



Bassett Creek Watershed Management Commission

Regular Meeting
Thursday October 18, 2018
8:30 – 11:00 a.m.

Council Conference Room, Golden Valley City Hall, Golden Valley, MN

AGENDA

1. CALL TO ORDER and ROLL CALL

2. CITIZEN FORUM ON NON-AGENDA ITEMS - *Citizens may address the Commission about any item not contained on the regular agenda. A maximum of 15 minutes is allowed for the Forum. If the full 15 minutes are not needed for the Forum, the Commission will continue with the agenda. The Commission will take no official action on items discussed at the Forum, with the exception of referral to staff or a Commissions Committee for a recommendation to be brought back to the Commission for discussion/action.*

3. APPROVAL OF AGENDA

4. CONSENT AGENDA

- A. Approval of Minutes – September 20, 2018 Commission Meeting
- B. Acceptance of October 2018 Financial Report
- C. Approval of Payment of Invoices
 - i. Keystone Waters, LLC – September 2018 Administrative Services
 - ii. Keystone Waters, LLC – September 2018 Printing Expenses
 - iii. Barr Engineering – September 2018 Engineering Services
 - iv. Triple D Espresso – October 2018 Meeting Refreshments
 - v. Wenck – September 2018 WOMP Monitoring
 - vi. Lawn Chair Gardener – September 2018 Administrative and Education Services
 - vii. Kennedy Graven – August 2018 Legal Services
 - viii. Triple D Espresso – Catering for Workshops
- D. Approval to Send Administrator Jester to Minnesota Association of Watershed Districts Annual Meeting
- E. Approval of Sweeney Lake Aeration Study Final Report

5. BUSINESS

- A. Review Draft Feasibility Study for Bryn Mawr Meadows Water Quality Improvement Project (BC-5) (30 minutes)
- B. Review Draft Bassett Creek Watershed Sign at Westwood Hills Nature Center (15 minutes)
- C. Update on Local Water Management Plan Reviews (15 minutes)
 - i. Commission Comments on New Hope Local Surface Water Management Plan
 - ii. Commission Comments on Minnetonka Water Resources Management Plan
- D. Discuss Invitation to Officially Join Minnesota Association of Watershed Districts (20 minutes)

6. COMMUNICATIONS (20 minutes)

- A. Administrator's Report
 - i. Loppet Foundation – Urban Portage Event
 - ii. Smart Salt Certification Course
 - iii. Workshop for Lake Groups: Options for Organizing
 - iv. Reminder of WEDNESDAY November 14th Commission Meeting
- B. Chair
- C. Commissioners
- D. TAC Members
- E. Committees
 - i. Administrative Services Committee – 10/24 meeting
 - ii. CIP Prioritization Committee
- F. Legal Counsel
- G. Engineer
 - i. Tunnel Inspection
 - ii. Schaper Pond Carp Survey
 - iii. Sediment Sampling in Jevne Park

7. INFORMATION ONLY (Information online only)

- A. Administrative Calendar
- B. CIP Project Updates <http://www.bassettcreekwmo.org/projects>
- C. Grant Tracking Summary and Spreadsheet
- D. Sun Sailor Article: DeCola Ponds B & C Improvement Project
- E. Letter from Commission Legal Counsel to BWSR
- F. West Metro Water Alliance Water Links Newsletter

8. ADJOURNMENT

Upcoming Meetings & Events

- Minnesota Water Resources Conference: October 17 & 18, St. Paul River Centre
- BCWMC Administrative Services Committee Meeting: Wednesday October 24th, 11:30 a.m., Plymouth City Hall
- Bassett Creek Watershed Management Commission Meeting: Wednesday November 14th, 8:30 a.m., Golden Valley City Hall



Bassett Creek Watershed Management Commission

AGENDA MEMO

Date: October 10, 2018

To: BCWMC Commissioners

From: Laura Jester, Administrator

RE: Background Information for 10/18/18 BCWMC Meeting

1. **CALL TO ORDER and ROLL CALL**
2. **CITIZEN FORUM ON NON-AGENDA ITEMS**
3. **APPROVAL OF AGENDA – ACTION ITEM with attachment**
4. **CONSENT AGENDA**
 - A. Approval of Minutes – September 20, 2018 Commission Meeting- **ACTION ITEM with attachment**
 - B. Acceptance of October 2018 Financial Report - **ACTION ITEM with attachment**
 - C. Approval of Payment of Invoices - **ACTION ITEM with attachments (online)** – *I reviewed the following invoices and recommend approval of payment.*
 - i. Keystone Waters, LLC – September 2018 Administrative Services
 - ii. Keystone Waters, LLC – September 2018 Printing Expenses
 - iii. Barr Engineering – September 2018 Engineering Services
 - iv. Triple D Espresso – October 2018 Meeting Refreshments
 - v. Wenck – September 2018 WOMP Monitoring
 - vi. Lawn Chair Gardener – September 2018 Administrative and Education Services
 - vii. Kennedy Graven – August 2018 Legal Services
 - viii. Triple D Espresso – Catering for Workshops
 - D. Approval to Send Administrator Jester to [Minnesota Association of Watershed Districts Annual Meeting](#)– **ACTION ITEM no attachment** – *The Commission Engineer and I are scheduled to give a presentation on the BCWMC AIS Rapid Response Plan at this year's annual meeting of MAWD in Alexandria, MN. I have attended this meeting the past four years and find it valuable to learn from and meet with other watersheds across the State. I am requesting approval to attend the meeting with registration costs of \$200, one nights lodging for up to \$150 (not yet secured), and travel costs of up to \$152 for a total of \$502 plus my time. This spending would come from the Administrator budget line.*
 - E. Approval of Sweeney Lake Aeration Study Final Report – **ACTION ITEM with attachment** – *At their meeting in August, the Commission received a [presentation](#) on this study's results. The final report is now available and includes additional information on alum treatment costs and more discussion and a recommendation regarding aquatic plants, noting that a future lake vegetation management plan may be warranted. Staff recommends approval of the final report and direction to post it online along with notes from the August 1st informational meeting with Sweeney Lake residents.*
5. **BUSINESS**
 - A. Review Draft Feasibility Study for Bryn Mawr Meadows Water Quality Improvement Project (BC-5) (30 minutes) – **ACTION ITEM with attachment (complete document online)** – *At their meeting in September 2017, the Commission approved a proposal by the Commission Engineer to develop a feasibility study for this 2020 CIP project. The Commission Engineer has been in close communication with the Minneapolis Park and Rec Board as this project will coincide with a park reconstruction project in 2021. The draft feasibility study offers three concepts for the Commission to discuss and consider at this meeting.*
 - B. Review Draft Bassett Creek Watershed Sign at Westwood Hills Nature Center (15 minutes) -

INFORMATION ITEM no attachment – *At their meeting in September, the Education Committee discussed and made recommendations on content and graphics for the BCWMC sign to be installed in the new Westwood Hills Nature Center. An initial draft was reviewed and commented on by committee members and me via email since that meeting. The Commission Engineer will present the draft sign at this meeting and review the timeline for finalizing the sign.*

- C. Update on Local Water Management Plan Reviews (15 minutes) – **INFORMATION ITEM with attachments; local water management plans available online** – *The Commission Engineer reviewed the New Hope Plan and provided city staff with the attached comments. I reviewed the Minnetonka Plan and provided city staff with the attached comments. If Commissioners have additional comments on these plans we can add them to our initial comments. The deadline for reviewing and approving (all or parts of) these plans is November 22 and December 21, respectively. At this meeting, staff will also update the Commission on the status of other local plans.*
- i. Commission Comments on New Hope Local Surface Water Management Plan
 - ii. Commission Comments on Minnetonka Water Resources Management Plan
- D. Discuss Invitation to Officially Join Minnesota Association of Watershed Districts (20 minutes) – **DISCUSSION ITEM with attachment** – *At their meeting in September the MAWD Board of Directors approved inviting watershed management organization (such as the BCWMC) to join the MAWD. In the past MAWD's membership was limited to watershed districts. The cost of membership for WMOs is \$500 through 2019. If the MAWD Board approves voting rights for WMOs on resolutions, bylaws, etc. at their annual meeting on November 30th, the annual membership cost will increase starting January 2020. Please see the fact sheet attached with membership benefits.*

6. COMMUNICATIONS (20 minutes)

- A. Administrator's Report - **INFORMATION ITEM with attachment**
- i. Loppet Foundation – Urban Portage Event
 - ii. Smart Salt Certification Course
 - iii. Workshop for Lake Groups: Options for Organizing
 - iv. Reminder of WEDNESDAY November 14th Commission Meeting
- B. Chair
- C. Commissioners
- D. TAC Members
- E. Committees
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7. INFORMATION ONLY (Information online only)

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Upcoming Meetings & Events

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Bassett Creek Watershed Management Commission Meeting: Wednesday November 14th, 8:30 a.m., Golden Valley City Hall



Item 4A.
BCWMC 10-18-18

Bassett Creek Watershed Management Commission

DRAFT Minutes of Regular Meeting

Thursday, September 20, 2018

8:30 a.m.

Golden Valley City Hall, Golden Valley MN

1. CALL TO ORDER and ROLL CALL

On Thursday, September 20, 2018 at 8:33 a.m. in the Council Conference Room at Golden Valley City Hall (7800 Golden Valley Rd.), Chair de Lambert called the meeting of the Bassett Creek Watershed Management Commission (BCWMC) to order.

Commissioners and city staff present:

City	Commissioner	Alternate Commissioner	Technical Advisory Committee Members (City Staff)
Crystal	Dave Anderson	<i>Vacant Position</i>	<i>Absent</i>
Golden Valley	Stacy Harwell	<i>Absent</i>	Jeff Oliver
Medicine Lake	<i>Absent</i>	Gary Holter	<i>Absent</i>
Minneapolis	Welch	<i>Vacant Position</i>	<i>Absent</i>
Minnetonka	<i>Absent</i>	Monk	Chris LaBounty
New Hope	<i>Absent</i>	Pat Crough	Megan Albert
Plymouth	Jim Prom	John Byrnes	Ben Scharenbroich
Robbinsdale	Michael Scanlan	<i>Absent</i>	Richard McCoy
St. Louis Park	Jim de Lambert	<i>Absent</i>	Erick Francis
Administrator	Laura Jester, Keystone Waters		
Engineer	Karen Chandler and Greg Wilson, Barr Engineering		
Recorder	Dawn Pape, Lawn Chair Gardener Creative Services		
Legal Counsel	Troy Gilchrist, Kennedy & Graven		
Presenters/ Guests/Public	Jake Newhall, WSB; Jim Toulouse, Blue Line LRT; Dave Filipiak, Blue Line LRT		

2. CITIZEN FORUM ON NON-AGENDA ITEMS

None.

3. APPROVAL OF AGENDA

Chair de Lambert welcomed new Commissioner Dave Anderson from Crystal and Minnetonka TAC member Chris LaBounty to the meeting.

MOTION: Commissioner Prom moved to approve the agenda. Commissioner Welch seconded the motion. Upon a vote, the motion carried 9-0.

4. CONSENT AGENDA

Commissioner Welch asked to pull Item G – Approval of Grant Agreement for BWSR’s Watershed Based Funding Grant Program from the consent agenda. That item was added to the business section as 5F.

The following items were approved as part of the consent agenda: August 16, 2018 Commission meeting minutes, September 2018 financial report, payment of invoices, approval of Blue Line Light Rail Transit Floodplain Mitigation Project, approval to reimburse Commissioner Scanlan for conference registrations, approval to send Administrator Jester to Water Resources Conference.

The general and construction account balances reported in the September 2018 Financial Report are as follows:

Checking Account Balance	\$ 578,319.98
TOTAL GENERAL FUND BALANCE	\$ 578,319.98
TOTAL CASH & INVESTMENTS ON-HAND (9/12/18)	\$ 3,197,675.34
CIP Projects Levied – Budget Remaining	(\$4,038,913.10)
Closed Projects Remaining Balance	(\$ 841,237.76)
2012-2016 Anticipated Tax Levy Revenue	\$ 4,537.93
2017 Anticipated Tax Levy Revenue	\$ 3,895.88
Anticipated Closed Project Balance	(\$832,803.95)

MOTION: Commissioner Prom moved to approve the consent agenda as amended. Alternate Commissioner Crough seconded the motion. Upon a vote, the motion carried 9-0.

5. BUSINESS**A. Review Draft Feasibility Study for Crane Lake Improvement Project via Ridgedale Drive (CL-3)**

Administrator Jester reminded the Commission that although this is a 2020 CIP project, the feasibility study is ahead of schedule in order for work to coincide with the Ridgedale Drive Reconstruction Project.

Chris LaBounty with the City of Minnetonka gave a short overview of the Ridgedale Drive Reconstruction project. He reported the reconstruction project will result in a reduction of 1.5 acres of impervious surface and noted the city aims to use the opportunity to improve the water quality of Crane Lake. He noted the soils are poor in this area so infiltration is not an option and he noted there is an impending chloride impairment in Crane Lake.

WSB Engineer, Jake Newhall, gave an overview of options that were investigated as part of the feasibility study. He reported the existing large regional ponds are doing a good job of pollutant removal and it would be difficult to retrofit those basins.

Mr. Newhall noted the water quality improvement would be constructed as part of the city's Ridgedale Drive Reconstruction project, scheduled for construction in 2019. The feasibility analysis identified eight water quality improvement options that were then narrowed down to three based on feasibility and impact, including:

- 1) installing stormwater runoff BMPs to provide treatment systems for runoff not currently receiving treatment prior to discharge to Crane Lake
- 2) periodically dosing stormwater ponds with alum
- 3) diverting high chloride snow-melt runoff to sanitary sewer

Mr. Newhall reported that Option 1 would treat stormwater runoff from 13.4 acres that currently flows to Crane Lake without treatment. This option includes constructing a stormwater pond or underground treatment system in the southeast part of the study area, either in public right-of-way, the Ridgedale shopping center, or in a private parking lot at the Sheraton Minneapolis West hotel, adjacent to Crane Lake. The feasibility study indicates that treatment could be provided through sedimentation, skimming, or filtration. This alternative would require coordination with private property owners and an easement for the proposed stormwater utilities, especially if located in the private parking lot.

Mr. Newhall reported that Option 2 would use alum in Ridgedale Pond to reduce internal phosphorus loading and reduce total phosphorus in the water column. He reported that Option 3 would pump snowmelt runoff from the Ridgedale Pond watershed to the Metropolitan Council Environmental Services (MCES) sanitary sewer, to reduce chlorides reaching Crane Lake. The snowmelt runoff may be captured in an underground storage tank or pumped directly from Ridgedale Pond. He noted this option will require permitting by the MCES to allow diverting snowmelt runoff with high chloride concentrations to the sanitary sewer. It was noted that this option does not reduce the private application of chlorides in the watershed. Rather, it would divert the chloride load away from Crane Lake, send the salty water to a wastewater treatment plant that would ultimately discharge into the Mississippi River. (Wastewater treatment plants do not remove chlorides.)

Commissioner Scanlan pointed out that this would just be moving the problem downstream and that about 30 million people depend on the Mississippi River for drinking water. He noted that the whole cost of the system should be taken into consideration. Chair de Lambert also indicated that Option 3 did not seem appropriate and expected it would be difficult to get MCES to agree to stormwater diversion to the sanitary sewer.

There was further discussion about the high chloride levels in Crane Lake measured at 450 mg/l in July and estimated to be closer to 1000 mg/l in the spring. Mr. LaBounty noted that the city has and will continue to work with Ridgedale Mall property managers regarding the overuse of salt. There was also discussion about the possible implementation of a reverse osmosis system (RO) to remove salt from the water. Mr. Newhall noted the RO system is 95-98% effective and that when this project began, he thought that the RO system would be the answer, but the waste is highly concentrated with chlorides that would be sent to the wastewater treatment plant, so it doesn't solve the problem and it's very expensive to operate.

MOTION: Commissioner Scanlan moved to remove the option to divert high chloride snow-melt runoff to the sanitary sewer from the list of possible options to implement. Commissioner Prom seconded the motion.

Further discussion:

Engineer Chandler stated that she had a lot of comments that are included in the review memo and noted there are many issues and questions to work through as the study is refined.

Commissioner Welch asked Administrator Jester why is this a CIP Project. She replied that it was added after a recommendation from the TAC and approval by the Commission because of the opportunity to install BMPs when Ridgedale Drive is being reconstructed. Engineer Chandler added that the Crane Lake watershed management plan called for best management practices in this part of the watershed. Mr. LaBounty added that this is an opportunity that is somewhat rare in a watershed that is so fully developed.

Commissioner Monk noted there are close to 100 acres of impervious surfaces around Ridgedale and that this is a huge opportunity to develop an initiative that could be used as a demonstration project. He thought this seemed too good to not pursue. He went on to say he couldn't think of a better opportunity/situation to look at strategies to come up with something bigger and more impactful.

Commissioner Harwell said she likes the idea of pursuing public-private partnerships and agreed that chlorides are a huge issue. She disagreed with eliminating options at this point. Commissioner Welch agreed that nothing needed to be eliminated at this point. Commissioner Prom removed his support for the motion.

Administrator Jester spoke about how watersheds throughout Hennepin County are using some of BWSR's Watershed Based Funding to 1) determine barriers to implement best practices for lowering salt use among private applicators and 2) developing a program to overcome the barriers. Commissioner Prom added that this is the perfect site to study chlorides.

VOTE ON MOTION: Upon a vote the motion failed with 1 aye and 8 nays. [Robbinsdale voted aye; all others voted nay.]

Commissioner Monk pointed out that the good part of this situation is that the current stormwater management system is handling the total phosphorus pollution and since it is 100% developed there are few options. He reiterated his idea to concentrate on chloride and total suspended solids removal. He asked if all possible options were truly evaluated. Commissioner Harwell stated that all options were already evaluated and that these three options have been selected as the best options. Administrator Jester agreed that other options were considered and the options presented made the most sense. She also noted that she and Commission Engineers had met with the city and WSB to review the various options and they agreed that these made the most sense for this CIP project.

The Commission Engineer's comments will be reviewed and a revised feasibility study will be brought to a future meeting.

B. Consider Approval of Additional Carp Survey Work in Schaper Pond

Commission Engineer Wilson provided background about Schaper Pond and the BCWMC Diversion Project installed in 2016. He reminded Commissioners that monitoring indicates the pond is exporting more total phosphorus to Sweeney Lake than is coming into the pond from the south. He reported that the northwest lobe is about 8 feet deep and the results of the 2018 water monitoring include the following results:

- The bathymetric survey indicates that some sedimentation has taken place in areas of the pond, but that it is unlikely that those changes have greatly altered the settling or treatment capacity in the northwest corner of the pond.
- Water quality monitoring confirms that pollutant concentrations increase as the flow moves through the pond. In other words, pollution levels leaving the pond are high. However, the total phosphorus doesn't appear to be releasing from anoxic sediment in the northwest lobe.
- The first carp survey estimated the carp population in the pond that day to be 227 individuals, with an average mass between 4 and 5 pounds. The biomass for the pond at that time was about 368 kilograms/hectare, which is nearly four times the recommended threshold for carp management. The second survey resulted in the capture of 37 carp in one hour of electrofishing. Most of the carp were captured in the deeper-water portion of the northwest lobe. Six of the 37 carp were young of year (YOY), making it very likely that successful recruitment (i.e., fish surviving to enter the fishery or a mature life stage) occurred this year.

Engineer Wilson described his recommendation to expand the scope of the third carp survey to include tagging the carp with transmitters to track their movements between the pond, downstream into Sweeney Lake, and upstream from the pond.

MOTION: Commissioner Welch moved to approve the expanded carp survey for up to \$35,000. Alt. Commissioner Monk seconded the motion.

Discussion:

The Commission asked why the carp couldn't just be removed. Engineer Wilson reported that it would be beneficial to collect better data to find a long-term solution.

Commissioner Prom and Plymouth TAC member Scharenbroich found it unfortunate that more data collection is needed before action is taken. Commissioners Welch and Scanlan noted that data collected now would help address carp long-term; an investment in the future.

Engineer Wilson explained that the third carp survey represents an opportunity to begin gathering the kind of data needed to make future carp management decisions, including information about carp recruitment and mobility throughout the Sweeney Branch system. To guide that decision-making, it will be important to know whether the current carp population survives and/or remains in Schaper Pond year-round or if the carp are moving back and forth between Sweeney Lake and/or upstream water bodies.

VOTE: Upon a vote, the motion passed 8-1. [Plymouth voted against, all others voted aye.]

C. Review Results of Comparative Analysis of Linear Projects: Water Quality Treatment Outcomes

Commission Engineer Chandler reminded commissioners that in May of 2017, the Commission approved revisions to the BCWMC's water quality performance standards for linear projects. She noted the previous 2015 standards required MIDS treatment for linear projects when the project would result in 1 acre of new/fully reconstructed impervious. She reported the revised/current 2017 standards require treatment for linear projects when the project results in 1 acre of net new impervious. She noted the BCWMC standard is to capture and retain 1.1 inches off the net new impervious area and follow flexible treatment options if volume reduction BMPs are not feasible or not allowed.

Engineer Chandler reported that at the June 2017 Commission meeting, the Commission requested an analysis comparing the revised linear project standards and the previous MIDS standards on linear projects reviewed by the BCWMC after the BCWMC revised the standards. Engineer Chandler walked through a table of the 11 linear projects, the required water quality treatment volume under previous and current requirements, and the amount of treatment that was provided. In summary, none of the 11 linear projects triggered water quality treatment per the current requirements, whereas 8 of the 11 projects would have triggered water quality treatment per the previous requirements. For the 8 projects that would have triggered water quality treatment per the previous requirements, the total required treatment volume would have been 1.11 acre-feet.

