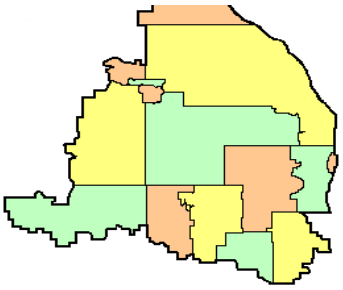
Item 1

Shingle Creek Watershed Management Commission

West Mississippi Watershed Management Commission



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August 28, 2017

Commissioners
Shingle Creek and West Mississippi
Watershed Management Commissions
Hennepin County, Minnesota

The agenda and meeting packet are available to all interested parties on the Commission's web site. The direct path is http://www.shinglecreek.org/minutes--meeting-packets.html

Dear Commissioners:

Regular meetings of the Shingle Creek and West Mississippi Watershed Management Commissions will be held **Thursday, September 14, 2017,** at Clubhouse at Edinburgh USA, 8700 Edinbrook Crossing, Brooklyn Park, MN. Lunch will be served at 12:00 noon and the meetings will convene concurrently at 12:45.

The Commissions will suspend their meetings at 12:45 p.m. for the purpose of conducting a public hearing on the following improvement projects: **2017-01** Shingle Creek City Cost Share Retrofit Projects; **2017-03** Shingle Creek Partnership Cost Share BMP Projects; **2017-04** West Mississippi City Cost Share Retrofit Projects; and **2017-05** Mississippi Crossings Rain Garden Project. The regular meeting will resume immediately after the public hearings conclude.

Please email Beverly at blove@jass.biz to confirm whether you or your Alternate will be attending the meeting. Your meal choices are:

_____ **Chef Salad.** Fresh Lettuce, Julienne Ham, Turkey, Swiss and Cheddar Cheeses, Plum Tomatoes, Hardboiled Egg, House Dressing
All Dressing will be served on the side

_____ **California Club Wrap**. Fire-Grilled Chicken, Red Grapes, Almonds and Mayo rolled up with Chopped Tomatoes, Crisp Bacon and Romaine Lettuce in a Flour Tortilla

_____ **Chicken Stir Fry.** Breast of Chicken, stir-fried with Asian Vegetables and finished with our Private Recipe Stir Fry Sauce. Served over Jasmine Rice.

_____ I will be attending but DO NOT want a meal.

_____ I will not be attending the regular meeting on Thursday, September 6.

We must make final reservations by **noon, Wednesday, September 6, 2017.** Please make a reservation, even if you are not requesting a meal, so we can arrange for sufficient seating and meeting materials. Thank you.

Regards,

Judie A. Anderson
Administrator

cc: Alternate Commissioners, Member Cites, Troy Gilchrist, TAC Members
Metropolitan Council, Wenck Associates

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Shingle Creek Watershed Management Commission
West Mississippi Watershed Management Commission

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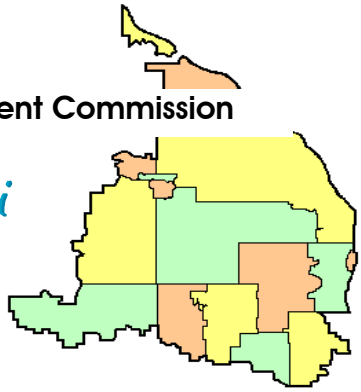


MINUTES
Regular Meeting
August 10, 2017

(Action by the SCWMC appears in blue, by the WMWMC in green and shared information in black.
*indicates items included in the meeting packet.)

I. A joint meeting of the Shingle Creek Watershed Management Commission and the West Mississippi Watershed Management Commission was called to order by Shingle Creek Chairman Andy Polzin at 12:30 p.m. on Thursday, August 10, 2017, at the Clubhouse at Edinburgh, USA, 8700 Edinbrook Crossing, Brooklyn Park, MN.

Present for Shingle Creek were: David Mulla, Brooklyn Center; John Roach, Brooklyn Park; Burt Orred, Jr., Crystal; Karen Jaeger, Maple Grove; Gary Anderson, Minneapolis; Bill Wills, New Hope; Harold E. Johnson, Osseo; Andy Polzin, Plymouth; Troy Gilchrist, Kennedy & Graven; Ed Matthiesen and Diane Spector, Wenck Associates, Inc.; and Judie Anderson, JASS.

