FINAL REPORT

1999 Project Abstract
For the Period Ending June 30, 2001

TITLE: City of Lakes Flood Mitigation and Gravity Flow Stream System
PROJECT MANAGER: Jeffrey T. Lee
ORGANIZATION: Minneapolis Park & Recreation Board
ADDRESS: 3800 Bryant Ave. South, Minneapolis, MN 55409
WEB SITE ADDRESS: www.minneapolisparks.org
FUND: MFRF
LEGAL CITATION: ML 1999, Ch. 231, Sec. 16, Subd. 6(h)

APPROPRIATION AMOUNT: $ 500,000

Overall Project Outcome and Results

Completed construction of the gravity flow stream connection between Lake Calhoun and Lake Harriet to improve lake water quality and equalize water levels in the Minneapolis Chain of Lakes. Construction and engineering costs totaled $ 516,234 for completion of the final phase of the project. Gravity flow outlet has been functional since May 2000 and operated efficiently and as designed during high water episodes in 2001.

Phase one construction for Lake of the Isles Park has been designed, permitted, bid and construction contract awarded. The current phase one includes shoreline stabilization and wetland and flood storage creation, with shoreline stabilization along the east shore of the main lake and on the south shore of the Kenilworth Lagoon.

Project Results Use and Dissemination

The project completed construction of the gravity flow stream connection between Lake Calhoun and Lake Harriet to improve lake water quality and equalize water levels in the Minneapolis Chain of Lakes. The gravity flow system uses the natural force of gravity to regulate 721 acres of lake surface area. The open channel portions of the gravity flow connection have the appearance of a natural stream, with plantings of native riparian species. Construction and engineering costs totaled $ 516,234.

Historically, lake levels within the Chain of Lakes have been maintained using mechanical pumping of 800 million gallons of water (up to $8,000 of electricity per year). The gravity flow system moves water at a maximum rate of 28.4 cfs, while the pumping system moved only 22.3 cfs. Gravity flow outlet has been functional since May 2000 as designed during high water episodes in 2001. The increased stability of water levels will safeguard shoreline vegetation and infrastructure from disastrous flooding.

Phase one construction for Lake of the Isles Park has been designed, permitted, bid and construction contract awarded. Design costs totaled $ 489,319 for work completed to date. All of the phase one-construction permits with the Department of Natural Resources, U.S. Army Corp of Engineers and the Minnehaha Creek Watershed District have been signed/approved. Total recovery and restoration efforts will exceed $9 million with environmental restoration costs exceeding $4 million. Preventative measures will be implemented to control storm water runoff and storage, decrease impacts to the natural and built facilities and minimize future capital expenditures, address shoreline

restoration and stabilization and reforestation needs. The benefits of the recovery project are future flooding impacts are minimized and of lesser duration, recurrent flood related expenditures are eliminated and/or reduced, improved environmental and water quality; discourage goose habitat while encouraging other songbird and fish habitat.

Date of Report: July 1, 2001
Date of Next Status Report: Final
Date of Workprogram Approval: July 22, 1999
Project Completion Date: June 30, 2001

FINAL LCMR Work Program Report

Title: City of Lakes Flood Mitigation and Gravity Flow Stream System
$500,000

Program Manager:	Jeffrey T. Lee
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Total Biennial Project Budget:

LCMR	$ 500,000	**Match:**	$1,035,000.00
LCMR Amount Spent	$ 500,000	**Match Amount Spent**	$ 599,275.33
LCMR Balance:	$ 0	**Match Balance:**	$ 435,724.67

A. Legal Citation: ML 1999, [Chap. 231], Sec.[16], Subd. 6(h)
Appropriation Language:
City of Lakes Flood Mitigation and Gravity Flow Stream System $500,000 the first year is from the future resources fund to the Metropolitan Council for an agreement with the Minneapolis Park and Recreation Board. Up to $250,000 is to complete the construction of the gravity flow stream connection between Lake Calhoun and Lake Harriet to improve lakewater quality and equalize water levels in the chain of lakes. At least $250,000 the first year is for flood mitigation, shoreland stabilization, design and engineering, and wetland replacement at Lake of the Isles. The appropriation for the gravity flow stream connection project must be matched by sufficient non-state money to complete the project.