Mr. Scharenbroich noted that cities are still doing water quality improvements even if they weren't reported to the Commission, so the table incorrectly states that no treatment resulted. There was support among TAC members and Commissioner Harwell to leave the current requirements in place, noting the difficulty in infiltrating in narrow rights of way and limited space elsewhere to accommodate treatment. Commissioner Welch stated that the Commission made the decision to revise the requirements without data and that at the time he didn't see the logic in taking an entire category of impervious surface off the table for requirements. He stated that he wants to find a path forward so the Commission's regulatory framework looks at these projects for improvements that make sense.

MOTION: Commissioner Harwell moved to have the Commission review water quality improvements that were actually implemented with these projects. Commissioner Scanlan seconded the motion.

Discussion: Engineer Chandler noted that she could bring additional information about the treatment cities are implementing and not reporting to the Commission.

Commissioner Monk explained that he has been on both sides of this issue and stated that treatment missed on only 1.17 acre-feet isn't significant. He thought it will be difficult to look at MIDS latest treatment and allowances and see whether we should go back. He was not excited to ask the cities to provide data that may be tough to get because the numbers won't warrant any immediate action.

Commissioner Welch said he's not going to support this motion because more data won't mean progress forward.

Mr. Scharenbroich restated that this is discrediting the cities' work that has been done and that the cities' work isn't reflected in the memo. Chandler agreed that the memo should be revised because it doesn't adequately reflect the cities' work.

VOTE: Upon a vote, the motion failed 4-5. [Cities of Medicine Lake, Minneapolis, Minnetonka, Plymouth, and Robbinsdale voted against.]

Commissioner Welch added that he realizes the table is incomplete and that the cities are implementing improvements. He asked the Commission Engineer to give some thought about how to move forward. Engineer Chandler agreed to continue to track this data so it can be revisited in the future.

Commissioner Prom noted that he needed to leave the meeting but wanted to acknowledge Derek Asche's work with the Commission as the TAC member from Plymouth. He noted Mr. Asche took a job with Maple Grove. A certificate of appreciation was given to Commissioner Prom to pass along to Mr. Asche.

[Commissioner Prom departs. Alt. Commissioner Byrnes becomes the voting member from Plymouth.]

D. Consider Approval of Resolution Approving Golden Valley Surface Water Management Plan

Administrator Jester reminded commissioners that at the June meeting, the Commission approved the submittal of comments on the Golden Valley Surface Water Management Plan (SWMP). She noted the city revised the plan according to the Commission's comments and the plan is consistent with the Bassett Creek Watershed Management Plan and requirements. Staff recommended approval of the resolution.

MOTION: Commissioner Scanlan moved to approve the resolution approving the Golden Valley Surface Water Management Plan. Commissioner Harwell seconded the motion.

MOTION: Commissioner Welch moved to amend the motion to revise the resolution language to reflect the fact that the Commission considered comment from the Metropolitan Council. Commissioner Harwell seconded the motion. Upon a vote, the motion carried 9-0.

VOTE on original motion carried 9-0.

E. Consider Approval of Northwood Lake Improvement Project (NL-1) Final Report

Megan Albert, TAC member from New Hope, gave a PowerPoint presentation of the Northwood Lake Improvement Project. She reported that the project treats stormwater runoff from 110 acres of previously untreated urban land and was designed to reduce phosphorus loadings to the lake by an estimated 22 pounds per year. At the east end of the lake in Northwood Park the project included design and construction of a pre-treatment device, a 160,000-gallon underground stormwater re-use chamber, pump house, distribution system to irrigate 6.4 acres of adjacent ball fields, and an overflow structure directed into a series of linear rain gardens for treatment prior to discharging into Northwood Lake. At the west end of Northwood Lake, a wet ponding basin was constructed to treat stormwater runoff from backyards and Jordan Avenue.

Ms. Albert recounted how when this project was brought to the Commission in 2015 it was originally identified to create a pond, but the community was very opposed to losing park space for the pond. Hence, the underground system was installed.

[Commissioner Harwell departs.]

MOTION: Commissioner Welch moved to approve the Northwood Lake Improvement Project Final Report. Alt. Commissioner Byrnes seconded the motion. Upon a vote, the motion carried 8-0 [City of Golden Valley absent from the vote.]

F. Approval of Grant Agreement for BWSR's Watershed Based Funding Grant Program (moved from consent agenda)

Commissioner Welch noted that section 5 of the agreement includes a provision stating that penalties can be assessed at a rate up to 150% of the grant agreement. He noted that he finds this to be very heavy-handed and inappropriate. Attorney Gilchrist agreed and stated that penalty provisions in contracts aren't allowed.

MOTION: Commissioner Welch moved to approve the agreement and authorize the chair to execute the agreement with direction to the Commission's Legal Counsel to use his discretion in commenting on the penalty provision. Alt. Commissioner Byrnes seconded the motion. Upon a vote, the motion carried 8-0 [City of Golden Valley absent from the vote.]

7. COMMUNICATIONS

A. Administrator's Report – Administrator Jester noted her written report in the meeting packet and also noted the following:

- i. Smart Salt Certification Course – 19 are currently registered
- ii. Workshop for Lake Groups: Options for Organizing – Date is set for Oct. 3rd at Plymouth City Hall. Freshwater will facilitate the workshop; three presenters are lined up.
- iii. Hennepin County Chloride Consortium – Previously discussed under 5A.
- iv. Metro Blooms Event: Mapping Resilient Cities – An event regarding pollinator mapping that is by invitation only.
- v. Three Rivers Park District Survey - May interest Commissioners
- vi. Reminder of WEDNESDAY November 14th Commission Meeting

B. Chair

- i. Nothing to report

C. Commissioners

- i. Report on Golden Valley Arts & Music Festival – Commissioners Scanlan, Harwell and Welch were there and appreciated talking with residents.
- ii. Certificate of Appreciation for Derek Asche – Already covered.

Commissioner Scanlan reported that he attended the AIS research workshop and learned a great deal.

D. TAC Members

- i. Nothing to report

E. Committees

- i. Education Committee met to work on BCWMC educational sign at Westwood Hills Nature Center.

F. Legal Counsel

- i. Nothing to report

G. Engineer

- i. Tunnel inspection update – Hopefully will be scheduled for Tuesday, Oct. 30th with the Commissioner tour the following day. The Army Corps of Engineers has yet to approve a drawdown of the River's pool to accommodate the inspection.

Engineer Chandler noted that Mag Rattei from Barr Engineering also attended the AIS research workshop and brought back new information on possible control methods for various AIS.

8. INFORMATION ONLY (Information online only)

- A. Administrative Calendar
- B. CIP Project Updates <http://www.bassettcreekwmo.org/projects>
- C. Grant Tracking Summary and Spreadsheet
- D. Sun Sailor Article: AMLAC Requests Plymouth Boat Ramp Closure to Reduce AIS Spreading
- E. Sun Sailor BCWMC Column: Water Cycle Leak – Solution in Education
- F. Zebra Mussel Educational Video Produced by Commission
- G. WCA Notices of Decision, Plymouth
- H. WCA Notice of Decision, Winnetka Pond Dredging Project

9. ADJOURNMENT

The meeting adjourned at 11:17 a.m.

Signature/Title

Date

Signature/Title

Date

Bassett Creek Watershed Management Commission General Account
General Fund (Administration) Financial Report
Fiscal Year: February 1, 2018 through January 31, 2019
MEETING DATE: October 18, 2018

Item 4B.
BCWMC 10-18-18

(UNAUDITED)

BEGINNING BALANCE	12-Sep-18	578,319.98
ADD:		
General Fund Revenue:		
Interest less Bank Fees	56.97	
Permits:		
SCI Associates LLC	BCWMC 2018-25	2,500.00
BIB Properties	BCWMC 2018-26	1,500.00
Reimbursed Construction Costs		21,415.27
	Total Revenue and Transfers In	25,472.24
DEDUCT:		
Checks:		
3120 Barr Engineering	August Engineering	48,941.91
3121 Kennedy & Graven	July Legal	975.10
3122 Keystone Waters LLC	August Administrator	4,804.94
3123 Lawn Chair Gardener	August Admin Serv/Edu	1,230.50
3124 Triple D Espresso	August Meeting	597.65
3125 Wenck Associates	August WOMP	664.28
	Total Checks/Deductions	57,214.38
ENDING BALANCE	10-Oct-18	546,577.84

Bassett Creek Watershed Management Commission General Account

General Fund (Administration) Financial Report

(UNAUDITED)

Fiscal Year: February 1, 2018 through January 31, 2019

MEETING DATE: October 18, 2018

	2018 /2019 BUDGET	CURRENT MONTH	YTD 2018 /2019	BALANCE
<u>OTHER GENERAL FUND REVENUE</u>				
ASSESSMENTS TO CITIES	515,000	0.00	515,050.00	(50.00)
PROJECT REVIEW FEES	55,000	4,000.00	41,000.00	14,000.00
WOMP REIMBURSEMENT	5,000	0.00	4,500.00	500.00
METROPOLITAN COUNCIL - LRT		0.00	6,881.45	
METRO BLOOMS - MET COUNCIL GRANT		0.00	38,081.77	
HENNEPIN COUNTY GRANT-AIS PREVENTION GRANT		0.00	18,281.90	
TRANSFERS FROM LONG TERM FUND & CIP	75,000	0.00	0.00	75,000.00
REVENUE TOTAL	650,000	4,000.00	623,795.12	89,450.00
<u>EXPENDITURES</u>				
ENGINEERING & MONITORING				
TECHNICAL SERVICES	125,000	11,186.91	89,527.83	35,472.17
DEV/PROJECT REVIEWS	75,000	221.47	34,301.88	40,698.12
NON-FEE/PRELIM REVIEWS	10,000	3,456.00	18,725.95	(8,725.95)
COMMISSION AND TAC MEETINGS	12,000	1,161.35	7,087.14	4,912.86
SURVEYS & STUDIES	12,000	0.00	0.00	12,000.00
WATER QUALITY/MONITORING	80,700	7,052.44	92,586.15	(11,886.15)
WATER QUANTITY	6,300	0.00	3,854.70	2,445.30
WATERSHED INSPECTIONS - EROSION CONTROL	1,000	0.00	0.00	1,000.00
ANNUAL FLOOD CONTROL INSPECTIONS	48,000	1,140.97	3,804.47	44,195.53
REVIEW MUNICIPAL PLANS	8,000	2,490.00	12,049.70	(4,049.70)
WOMP	20,500	664.28	12,582.24	7,917.76
XP-SWMM MODEL UPDATES/REVIEWS	10,000	0.00	8,918.00	1,082.00
APM / AIS WORK	32,000	817.50	25,121.74	6,878.26
ENGINEERING & MONITORING TOTAL	440,500	28,190.92	308,559.80	131,940.20
ADMINISTRATION				
ADMINISTRATOR	67,200	4,375.00	42,140.00	25,060.00
LEGAL COSTS	17,000	975.10	8,477.40	8,522.60
AUDIT, INSURANCE & BONDING	15,500	0.00	17,648.00	(2,148.00)
FINANCIAL MANAGEMENT	3,200	0.00	0.00	3,200.00
MEETING EXPENSES	1,600	111.75	959.37	640.63
ADMINISTRATIVE SERVICES	15,000	1,171.19	10,165.37	4,834.63
ADMINISTRATION TOTAL	119,500	6,633.04	79,390.14	40,109.86
OUTREACH & EDUCATION				
PUBLICATIONS/ANNUAL REPORT	1,500	0.00	937.00	563.00
WEBSITE	4,200	0.00	221.53	3,978.47
PUBLIC COMMUNICATIONS	2,500	0.00	499.28	2,000.72
EDUCATION AND PUBLIC OUTREACH	22,000	975.15	16,025.44	5,974.56
WATERSHED EDUCATION PARTNERSHIPS	13,850	0.00	3,850.00	10,000.00
OUTREACH & EDUCATION TOTAL	44,050	975.15	21,533.25	22,516.75
MAINTENANCE FUNDS				
EROSION/SEDIMENT (CHANNEL MAINT)	25,000	0.00	0.00	25,000.00
LONG TERM MAINTENANCE (moved to CF)	25,000	0.00	0.00	25,000.00
MAINTENANCE FUNDS TOTAL	50,000	0.00	0.00	50,000.00
TMDL WORK				
TMDL IMPLEMENTATION REPORTING	10,000	0.00	4,668.00	5,332.00
TMDL WORK TOTAL	10,000	0.00	4,668.00	5,332.00
TOTAL EXPENSES	664,050	35,799.11	414,151.19	249,898.81

Cash Balance 9/12/18			
Cash		678,202.75	
Transfer to purchase investments			
	Total Cash		678,202.75
Investments:			
Minnesota Municipal Money Market (4M Fund)		2,500,000.00	
Dividends-prior months		19,472.59	
Dividends-Current		3,614.14	
	Total Investments		<u>2,523,086.73</u>
	Total Cash & Investments		3,201,289.48
Add:			
Interest Revenue (Bank Charges)		171.80	
	Total Revenue		171.80
Less:			
CIP Projects Levied - Current Expenses - TABLE A		(3,475.69)	
Proposed & Future CIP Projects to Be Levied - Current Expenses - TABLE B		<u>(16,467.58)</u>	
	Total Current Expenses		(19,943.27)
	Total Cash & Investments On Hand 10/10/18		<u><u>3,181,518.01</u></u>
Total Cash & Investments On Hand		3,181,518.01	
CIP Projects Levied - Budget Remaining - TABLE A		<u>(4,035,437.41)</u>	
Closed Projects Remaining Balance		(853,919.40)	
2012 - 2016 Anticipated Tax Levy Revenue - TABLE C		<u>4,537.93</u>	
2017 Anticipated Tax Levy Revenue - TABLE C		<u>3,895.88</u>	
Anticipated Closed Project Balance		<u>(845,485.59)</u>	
Proposed & Future CIP Project Amount to be Levied - TABLE B		<u>1,436,000.00</u>	

TABLE A - CIP PROJECTS LEVIED

		Approved Budget	Current Expenses	2018 YTD Expenses	INCEPTION To Date Expenses	Remaining Budget	Grant Funds Received
Lakeview Park Pond (ML-8) (2013)		196,000	0.00	0.00	11,589.50	184,410.50	
Four Seasons Mall Area Water Quality Proj (NL-2)		990,000	0.00	0.00	162,907.34	827,092.66	
2014							
Schaper Pond Enhance Feasibility/Project (SL-1)(SL-3)		612,000	3,475.69	15,740.38	365,401.78	246,598.22	
Briarwood / Dawnview Nature Area (BC-7)		250,000	0.00	0.00	250,000.00	0.00	
Twin Lake Alum Treatment Project (TW-2)		163,000	0.00	0.00	91,037.82	71,962.18	
2015							
Main Stem 10th to Duluth (CR2015)		1,503,000	0.00	0.00	1,003,746.24	499,253.76	
2016							
Honeywell Pond Expansion (BC-4) ¹		810,930	0.00	725,298.17	750,605.17	60,324.83	
Northwood Lake Pond (NL-1) ²		822,140					
Budget Amendment		<u>611,600</u>					
		1,433,740	0.00	2,000.00	1,447,143.38	(13,403.38)	670,000
2017							
Main Stem Cedar Lk Rd-Dupont (2017CR-M)	2017 Levy	400,000					
	2018 Levy	664,472					
		1,064,472	0.00	0.00	126,376.39	938,095.61	
Plymouth Creek Restoration (2017 CR-P)	2017 Levy	580,930					
	2018 Levy	282,643					
		863,573	0.00	422,683.49	581,400.72	282,172.28	200,000
2018							
Bassett Creek Park & Winnetka Ponds Dredging (BCP-2)		1,000,000	0.00	0.00	61,069.25	938,930.75	
		<u>8,886,715</u>	<u>3,475.69</u>	<u>1,165,722.04</u>	<u>4,851,277.59</u>	<u>4,035,437.41</u>	

TABLE B - PROPOSED & FUTURE CIP PROJECTS TO BE LEVIED

	Approved Budget - To Be Levied	Current Expenses	2018 YTD Expenses	INCEPTION To Date Expenses	Remaining Budget
2019					
Decola Ponds B&C Improvement(BC-2,BC-3,BC-8)	1,031,500	0.00	41,003.40	85,512.56	945,987.44
Westwood Lake Water Quality Improvement Project(Feasibility)	404,500	3,064.50	37,046.00	39,556.20	364,943.80
2019 Project Totals	1,436,000	3,064.50	78,049.40	125,068.76	1,310,931.24
2020					
Bryn Mawr Meadows (BC-5)	0	5,700.00	49,926.24	81,168.56	(81,168.56)
Jevne Park Stormwater Mgmt Feasibility (ML-21)	0	3,761.08	6,693.62	6,693.62	(6,693.62)
Crane Lake Improvement Proj (CL-3)	0	3,942.00	5,039.85	5,039.85	(5,039.85)
2020 Project Totals	0	13,403.08	61,659.71	92,902.03	(92,902.03)
Total Proposed & Future CIP Projects to be Levied	1,436,000	16,467.58	139,709.11	217,970.79	1,218,029.21

BCWMC Construction Account

Fiscal Year: February 1, 2018 through January 31, 2019

October 2018 Financial Report

(UNAUDITED)

TABLE C - TAX LEVY REVENUES

	County Levy	Abatements / Adjustments	Adjusted Levy	Current Received	Year to Date Received	Inception to Date Received	Balance to be Collected	BCWMO Levy
2018 Tax Levy	947,115.00		947,115.00	0.00	719,469.72	719,469.72	227,645.28	947,115.00
2017 Tax Levy	1,303,600.00	(10,691.48)	1,292,908.52	0.00	(2,124.76)	1,289,012.64	3,895.88	1,303,600.00
2016 Tax Levy	1,222,000.00	(9,526.79)	1,212,473.21	0.00	(1,622.13)	1,209,593.43	2,879.78	1,222,000.00
2015 Tax Levy	1,000,000.00	32.19	1,000,032.19	0.00	258.90	999,190.60	841.59	1,000,000.00
2014 Tax Levy	895,000.00	(8,533.75)	886,466.25	0.00	133.88	885,770.40	695.85	895,000.00
2013 Tax Levy	986,000.00	(10,510.52)	975,489.48	0.00	412.43	975,368.77	120.71	986,000.00
				<u>0.00</u>			<u>8,433.81</u>	

OTHER PROJECTS:

	Approved Budget	Current Expenses / (Revenue)	2018 YTD Expenses / (Revenue)	INCEPTION To Date Expenses / (Revenue)	Remaining Budget
TMDL Studies					
TMDL Studies	135,000.00	0.00	0.00	107,765.15	27,234.85
TOTAL TMDL Studies	135,000.00	0.00	0.00	107,765.15	27,234.85
Flood Control Long-Term					
Flood Control Long-Term Maintenance	690,573.00	1,472.00	6,351.00	327,093.41	
Less: State of MN - DNR Grants		0.00	(4,542.00)	(97,542.00)	
	690,573.00	1,472.00	1,809.00	229,551.41	461,021.59
Annual Flood Control Projects:					
Flood Control Emergency Maintenance	500,000.00	0.00	0.00	0.00	500,000.00
Annual Water Quality					
Channel Maintenance Fund	375,000.00	0.00	73,461.65	255,619.60	119,380.40
Metro Blooms Harrison Neighborhood CWF Grant Project					
BWSR Grant	134,595.00	0.00	0.00	8,396.89	126,198.11
				(67,298.00)	(67,298.00)
	134,595.00	0.00	0.00	(58,901.11)	
Total Other Projects	1,835,168.00	1,472.00	75,270.65	466,737.05	1,166,536.95

Cash Balance 9/12/18 **1,065,508.90**

Add:

Transfer from GF 0.00

Less:

Current (Expenses)/Revenue (1,472.00)