Not represented: Robbinsdale.

Present for West Mississippi were: David Mulla, Brooklyn Center; John Roach, Brooklyn Park; Gerry Butcher, Champlin; Karen Jaeger, Maple Grove; Harold E. Johnson, Osseo; Troy Gilchrist, Kennedy & Graven; Ed Matthiesen and Diane Spector, Wenck Associates, Inc.; and Judie Anderson, JASS.

Also present were: David Vlasin and Andrew Hogg, Brooklyn Center; Steve Chesney and Mitch Robinson, Brooklyn Park; Rick Lestina, Maple Grove; Liz Stout, Minneapolis; Shawn Markham, New Hope; Leah Gifford and Ben Scharenbroich, Plymouth; and Richard McCoy and Marta Roser, Robbinsdale.

II. Agendas and Minutes.

Motion by G. Anderson, second by Wills to approve the revised **Shingle Creek agenda.*** *Motion carried unanimously.*

Motion by Butcher, second by Jaeger to approve the revised **West Mississippi agenda.*** *Motion carried unanimously.*

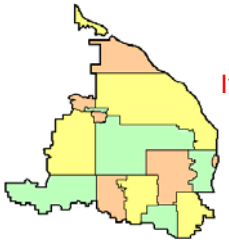
Motion by Wills, second by G. Anderson to approve the **minutes of the July regular meeting.*** *Motion carried unanimously.*

Motion by Jaeger, second by Butcher to approve the **minutes of the July regular meeting.*** *Motion carried unanimously.*

III. Open Forum.

A. McCoy passed around pictures of the Noble Avenue reconstruction project currently underway in Robbinsdale.

B. Jaeger informed the Commissioners of an article in the August 8, 2017 *StarTribune* featuring the starry stonewort's presence in lakes in Minnesota. This invasive plant was the topic of the Commissions' speaker at their July meeting.



IV. Finances and Reports.

A. Motion by G. Anderson, second by Wills to approve the **Shingle Creek Treasurer's Report.*** *Motion carried unanimously*.

Motion by Wills, second by G. Anderson to approve the **Shingle Creek August claims.*** Claims totaling $180,997.12 were *approved by roll call vote:* ayes – Mulla, Roach, Orred, Jaeger, G. Anderson, Wills, Johnson, and Polzin; nays – none; absent - Robbinsdale.

B. Motion by Jaeger, second by Roach to approve the **West Mississippi Treasurer's Report.*** *Motion carried unanimously*.

Motion by Jaeger, second by Roach to approve the **West Mississippi August claims.*** Claims totaling $101,013.55 were *approved by roll call vote:* ayes – Mulla, Roach, Butcher, Jaeger, and Johnson; nays – none.

V. Project Reviews.

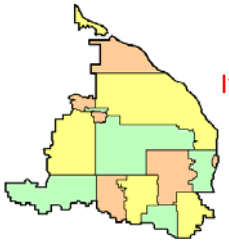
VI. Watershed Management Plan.

A. Earlier this year the Commissions undertook a Minor Plan Amendment to revise the Capital Improvement Program (CIP) for 2017 to add a Phase 2 to the DO Aeration project. The next step in the CIP process is to receive and discuss feasibility studies for the proposed projects and call for a public hearing on those projects that the Commissions desire to move forward. The table below shows the projects under consideration, their funding, and the additional 1% levy discussed earlier this year to be added to account for uncollectable amounts.

