

## MEMORANDUM

**To:** MCWD Board of Managers  
**From:** Kelly Dooley, Water Quality Manager  
**CC:** Craig Dawson, Director of Research and Monitoring Department  
**Date:** 03/06/2015  
**RE:** Lake Nokomis Water Quality Improvement Efforts: 2015 Biomanipulation Project – Work Plan Amended

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### **Purpose:**

Staff is presenting an amended Lake Nokomis Water Quality Improvement Efforts: 2015 Biomanipulation Project work plan. The budget and levy in the amended work plan is the same as the budget and levy in the original 2015 work plan.

### **Background:**

The original 2015 work plan for the Lake Nokomis Water Quality Improvement Efforts – 2015 Biomanipulation Project had budgeted funds to implement a 10-year walleye stocking program. There were several options listed on how much of the work plan funds were to be spent dependent on the success of the Minneapolis Park and Recreation Board's Lessard-Sams Outdoor Heritage grant application.

A carp survey was conducted in August 2014 on Lake Nokomis, and estimated the carp population size to be about 8,421 carp with a biomass of about 298 kg/ha. This amount of carp in Lake Nokomis is above the level of ecological sustainability for a lake (< 100 kg/ha). In the fall 2014, the MPRB learned the portion of the grant to maintain the biomanipulation program was not funded.

With the knowledge that the carp population is a bigger issue in Lake Nokomis than originally believed, MCWD staff met with the partners in November 2014 to discuss the next steps for Lake Nokomis. It was determined that the focus will shift from an intense walleye stocking program to developing a carp management program. The amended 2015 work plan reflects the change in direction for improving water quality in Lake Nokomis. The amended work plan can be accomplished with the funds available for 2015.

**Next Steps:**

Staff recommends the Board of Managers approve the Lake Nokomis Water Quality Improvement Efforts: 2015 Biomanipulation Project – amended work plan by forwarding the document to the Board Meeting’s consent agenda on March 26, 2015.

If there are questions in advance of the meeting, please contact:

Kelly Dooley, Water Quality Manager, at 952-641-4515 or [kdooley@minnehahacreek.org](mailto:kdooley@minnehahacreek.org)

**MINNEHAHA CREEK WATERSHED DISTRICT**  
**LAKE NOKOMIS WATER QUALITY IMPROVEMENT EFFORTS:**  
**2015 BIOMANIPULATION PROJECT - AMENDED**

**PREPARED BY:** Kelly Dooley

**DATE:** March 5, 2015

<b><u>Project</u></b>	Biomanipulation Project in Lake Nokomis for Improvement in Water Quality
<b><u>Description</u></b>	<p>In 2010, the Minnehaha Creek Watershed District (MCWD) and Blue Water Science (BWS) with cooperation from the Minnesota Department of Natural Resources (MnDNR) and Minneapolis Parks and Recreation Board (MPRB), embarked on a 4-year biomanipulation study to improve the water quality in Lake Nokomis. During those 4 years, the study observed improvements in the three features of the lake’s ecosystem: (1) the fish community (2) the aquatic plant community, and (3) the water quality.</p> <p>Biomanipulation in Lake Nokomis aided the lake in temporarily achieving Total Maximum Daily Load (TMDLs) goals, which aligns with the MPCA’s nutrient criteria for the lake. Blue Water Science and staff at MPRB and MCWD feel strongly that continued annual management activities will have to be conducted to sustain the TMDL goals. Most biomanipulation programs fail, because the programs are not actively maintained.</p> <p>In 2014, staff at MPRB with support of MCWD applied for Lessard-Sams Outdoor Heritage Grant to fund fish habitat, shoreline improvements and bio-manipulation maintenance projects. While waiting for the grant committee’s recommendation, a carp survey was conducted on Lake Nokomis. The survey estimated the carp population size to be about 8,421 carp with a biomass of about 298 kg/ha, which is above the level ecologically sustainable for a lake.</p> <p>In the fall 2014, the MPRB learned the portion of the grant to maintain the biomanipulation program was not recommended for funding.</p> <p>With the knowledge that the carp population is a bigger issue in Lake Nokomis than originally believed, MCWD staff met with the partners in November 2014 to discuss the next steps for Lake Nokomis.</p> <p>It was determined that the focus will shift from an intense walleye stocking program to developing a carp management program. The MnDNR will continue to stock walleyes in Lake Nokomis, as it stocks the lake every 2-3 years. Angler surveys in the fall 2014 revealed that many anglers on Lake Nokomis practice “catch-and-release,” so an intense stocking program is not necessary. Blue Water Science will work on locating the carp nurseries throughout the Lake Nokomis Subwatershed. While the remaining partners will continue to monitor</p>