Ending Cash Balance 10/10/18 **1,064,036.90**

Additional Capital Needed **(102,500)**

Bassett Creek Construction Project Details

10/10/2018

	CIP Projects Levied											
	Total	2013	2013	2014	2014	2014	2015	2016	2016	2017	2017	2018
	CIP Projects Levied	Lakeview Park Pond (ML-8)	Four Seasons Mall Area Water Quality Project (NL-2)	Schaper Pond Enhancement Feasibility / Project (SL-1) (SL-3)	Briarwood / Dawnview Water Quality Improve Proj (BC-7)	Twin Lake In-Lake Alum Treatment Project (TW-2)	Main Stem - 10th Ave to Duluth (CR2015)	Honeywell Pond Expansion (BC-4)	Northwood Lake Pond (NL-1)	Main Stem-Cedar Lk Rd to Dupont (CR-M)	Plymouth Creek Restoration (CR-P)	Basset Cr Pk & Winnetka Ponds Dredging (BCP-2)
Original Budget Added to Budget	8,275,115 611,600	196,000	990,000	612,000	250,000	163,000	1,503,000	810,930	822,140 611,600	1,064,472	863,573	1,000,000
Expenditures:												
Feb 2004 - Jan 2014	269,971.68	11,589.50	101,635.49	89,594.90	19,598.09	23,793.65	11,179.35	7,461.95	5,118.75			
Feb 2015-Jan 2016	313,510.98		25,866.35			432.00	93,862.65	6,442.53	94,823.44	42,671.88	49,412.13	
Feb 2016-Jan 2017	2,835,773.05		14,350.00	213,668.55	230,401.91	66,812.17	841,405.15	11,402.52	1,338,331.79	71,889.91	16,192.00	31,319.05
Feb 2017-Jan 2018	266,299.84		21,055.50	46,397.95			57,299.09		6,869.40	11,814.60	93,113.10	29,750.20
Feb 2018-Jan 2019	1,165,722.04			15,740.38				725,298.17	2,000.00		422,683.49	
Total Expenditures:	4,851,277.59	11,589.50	162,907.34	365,401.78	250,000.00	91,037.82	1,003,746.24	750,605.17	1,447,143.38	126,376.39	581,400.72	61,069.25
Project Balance	4,035,437.41	184,410.50	827,092.66	246,598.22		71,962.18	499,253.76	60,324.83	(13,403.38)	938,095.61	282,172.28	938,930.75
	Total	2013	2013	2014	2014	2014	2015	2016	2016	2017	2017	2018
	CIP Projects Levied	Lakeview Park Pond (ML-8)	Four Seasons Mall Area Water Quality Project (NL-2)	Schaper Pond Enhancement Feasibility / Project (SL-1) (SL-3)	Briarwood / Dawnview Water Quality Improve Proj (BC-7)	Twin Lake In-Lake Alum Treatment Project (TW-2)	Main Stem - 10th Ave to Duluth (CR2015)	Honeywell Pond Expansion (BC-4)	Northwood Lake Pond (NL-1)	Main Stem-Cedar Lk Rd to Dupont (CR-M)	Plymouth Creek Restoration (CR-P)	Basset Cr Pk & Winnetka Ponds Dredging (BCP-2)
Project Totals By Vendor												
Barr Engineering	535,537.31	6,338.95	64,076.04	137,389.83	13,089.74	15,712.00	15,825.00	13,157.98	17,966.00	111,939.39	78,973.13	61,069.25
Kennedy & Graven	11,961.70	1,200.55	2,471.95	993.40	1,038.35	1,058.65	2,223.75	796.00	1,701.45	318.40	159.20	
City of Golden Valley	1,471,580.12			213,668.55	230,401.91	66,812.17	960,697.49					
City of Minneapolis												
City of Plymouth	570,027.74		75,759.35								494,268.39	
City of New Hope	1,413,267.55								1,413,267.55			
City of Crystal												
MPCA	2,500.00									2,500.00		
Blue Water Science	3,900.00					3,900.00						
Misc												
2.5% Admin Transfer	115,205.00	4,050.00	20,600.00	13,350.00	5,470.00	3,555.00	25,000.00	11,353.02	12,208.38	11,618.60	8,000.00	
Transfer to General Fund												
Total Expenditures	4,123,979.42	11,589.50	162,907.34	365,401.78	250,000.00	91,037.82	1,003,746.24	25,307.00	1,445,143.38	126,376.39	581,400.72	61,069.25
	Total	2013	2013	2014	2014	2014	2015	2016	2016	2017	2017	2018
	CIP Projects Levied	Lakeview Park Pond (ML-8)	Four Seasons Mall Area Water Quality Project (NL-2)	Schaper Pond Enhancement Feasibility / Project (SL-1) (SL-3)	Briarwood / Dawnview Water Quality Improve Proj (BC-7)	Twin Lake In-Lake Alum Treatment Project (TW-2)	Main Stem - 10th Ave to Duluth (CR2015)	Honeywell Pond Expansion (BC-4)	Northwood Lake Pond (NL-1)	Main Stem-Cedar Lk Rd to Dupont (CR-M)	Plymouth Creek Restoration (CR-P)	Basset Cr Pk & Winnetka Ponds Dredging (BCP-2)
Levy/Grant Details												
2010 -2014 Levies	1,881,000	162,000	824,000	534,000	218,800	142,200						
2014/2015 Levy	1,000,000						1,000,000					
2015-2016 Levy	1,222,000							810,930	411,070			
2016-2017 Levy	1,303,600								322,670			
2017-2018 Levy	947,115									580,930	400,000	
Construction Fund Balance	703,000	34,000	166,000				503,000			282,643	664,472	
BWSR Grant- BCWMO	470,000								470,000			
DNR Grants-LT Maint												
Total Levy/Grants	7,526,715	196,000	990,000	534,000	218,800	142,200	1,503,000	810,930	1,203,740	863,573	1,064,472	
BWSR Grants Received									670,000		200,000	
MPCA Grant-CWP (Total \$300,000)									75,000.00			
									19,932.80			

Bassett Creek Construction Project Details

Proposed & Future CIP Projects (to be Levied)							Other Projects							
Original Budget Added to Budget	Total	2019	2019	2020	2020	2020	DNR Grant From GF	Total		Flood Control Emergency Maint	Flood Control Long- Term Maint	Channel Maint	Totals - All Projects	
	Proposed & Future CIP Projects (to be Levied)	DeCola Ponds B&C Improve (BC- 2,BC-3,BC-8)	Westwood Lake Water Quality (Feasibility)	Bryn Mawr Meadows (BC- 5)	Jevne Park Feasibility (ML-21)	Crane Lake Improve Proj (CL-3)		Other Projects	TMDL Studies					
	1,436,000	1,031,500	404,500					1,278,373.00 (250,000.00) 97,542.00 422,200.00	105,000.00	500,000.00	748,373.00 (250,000.00) 97,542.00 192,200.00	175,000.00		10,989,488.00 361,600.00 97,542.00 422,200.00
								30,000.00			200,000.00			
Expenditures:														
Feb 2004 - Jan 2014	5,282.80			5,282.80				245,426.23	107,765.15		43,195.48	94,465.60	520,680.71	
Feb 2015-Jan 2016								137,357.54			110,580.19	26,777.35	450,868.52	
Feb 2016-Jan 2017								152,070.74			152,070.74		2,987,843.79	
Feb 2017-Jan 2018	72,978.88	44,509.16	2,510.20	25,959.52				75,811.00			14,896.00	60,915.00	415,089.72	
Feb 2018-Jan 2019	139,709.12	41,003.40	37,046.00	49,926.24	6,693.63	5,039.85		79,812.65			6,351.00	73,461.65	1,385,243.81	
Total Expenditures:	217,970.80	85,512.56	39,556.20	81,168.56	6,693.63	5,039.85		690,478.16	107,765.15		327,093.41	255,619.60	5,759,726.55	
Project Balance	1,218,029.20	945,987.44	364,943.80	(81,168.56)	(6,693.63)	(5,039.85)		1,107,636.84	27,234.85	500,000.00	461,021.59	119,380.40	6,361,103.45	
Project Totals By Vendor	Total	2019	2019	2020	2020	2020		Total		Flood Control Emergency Maint	Flood Control Long- Term Maint	Channel Maint	Totals - All Projects	
	Proposed & Future CIP Projects (to be Levied)	DeCola Ponds B&C Improve (BC- 2,BC-3,BC-8)	Westwood Lake Water Quality (Feasibility)	Bryn Mawr Meadows (BC- 5)	Jevne Park Feasibility (ML-21)	Crane Lake Improve Proj (CL-3)		Other Projects	TMDL Studies					
	217,970.80	85,512.56	39,556.20	81,168.56	6,693.63	5,039.85		394,290.50 2,648.25 55,287.50 38,823.35 100,209.15	104,888.70 1,164.30		289,401.80 1,099.35	384.60 55,287.50 38,823.35 100,209.15 29,240.00		1,147,798.61 14,609.95 1,526,867.62 38,823.35 670,236.89 1,413,267.55
Barr Engineering													2,500.00	
Kennedy & Graven													3,900.00	
City of Golden Valley														
City of Minneapolis														
City of Plymouth														
City of New Hope														
City of Crystal														
MPCA														
Blue Water Science														
Misc								5,704.41	1,712.15		3,992.26		5,704.41	
2.5% Admin Transfer													115,205.00	
Transfer to General Fund								32,600.00			32,600.00		32,600.00	
Total Expenditures	217,970.80	85,512.56	39,556.20	81,168.56	6,693.63	5,039.85		658,803.16	107,765.15		327,093.41	223,944.60	4,971,513.38	
Levy/Grant Details	Total	2019	2019	2020	2020	2020	2010-2017 2017/18	Total		Flood Control Emergency Maint	Flood Control Long- Term Maint	Channel Maint	Totals - All Projects	
	Proposed & Future CIP Projects (to be Levied)	DeCola Ponds B&C Improve (BC- 2,BC-3,BC-8)	Westwood Lake Water Quality (Feasibility)	Bryn Mawr Meadows (BC- 5)	Jevne Park Feasibility (ML-21)	Crane Lake Improve Proj (CL-3)		Other Projects	TMDL Studies					
								42,200.00	30,000		175,000 17,200	175,000 25,000		1,881,000 1,042,200
2010 -2014 Levies														
2014/2015 Levy														
2015-2016 Levy														
2016-2017 Levy														
2017-2018 Levy														
Construction Fund Balance													703,000	
BWSR Grant- BCWMO													470,000	
DNR Grants-LT Maint							DNR Grant	93,000.00			93,000			
Total Levy/Grants								515,200.00	30,000		285,200	200,000	4,096,200	

Sweeney Lake Aeration Study

Prepared for
Bassett Creek Watershed Management Commission (BCWMC)

October, 2018



Sweeney Lake Aeration Study

October, 2018

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Certifications

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.



Greg Wilson
PE #: MN 25782

October 9, 2018

Date

1.0 Project Background and Purpose

For 40 years Sweeney Lake homeowners have operated an aeration system year-round—intending to oxygenate the water, improve conditions for native fish and reduce the buildup of phosphorus and harmful algal growth. While the Sweeney Lake Total Phosphorus TMDL (Total Maximum Daily Load) study (SEH and Barr, 2011) established a path toward better water quality, there was still a question about whether the lake’s aeration system is part of the problem or the solution. As a result, the Bassett Creek Watershed Management Commission (BCWMC) initiated this study to employ three-dimensional water quality modeling to simulate sediment phosphorus release and algal dynamics, with and without aeration, under different management efforts and climatic conditions. This study report presents the modeling results and recommends management actions that will meet the Minnesota Pollution Control Agency (MPCA) water quality standards and BCWMC goals, based on its classification as a BCWMC Priority 1 deep lake.

1.1 Lake and Watershed Characteristics

Figure 1-1 shows the watershed divides and drainage patterns for Sweeney Lake, including subcatchments. Table 1-1 shows the lake morphology/depth and other watershed/water body characteristics for the lake (as published in the TMDL report [SEH and Barr, 2011]).

Table 1-1 Lake and Watershed Characteristics

Parameter	Sweeney Lake
Surface Area (acres)	67
Average Depth (feet)	12
Maximum Depth (feet)	25
Watershed Area (acres)	2,397

The aerators in Sweeney Lake disrupt the normal stratification of the lake by placing eleven diffusers at the bottom of the lake throughout the deeper water areas of both the north and south basins. Each diffuser pushes air from a compressor into the bottom water of the lake and the movement of the air bubbles to the surface of the lake forms a vertical circulation pattern that prevents thermal stratification and allows for phosphorus to be distributed throughout the water column.

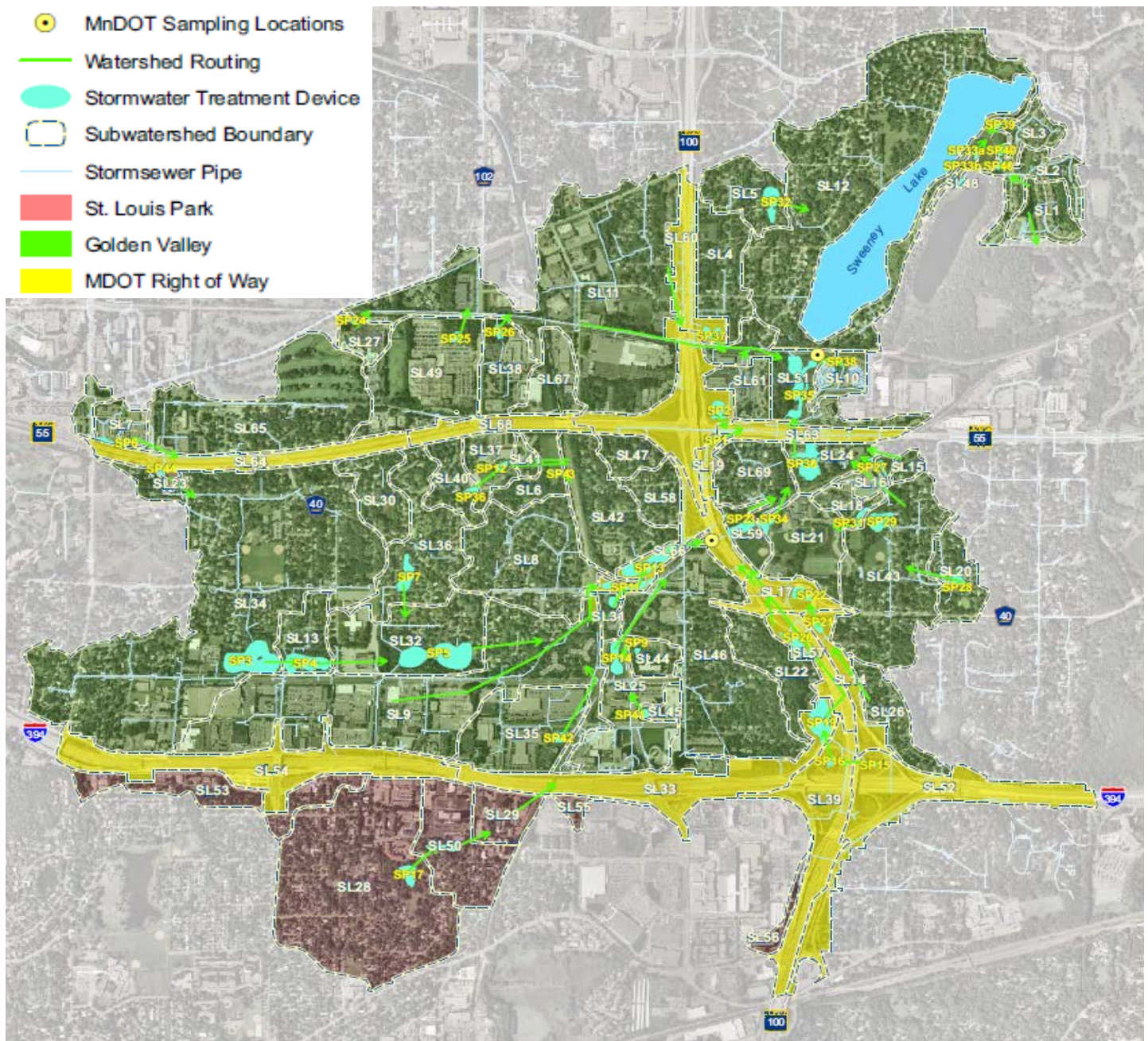


Figure 1-1 Sweeney Lake Watershed

1.2 Summary of Sweeney Lake TMDL and Past Studies

In preparing this study, Barr systematically reviewed reports and data collected on Sweeney Lake, including the TMDL report and implementation plan, fish and aquatic plant survey reports, bathymetric surveys, sediment core sampling analyses, aeration system design and operation data.

The TMDL report (SEH and Barr, 2011) estimated that internal load accounted for 32% of the summer phosphorus load during the baseline year (2004) and called for total phosphorus load reductions of 175 pounds from internal load and 99 pounds from the Sweeney Lake watershed load. The BCWMC/MPCA water quality standards identified that the following summer average criteria apply to Sweeney Lake:

- Total phosphorus (TP) $\leq 40 \mu\text{g/L}$
- Chlorophyll-a $\leq 14 \mu\text{g/L}$
- Secchi disc transparency ≥ 1.4 meters (4.6 feet)

The stakeholder process conducted as a part of the TMDL study established general consensus that the existing aeration system should be evaluated further to see if modifications can be made to better manage the system to avoid circulating nutrient-rich water (SEH and Barr, 2011). Discussions also related to the advantages and disadvantages of aeration during the growing season. Based on the 2007-2008 data, it was concluded that the aeration system may or may not be increasing the internal phosphorus loading to the lake. The water quality was better with the aerators turned off, but insufficient data was available to conclude what portion relates to reduced watershed load from the lower than normal precipitation and what portion relates to reduced internal loading from stratification of the lake and trapping phosphorus in the bottom layer. In either case, the recommended action was to conduct future years of monitoring with the aeration system off to see how the lake responds to a normal year of precipitation. There was also consensus that winter aeration is not a concern and likely represents a good long-term management strategy for the lake.

2.0 Historical Monitoring and Watershed Modeling

Background information, including Sweeney Lake watershed modeling and historical water quality monitoring data were evaluated for potential relationships in comparison to the MPCA criteria for summer average total phosphorus (TP), chlorophyll-a and Secchi disc transparency. Figure 2-1 shows a plot of the summer TP concentrations (since 2005) against the estimated P8 model watershed TP loads to evaluate potential patterns, with and without aeration. The figure shows that the three years of monitoring without aeration likely represent the best water quality that could be expected under varying climatic conditions, considering that increasing watershed TP loads correspond with slight increases in summer average TP concentrations (above the lake water quality criteria). Figure 2-1 also appears to show that aeration did not adversely impact water quality between 2011 and 2013, as it compares to aforementioned pattern without aeration. However, aeration during the other five years (2005, 2006, 2009, 2010 and 2014) appears to exacerbate the impact that the available internal phosphorus load had on water quality.

Figures 2-2 and 2-3 show how summer average TP concentrations correspond with summer average chlorophyll-a and Secchi disc transparency, respectively. Figure 2-2 shows that the three years of monitoring without aeration resulted in water quality that met or very nearly met the criteria for TP and chlorophyll-a, while aeration during five years (2005, 2006, 2009, 2010 and 2014) appeared to exacerbate the problem with algae growth that greatly exceeded the chlorophyll-a criteria. Figure 2-3 shows that the three years of monitoring without aeration resulted in water quality that met or very nearly met the criteria for TP and Secchi disc transparency, while aeration during the remaining years (except for 2005) exacerbated the problem with algae growth that prevented attainment of the transparency criteria.

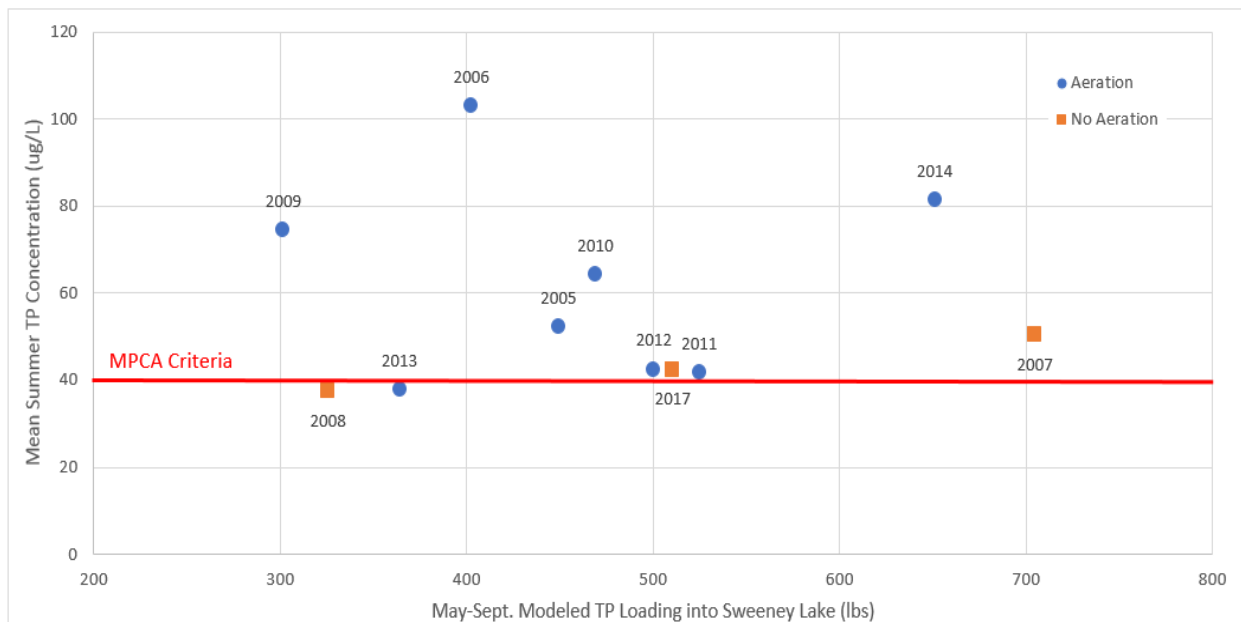


Figure 2-1 Relationship Between Summer Average (June-Sept.) Total Phosphorus Concentrations in Sweeney Lake and Modeled Watershed TP Loading