Shingle Creek Projects	Total Project Cost	Commission Levy	Grant Funds	City Funds
Cost share (city projects)	$200,000	$100,000		$100,000
Shingle Creek Reaeration Project Phase 2	145,000	145,000		
Priority BMP retrofits (private projects)	100,000	50,000		50,000
TOTAL	**$445,000**	**$295,000**		**$150,000**
1% additional for uncollectable levy		**2,950**		
TOTAL LEVY		**$297,950**		
West Mississippi Projects				
Cost share (city projects)	**$100,000**	**$50,000**		**$50,000**
Mississippi Crossings Rain Garden	**219,000**	**54,750**		**164,250**
TOTAL	**$319,000**	**$104,750**		**$214,250**
1% additional for uncollectable levy		**1,050**		
TOTAL LEVY		**$105,800**		

B. Shingle Creek Projects.

1. Commission Fund for Retrofit Cost Share (City Projects). This annual project provides cost sharing to retrofit smaller Best Management Practices identified in Commission-prepared Intensive BMP Retrofit Studies. The TAC developed policies and procedures to administer these funds, and makes recommendations to the Commissions on which projects should be funded. In 2016 the Commission awarded cost-share funding to Brooklyn Park to install ponds and sumps in a park adjacent to Bass Creek. Another project in Minneapolis was for a "blooming alleys" project in the Cleveland Neighborhood, which drains to Crystal Lake. The annual levy is $100,000, to be matched at least one-to-one by a member city or cities. Potential cost-share projects for 2018 will be solicited in November-December 2017.



2. Shingle Creek Reaeration Project Phase 2. The overall project is the design, fabrication and installation of mechanical or passive stream reaeration structures that are artistic in design and appearance and practical in function. These structures are being installed in three locations in public parks on Shingle Creek where TMDL modeling determined that traditional stream roughness reaeration structures such as riffles or vanes would not be sufficient to increase dissolved oxygen above the aquatic life standard. This second phase of the project would add solar power energy sources to power the mechanical aspects of the systems and to increase the ad valorem tax levy share to 100%.

3. Priority BMP Retrofits (Private Projects). No applications have been received in 2017. The annual levy is $50,000, to be matched at least one-to-one by a private party through a member city or cities. Potential cost-share projects are open year round until the fund is depleted.

C. West Mississippi Projects.

1. Commission Fund for Retrofit Cost Share (City Projects). Similar to Shingle Creek, this annual project provides cost sharing to retrofit smaller BMPs. No project applications have been received in 2016 or 2017 to date.

2. Mississippi Crossings Rain Gardens. This project in Champlin will construct two large bioinfiltration basins to treat runoff in the old town center area. The area currently discharges water untreated to the Mississippi River.

D. Staff Recommendation. Quotes were submitted to the Commission for installation of the solar/grid power, footings, enclosures, and other costs, excluding the cost of the art itself. These quotes were significantly greater than the funds the Commission had agreed to contribute to the project, increasing the project overall cost well above what Staff considers reasonable for this project. Staff cannot recommend its feasibility at this time. They have discussed this with staff from the two cities involved and agreed that *the project should not go forward.* Staff have also discussed this with the MPCA, which provided grant funds for a portion of the project, and they are okay with not proceeding with the project, and would not ask the Commission to refund any of the grant funds expended.

Motion by G. Anderson, second by Jaeger to cease work on the Reaeration Project at this time and to not move forward with Phase 2. *Motion carried unanimously.*

Motion by Wills, second by Roach to call for a public hearing on the Cost Share City Projects and the Priority BMP Projects as described above. *Motion carried unanimously.*

Motion by Butcher, second by Jaeger to call for a public hearing on the Cost Share City Projects and the Mississippi Crossings Rain Garden Project as described above. *Motion carried unanimously.*

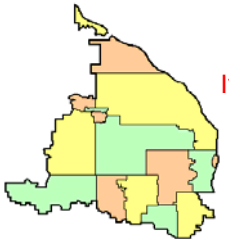
The public hearing will occur at 12:45 p.m., Thursday, September 14, 2017, prior to the Commissions' regular meeting. A draft of the legal notice* is included in the meeting packet. It will be amended to remove the Shingle Creek Reaeration Project.

VII. Water Quality.

VIII. Education.

A. Watershed PREP. The educators are gearing up for the fall semester and are scheduling classes. They will be sending letters to the cities soliciting their support of the program in the schools within their boundaries.

