-standard engineering approach for Lake Calhoun shoreline.

		July 1995 - June 1997	July 1997 - June 1999	July 1999 - June 2001
		Prior expenditures on this project	Proposed expenditures on this project	Anticipated future expenditures on this project
1.	LCMR	\$ 0	\$ 300,000	\$ 0
2.	Other State	\$ 195,000	\$ 0	\$ 0
3.	Non State Cash	\$ 10,000	\$ 150,000	\$ 7,000
Total		\$ 205,000	\$ 450,000	\$ 7,000

BUDGET:

Personnel	\$ 0	
Equipment	\$ 0	
Acquisition	\$ 0	
Development	\$ 15,000	(surveys, contractual design, and construction observation)

Other

Construction	\$ 284,852
Total	\$ 299,852

VII. COOPERATION: Loring-Nicollet-Bethlehem Community Center - youth crews Chain of Lakes Clean Water Partnership project

VIII. LOCATION: see map of Chain of Lakes attached to original workplan

IX. Reporting Requirements:

Periodic work program progress reports will be submitted no later than December 31, 1997, June 30, 1998 and December 31, 1998. A final work program report and associated products will be submitted by June 30, 1999, or by the completion date as set in the appropriation.