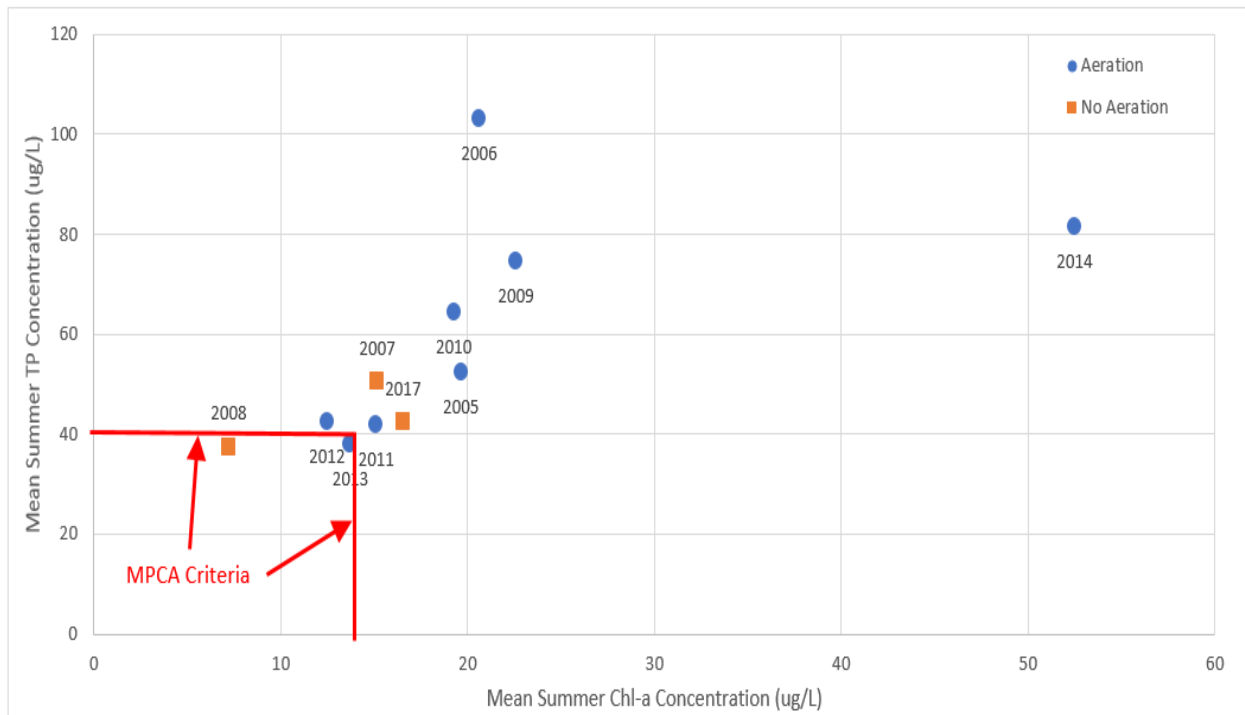


Figure 2-2 Relationship Between Summer Average (June-Sept.) Total Phosphorus Concentrations and Chlorophyll-a Concentrations in Sweeney Lake

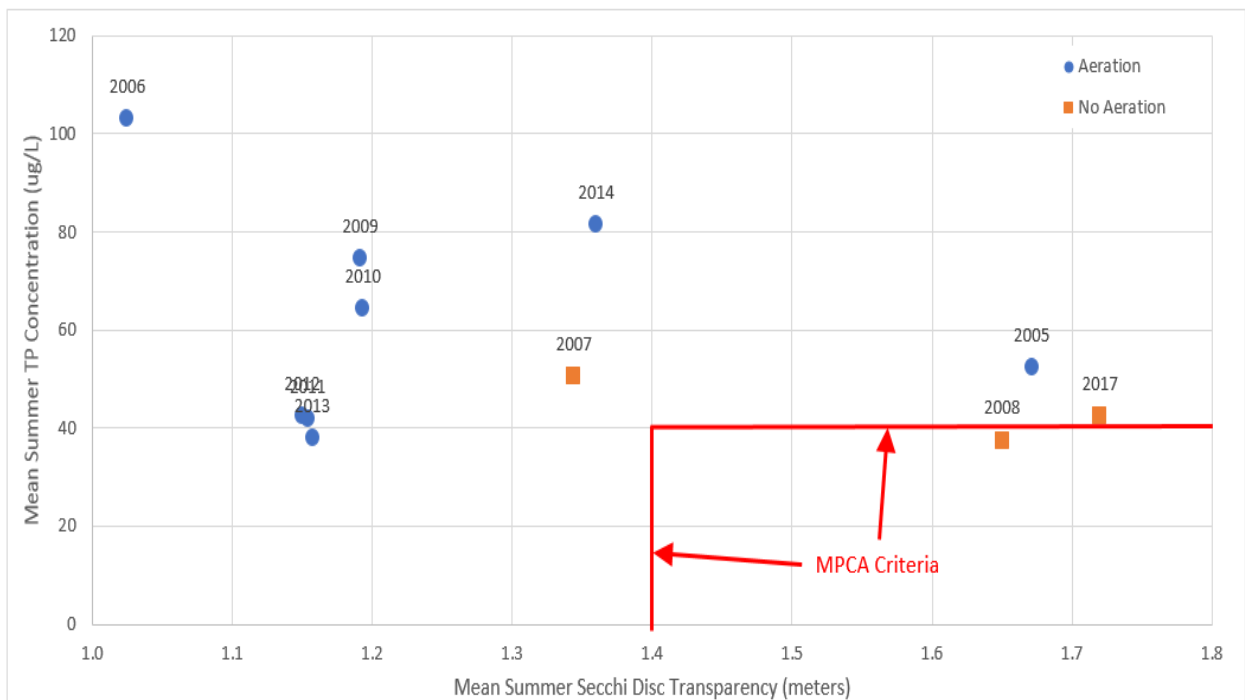


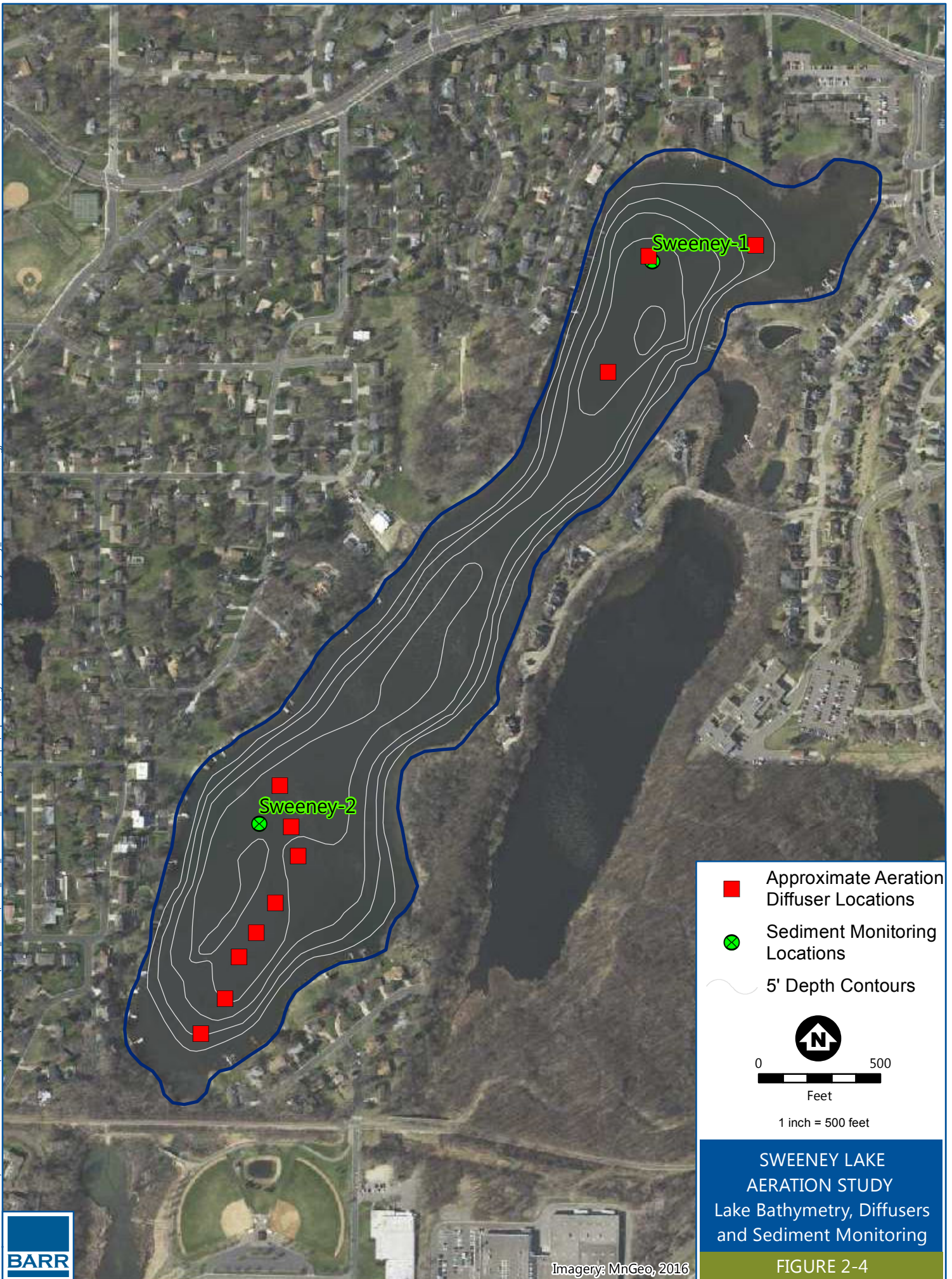
Figure 2-3 Relationship Between Summer Average (June-Sept.) Total Phosphorus Concentrations and Secchi Disc Transparency in Sweeney Lake

2.1 Analysis of 2018 Lake Sediment Cores

Phosphorus from stormwater over time accumulates in the bottom sediments of lakes. During the spring and fall, this phosphorus is largely tied-up in the sediments, but during the warm summer months the phosphorus can be released from bottom sediments and move upward into the water column. This can lead to summer and sometimes early fall algal blooms. Not all of the phosphorus that is incorporated into bottom sediments releases into the water column. Phosphorus in sediment is typically attached to something and can be found in the following forms (often referred to as “fractions”): calcium-bound phosphorus (Ca-P), aluminum-bound phosphorus (Al-P), iron-bound phosphorus (Fe-P), and organically-bound phosphorus (Org-P). Ca-P and Al-P are largely inert and are immobilized in the bottom sediment. Org-P decays over time and releases phosphorus into the water column over the course of several years. Fe-P is the phosphorus form that readily releases into the water column during warm summer months as oxygen is depleted in the sediment.

The primary purposes of collecting sediment cores is to quantify the amount of Fe-P and Org-P in sediment. The more Fe-P and Org-P in sediment, the more alum will need to be applied to immobilize these phosphorus fractions as a part of an in-lake treatment project (further described in Section 4.1.1). In general, aluminum treatment (either as alum or sodium aluminate, for example), forces the Fe-P to bind to aluminum and form Al-P (the inert form of aluminum). In most cases, alum treatments are designed to also provide excess aluminum in sediment, which can then bind phosphorus years after the treatment. When aluminum in the form of alum or other solutions is added to a lake, it forms an aluminum hydroxide floc that settles to the lake bottom. The aluminum floc will mix into the top few to several inches of sediment over time and becomes diluted. The sediment phosphorus data collected at different depths was used to help determine the expected sediment mixing depth for each core location.

Two sediment cores were collected on May 18, 2018 in Sweeney Lake (see Figure 2-4). Each sediment core was sliced into 2-cm sediment samples down to a depth of 10 cm, and 4 cm intervals were collected down to 18 cm or deeper. Sediment samples were returned to the Barr Engineering laboratory and analyzed for the phosphorus fractions identified previously. The Fe-P concentration in the sediment of the south basin of Sweeney Lake was significantly higher than the north basin, while organic-P concentrations were similar in both basins of the lake (see Figure 2-5). While the physical characteristics were relatively similar among both cores of Sweeney Lake, the remaining phosphorus concentrations in the sediment of the south basin of Sweeney Lake were approximately twice as high as phosphorus concentrations in the sediment from the north basin.



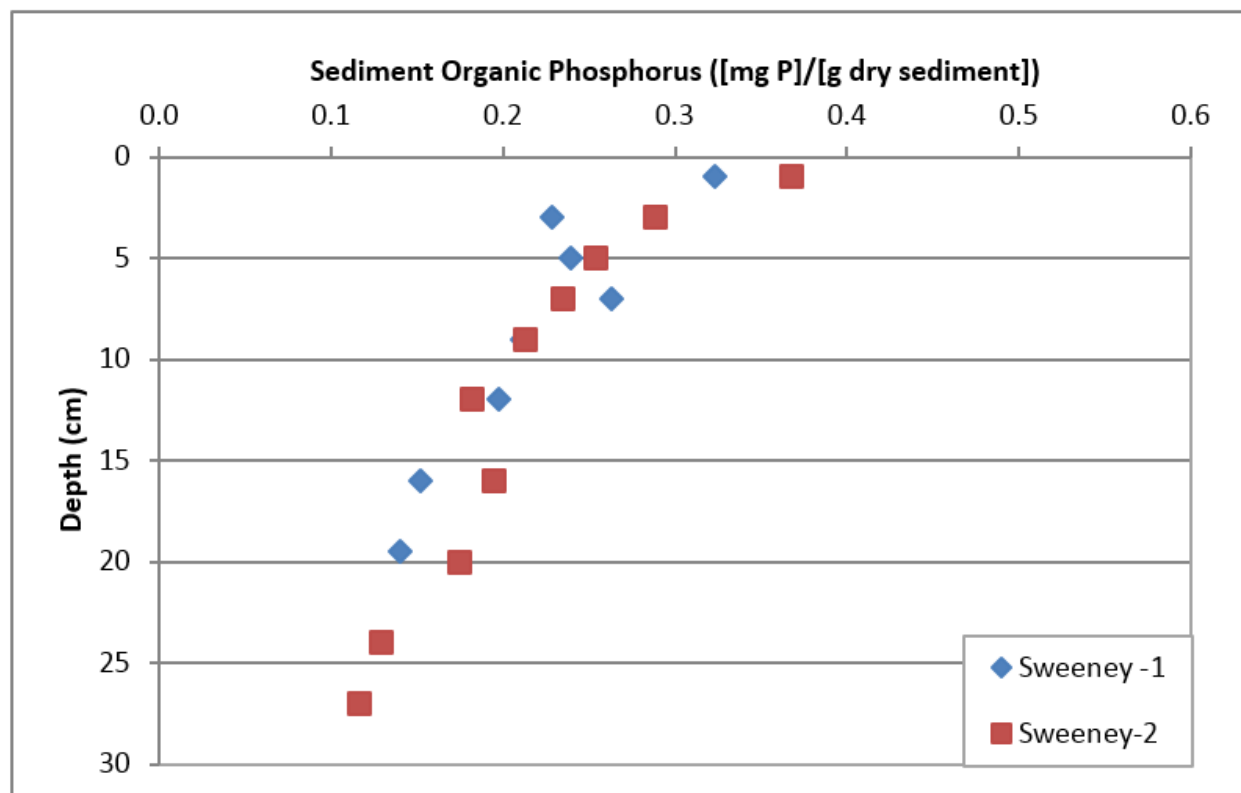
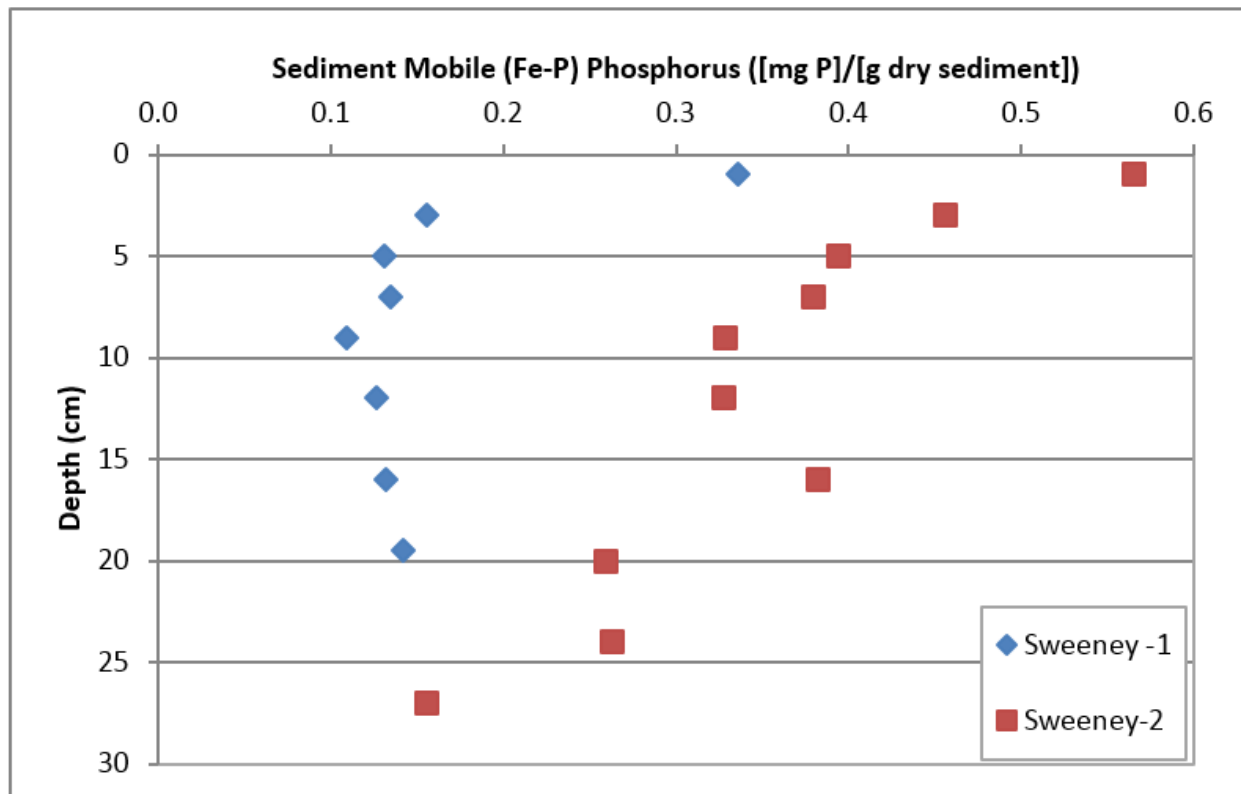


Figure 2-5 Results of Sweeney Lake Sediment Phosphorus Fractionations

3.0 Three-Dimensional In-Lake Water Quality Modeling

A three-dimensional hydrodynamic and water quality model was developed to evaluate the cause of high phosphorus concentrations and phytoplankton (algae) blooms in Sweeney Lake and the role that the operation of aerators in the lake may have on observed phosphorus and phytoplankton blooms. The primary objective of the modeling was to identify how management of the aeration system and internal loading control will affect phosphorus and phytoplankton, as well as achievement of the BCWMC/MPCA water quality standards for Sweeney Lake.

3.1 Methods

The first step in model development was to identify years that are representative of two distinct operating conditions: (1) years with the aerators operating, and (2) years in which there was not aeration. We chose 2008 to represent a year in which the aerators were not operating and 2014 to represent a year in which aerators were operating. Model development was focused on those two years to ensure that the water quality modeling could also be applied to a range of climatic conditions, with 2008 representing a dry year and 2014 a wet year (as shown in Figure 2-1).

Model development consisted of the following steps:

- **Bathymetry:** Input of Sweeney Lake bathymetry (depth and volume) into the model.
- **Climate:** Development of climatic inputs (air temperature, solar radiation, wind speed, relative humidity).
- **Watershed Runoff:** Input of runoff volume and runoff quality (e.g., phosphorus, suspended solids, water temperature). This was estimated using the P8 model described previously.
- **Aeration:** Input of the aerators into the model. This was conducted such that location of the diffusers and the airflow rate of each aerator were identified in the model to simulate the actual location and air flow rate throughout Sweeney Lake.
- **Model Calibration:** This consisted of a series of model runs whereby the model is changed slightly. With each run, the in-lake monitoring data are compared to the model results. An example of the calibration results is provided in Figure 3-1 and Figure 3-2 below.