B. Native Plant Sales/Pledge to Plant. WMWA has been coordinating with cities and native plant growers and is targeting a few events for sponsored native plant sales. A nursery will be at these events to sell their native plants and city or other volunteers will be available to explain the benefits of native plants and pollinators and to advertise the Pledge to Plant campaign. The July 13 Camden Farmers Market had over 230 visitors. Many visited the WMWA table and purchased plants from Minnesota Native Landscapes. The vendor from MNL said he sold about 200 units, over half of which were 6-packs, for $10 each.



C. Staff's August 9, 2017 memo* included the July **website Google Analytics and Facebook insights** for both the Single Creek and WMWA Facebook pages.

D. The **next WMWA meeting** is scheduled for 8:30 a.m., Tuesday, September 12, 2017, at Plymouth City Hall. Commissioners are encouraged to attend.

E. The **Freshwater Society** is requesting watershed organizations to consider partnering with them to sponsor a number of programs. Possibilities include the Road Salt Symposium, MOOS Lecture Series, and the State of Water Conference. The Society is suggesting $500 sponsorships. The Commissioners will respond to this outreach at their September meeting.

IX. Grant Opportunities.

A. Becker Park Phases 2 and 3.* On October 13, 2016 the Commission approved a Subgrant Agreement with the City of Crystal concerning the professional services necessary to assess the feasibility of the project. This was Phase 1 of the City's professional services agreement with Wenck. The Crystal City Council entered into that professional services agreement, but only authorized Phase 1, requiring that the Council act to proceed to Phase 2 if Phase 1 found the project technically feasible.

Staff will recommend to the Council to proceed to the next phases of the project, which would include preparing 30% plans (Phase 2) and then final construction documents (Phase 3) and bidding. The Subgrant Agreement* between the City and Commission would allow Crystal to use the proceeds of the Clean Water Fund grant to pay for these subsequent phases of professional services. This agreement would be brought to the Council at the same time that City staff requests proceeding to the next phases of the project.

Following award of a contract, the final phase (4) would provide for construction observation and management. When the Commission orders the project in fall 2018, a third Subgrant Agreement between the City and the Commission will allocate the remainder of the Clean Water Fund grant, other grants received by the Commission for the project, and the Commission's levy for both the actual construction work and the professional services required to manage the construction.

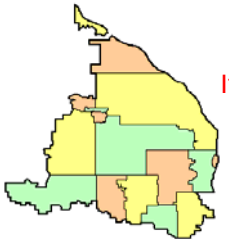
Motion by Jaeger, second by Orred to enter into the Subgrant Agreement. *Motion carried unanimously.*

B. Bass and Pomerleau Lakes Alum Treatment project.* Included in the meeting packet are the Clean Water Fund grant application questions and responses* for the proposed Bass and Pomerleau Lakes Alum Treatment project and a brief Feasibility Study.* Both were submitted along with the grant application* on the August 9 due date.

Table 1 on the following page shows the estimated cost of completing this project and how it is proposed to be split between grant funds and Commission funds. The first three line items on the table are costs Staff recommend to be incurred in 2017 from the levy funds already on hand for the Bass Lake internal load reduction project. This includes preparation of the Feasibility Study for submittal with the grant application. The second line item is the collection of additional lake sediment cores to refine the spatial extent and dosing required. In estimating the alum application cost a very conservative approach was used, based on data from only one sediment core. By taking additional sediment cores at various locations in the general area expected to be treated, the area to be treated can be refined and variability in sediment release rates identified. Staff's expectation is that getting this additional core data will allow them to reduce the dosage and thus reduce the actual overall cost of the alum application. That line item is set forth in more detail in Table 2.

Staff also recommend doing a full fish survey this fall as the previous surveys are more than five years old. Because these first three line items would be completed prior to executing a grant, should one be awarded, they would not be eligible for grant funding and would not count as match. The rationale for completing this work in 2017 is that, if Staff wait until after the grant is executed, they will not get lab results back in time to apply the alum in 2018.

The next several lines in Table 1 are the estimated Project Costs that would be potentially eligible for grant funding. They include the cost of the alum treatment itself, along with the technical services associated with it



such as plans and specifications and construction observation. Staff's approach to alum dosing, which has greatly increased its effectiveness, is to make two applications. After the first application, follow-up sediment cores are taken to observe the penetration of the alum and how well it is neutralizing sediment release. A second dose would be applied the following year. Sometimes the core results reveal the need to modify the dosing, so that adjustment can be made during the second application.