B. Status of Match:
~~$192,500~~ $1,035,000 committed
$175,000 Lowry Hill East Neighborhood Association
~~$17,500~~ $100,000 East Isles Residents Association
$ 9,000 MPRB Environmental Operations
$ 751,500.00 Metropolitan Council

II. PROJECT SUMMARY AND RESULTS

The proposed gravity flow system will use the natural force of gravity to regulate 721 acres of lake surface area as part of a 6850-acre watershed system. Historically, lake levels within the Chain of Lakes have been maintained through the mechanical pumping of 800 million gallons of water annually. The resulting movement of water through the system will improve water quality, and the increased stability of water levels will safeguard shoreline vegetation and infrastructure from disastrous flooding, such as that, which occurred during the summer of 1997. Where possible, segments of the gravity flow connection will take on the appearance of a natural stream, with shoreline plantings of native riparian species.

Prolonged flooding in 1997 and severe wind storms in 1998 devastated the shoreline and surrounding facilities at Lake of the Isles Regional Park. A Citizen Advisory Committee and team of consultants have developed a recovery plan that addresses restoration needs. Total recovery and restoration efforts will exceed $9 million. Environmental restoration costs alone will exceed $4 million and will address shoreline restoration and stabilization as well as reforestation needs. Most importantly, preventative measures will be implemented to control storm water runoff and storage, decrease impacts to the natural and built facilities and minimize future capital expenditures. The benefits of the recovery project are future flooding impacts are minimized and of lesser duration, recurrent flood related expenditures are eliminated and/or reduced, improved environmental and water quality; discourage goose habitat while encouraging other songbird and fish habitat

III. PROGRESS SUMMARY

Result 1: Construction of gravity outlet system between Lake Calhoun and Harriet.

Design work for the gravity flow stream connection between Lake Calhoun and Lake Harriet has been completed. Contract completed with Barr Engineering for construction observation and engineering services for $29,500. Project construction bids opened on September 23, 1999, low bid of $493,094.30. Change orders negotiated and contract awarded to Veit and Companies for $460,747.80 Permits from Minnehaha Creek Watershed District, DNR - Division of Waters and US Army Corps of Engineers received. Construction work start on November 9, 1999. Pipe jacking and pipe installation, outlet structure construction, stream channel grading and manholes completed on February 1, 2000. System is currently operational and will allow water to pass from Calhoun to Harriet when lake levels require such an outflow.

Landscaping work has been completed and the system is functioning. Monitoring of lakes level recession is underway to document the effectiveness of the system. Final payment to contractor awaiting completion of punch list.

Final Punch list has been completed and final payment made to contractor. Billing from Minneapolis Water Works still outstanding. As built drawings being

completed and final payment to engineers will be made when completed. Based upon 2000 growing season information, the system is operating as designed and the vegetation has become established.

Project as-builts have been completed and stream gauging complete for discharge measurements. System is operating as designed.

Result 2: Engineering and design, permitting and landscaping work at Lake of the Isles

Engineering, design and permitting is well underway for the Lake of the Isles renovation project. The following is a summary of work since August 1999: In September, the Citizen Advisory Committee (CAC) for the Lake of the Isles project was reconvened to complete their involvement in the renovation masterplan. The CAC had an additional five public meetings and recommended to the MPRB an agreed upon design. The MPRB approved the CAC recommended masterplan during their December 1999 Board meeting.

Starting in late August, the project consultant team began the process of delineating and mapping the existing wetland boundaries. This process entailed convening a Technical Evaluation Panel (TEP) to review the wetland delineation. In addition, the team prepared and submitted the U.S. Army Corp of Engineers individual permit in compliance with Section 404 Clean Waters Act, Department of Natural Resources (DNR) – Division of Waters protected waters permit, the Minnehaha Creek Watershed District wetland permit and an Environmental Assessment Worksheet (EAW). In February the MPRB passed a negative declaration resolution on the need for an Environmental Impact Statement (EIS). The consultant team is currently working on the construction documents for phase one of the approved renovation masterplan. Construction for the phase one will begin early this summer. Phase one construction documents include a planting plan for vegetation restoration.