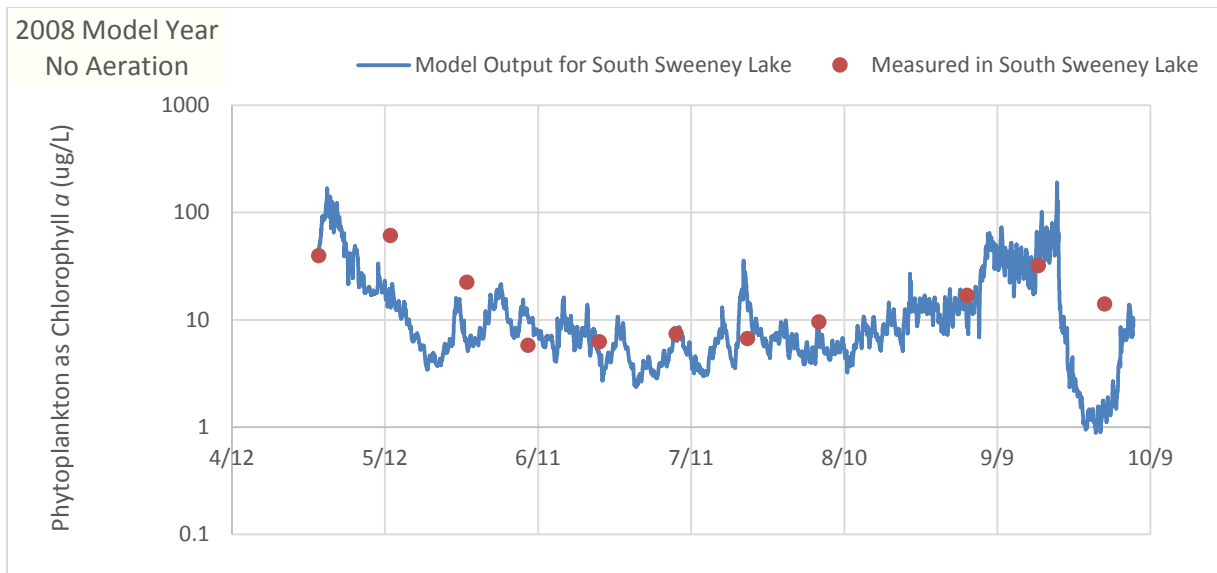


Figure 3-1 **Example of 2008 measured and model-predicted phytoplankton in Sweeney Lake surface water**

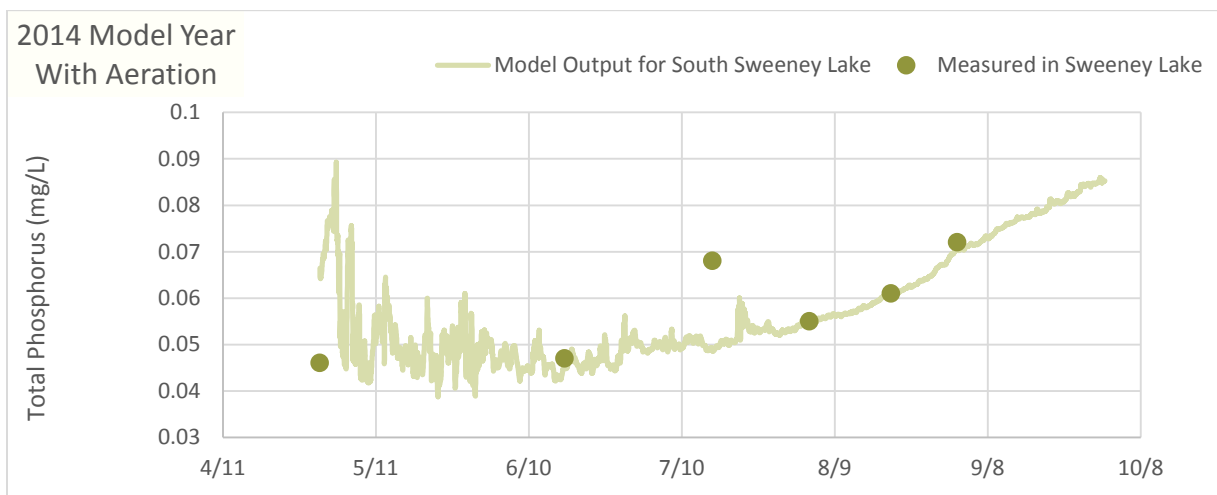


Figure 3-2 **Example of 2014 measured and model-predicted phosphorus in Sweeney Lake surface water**

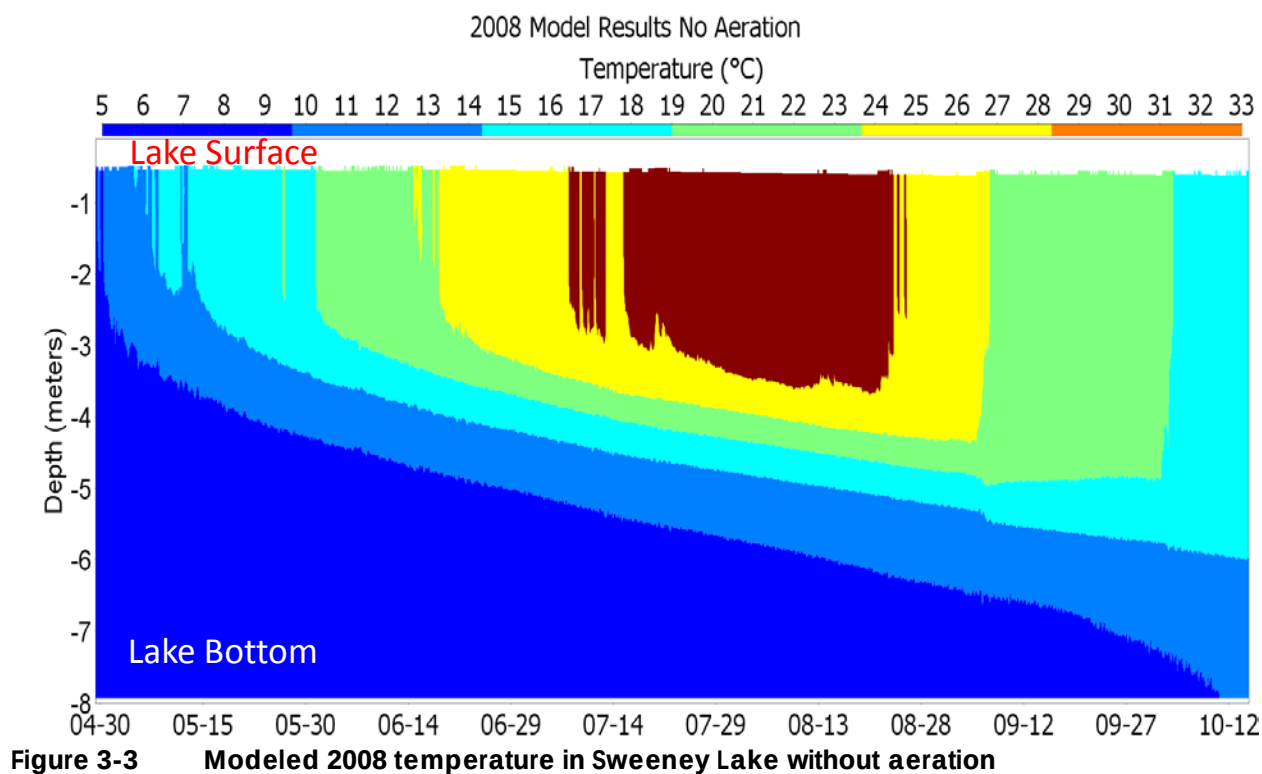
For modeling years 2008 and 2014, four modeling scenarios were conducted:

1. Existing conditions: for 2008 this is without aeration and for 2014 this is with aeration.
2. Alternative condition: for 2008 this is with aeration and for 2014 this is without aeration.
3. Existing conditions with an alum treatment to reduce phosphorus release from lake-bottom sediments (internal loading).
4. Alternative conditions with an alum treatment to reduce phosphorus release from lake-bottom sediments (internal loading).

All of the modeling scenarios assumed the same starting (spring) phosphorus concentration in the lake, which is conservative when considering that the implementation of an alum treatment would be expected to improve the lake water quality year-round.

3.2 Modeling Results

The model was able to properly simulate normal lake stratification without aeration (Figure 3-3) and the lack of stratification (destratification) with aeration (Figure 3-4). It can be seen that with stratification, water on the bottom of the lake is colder and does not mix with the surface waters. When there is aeration, the water column has a nearly uniform temperature indicating that the bottom waters are completely mixing with the surface waters. Figure 3-5 shows an example of the modeling output, which simulated aeration during the summer of 2008, where sediment phosphorus release from the south basin becomes entrained in the surface water of the lake.



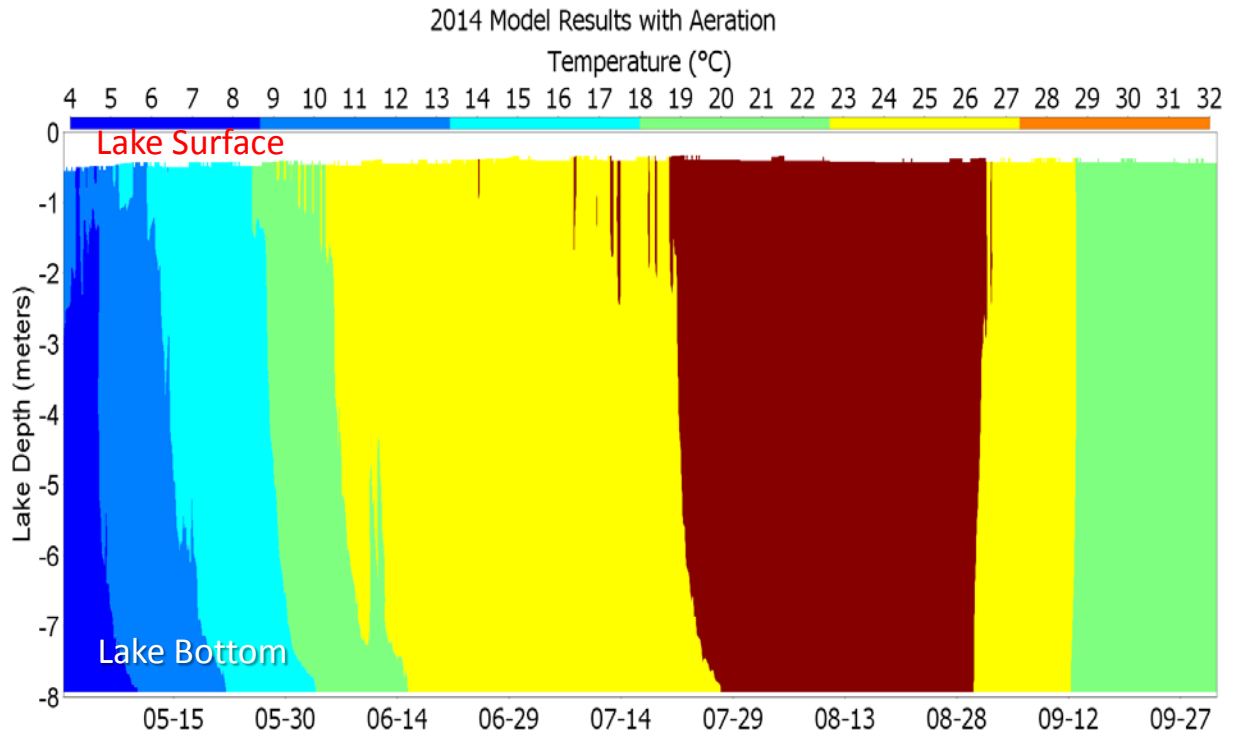


Figure 3-4 Modeled 2014 temperature in Sweeney Lake with aeration

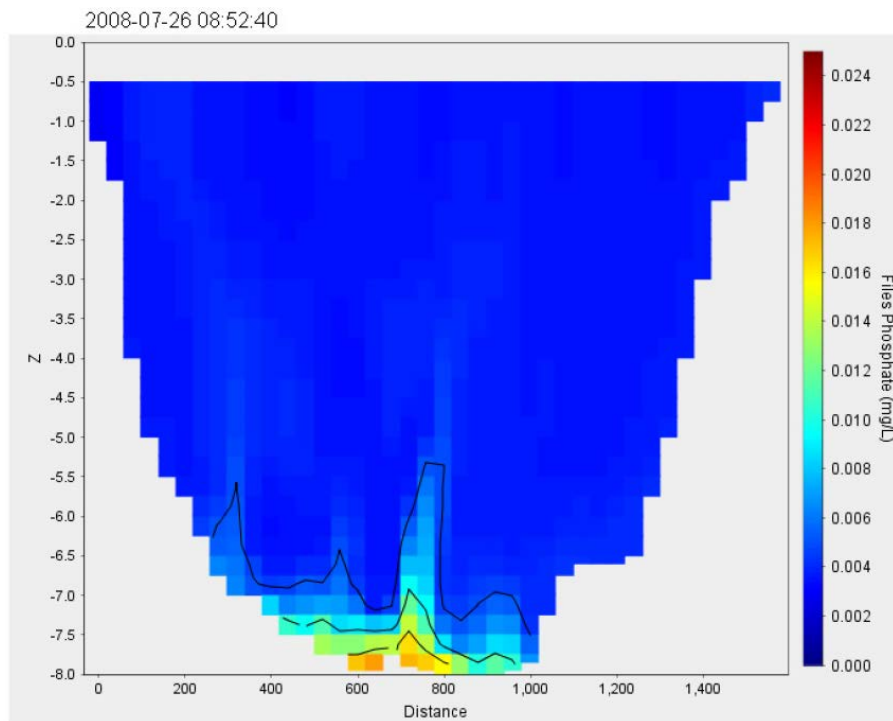


Figure 3-5 Modeled example of phosphorus entrainment from aeration in Sweeney Lake

The modeled effects of aeration, climate and the application of alum to inhibit the release of sediment phosphorus to the bottom water in Sweeney Lake are shown in Figure 3-6. The modeling results show:

- Internal loading is the largest source of phosphorus entering Sweeney Lake in the summer
- Aeration exacerbates summer water quality problems in Sweeney Lake, with surface water phosphorus concentrations that are 10 to 30% higher than the respective un-aerated condition
- An alum treatment will greatly improve water quality and ensure that MPCA/BCWMC standards/goals will be consistently met for Sweeney Lake
- Aeration following an alum treatment is not expected to substantially change the resulting lake water quality.

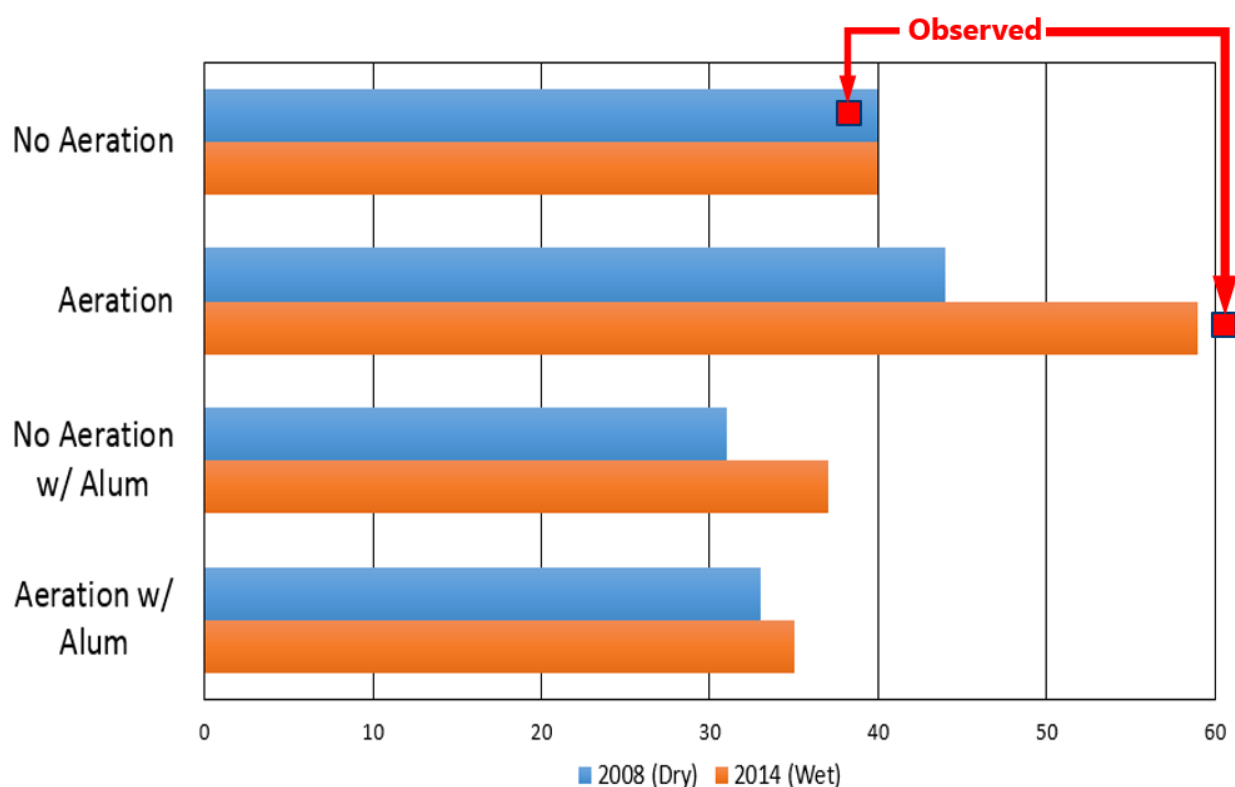


Figure 3-6 Modeled and observed summer average total phosphorus concentrations (µg/L) in Sweeney Lake

4.0 Summary

4.1 Water Quality Improvement Options

The monitoring data and modeling results indicate that phosphorus from watershed runoff and phosphorus that is released from lake-bottom sediments (internal phosphorus loading) are the cause of periodic phytoplankton blooms and low water clarity in Sweeney Lake. The modeling results indicate that aeration is not preventing internal loading but rather aeration prevents the capture (settling and assimilation) of phosphorus by the lake. The outcome is that aeration leads to higher phosphorus and phytoplankton concentrations and less clarity. The modeling also indicates that the treatment of lake sediments with alum will reduce phosphorus and phytoplankton blooms, regardless of whether aeration is used.

The modeling results reaffirm that compliance with Minnesota lake nutrient standards and the Sweeney Lake TMDL will require inactivation of phosphorus in the lake bottom sediments to significantly reduce internal phosphorus loading. There are a few options that were considered to meet the necessary internal phosphorus loading reduction targets. These options are discussed in more detail in the following sections.

4.1.1 Whole Lake Aluminum Treatment of Lake Bottom Sediments

The active ingredient in alum and sodium aluminate is aluminum. Aluminum binds phosphorus in sediment and stops it from migrating upward from the lake bottom to the lake surface. The aluminum-phosphate compound that is formed (Al-P), is unique in that it is stable even when oxygen is low (i.e., anoxia) in the bottom waters of the lake. This is not the case for phosphorus bound to iron (Fe-P). In the lake bottom sediments and when oxygen is low in the summer, phosphorus breaks away from iron and migrates into the lake water column (this is internal loading and the cause of most algal blooms). Aluminum (e.g., alum and sodium aluminate) is effective at stopping this process. The alum/sodium aluminate is typically applied to the surface of a lake using a treatment barge and the aluminum settles into the lake sediments as a floc. Aluminum treatment is typically expected to reduce phosphorus release from lake-bottom sediments for 10 to 20 years.

The total mass of Fe-P and Org-P in the actively mixed layers (upper few inches) of sediment were determined for each core. Alum doses were then calculated for the lake by determining an appropriate Al:Al-P ratio, following techniques designed by Pilgrim et al. (2007). Several factors were considered in the development of the alum dose for Sweeney Lake:

1. The mass of phosphorus in the Sweeney Lake sediments is higher in the south bay compared to the north bay. Hence, more alum/sodium aluminate is required to immobilize the phosphorus in the south bay sediment.
2. Phosphorus concentrations in the Sweeney Lake sediment are very high and the total amount of alum/sodium aluminate needed is on the high end of most aluminum treatments.
3. Treatment will consist of a mixture of alum and sodium aluminate (both chemicals contain the active ingredient—aluminum) to make sure that an in-lake pH of near 7 can be maintained in

Sweeney Lake during and after treatment. This neutral pH will be protective of aquatic life. The overall dose of both chemicals is designed to reduce internal phosphorus loading by 85%.

4. It is recommended that a "split" treatment is conducted. For a split treatment, a portion of the dose would be applied in one year and the remaining dose(s) would be applied after a number of years has transpired. The initial treatment will bind what is called "mobile phosphorus" (Fe-P). The follow-up treatments will also bind mobile phosphorus, however, the treatments will also bind phosphorus that is released from organic phosphorus that has decayed since the initial treatment. This approach will immobilize more phosphorus in the sediment, increase the longevity and make the overall treatment more cost effective. We recommend splitting the dose in half or in thirds. The treatment sequence would be conducted as follows:
 - a. 50% Split Dose: One half of the dose is applied in year 1 and the other half applied in year 5.
 - b. 33% Split Dose: One third of the dose is applied in year 1, another third in year 3, and another third in year 6.

A synopsis of the aluminum doses and estimated chemical application costs for each treatment sequence are provided in the following tables.

A. 100% of Total Prescribed Dose (not recommended)

Location	Mobile Phosphorus (g P m ⁻² x cm ⁻¹)	Depth of Sediment Treated (cm)	Treatment Area (acres)	Total Aluminum Dose After Completion of All Applications			Per Treatment Estimated Total Cost for Both Bays
				g Al m ⁻²	Total Alum Applied (gallons)	Total Sodium Aluminate Applied (gallons)	
South Sweeney	0.60	8	37.5	178.8	50,302	25,151	\$365,000
North Sweeney	0.21	8	30.0	75.1	21,123	10,562	

B. Split Treatment: 50% of Total Prescribed Dose

Location	Mobile Phosphorus (g P m ⁻² x cm ⁻¹)	Depth of Sediment Treated (cm)	Treatment Area (acres)	Aluminum Dose for the First Treatment (split treatment, 50% of total prescribed volume)			Per Treatment Estimated Total Cost for Both Bays
				g Al m ⁻²	Total Alum Applied (gallons)	Total Sodium Aluminate Applied (gallons)	
South Sweeney	0.60	8	37.5	89.4	25,151	12,576	\$194,000 (Total for 2 treatments = \$388,000)
North Sweeney	0.21	8	30.0	37.5	10,562	5,281	

C. Split Treatment: 33% of Total Prescribed Dose

Location	Mobile Phosphorus (g P m ⁻² x cm ⁻¹)	Depth of Sediment Treated (cm)	Treatment Area (acres)	Aluminum Dose for the First Treatment (split treatment, 33% of total prescribed volume)			Per Treatment Estimated Total Cost for Both Bays
				g Al m ⁻²	Total Alum Applied (gallons)	Total Sodium Aluminate Applied (gallons)	
South Sweeney	0.60	8	37.5	59.6	16,767	8,384	\$135,000 (Total for 3 treatments = \$405,000)
North Sweeney	0.21	8	30.0	25.0	7,041	3,521	

4.1.2 Micro-floc injection

Micro-floc injection is a potential alternative to treating a lake with alum/sodium aluminate at one time (e.g., using a treatment barge that delivers the product). With the micro-floc approach, small volumes of alum are injected from a shore-based facility and via tubing into the bottom of a lake creating alum floc at the bottom of the lake. Aluminum from the floc builds up over time and incorporates into the sediment. This captures phosphorus that has accumulated on the bottom of a lake and it binds phosphorus in the sediment. Ultimately the aluminum binds enough phosphorus in the sediment and inhibits internal phosphorus loading.