	water quality of Lake Nokomis and the adjacent waterbodies. A carp management plan will be developed from the results.																		
<b>Location</b>	The following waterbodies: Legion, Mother, Nokomis, Taft lakes, and the three lagoons adjacent to Lake Nokomis (City of Minneapolis, Minneapolis Parks and Recreation Board and Minnehaha Creek Watershed District)																		
<b>Program Element(s)</b>	<p><b><u>Water Quality Monitoring</u></b></p> <p><b>Winter Monitoring:</b></p> <ul style="list-style-type: none"> <li>• MCWD staff to monitor once to determine dissolved oxygen levels on Mother, Taft and Legion lakes</li> <li>• MPRB staff to monitor once to determine dissolved oxygen levels on Lake Nokomis and the 3 lagoons adjacent to the lake</li> </ul> <p><b>Open-Water Monitoring:</b></p> <ul style="list-style-type: none"> <li>• MCWD staff to monitor water quality in Mother Lake in the 3 lagoons adjacent to Lake Nokomis</li> <li>• MPRB staff to monitor water quality in Lake Nokomis</li> <li>• Consultant for the City of Richfield to monitor water quality in Taft and Legion lakes</li> </ul> <table border="1"> <tr> <th colspan="2">MCWD - Water Quality Monitoring Costs:</th> </tr> <tr> <td>Winter Monitoring</td> <td>--</td> </tr> <tr> <td>Open-Water Monitoring</td> <td>--</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$0</b></td> </tr> </table> <p><b><u>Biological Monitoring</u></b></p> <p><b>Carp Assessments:</b> Blue Water Science to conduct the following tasks:</p> <ul style="list-style-type: none"> <li>• Seining and using fish traps to monitor carp movement in Taft, Legion and Mother lakes (June 2015)</li> <li>• Seining for young-of-the-year carp in the 3 lagoons, Taft, Legion and Mother lakes (August 2015)</li> <li>• Inspect Lake Nokomis inlet/outlet for carp activity</li> </ul> <p><b>Fish Community Survey:</b> Blue Water Science to conduct the following task:</p> <ul style="list-style-type: none"> <li>• Use Trap nets to survey the fish community in Lake Nokomis (July)</li> </ul> <p><b>Aquatic Plant Community Survey:</b> Blue Water Science to conduct the following task:</p> <ul style="list-style-type: none"> <li>• Conduct a point-intercept survey of the aquatic plant community in Lake Nokomis (July)</li> </ul> <table border="1"> <tr> <th colspan="2">MCWD - Biological Monitoring Costs:</th> </tr> <tr> <td>Carp Assessments</td> <td>\$2500</td> </tr> <tr> <td>Fish Community Survey</td> <td>\$3500</td> </tr> <tr> <td>Aquatic Plant Community Survey</td> <td>\$2000</td> </tr> <tr> <td><b>Total</b></td> <td><b>\$8000</b></td> </tr> </table>	MCWD - Water Quality Monitoring Costs:		Winter Monitoring	--	Open-Water Monitoring	--	<b>Total</b>	<b>\$0</b>	MCWD - Biological Monitoring Costs:		Carp Assessments	\$2500	Fish Community Survey	\$3500	Aquatic Plant Community Survey	\$2000	<b>Total</b>	<b>\$8000</b>
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**Biomanipulation**

**Walleye Stocking:**

- MnDNR plans to stock about 2000 walleye fingerlings in Lake Nokomis (Sept-Oct 2015)

<b>MCWD - Biomanipulation Costs:</b>	
Walleye Stocking	--
<b>Total</b>	<b>\$0</b>

**Reporting and Publication**

**Project Report/Submit Manuscript:** Blue Water Science completed the Lake Nokomis Biomanipulation Study Manuscript for publication (Funds spent in 2014)

**Project Report:** Blue Water Science to provide a summary report of the project activities and results (Oct-Nov 2015)

<b>MCWD - Reporting and Publication Costs:</b>	
Project Report/Submit Manuscript (2014)	\$3700
Project Report (2015)	\$1800
<b>Total</b>	<b>\$5500</b>

**Budget Total**

<b>MCWD - Project Tasks</b>	<b>Costs</b>
Water Quality Monitoring	\$0
Biological Monitoring	\$8000
Biomanipulation	\$0
Reporting and Publication	\$5500
<b>3101 Fund Total</b>	<b>\$12,700</b>
<b>2201 Fund Total</b>	<b>\$800</b>

**Outcome**

- 1) Continued partnership with local and state-wide agencies that have interest in the Lake Nokomis Subwatershed
- 2) Quantitative data on the health of Lake Nokomis post-biomanipulation efforts
- 3) The results from the carp assessment will lead to drafting a Carp Management Plan for the Lake Nokomis Subwatershed to be implemented in 2016
- 4) Revising the manuscript for the Lake Nokomis Biomanipulation Project

**2015 Schedule**

***January - March:***

- Monitor for evidence of winter kill conditions in the waterbodies in the Lake Nokomis Subwatershed

***April - October:***

- Conduct monitoring fieldwork in the waterbodies in the Lake Nokomis Subwatershed

**October - December:**

- Preparing the summary of the 2015 project report
- Revise the Lake Nokomis Biomanipulation manuscript
- Submit the manuscript for publication

**3101 Fund Budget/Levy History:**

Year	Budget	Tax Revenue	Revenue	Expenditures*	Transfer In (Out)	Carry Over
2007						\$232,815
2008	\$0			(\$3,568)		\$229,247
2009	\$0			(\$7,293)		\$221,954
2010	\$20,000			(\$366)		\$221,558
2011	\$20,000			(\$24,211)		\$197,377
2012	\$15,000			(\$114,808)		\$82,569
2013	\$20,000			(\$15,050)	(\$63,819)	\$3,700
2014	\$3,700			(\$7,400)		(\$3,700)
2015	\$12,700			(\$9,000)**		\$0

*\*Includes Planning Department expenditures from this fund; \*\*Water Quality Program (2201) will cover the remaining \$800 in 2015 project costs*

**Recommended 2015 Budget and Levy**

Budget: \$ 12,700

Levy: \$ 0

**Detailed Budget**

<b>Budget</b>		
	LAKE NOKOMIS WATER QUALITY IMPROVEMENT EFFORTS: 2015 BIOMANIPULATION PROJECT - AMENDED	
	Contracted Services (3101-500-4320)	\$12,700
	Contracted Services (2201-500-4320)	\$800
	<b>Subtotal</b>	<b>\$13,500</b>
	<b>Total</b>	<b>\$13,500</b>