Staff recommend follow-up water quality monitoring and aquatic vegetation and fish surveys. They also recommend that the Commission include in the grant application the first year of aquatic vegetation management. The initial vegetation survey of Pomerleau did not detect Eurasian watermilfoil or curly-leaf pondweed, so not much management is expected on that lake. The Bass Lake Association has been treating Bass Lake for curly-leaf pondweed and has knocked it down considerably, but there is a potential for it to bloom following an improvement in clarity. Staff's recommendation is that the Commission plan to respond to any excessive growth the first year, then turn ongoing management back to the Association.

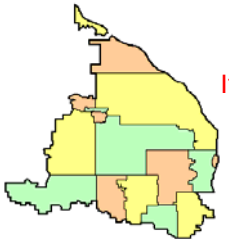
Table 1. Project estimated cost and grant/match funding.

	Bass	Pomerleau	Combined
Feasibility study	$3,500	$3,500	$7,000
Preliminary design (fall 2017)(see Table 2)	14,800	14,800	29,600
Initial 2017 fish survey	12,500	4,300	16,800
Subtotal, Commission Cost	30,800	22,600	53,400
Alum application	122,400	72,800	195,200
P & S, observation, cores	40,000	20,000	60,000
Follow up 2018 WQ monitoring	6,000	6,000	12,000
Late season 2018 vegetation survey	2,000	1,300	3,300
Follow up 2018 or 2019 fish survey	12,500	4,300	16,800
Initial year (2019) vegetation management	35,000	5,000	40,000
Project management	4,500	2,000	6,500
Subtotal, Project Cost	222,400	111,400	333,800
Grant share			267,000
Commission share			63,800
Commission Levy Funds Available			202,000
Less Commission Cost			53,400
Less Grant Match			63,800
Excess levy funds to Closed Projects Acct			84,800

2017 Preliminary Design. To refine the alum dosing and the spatial extent of the application area, Staff recommend taking three more cores this fall in each lake. These cores would be sectioned into 0-6, 6-10, and 10-20 centimeter deep samples with release rate and sediment chemistry analyses run on each. For the grant, they estimated they would have to treat to a 10 centimeter depth. Through this partitioning they can determine if the depth can be reduced and, thus, the amount of alum applied can be reduced based on the release rate at various depths. Dr. Bill James James at UW-Stout, who we have worked with for many years, would complete the lab work. The City of Plymouth has

Table 2. Preliminary design costs.

	Task	Wenck	Lab Costs	Total Cost
1	Sediment Coring	$1,834	$17,741	$19,575
2	Alum Cost Estimates	$3,835	$0	$3,835
3	Reporting	$5,118	$0	$5,118
4	Veg management options	$991	$0	$991
	Total	$11,778	$17,741	$29,519



also asked for some preliminary vegetation response scenarios and options to be used in discussing the project with lake residents.

Motion by G. Anderson, second by Orred to move forward with the preliminary design, fish survey and vegetation management plan tasks, working in collaboration with DNR. *Motion carried unanimously.* If the grant is not awarded, the Commission will proceed with the project on Bass Lake only.

C. At the June meeting Matthiesen reminded the Commissioners of an upcoming DNR grant available to **update the Commissions' floodplain maps.** This item will remain as a placeholder until more details become available.

X. Communications.

A. June Communications Log.* No action required.

B. Notice of Risk MAP Standards and Guidance Updates Public Review.* The announcement is available at https://www.fema.gov/media-library-data/1501539531485-d7db8bdf90b197daa50448983a66fab9/Maintenance_and_Public_Review_Announcement_Fall_2017_RiskMAP_Guidelines_and_Standards.pdf

XI. Adjournment.

There being no further business before the Commissions, the meetings were adjourned at 1:48 p.m.