The advantage of this system is that the alum can be freshly applied each year and throughout the summer months. Hence, internal loading is controlled on an ongoing basis. The disadvantage of this system is that the delivery of aluminum may be uneven and this system requires the operation and maintenance of a facility on land to house the alum and the feed pumps. Since the benefit of this approach is unpredictable, and the operation and maintenance would exceed that of the existing aeration system, this option was not considered for further implementation.

4.1.3 Direct oxygen injection

Direct oxygen injection is an approach to feed oxygen at the lake bottom with the intent to increase oxygen in the bottom waters without destratifying the lake. The bubbles are injected at low volume and dissolve into the water as they travel upward. The primary advantage of this system is that it can improve oxygen in the lake bottom waters without destratifying the lake and transporting potentially phosphorus rich bottom waters to the lake surface. The primary disadvantage of this system is that it will require the construction of a facility on land to house the necessary equipment to generate oxygen and pump the oxygen to the bottom of the lake. Since the long-term cost-benefit of this approach is not expected to match an in-lake aluminum treatment, and the operation and maintenance would exceed that of the existing aeration system, this option was not considered for further implementation.

4.2 Recommendations

It is recommended that the aerators no longer remain in operation and that a whole lake alum treatment of bottom sediment be conducted with the total aluminum dose split in half, or in thirds, depending on the source of funding. The basis for these recommendations is:

- The TMDL requirements for internal load reduction will be met.
- In-lake phosphorus concentrations will be below the MPCA nutrient standards
- Phosphorus that accumulates in the bottom waters will not be mixed with surface waters.

If there is a need to manage the potential for winter kill, surface-type aerators that keep portions of the lake surface open during the winter may be a cost-effective option to improve oxygen concentrations during the winter.

Because an in-lake aluminum treatment combined with discontinued aeration should result in improved water transparency in Sweeney Lake, it is expected that aquatic plant management may be warranted. A lake vegetation management plan (LVMP) is a document the Minnesota Department of Natural Resources (DNR) develops with public input to address aquatic plant issues on a lake. The LVMP is intended to balance riparian property owner's interest in the use of shoreland and access to the lake with preservation of aquatic plants, which are important to the lake's ecological health. It is recommended that the BCWMC work with the DNR and the public to develop a LVMP for Sweeney Lake that will prescribe the permitted aquatic plant management actions (mechanical and/or herbicides) for a five-year period, including controls for invasive plants and restoration of lake shore habitat. The BCWMC should also pass along recent plant surveys and inquire with the DNR about whether the survey information can be used as the control for future plant management actions.

5.0 References

Short Elliott Hendrickson Inc. (SEH) and Barr Engineering Company (Barr). 2011. Sweeney Lake Total Phosphorus TMDL. Prepared for Bassett Creek Watershed Management Commission (BCWMC) and the Minnesota Pollution Control Agency (MPCA). wq-iw8-06e.

Pilgrim, Keith M., Brian J. Huser, and Patrick L. Brezonik. 2007. A method for comparative evaluation of whole-lake and inflow alum treatment. *Water Research*. 41 (2007) 1215 – 1224.

Feasibility Report for Bryn Mawr Meadows Water Quality Improvement Project

Minneapolis, MN

October 2018 Draft

Prepared for
Bassett Creek Watershed Management Commission



Feasibility Report for Bryn Mawr Meadows Water Quality Improvement Project

October 2018

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Appendix A	Minneapolis Park & Recreation Board preferred master plan alternatives
Appendix B	Site Topographic Survey
Appendix C	Preliminary Geotechnical Report
Appendix D	Wetland Delineation Report
Appendix E	Opinion of Cost

Certifications

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

Michelle Kimble
PE #: 42012

date
Date

1.0 Background

The BCWMC's 2015-2025 Watershed Management Plan (Plan, Reference (1)) addresses the need to improve the quality of stormwater runoff reaching the Mississippi River by reducing nonpoint source pollution, protecting and enhancing fish and wildlife habitat, reducing stormwater runoff volume to improve water quality, and taking into account aesthetics and recreational opportunities within the watershed. This project is consistent with the goals (Section 4.1) and policies (Sections 4.2.1 and 4.2.10) in the Plan. The Plan's 10-year Capital Improvement Program (CIP, Table 5-3 in the Plan) includes project BC-5 Bryn Mawr Meadows Water Quality Improvement Project. The BCWMC approved the 5-year (working) CIP at their March 16, 2017 meeting, which included implementation of the Bryn Mawr Meadows Water Quality Improvement Project in 2019.

The Bryn Mawr Meadows Water Quality Improvement Project was originally recommended as a 2016 CIP project, however it was decided to defer the project to 2020 to be more in line with the Minneapolis Park & Recreation Board's (MPRB) master plan process. MPRB's Bryn Mawr Meadows Park master plan is still in process, but they have selected two preferred master plan alternatives. Both alternatives include areas for water quality treatment and are attached in Appendix A. After the public comment period is over, one master plan will be chosen and presented to at the MPRB boarding meeting on November 28, 2018. MPRB will design the park reconstruction in 2021 and start construction in 2022. MPRB will be responsible for meeting BCWMC water quality requirements for the site when the park is redeveloped. This CIP project will treat water above and beyond those requirements. This study examines the feasibility of constructing water quality improvements within the park to treat stormwater runoff from areas adjacent to Bryn Mawr and tributary to Bassett Creek.

1.1 Project Area Description

Bryn Mawr Meadows Park is a 51-acre park located in Minneapolis in the southeastern portion of the Bassett Creek watershed, southwest of the intersection of Interstate 394 and 94 (Figure 1-1). The park is bordered by Morgan Avenue S on the west, Interstate 394 on the east and south, and the Canadian Pacific rail line on the north. The city of Minneapolis impound lot and Bassett Creek are located north of the park and rail line. The park contains walking and biking paths, parking lot, broomball rink, cricket field, picnic area, playground, restroom, soccer fields, softball fields, tennis courts, basketball court, wading pool, and batting cages. The land use in the areas surrounding Bryn Mawr is low density residential, park, and industrial (Figure 1-2).

The MPRB master plan development is ongoing, but currently shows two preferred alternatives which include rearranging, adding and deleting some of the park's uses, including a new parking lot, and possibly an indoor/outdoor building. Both alternatives show areas in the north and central portion of the site to be used for "storm water enhancements". In general the park drains from the south to the north, with the north end being at the lowest elevation and most suitable to use for collecting and treating stormwater runoff. MPRB will need to meet BCWMC's water quality treatment requirements for the site, no matter which option is chosen. This feasibility study evaluates possible options that would go above

and beyond BCWMC's water quality treatment requirements, with the intention of treating some of the untreated or undertreated runoff from upstream areas.

1.1.1 Subwatershed Draining Through Bryn Mawr Meadows Park

The subwatershed tributary to the storm sewer through Bryn Mawr Meadows Park is approximately 267 acres (Figure 1-3); the storm sewer in the park discharges into Bassett Creek. Most of the subwatershed is located within Minneapolis, with a very small portion in Golden Valley. Land use is primarily comprised of low-density residential, park and recreational, and railroad (Figure 1-2).

One hundred eighty one (181) acres of the watershed drains into Penn Pond, owned by the Minnesota Department of Transportation (MnDOT), and located southwest of the Interstate 394 and Penn Avenue interchange. Penn Pond outlets via a 24-inch diameter storm sewer located under Interstate 394. The 24-inch storm sewer becomes a 42-inch storm sewer and continues along Morgan Avenue South, collecting additional drainage from surrounding park and residential areas. Near the north end of Bryn Mawr Meadows Park, the Morgan Avenue South storm sewer joins with park storm sewer. From that junction, a 66-inch reinforced concrete pipe continues under the railroad, under the city of Minneapolis impound lot, and outlets into Bassett Creek.

Existing information about Penn Pond is limited and we made assumptions to model the pond for this feasibility study. We estimated the pond size based on aerial imagery. We know from a site visit that the pond may not be functioning to its fullest potential. We recommend that MnDOT survey and dredge the pond to maximize water quality benefits. The water quality modeling for this feasibility study assumes the pond is approximately 6.5 feet deep from outlet to pond bottom (water quality storage). The actual water quality depth of the pond is important as it will have an impact on the removal effectiveness for concepts 2 and 3. The site visit also revealed the existence of an additional dry storm basin located under Interstate 394 east of Penn Avenue. It is not clear how that basin functions or if there is a piped outlet from that basin to the storm sewer in the park. Storage from that basin was not included in this study. It appears the basin overtops on occasion, and the overflow from the basin flows into the south end of Bryn Mawr Meadows Park. The City of Minneapolis does not have additional information on this basin and we are seeking information from MnDOT. Prior to full design we recommend a survey and investigation into how the basin functions with the park and city storm sewer.

1.1.2 Site Topographic Survey

Barr Engineering completed a site topographic survey in 2017. The site topographic survey is included in Appendix B.

1.1.3 Soil Borings

Barr Engineering completed four soil borings in April 2018. Soils are generally characterized as six to fourteen feet of fill, with organic or fat clays beneath the fill. Fat clays are very soft and are not conducive to supporting any type of structure. Any concrete pipe, concrete structures, or other structures will need to be installed on piles to prevent settlement. Plastic pipe is likely light enough to be installed without piles. Installation of all pipes and structures should be evaluated in final design. The feasibility study

opinion of costs assume the pond outlet structure will be on piles, but all storm sewer will be plastic and not on piles. Groundwater was found three to six feet below grade. The preliminary geotechnical engineering report with boring locations and logs is included in Appendix C.

1.1.4 Cultural Resources

Barr Engineering completed a desktop Cultural Resources Review for the project area. A Minnesota State Historic Preservation Office (SHPO) database request resulted in several hundred residential structures in the area surrounding the park being identified as historic sites. The railroad bordering the north edge of the site is also considered historic. There were no historic sites identified within the park limits. The concepts discussed in this study would not disturb any of the historic sites identified in the area.

1.1.5 Wetland Delineations

Barr Engineering completed wetland delineations within the park in 2017. Four wetlands were delineated, but are not located in the conceptual design areas of the site and therefore should not impact potential water quality work. The wetland delineation report can be found in Appendix D.

1.1.6 Bassett Creek Floodplain

Barr completed the Phase II XP-SWMM model for Bassett Creek and its contributing watersheds in 2017. According to the model, the 100-year flood elevation for Bassett Creek, in the vicinity of Bryn Mawr Meadows Park, is 812.9 feet NAVD88. A portion of the northwest corner of the site is within the 100-year floodplain, however this area appears to be outside of the BCWMC jurisdictional floodplain, which means that the floodplain is managed by the City of Minneapolis, not the BCWMC. The water quality concepts developed as part of this study are not expected to result in fill in the floodplain and may even provide additional floodplain storage. Should any fill be placed within the 100-year floodplain, it must be mitigated and is subject to BCWMC and city approval.

1.2 Hydrologic and Hydraulic Models

As part of this study, the water quality concepts were analyzed using the latest version of the BCWMC Phase II XP-SWMM model. The XP-SWMM model was clipped to the local drainage area and the proposed water quality concepts were built into the model to evaluate the proposed features' effect on the overall drainage system. This effort should be expanded and refined during final design when selecting bmp and pipe sizes.

1.3 Water Quality Models

The BCWMC developed the P8 model for Bassett Creek and its contributing watersheds in 2012. The P8 water quality model was reviewed and analyzed to estimate the water quality improvement expected from each proposed alternative. Results of the analysis are summarized in section five of this report.

Final design efforts should include both additional refinements to the water quality modeling as the design components are finalized and incorporation of the constructed improvements into the BCWMC's P8 model after completion of the project.

2.0 Goals and Objectives

The goals and objectives of the feasibility study are to:

1. Review the feasibility of improving quality of stormwater runoff reaching Bassett Creek.
2. Develop conceptual designs.
3. Provide an opinion of cost for design and construction of concepts.
4. Identify potential impacts and permitting requirements.

The goal and objective of the water quality project is to reduce nonpoint source pollution to Bassett Creek.

2.1 Scope

As part of the Bryn Mawr Meadows Park reconstruction project, MPRB is proposing to construct additional water quality improvements to treat offsite stormwater runoff that would otherwise flow untreated to Bassett Creek. The BCWMC's BC-5 CIP project funding would be applied towards the portions of the water quality improvements that provide treatment "above and beyond" the BCWMC requirements for the park reconstruction project.

This project is consistent with the goals (Section 4.1) and policies (Sections 4.2.1, 4.2.2, and 4.2.10) in the 2015 – 2025 BCWMC Watershed Management Plan. The BCWMC has included the Bryn Mawr Meadows Water Quality Project in its CIP, based on gatekeeper policy 110 from the BCWMC Plan:

The BCWMC will consider including projects in the CIP that meet one or more of the following "gatekeeper" criteria.

- *Project is part of the BCWMC trunk system (see Section 2.8.1, Figure 2-14 and Figure 2-15)*
- *Project improves or protects water quality in a priority waterbody*
- *Project addresses an approved TMDL or watershed restoration and protection strategy (WRAPS)*
- *Project addresses flooding concern*

The BCWMC will use the following criteria, in addition to those listed above, to aid in the prioritization of projects:

- *Project protects or restores previous Commission investments in infrastructure*
- *Project addresses intercommunity drainage issues*
- *Project addresses erosion and sedimentation issues*
- *Project will address multiple Commission goals (e.g., water quality, runoff volume, aesthetics, wildlife habitat, recreation, etc.)*
- *Subwatershed draining to project includes more than one community*
- *Addresses significant infrastructure or property damage concerns*

The BCWMC will place a higher priority on projects that incorporate multiple benefits, and will seek opportunities to incorporate multiple benefits into BCWMC projects, as opportunities allow.

The Bryn Mawr Meadows Water Quality Project meets multiple of the gatekeeper criteria—the project would improve water quality in a priority waterbody, and would address multiple Commission goals including improving quality of stormwater runoff, protecting fish and wildlife habitat, and potentially protect against flood risks by adding flood storage volume.

2.2 Considerations

The following considerations played a key role in developing recommendations for the Bryn Mawr Meadows Water Quality Project and should continue to be evaluated through final design:

1. Maximizing the water quality benefit.
2. Minimizing permitting required to construct the project.
3. Minimizing wetland impacts.

3.0 Stakeholder Input

3.1 Onsite Meeting

A project meeting was held onsite on October 23, 2017. Attendees included Minneapolis Commissioner Michael Welch, the BCWMC administrator and engineers, City of Minneapolis staff, and MPRB staff. The BCWMC feasibility study scope and schedule were discussed. BCWMC engineers presented preliminary concept ideas. The MPRB staff shared their anticipated park reconstruction project schedule, starting with community advisory meetings that were occurring at the time of the meeting, and ending with future construction in 2021 or 2022. Attendees were informed of a design charrette MPRB would be holding in December or January for several park master plans. Bryn Mawr Meadows Park is one of the parks that would be worked on during the design charrette.

3.2 Design Charrette at MPRB

MPRB hosted a parks master plan design charrette for several parks the week of January 8, 2018. The BCWMC administrator and engineer attended the first day of the charrette and met with the planners and landscape architects working on the Bryn Mawr Meadows Park Master Plan. The design charrette team was provided with existing conditions information, including park topography, utility locations, and flood plain elevation; and preliminary concept ideas developed to date. This information was used to help develop the MPRB master plan alternatives and ensured the coordination of the master plan with the BCWMC water quality project.

3.3 Technical Stakeholder Meeting

One technical stakeholder meeting was held on January 19, 2018 at MPRB offices at 3800 Bryant Avenue South. The meeting included representatives from the City of Minneapolis, MPRB, and the Commission Engineer. The attendees discussed project scope, potential design concepts, regulatory issues, permits, and possible future conversations the City of Minneapolis would like to have with MPRB about adding flood control in this area. United States Army Corps Engineers (USACE) and Minnesota Department of

Natural Resources (DNR) staff were invited to attend the meeting, however both agencies indicated they do not need to be involved with the project unless construction work happens within Bassett Creek.

3.4 Public Stakeholder Meeting

A public stakeholder open house meeting was held on March 8, 2018 at Harrison Recreation Center in Minneapolis. The City of Minneapolis organized this meeting, which was an open house for several MPRB projects. The BCWMC administrator and BCWMC engineer attended the meeting. The BCWMC display included a watershed map, a brief project description, possible design concepts, educational materials, and information about the BCWMC. A landscape architecture firm hired by MPRB to design the Bryn Mawr Meadows Park Master Plan was situated next to BCWMC. Many conversations involved the MPRB's possible changes to the park and its programming. Residents were generally in support of the CIP design concepts.

3.5 BCWMC Staff Comments

A draft version of the October 2018 draft feasibility report was provided to the BCWMC administrator. The draft feasibility study was revised in response to the comments received.

4.0 Water Quality Improvement Concepts

This section provides a summary of the alternatives analyzed for water quality and other improvements at Bryn Mawr Meadows Park. Multiple alternatives were evaluated for removing sediment and improving water quality. The measures considered for potential implementation include the following:

- Diverting runoff from a 15.9-acre residential area west of the park into a stormwater pond (Concept 1 – Northwest Neighborhood Diversion)
- Diverting low flows from Penn Pond discharge and 29.2-acre residential area west of the park into a stormwater pond (Concept 2 – Penn Pond Low Flow Diversion)
- Combine Concepts 1 and 2 (Concept 3 – Northwest Neighborhood Diversion and Penn Pond Low Flow Diversion)
- Other concepts considered, but not developed (treatment of full flows, infiltration, iron enhanced or other filtration)

The proposed concepts will reduce sediment and phosphorus loading to Bassett Creek and all downstream water bodies.

4.1 Concept 1 – Northwest Neighborhood Diversion

Concept 1 diverts stormwater runoff from 15.9 acres in the residential neighborhood west of the park into a proposed stormwater pond within the park (Figure 4-1). Soil borings indicate the site has six to fourteen feet of fill so all material excavated to create the pond may need to be disposed of offsite at a landfill. The cost estimate assumes disposal at a landfill.

The flow diversion would be installed near the intersection of Laurel Avenue West and Morgan Avenue South. Four existing catch basins on the north side of the intersection would be redirected into a proposed 15-inch storm sewer that would cross over the existing 42-inch diameter storm sewer located in Morgan Avenue South. Two additional catch basins may need to be added on Laurel Avenue West to capture the first flush of stormwater runoff. These catch basins have been included in the cost estimate for concept 1. Exact sizing of the pond and diversion storm sewer should be adjusted when the final grading reconstruction layout for the park is known.

4.2 Concept 2 –Penn Pond Low Flow Diversion

Concept 2 diverts stormwater runoff from the storm sewer in Morgan Avenue South. The diversion would be installed as far downstream as possible to capture as much untreated runoff as possible, while allowing the diversion pipe to be high enough above the pond normal water level. A 12-inch low flow diversion pipe would be installed in a new storm sewer structure, allowing the first flush flows to be diverted into the water quality pond within the park (Figure 4-2). The proposed pond was sized with a permanent volume of 3.8 acre-feet based on runoff from a 2.5-inch storm. Soil borings indicate the site has six to fourteen feet of fill so all material excavated to create the pond may need to be disposed of offsite at a landfill. The cost estimate assumes disposal at a landfill. Exact sizing of the pond and diversion storm sewer should be adjusted when the final grading and reconstruction layout for the park is known.

4.3 Concept 3 – Northwest Neighborhood Diversion and Penn Pond Low Flow Diversion

Concept 3 assumes both concepts 1 and 2 are constructed with a stormwater pond permanent volume equal to 5.4 acre-feet.

4.4 Other Concepts considered

Another concept we evaluated was to direct all flows from Penn Pond and the rest of the subwatershed downstream of I-394 through the proposed water quality pond. This concept was not fully developed because preliminary modeling showed that the pond would need to be significantly larger, and the costs and space needed to excavate additional water quality storage were prohibitive.

Infiltration is not possible on this site due to tight soils and high groundwater; however, filtration BMPs were considered. Filtration BMPs would need to be installed at a higher site elevation than the proposed water quality pond due to the proximity of groundwater, flood plain elevation, and existing storm sewer elevation. Those parameters would cause any filtration BMPs to be located south of the proposed water quality pond, closer to the proposed building. Initially a linear water feature was considered, but MPRB will likely need the area near the building and other site features to meet BCWMC's water quality requirements when the park is reconstructed; therefore, this option was not developed further.

Installation of iron-enhanced sand filtration benches along the ponds were considered but not recommended due to the proximity of groundwater keeping the site wet. If iron enhancement materials are saturated for long periods of time they will release pollutants they previously captured.

5.0 Water Quality Impacts

This section discusses impacts of the Bryn Mawr Meadows Quality Improvement Project, including estimated pollutant reductions resulting from each alternative. The P8 model was used to evaluate anticipated pollutant removals for all concepts. Table 5-1 summarizes the results from each alternative.

Table 5-1 Estimated Annual TP Removals for Concepts 1, 2, and 3

Alternative	Estimated TP Removal (pounds/year)
Concept 1	67
Concept 2	296
Concept 3	334

6.0 Project Cost Considerations

This section presents a feasibility level opinion of cost of the evaluated concepts, discusses potential funding sources, and provides an approximate project schedule.