The project consultant is completing work on construction documents for phase one of the Lake of the Isles Renovation Masterplan. The first phase of construction will focus on the shore line stabilization and other site amenities in the north west corner of the Lake and in the Kennilworth Lagoon. The estimate for the first phase of construction is $1,100,000.00. The first phase will go out for bid August 24, 2000 and bids will be due September 21, 2000. Pending an acceptable bid, the project will begin construction in mid October of this year with substantial completion scheduled for October of 2001. Construction permits with the Department of Natural Resources, U.S. Army Corp of Engineers and the Minnehaha Creek Watershed District for the project are in process and will be finalized in August.

The first phase of Lake of the Isles Renovation was bid and the MPRB intends to award a contract on February 7, 2001. The contractor intends to begin

construction the second week of February and weather permitting, work on the first phase will be completed by the fall of 2001.

The consultant will begin phase two construction documents the spring of 2001 for bidding in August of 2001. Construction for phase two would begin winter of 2001 and be completed the fall of 2002.

Phase one construction has been designed, permitted, bid and construction contract awarded. Work has not started due to the water elevation in the lake. It is the contractor's intent to start work as soon as the water level reaches near normal elevation. The majority of the work should be completed by the end of October. The current phase one includes shoreline stabilization and wetland and flood storage creation.

Currently the design team is continuing design and permitting work on the next phase of construction. This phase will include shoreline stabilization along the east shore of the main lake and on the south shore of the Kennilworth Lagoon.

All of the phase one-construction permits with the Department of Natural Resources, U.S. Army Corp of Engineers and the Minnehaha Creek Watershed District have been applied for and signed/approved copies have been received.

IV. OUTLINE OF PROJECT RESULTS

Result 1: Construction of gravity outlet system between Lake Calhoun and Harriet.

Budget:	$ 250,000 LCMR	$ 284,000 Match
Expenditures:	$ 250,000	$ 266,234.45
Balance	$ 0	$ 0

Result 2: Engineering and design, permitting and landscaping work at Isles

Budget:	$ 250,000 LCMR	$ 751,000 Match
Expenditures:	$ 250,000	$ 239,319.17
Balance	$ 0	$ 511,680.83

V. DISSEMINATION

Project results will be made available on the Minnesota Sustainable Communities Network web site, produced by the Minnesota Office of Environmental Assistance (http://www.moea.state.mn.us).

VI. CONTEXT

A. Significance

Existing mechanical systems cannot predictably or affordably maintain lake levels, as evidenced by the frequency of large flood events within the Chain of

Lakes system within the past decade (1987, 1992, 1993, and 1997). Each of these flood events has resulted in extensive loss of vegetation, path damage, erosion, and accompanying siltation. A detailed study of potential solutions to this problem, undertaken in 1997, determined that the creation of a gravity flow system between Lakes Calhoun and Harriet would be the most effective and sustainable approach.

B. Time

July 1999 - June 2001

C. Budget Context

For Chain of Lakes 1994-1998:

1. LCMR Budget History:	$ 200,000	(1997-1999, lakeshore bioengineering restoration at Lakes Calhoun and Harriet)
2. Non-LCMR Budget History:	3,216,000	(1996-1999, Met Council funding for improvements at Lakes Calhoun and Harriet)
3. TOTAL:	$3,416,000	

1. BUDGET

Result 1 Construction of outlet system:

Personnel (contractual construction management)	$ 22,500
Equipment	0
Acquisition	0
Development (construction - contractual)	420,000
Other	0
Total	$442,500

Result 2 Engineering and design, permitting and landscaping work at Isles

Design, engineering and permits	$238,000
Shoreline restoration	280,500
Landscaping	132,500
Total	$657,500

Total:

Personnel	**$ 260,500**
Equipment	**0**
Acquisition	**0**
Development	**839,500**
Other	**0**
TOTAL	**$1,100,000**

VII. COOPERATION

Regulatory agencies to be involved include the US Army Corps of Engineers, the Department of Natural Resources, the Minnehaha Creek Watershed District, and the Clean Water Partnership. No monetary match is available is currently available from these agencies or organizations.

VIII. REPORTING REQUIREMENTS:

Periodic workprogram progress reports will be submitted not later than January 2000, July 2000, and January 2001. A final workprogram report and associated products will be submitted by June 30, 2001, or by the completion date set in the appropriation.