6.1 Opinion of Cost

The opinion of cost provided in Appendix E assumes all excavated material will need to be disposed of at a landfill. If the soils are tested and they are not contaminated, the cost for excavation and removal could be much less than what is shown in the opinion of cost. If the excavated material could be used onsite as fill for the park reconstruction project, the excavation and removal cost could be reduced by 50%.

The opinion of cost is a Class 4 feasibility-level cost estimate as defined by the American Association of Cost Engineers International (AACI International) and uses the assumptions listed below and detailed in the following sections.

1. The cost estimate assumes a 30% construction contingency.
2. Costs associated with design, permitting, and construction observation (collectively "engineering") is assumed to be 30% of the estimated construction costs (excluding contingency).

The Class 4 level cost estimates have an acceptable range of between -15% to -30% on the low range and +20% to +50% on the high range. Based on the development of concepts, it is not necessary to utilize the full range of the acceptable range for the cost estimate; and we assume the final costs of construction may be between -20% and +30% of the estimated construction budget. The assumed contingency for the project (30%) incorporates the potential high end of the cost estimate range.

The estimated capital costs and a range of 20-year to 35-year annualized costs for each alternative are summarized in Table 6-1. Detailed cost-estimate tables for all concepts considered are provided in Appendix E.

6.2 Funding Sources

MPRB proposes to use BCWMC CIP funds to pay for the Bryn Mawr Meadows Water Quality Improvement project. BCWMC would contract with the City of Minneapolis who would then subcontract with the MPRB to construct the project. The source of these funds is an ad valorem tax levied by Hennepin County over the entire Bassett Creek watershed.

A significant portion of the construction costs is the (assumed) landfill disposal of contaminated sediment. There are other funds available that could be used to help cover the costs of investigation and/or clean-up. For example, Hennepin County has non-competitive funds available to municipalities for the environmental investigation of soils. In addition, if the BCWMC or the MPRB investigates the soils and finds contamination, they can apply for Hennepin County Environmental Response Fund (ERF) grant money to aid in the clean-up effort. ERF grants are competitive and applications are accepted once per year in November.

6.3 Project Schedule

The schedule for this project is dependent on MPRB's project schedule. MPRB plans on starting design in 2021 and construction sometime in 2022. The BCWMC must hold a public hearing and order the project in time to submit its ad valorem tax levy request to Hennepin County.

Table 6-1 Estimated Capital and Annualized Costs for Concepts 1, 2, and 3

Alternative	Construction Cost	Construction Contingency ¹	Planning, Engineering, Design, and Construction Observation ²	Total Cost	Estimated TSS Removal (lbs/year)	Estimated Annualized Cost per Pound of TSS Removal (\$/lb TSS/year) ³	Estimated TP Removal (lbs/year)	Estimated Annualized Cost per Pound of TP Removal (\$/lb TP/year) ³
Concept 1 –	\$209,000	\$63,000	\$82,000	\$354,000	31,450	\$0.70-\$0.90	67	\$310-\$420
Concept 2 –	\$317,000	\$95,000	\$124,000	\$536,000	103,050	\$0.33-\$0.50	296	\$110-\$140
Concept 3 –	\$470,000	\$141,000	\$183,000	\$794,000	114,250	\$0.40-\$0.55	334	\$140-\$190

(1) Assumed 30% contingency based on feasibility-level design (Class 4, 10-15% design completion per ASTM E 2516-06).

(2) Assumed 30% of construction cost for Engineering, Design, and Construction Observation.

(3) Assumed 4% interest rate and 20-year to 35-year lifespan.

7.0 Permitting, Site Impacts, and Coordination

This section discusses permitting and coordination required for each alternative.

7.1 Permitting

No disturbance or fill of any wetlands, nor any work in public waters is anticipated as part of the water quality project. An NPDES will be required if the park reconstruction is over one acre in size. MPRB and its contractors will be responsible for any permits required by the park reconstruction project.

7.2 Site Impacts and Coordination

Construction of this project would be in conjunction with the MPRB plans to reconstruct Bryn Mawr Meadows Park and would not require additional park closure beyond those already planned. Continued coordination with MPRB will be required during final design.

8.0 Recommendations

Concepts 2 and 3 provide the most water quality impact/treatment and cost effectiveness, based on the cost per pound of total phosphorus removed (see Table 6-1). However, concepts 2 and 3 would cost significantly more than the originally identified \$500,000 budget for this CIP. A significant percentage of the cost in each of the options is disposal of the excavated pond material due to unknown fill present at the site. If the soils are tested and found clean, they may be able to be used onsite or hauled offsite to another location resulting in a lesser project cost. The opinion of cost in the feasibility study assumes all material must go to a landfill. We recommend BCWMC or MPRB requests and utilizes Hennepin County funds to investigate the site soils and determine the likely cost of excavation and disposal prior to final design.

Prior to full design we recommend that MnDOT completes a survey and investigation of Penn Pond and the unnamed basin beneath Interstate 394 to understand how they connect to the park and city storm sewer. Final design will need to take that information into account. If it is found that there is more upstream storage and treatment for the 181 acres draining to Penn Pond, the size of the proposed water quality basin can be adjusted accordingly. Adjusting the volume of excavation will significantly impact the cost of the project, as excavation accounts for the largest portion of the construction cost estimate.

9.0 References

1. **Bassett Creek Watershed Management Commission.** 2015 Watershed Management Plan. September 2015.



 Creeks

 Subwatershed

 BC-5 Feasibility Study Area

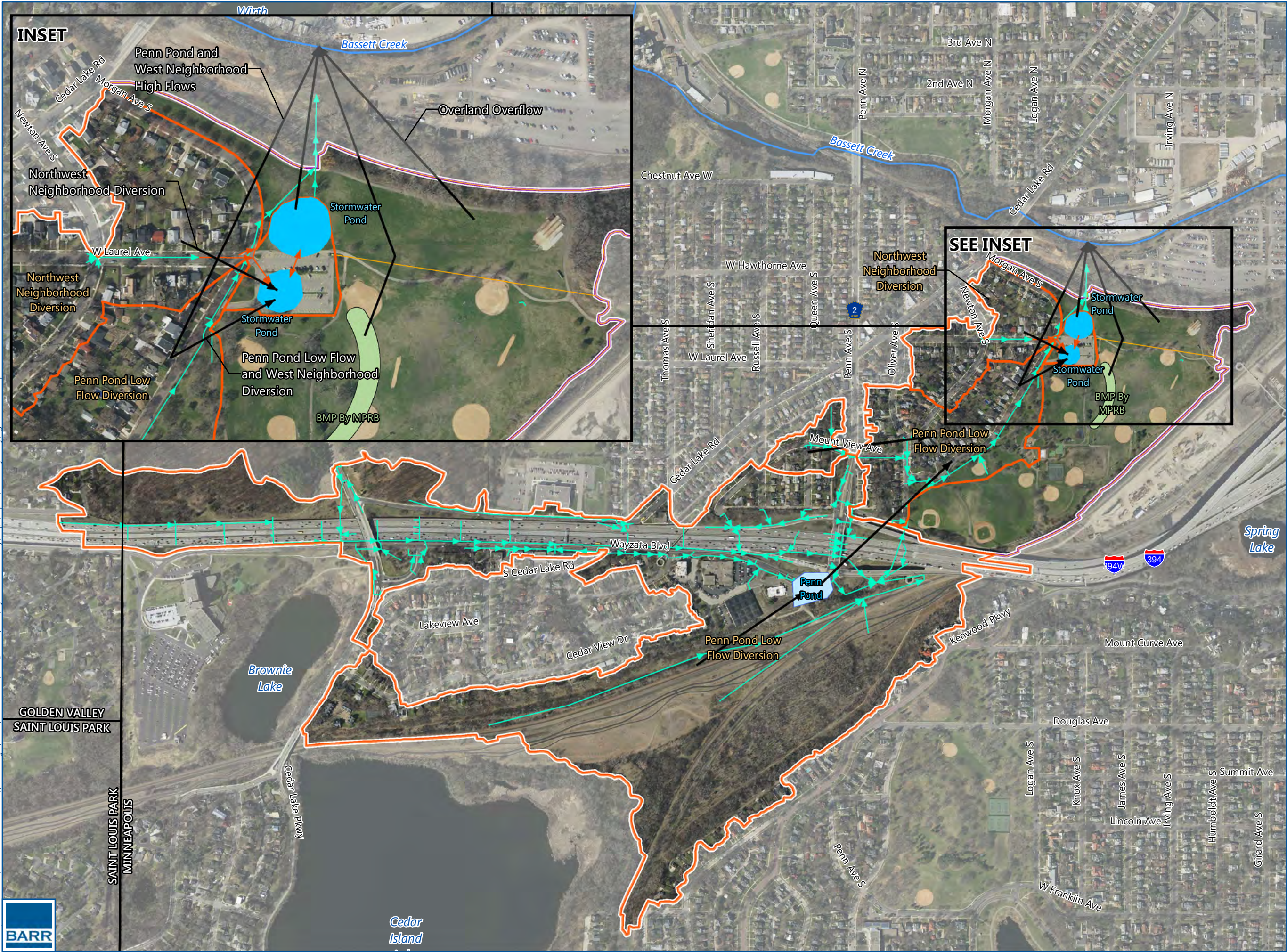
 Municipal Boundary




0 400 800
Feet

BCWMC
SUBWATERSHED
Bryn Mawr Meadows Park
Water Quality Project BC-5

FIGURE 1-3



Creeks

Flow Paths

Proposed Storm Sewer

Existing Storm Sewer

Proposed MPRB BMP

Proposed Stormwater Pond

Existing Stormwater Pond

Proposed Watersheds

Northwest Neighborhood Diversion and Penn Pond Flow Flow Diversion

Subwatershed

Municipal Boundary

0 300 600
Feet

CONCEPT 3
Northwest Neighborhood
Diversion and Penn Pond
Low Flow Diversion
Bryn Mawr Meadows Park
Water Quality Project BC-5

FIGURE 4-3

BCWMC Review of the City of New Hope Local Surface Water Resources Management Plan - DRAFT September 25, 2018

LSWMP Page(s)	WRMP Text	BCWMC Comment (gray = required revision) (white = recommended revision)
Page 5	According to Minnesota Rules 8410, local plans must include sections containing:...	The list of required LSWMP content included in Section 1.3 is not consistent with the 2015 amendment of Minnesota Rules 8410. This section must be revised to be consistent with, or simply reference, Minnesota Rules 8410.0160.
Page 7	General standards for Local Surface Water Management Plans from BCWMC Watershed Management Plan (Rev. August 2017) are, as follows: 1. Describe existing and proposed physical environment and land use. 2. Define drainage areas and the volume rates and paths of stormwater runoff. 3. Identify areas and elevations for stormwater storage adequate to meet performance standards established in the BCWMC Plan. 4. Define water quantity and water quality protection methods adequate to meet performance standards established in the BCWMC Plan. 5. Identify regulated areas. 6. Set forth an implementation program, including a description of official controls and, as appropriate, a capital improvement program.	Items 1 through 6 listed on page 7 of the LSWMP are not specifically listed in the 2015 BCWMC Plan as stated. Items 1 through 6 appear to be based on the general requirements for local water plan contents per Minnesota Statutes 103B.235, which are already listed on Page 5 of the LSWMP. The section describing BCWMC general standards for local water plans must be revised to be consistent with the "Requirements for Local Water Management Plans and Official Controls," described in Section 5.3.1.1 of the 2015 BCWMC Plan and reference that section of the 2015 BCWMC Plan. Consider revising this section to further reference "Member City Responsibilities" described in Section 5.1.2 of the 2015 BCWMC Plan.
Page 10	On the west end of the City, Northwood Lake is a man-made lake tributary to the North Branch of Bassett Creek and receives drainage primarily from Plymouth and a smaller portion of New Hope.	Consider revising the text to note that Northwood Lake is a constructed, flow-through lake located along of the North Branch of Bassett Creek. As written, the text implies that Northwood Lake is the headwaters of the North Branch of Bassett Creek.
Page 10	Much of the southern portion of the City (Bassett Creek Watershed) drains directly into Bassett Creek via the North Branch of Bassett Creek.	This section should be revised to note that the southern-most part of the City is directly tributary to the Main Stem of Bassett Creek and Medicine Lake (see Figure 2-9 of the 2015 BCWMC Plan).
Page 12	Table 2.4 lists rainfall frequencies for the Twin Cities area applicable to the City of New Hope.	Consider revising the text or adding a footnote to Table 2.4 noting whether the Atlas 14 values are based on a particular station or interpolation to a specific location within the City.
Page 13	In the southern portion of the City, the North Branch of Bassett Creek discharges into New Hope from Plymouth under TH 169 into Northwood Lake.	This section must be revised to note that the North Branch of Bassett Creek is classified by the BCWMC as a "Priority 1 Stream" per Section 2.7.2.2 of the 2015 BCWMC Plan.
Page 14	Northwood Lake is located southeast of the TH 169 Rockford Road interchange....BCWMC completed the Northwood Lake Watershed and Management Plan for Northwood Lake in 1996, identifying specific Best Management Practices (BMPs) to improve the water quality within the lake. The BMPs identified in the BCWMC plan are included in Section 4 of New Hope's LSWMP.	This section must be revised to note that Northwood Lake is classified by the BCWMC as a "Priority 1 Shallow Lake" per Section 2.7.2.2 of the 2015 BCWMC Plan. The text must also be revised to note that BMPs identified in the BCWMC plan are included in Section 8 (Implementation) of the LSWMP; the discussion of BCWMC BMPs in Section 4 is only a cross reference to other LSWMP sections.
Page 14	A schematic plan of the drainage system was prepared for this study and is shown on Map 1 attached to this report (Appendix A).	Minnesota Rules 8410.0160 Subp. 3.C requires that "drainage areas and the volumes, rates, and paths of stormwater runoff" must be defined in local water plans. This information is currently missing from the LSWMP. The portion of the City within the BCWMC was recently modeled as part of the BCWMC watershed-wide XP-SWMM model. If modeling results are not to be included in the LSWMP, the LSWMP must be revised to include reference to the BCWMC hydrologic and hydraulic modeling documentation.
Page 15	The Bassett Creek Watershed Management Commission (BCWMC) Watershed Management Plan (WMP) identifies BCWMC's adopted 100-year floodplain elevations for waterbodies in New Hope within the jurisdiction of the BCWMC, namely Northwood Lake and the North Branch of Bassett Creek.	Thank you for including a reference to the BCWMC 100-year floodplain.

BCWMC Review of the City of New Hope Local Surface Water Resources Management Plan - **DRAFT September 25, 2018**

LSWMP Page(s)	WRMP Text	BCWMC Comment (gray = required revision) (white = recommended revision)
Page 17	Section 3.1 City Services	This section lists several City ordinances relative to surface water and stormwater management. This section should be revised to note that the City is responsible for reviewing and permitting proposed projects, in coordination with the applicable WMO.
Page 18	Section 3.3 Watershed Management Organizations	Consider adding a reference to 2015 BCWMC Watershed Management Plan and/or the BCWMC website.
Page 18	The powers and duties of these Minnesota statutory authorities include:...	The bulleted list of watershed management organization authorities appears to be based on, but is not entirely consistent with, Minnesota Statutes 103B.211. Consider omitting the specific bullets and including a reference to Minnesota Statutes 103B.211.
Page 19	In 1992, the BWSR adopted rules (8410) establishing required content for Local Surface Water Management Plans.	This section should be revised to note that Minnesota Rules 8410 were amended in 2015.
Page 19	The 2016 MPCA list of impaired waters identifies 2,660 TMDL reports needed for 1,808 lakes, rivers and streams in the state.	This section should be updated to reference the 2018 impaired waters list.
Page 26	The City, in conjunction with the BCWMC, constructed a series of stormwater improvement projects that treats stormwater runoff from more than 110 acres of currently untreated urban land.	The text describing the recent Northwood Lake water quality improvement project should be revised to include the dates of construction and reference the corresponding corrective action listed in Table 6.1 (Major Drainage Areas BC-A2).
Page 27	A copy of the revised JPA can be found in Appendix B.	This section must be updated to reference the most recent revision to the Joint Powers Agreement (2014), which should be included as Appendix B. The most recent JPA is available from the BCWMC website.
Page 35	Both the SCWMC Plan and BCWMC Watershed Management Plan also identify in watershed policy statements that the City complete a wetland inventory and assess wetland functions and values.	It is not clear whether "identify" refers to a WMO requirement that the City maintain a wetland inventory, or WMO recognition of an existing City inventory. This statement must be revised to be consistent with Policy 65 of the 2015 BCWMC Plan; this policy states: "The BCWMC requires member cities to inventory, classify, and determine the functions and values of wetlands, either through a comprehensive wetland management plan or as required by the WCA...."
Pages 35-37	Three waterbodies within the City of New Hope are currently identified on the state list of Impaired Waters: Bass Creek, Meadow Lake, and Northwood Lake.	This section must be revised to note that the North Branch of Bassett Creek is listed as impaired for aquatic recreation due to <i>E. coli</i> . The text should also note that this impairment is addressed by the <i>Upper Mississippi River Bacteria TMDL Study</i> . Table 6.3 must also be revised to include this impairment.
Page 37	Table 6.3 - Impaired Waters in New Hope	Table 6.3 should be revised to note that the Northwood Lake TMDL study is not yet started.
Page 38	Development and redevelopment within New Hope is subject to review and approval from one of the two watershed management organizations having jurisdiction in the City.	Consider adding detail regarding how the process is coordinated between the City and BCWMC, or referencing additional detail added to Section 7.1 (Page 44, see comment below).
Page 44	Within the Bassett Creek Watershed Management Commission (BCWMC) jurisdictional area, project review is required for the following:	This text is ambiguous about who is the agent performing the review. The LSWMP must be revised to clarify that the BCWMC reviews proposed activities meeting specific criteria, only after the City has determined that the proposed activity meets City requirements. Following BCWMC review and approval of the proposed activity, the City issues permits. See Section 5.1.1.1 and Section 5.1.2 #3 of the 2015 BCWMC Plan.
Page 46	Policy 3.3: The City will help to enforce SCWMC and BCWMC standards for water quality:...In areas of the City where BCWMC has jurisdiction, to demonstrate compliance with the BCWMC performance goals, the MIDS calculator must be used to demonstrate volume reduction, total phosphorus removals, and total suspended solids removal at the site. For more details, refer to BCWMC standards for water quality.	Policy 12 of the 2015 BCWMC Watershed Management Plan and the BCWMC <i>Requirements for Improvements and Development Proposals</i> (2017) require that stormwater be treated in accordance with MIDS performance goals for non-linear projects. This policy must be revised to from "help to enforce" to "require" or similarly firm language, and should include reference to the appropriate section of the <i>BCWMC Requirements for Improvements and Development Proposals</i> (2017).

BCWMC Review of the City of New Hope Local Surface Water Resources Management Plan - **DRAFT September 25, 2018**

LSWMP Page(s)	WRMP Text	BCWMC Comment (gray = required revision) (white = recommended revision)
Page 47	Policy 3.7: Prohibit the discharge of foreign material into the stormwater system. Such material shall include, but not be limited to, waste oil, paint, grass clippings, leaves, and ecologically harmful chemicals. This policy is consistent with the MS4 Program and is outlined in the City's SWPPP.	Policy 15 of the 2015 BCWMC Plan states: "Member cities shall not allow the drainage of sanitary sewage or non-permitted industrial wastes onto any land or into any watercourse or storm sewer discharging into Bassett Creek." Policy 3.7 addresses discharges to storm sewers, but must be expanded to encompass land or watercourses tributary to Bassett Creek (or a new policy must be added consistent with Policy 15 of the 2015 BCWMC Plan).
Page 48	Policy 5.1: The City shall help to ensure that volume management standards are met in the City, based on SCWMC and BCWMC standards.	This policy must be revised to from "help to ensure" to "require" or similarly firm language, and should include reference to the appropriate section of the <i>BCWMC Requirements for Improvements and Development Proposals</i> (2017).
Page 49	Section 7.2.5 - Wetland and Lake Management	A policy must be added to this section noting that the City will annually inspect wetlands classified as "Preserve" for terrestrial and emergent aquatic invasive vegetation and attempt to control or treat invasive species, where feasible (see Policy 72 of the 2015 BCWMC Plan).
Page 50	Policy 9.8: Encourage natural buffer zones around ponds and wetlands....In areas of the City that require review from the BCWMC, proposed projects that create more than one acre of new and/or fully reconstructed impervious surfaces require wetland buffers.	The LSWMP notes that the City's wetland ordinance will be updated to incorporate current BCWMC buffer requirements. If specific BCWMC stream and wetland buffer standards are not to be included in the LSWMP, Policy 9.8 must be revised to specifically reference Appendix B of the BCWMC Requirements for Improvements and Development Proposals (2017, as amended) for wetland and stream buffer width requirements. Policy 9.8 must also be revised (or a new policy added) to reference applicable BCWMC stream buffer requirements.
Page 50	Policy 9.10: Where other standards applicable to wetlands are specified by the SCWMC or BCWMC, the City will help to enforce SCWMC or BCWMC standards.	This policy must be revised to from "help to ensure" to "require" or similarly firm language, and should include reference to the appropriate section of the <i>BCWMC Requirements for Improvements and Development Proposals</i> (2017).
Page 52	Policy 12.5: Where other stormwater management structure standards are specified by the SCWMC or BCWMC, the City will help to enforce SCWMC or BCWMC standards.	This policy must be revised to from "help to ensure" to "require" or similarly firm language, and should include reference to the appropriate section of the BCWMC Requirements for Improvements and Development Proposals (2017).
Page 61	Table 8.5 - Implementation Program	Table 8.5 contains the City's implementation program to address the issues identified throughout the LSWMP. Per Minnesota Rules 8410.0160 Subp. 3.E(5), this table must include the proposed funding source.
Page 61	Table 8.5 - Implementation Program	The table must also be revised to clarify whether the "budgeted cost" information represents annual costs or cumulative costs over the 10-year planning window.
Page 61	Table 8.5 - Implementation Program	Consider adding a footnote to Table 8.5 (or additional text to Section 8.9) noting that the subwatershed where the implementation activity will be performed is noted in parentheses (e.g., "(BC-A3)" in item #2).
Page 61	Table 8.5 - Implementation Program	Consider adding a line item to "Implement water quality improvement projects based on results of the Northwood Lake TMDL Study (pending) in cooperation with the BCWMC" as a placeholder for future activity.
Appendix A	Appendix A - Figures	Consider including a map showing the location and classification of wetlands within the City, using data from the National Wetland Inventory and the City's wetland inventory (as complete).

BCWMC Review of the City of New Hope Local Surface Water Resources Management Plan - DRAFT September 25, 2018

LSWMP Page(s)	WRMP Text	BCWMC Comment (gray = required revision) (white = recommended revision)
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Metropolitan Council Review of the City of New Hope Local Surface Water Resources Management Plan

Met Council Comment Number	Metropolitan Council Comment	BCWMC Comment (gray = required revision) (white = recommended revision)
1	The Minnesota Rules 8410 discussion under the Purpose and Scope should be updated to be consistent with the new rules adopted in 2015. Currently the language in the plan reflects the last version of the rules.	See the BCWMC comment on this topic included in the above table (referencing page 5 of the LSWMP).
2	The new rules required plans to include the drainage areas, volumes, rates, and paths of stormwater runoff. The storm sewer index map includes some but not all of this required information. If this information is available for the entire city through modeling or work of the Watersheds, this should be identified in the plan and the specific document that this information is in should be referenced in the plan.	See the BCWMC comment on this topic included in the above table (referencing page 14 of the LSWMP).
3	Throughout the plan there is mention of the need to update the City's 1999 Wetland Inventory and Management Plan to meet requirements for wetlands in the 2008 planning cycle. It is not clear if this work has been completed or not. With the fully developed nature of the City it is important to have good policies, standards, and requirements for how wetland impacts will be addressed as redevelopment and any future development occurs. If the plan was not updated to meet the requirements from 2008, it should be added to the list of projects to complete over the next 10 years.	Section 6.3 of the LSWMP notes that "it is the City's intent to revise this 1999 document to comply with Met Council requirements." Consider revising this statement to reference "current Met Council and WMO requirements," similar to the wording included in Policy 9.2 of the LSWMP. The planned update to the Wetland Inventory and Management Plan is also described in the text of Section 8.4; consider adding this activity as a line item in Table 8.5 - Implementation Program.



Item 5Cii.
BCWMC 10-18-18
Actual plan available online

Bassett Creek Watershed Management Commission

October 5, 2018

Will Manchester
City of Minnetonka
14600 Minnetonka Blvd.
Minnetonka, MN 55345

Hello Will,

Thank you for the opportunity to comment on Minnetonka's Draft Water Resources Management Plan (WRMP) dated September 2018. I am providing our initial comments now so that we can complete the review, comment, revise, approve activities by the deadline of December 21st. I have yet to receive comments on the WRMP from the Metropolitan Council and those must be considered before the BCWMC can provide you with final comments. As such, I may be adding to these comments after I review the Met Council's comments. The following comments include changes required to be consistent with the 2015 Bassett Creek Watershed Management Plan as well as recommended revisions.

One important item to note: Per Minnesota Statutes 103B.235 Subp. 4, the City must amend its official controls (i.e., ordinances) within 180 days of local water management plan approval by the BCWMC. The draft Minnetonka WRMP states that ordinances will be updated in 2020. Obviously, this is well outside the requirements of the Statute if the BCWMC approves the WRMP on or before December 21, 2018 as planned. From my review, there appears to be two instances where current city ordinances are less strict than BCWMC requirements: wetland buffers and floodplain standards. Please include a statement in the WRMP indicating how the city will enforce the BCWMC requirements up until the point at which city ordinances are consistent with BCWMC requirements.

Required revisions to these or similarly appropriate sections:

Policy 2.1.17: This policy states that the city will continue to implement buffer requirements of the Minnetonka Wetland Protection ordinance. However, as noted below with comments on Appendix G, buffer requirements in the city's current wetland ordinance are less strict than BCWMC standards. This policy should be revised to note that the city ordinance will be updated.

Section 2.6: Please add a policy noting that the city will share groundwater elevation data, where available, with the BCWMC (per BCWMC Policy #50 in Section 4.2 of BCWMC Watershed Plan).

Table 3-19: Crane Lake is classified by the city as Manage 1 wetland. It is unclear how that classification corresponds with BCWMC classification of the lake as a Priority 2 shallow lake. BCWMC Policy #3 in Section 4.2.1 states that "cities shall classify waterbodies according to the BCWMC classification system and include this information in their Local water management plans." Please clarify how the city's classification system corresponds with the BCWMC's.

Section 5.2.2, second paragraph: "The BCWMC has adopted the MPCA ~~eutrophication~~ water quality standards applicable to lakes and streams." The BCWMC adopted the MPCA water quality standards for all pollutants, not only those causing eutrophication.

Section 5.7.1: Please add “starry stonewort” to the list of AIS in the BCWMC.

Section 6.10.2.1, last paragraph, last sentence: “Other capital projects are funded through fees the BCWMC collects from the member cities.” Capital projects are always funded through a county-levied tax. Other (non-capital) projects and programs are funded through member city contributions.

Appendix A Section 5.1.1: The procedural steps for permitting land altering activities should include a discussion of how and when the city refers applicants to the BCWMC for project review and how BCWMC approval of the project is required before the project can proceed. See BCWMC Policy #121 in Section 4.2.10 of BCWMC Watershed Plan.

Appendix G: The city’s Wetland Protection Ordinance (300.23) do not include wetland buffer requirements as stringent as the BCWMC’s wetland buffer requirements. The City’s wetland ordinance must be updated. (See Policy #68 in Section 4.2.6 of the BCWMC Watershed Plan.)

Appendix I: The city’s Floodplain District Ordinance (300.24) does not include or reference the BCWMC-delineated 100-year floodplain (based on BCWMC XP-SWMM modeling). (Policy #39 in Section 4.2.2 of BCWMC Watershed Plan) The BCWMC Requirements for Improvements and Development Proposals (2017) and 2015 BCWMC Plan include minimum building elevations applicable within the BCWMC-delineated floodplain along the BCWMC Trunk System. The City's floodplain ordinance must be updated to include or reference the BCWMC-delineated floodplain and applicable minimum building elevations within that area.

Recommended revisions:

Section 5.2.2, paragraph 3: Consider noting that chlorides are on the rise in Crane Lake and nearing the impairment level.

Section 5.4.2: There are many additional BCWMC requirements and recommendations regarding wetlands and wetland management than are listed in this section. Please see section 4.2.6 of the of BCWMC Watershed Plan and consider incorporating at least the requirements including buffer requirements and inspections for invasive species.

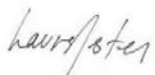
Section 5.5.1, paragraph 1: Consider adding “pollutants” to the list of issues affecting the creek from runoff originating in Minnetonka.

Section 5.7.1: Consider noting that in 2017 the BCWMC more formally identified its role in AIS and aquatic plant management and began implementing several committee-recommended actions as noted in this document: http://mail.bassettcreekwmo.org/application/files/1315/2157/7925/APM-AIS_Final_Recommendations_and_Approvals.pdf.

Section 6.0, page 6-1: The section title should be changed to “Implementation Program.”

Please feel free to contact me if you have any questions. The BCWMC will consider approval of your final Surface Water Management Plan upon completion of these revisions and upon review of comments from Metropolitan Council.

Sincerely,



Laura Jester
Administrator

CC: Jim de Lambert, BCWMC Chair
Mike Fruen, BCWMC Commissioner, Minnetonka
Bill Monk, BCWMC Alternate Commissioner, Minnetonka

MEMBER BENEFITS

MN Association of Watershed Districts, 18681 Lake Dr East, Chanhassen MN 55317
(612) 790-0700 office | www.mnwatershed.org | @mnwd46 | facebook.com/mnwd46



Land and Water Shall be Preserved

What is the Minnesota Association of Watershed Districts?

The Minnesota Association of Watershed Districts (MAWD) is a non-profit organization that represents the local governments that focus on the management of water on watershed boundaries rather than political boundaries, such as cities and counties. Members benefit from having an organization that provides a **unified voice for watershed management** and works diligently to maximize the availability of the tools and resources that allow members to most effectively and efficiently meet their water management goals. Primary areas of focus include providing education and training opportunities, lobbying and advocacy services, and regular communications.

Education and Training for Watershed Managers and Staff



Every year, MAWD provides members with opportunities to learn from other members, as well as industry experts, at a variety of workshops, a summer tour, and an annual convention and trade show. Training topics typically include the following: watershed planning, permitting, flood control, education and outreach programs, innovative technologies, effective administration, public relations, data collection and assessment, aquatic invasive species, urban and rural best management practices, governance, and leadership.

Lobbying and Advocacy for Effective and Efficient Watershed Management



MAWD lobbies for funding and programs that enhance the restoration and protection of Minnesota's water resources. Members drive the organization's policy issues through an annual resolutions process and the MAWD Board of Directors sets each year's priorities. Although legislative solutions are often needed to maximize resources, sometimes MAWD will find the best solutions by working directly with state agencies and other non-profits such as wildlife groups, lake associations, environmental groups, and farm organizations.

Organizational Support through Regular Communications



MAWD maintains regular communication with its members to ensure they are kept informed on the latest watershed news including trainings they may find useful, changes to legislation that may impact them, and information to help them stay in compliance with governmental regulations and laws. Formats used to distribute information include newsletters, social media (Facebook and Twitter), email updates and alerts, fact sheets, press releases, and the organization's website: www.mnwatershed.org. Check us out today!



Bassett Creek Watershed Management Commission

MEMO

Date: October 6, 2018
From: Laura Jester, Administrator
To: BCWMC Commissioners
RE: **Administrator's Report**

Aside from this month's agenda items, the Commission Engineers, city staff, committee members, and I continue to work on the following Commission projects and issues.

CIP Projects (more resources at <http://www.bassettcreekwmo.org/projects.>)

2019 Medicine Lake Road and Winnetka Avenue Area Long Term Flood Mitigation Plan Implementation Phase I: DeCola Ponds B & C Improvement Project (BC-2, BC-3 & BC-8), Golden Valley (See Item 7D): A feasibility study for this project was completed in May after months of study, development of concepts and input from residents at two public open houses. At the May meeting, the Commission approved Concept 3 and set a maximum 2019 levy. Also in May, the Minnesota Legislature passed the bonding bill and the MDNR has since committed \$2.3M for the project. The Hennepin County Board approved a maximum 2019 levy request at their meeting in July. A BCWMC public hearing on this project was held on August 16th with no comments being received. Also at that meeting the Commission officially ordered the project and entered an agreement with the City of Golden Valley to design and construct the project. Project website: <http://www.bassettcreekwmo.org/index.php?cid=433>. In September, the City of Golden Valley approved the agreement with the BCWMC. The Sun Post ran an article on this project October 2 (see Item 7D).

2020 Bryn Mawr Meadows Water Quality Improvement Project (BC-5), Minneapolis: (See Item 5A) A feasibility study by the Commission Engineer began last fall and included wetland delineations, soil borings, public open houses held in conjunction with MPRB's Bryn Mawr Meadows Park improvement project, and input from MPRB's staff and design consultants. At their meeting in April, the Commission approved a TAC and staff recommendation to move this project from implementation in 2019 to design in 2020 and construction in 2021 to better coincide with the MPRB's planning and implementation of significant improvements and redevelopment Bryn Mawr Meadows Park where the project will be located. A draft feasibility study will be presented at this meeting. Project website: <http://www.bassettcreekwmo.org/projects/all-projects/bryn-mawr-meadows-water-quality-improvement-project>

2019 Westwood Lake Water Quality Improvement Project (WST-2) (See Item 5B), St. Louis Park: At their meeting in September 2017, the Commission approved a proposal from the Commission Engineer to complete a feasibility study for this project. The project will be completed in conjunction with the Westwood Hills Nature Center reconstruction project. After months of study, several meetings with city consultants and nature center staff, and a public open house, the Commission approved Concept 3 (linear water feature) and set a maximum 2019 levy at their May meeting. 50% designs were approved at the July meeting and 90% design plans were approved at the August meeting. The Hennepin County Board approved a maximum 2019 levy request at their meeting in July. A BCWMC public hearing on this project was held on August 16th with no comments being received. Also at that meeting the Commission officially ordered the project and entered an agreement with the City of St. Louis Park to design and construct the project and directed the Education Committee to work with the Commission Engineer and city staff to develop a BCWMC educational sign for inside the nature center. The draft sign will be presented at this meeting. Project website: <http://www.bassettcreekwmo.org/projects/all-projects/westwood-lake-water-quality-improvement-project>

2018 Bassett Creek Park Pond Phase I Dredging Project: Winnetka Pond, Crystal (BCP-2): The final feasibility study for this project was approved at the May 2017 meeting and is available on the project page online at <http://www.bassettcreekwmo.org/index.php?cID=403>. At the September 2017 meeting, the Commission held a public hearing on the project and adopted a resolution officially ordering the project, certifying costs to Hennepin County, and entering an agreement with the City of Crystal for design and construction. Hennepin County approved the 2018 final levy request at their meeting in November 2017. The City of Crystal hired Barr Engineering to design the project. At their meeting in April, the Commission approved 50% design plans. A public open house on the project was held May 24th where four residents asked questions, provided comments, and expressed support. 90% design plans were approved at the June 2018 meeting. Bidding documents are complete but bidding was postponed due to the need for an Environmental Assessment Worksheet (EAW). The EAW was recently submitted; 30-day comment period ends November 7th. Bid documents are being developed, expected to be available in late October. Construction is expected this winter.

2017 Plymouth Creek Restoration Project, Annapolis Lane to 2,500 feet Upstream (2017CR-P): (No change since August) All project documents including the feasibility study and 90% design plans are available online at <http://www.bassettcreekwmo.org/index.php?cID=284>. The BCWMC executed agreements with the BWSR for a \$400,000 Clean Water Fund grant and with Hennepin County for a \$50,000 Opportunity Grant and a subgrant agreement with the City was executed. Project design was completed by the city's contractor, Wenck Associates, with 60% and 90% design plans approved by the Commission at the April and August 2017 meetings, respectively. Plymouth City Council awarded a construction contract in early December 2017 and construction got underway on December 11, 2017. Streambank restoration work is complete in all three reaches. Vegetation is currently being established. Requests for reimbursement to the city were approved at the June and July BCWMC meetings. I will work on submitting a grant request to the State, if appropriate given expenditures.

2017 Main Stem Bassett Creek Streambank Erosion Repair Project (2017CR-M) (No change since June): The feasibility study for this project was approved at the April Commission meeting and the final document is available on the project page at: <http://www.bassettcreekwmo.org/index.php?cID=281>. A Response Action Plan to address contaminated soils in the project area was completed by Barr Engineering with funding from Hennepin County and was reviewed and approved by the MPCA. The Commission was awarded an Environmental Response Fund grant from Hennepin County for \$150,300 and a grant agreement is in the process of being signed by the county. A subgrant agreement with the City will be developed. The City hired Barr Engineering to design and construct the project. Fifty-percent and 90% designs were approved at the August and October Commission meetings, respectively. In September, design plans were presented by Commission and city staff to the Harrison Neighborhood Association's Glenwood Revitalization Team committee and through a public open house on the project. Bidding for construction is complete and a pre-construction meeting was recently held. Construction was to begin this summer but will be delayed until winter/spring 2019 due to the unanticipated need for a field based cultural and historical survey of the project area required by the Army Corps of Engineers and the preference for Pioneer Paper (a significant landowner and access grantor) for a spring/summer construction window.

2016 Northwood Lake Improvement Project, New Hope (NL-1): Northwood Lake Improvement Project is nearing completion with all major work complete. The storm water tank was fully operational in June and irrigated the fields all summer. Since it began operating the tank has captured and reused 904,000 gallons of storm water. All raingardens are planted and working well. A grand opening of the park was held last spring. Friends of Northwood Lake disseminated water quality educational materials, including BCWMC materials. A semi-annual grant report was submitted to the MPCA in January. The final piece of the project – an educational sign was designed, fabricated, and recently installed. A final grant report was submitted to the MN Pollution Control Agency. A final project report was presented by the City of New Hope in September and is available online.

2015 Main Stem Restoration Project 10th Avenue to Duluth Street, Golden Valley (2015CR) (No change since October 2017): The restoration project is being constructed in two phases, each under separate contract. Phase one included stream bank shaping, placement of field stone rock and 12-inch bio-logs, and repair of storm sewer outlets. The first phase of the project began in November 2015 and was finished in June 2016. Turf establishment and minor restoration repairs in Phase 1 were accepted in late October 2016. Repairs to some areas where flooding impacted rocks or biologists were completed and accepted in mid-December 2016. Phase 1 of the construction project has entered the warranty period.

Phase 2 of the project includes the establishment of native vegetation along the stream, including grasses, wildflowers, shrubs, live stakes and fascines, and cordgrass plugs. The project has been seeded and stabilized and maintenance mowing and spot treatments have been completed. Applied Ecological Services (AES) installed live stakes and fascines this spring and completed the tree and shrub planting along the restoration project. AES will continue to monitor and maintain the native vegetation through 2018. It is anticipated that the total contract amount for both Phase one and Phase two will be within the Watershed's overall project budget.

2014 Schaper Pond Diversion Project, Golden Valley (SL-3): Repairs to the baffle structure were made in 2017 after anchor weights pulled away from the bottom of the pond and some vandalism occurred in 2016. The city continues to monitor the baffle and check the anchors, as needed. Vegetation around the pond was planted in 2016 and a final inspection of the vegetation was completed last fall. Once final vegetation has been completed, erosion control will be pulled and the contract will be closed. The Commission Engineer began the Schaper Pond Effectiveness Monitoring Project last summer and presented results and recommendations at the May 2018 meeting. Additional effectiveness monitoring is being performed this summer. At the July meeting the Commission Engineer reported that over 200 carp were discovered in the pond during a recent carp survey. At the September meeting the Commission approved the Engineer's recommendation to perform a more in depth survey of carp including transmitters to learn where and when carp are moving through the system.

2014 Twin Lake In-lake Alum Treatment, Golden Valley (TW-2): (No change since June) At their March 2015 meeting, the Commission approved the project specifications and directed the city to finalize specifications and solicit bids for the project. The contract was awarded to HAB Aquatic Solutions. The alum treatment spanned two days: May 18- 19, 2015 with 15,070 gallons being applied. Water temperatures and water pH stayed within the desired ranges for the treatment. Early transparency data from before and after the treatment indicates a change in Secchi depth from 1.2 meters before the treatment to 4.8 meters on May 20th. There were no complaints or comments from residents during or since the treatment. Water monitoring continues to determine if and when a second alum treatment is necessary. Lake monitoring results from 2017 were presented at the June 2018 meeting. Commissioners agreed with staff recommendations to keep the CIP funding remaining for this project as a 2nd treatment may be needed in the future.

2013 Four Season Area Water Quality Project/Agora Development (NL-2) (No change since May): At their meeting in December 2016, the Commission took action to contribute up to \$830,000 of Four Seasons CIP funds for stormwater management at the Agora development on the old Four Seasons Mall location. At their February 2017 meeting the Commission approved an agreement with Rock Hill Management (RHM) and an agreement with the City of Plymouth allowing the developer access to a city-owned parcel to construct a wetland restoration project and to ensure ongoing maintenance of the CIP project components. At the August 2017 meeting, the Commission approved the 90% design plans for the CIP portion of the project. At the April 2018 meeting, Commissioner Prom notified the Commission that RHM recently disbanded its efforts to purchase the property for redevelopment. I will be writing letters to the RHM and the City of Plymouth to officially cancel the agreements. Staff will work with the City of Plymouth to determine another possible option for treatment in this area.

Other Work

CIP Project Work and Technical Assistance

- Met reporter and gave interview on DeCola Ponds B & C Improvement Project
- Loppet Urban Portage Event: discussed AIS threats to Sweeney Lake with lake residents, county staff, Commission Engineers, MPRB staff, and Golden Valley staff; coordinated meeting with same + Loppet Foundation staff and MDNR; prepared agenda and distributed meeting notes
- Reviewed/commented on Minnetonka Surface Water Management Plan
- Developed report on impact of BCWMC CIP projects since 2010 for Hennepin County at their request

Administration and Education

- Reviewed draft September press release
- Assisted volunteers with Golden Valley Arts and Music Festival
- Reviewed/commented on draft BCWMC Education sign for Westwood Hills Nature Center
- Attended and coordinated logistics and meals for Smart Salt Training Workshop
- Coordinated meeting refreshments and logistics for Lake Group Workshop including communication with presenters and participants; attended event; sent follow up emails
- Worked on presentation for Water Resources Conference including drafting slides and practicing talk
- Assisted County with logistics for visiting Northwood Lake Improvement Project during upcoming tour
- Reviewed letter to BWSR from Commission Legal Counsel
- Assisted Metro Blooms with Resilient Cities Workshop invitation