Respectfully submitted,

Judie A. Anderson
Recording Secretary
JAA:tim
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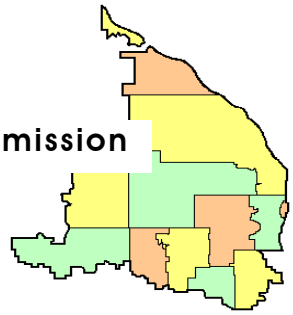
Item 1b

Shingle Creek Watershed Management Commission

West Mississippi Watershed Management Commission



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A combined regular meeting of the Shingle Creek and West Mississippi Watershed Management Commissions will be convened on Thursday, September 14, 2017, at 12:45 p.m. at the Clubhouse at Edinburgh USA, 8700 Edinbrook Crossing, Brooklyn Park, MN. The Commissions will suspend their meetings at 12:45 p.m. or shortly thereafter for the purpose of conducting a public hearing on the following improvements: 2017-01 SC City Cost Share Retrofit Projects; 2017-03 SC Partnership Cost Share BMP Projects; 2017-04 WM City Cost Share Retrofit Projects; and 2017-05 Mississippi Crossings Rain Garden Project. The regular meeting will resume immediately after the public hearings conclude. An agenda for the meeting follows. Agenda items are available at **http://www.shinglecreek.org/minutes--meeting-packets.html.**

		1.	Call to Order.
	SCWM	a.	Roll Call.
√	SCWM	b.	Approve agenda.*
√	SCWM	c.	Approve minutes of last meeting.*
	SCWM	2.	Reports.
√	SC	a.	Treasurer's Report.*
√	SC	b.	Approve Claims.*
√	WM	c.	Treasurer's Report.*
√	WM	d.	Approve Claims.*

Suspend regular meeting.

	SCWM	3.	Public Hearing for 2017 Capital Improvement Projects.
	SCWM	a.	Staff Report.*
	SCWM	b.	Commission discussion.
	SCWM	c.	Open Public Hearing.
	SCWM	1)	Receive comments from member cities.
	SCWM	2)	Receive comments from public.
	SCWM	d.	Close Public Hearing.
	SCWM	e.	Commission discussion.
√	SC	f.	Consider Resolution 2017-02 Ordering 2017 Improvements.*
√	WM	g.	Consider Resolution 2016-02 Ordering 2016 Improvements.*

Resume regular meeting.

		4.	Open forum.
		5.	Project Reviews.
√	SC	a.	SC2017-007 Arbor Lakes Business Park Building A, Maple Grove.*
		6.	Watershed Management Plan.
		7.	Water Quality.
	SC	a.	Fish Survey Results – Magda and Meadow Lakes.*

(over)

SCWM b. Metropolitan Council – 2016 Year In Review.* https://metrocouncil.org/Wastewater-Water/Publications-And-Resources/WATER-QUALITY-MONITOR-ASSESS/2016-Year-in-Review-Water-Resources-Group.aspx

SCWM 8. Education and Public Outreach.

√ SCWM a. Freshwater Partnership Opportunities.*

1) Road Salt Symposium.

2) MOOS Lecture Series.

3) State of Water Conference.

SCWM b. Update.**

SCWM c. Next WMWA meeting – 8:30 a.m., Tuesday, October 10, 2017, Plymouth City Hall.

SCWM 9. Grant Opportunities and Updates.

a. Iron and Biochar-Enhanced Sand Filter Project.*

√ SC 1) Establish Final Cost and Closing Project, Humboldt Avenue Pond.

√ SC 2) Establish Final Cost and Closing Project, North Lions Park Pond.

√ WM 3) Establish Final Cost and Closing Project, City Hall Pond.

√ SCWM 4) Authorize Supplemental Pond Monitoring.*

10. Communications.

SCWM a. Communications Log.*

SC b. Mark Ray Award.*

SCWM 11. Other Business.

SCWM 12. Adjournment.

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* In meeting packet or emailed ** Available at meeting ***Previously transmitted **** Available on website √ Item requires action

Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek/West Mississippi WMO Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: September 8, 2017

Subject: Public Hearing 2017 Capital Projects
Project 2017-01 Shingle Creek Retrofit Projects
Project 2017-02 Shingle Creek DO Art Aeration Phase 2
Project 2017-03 Shingle Creek Priority BMP Retrofit Projects
Project 2016-04 West Mississippi Retrofit Projects
Project 2016-05 Mississippi Crossings Rain Garden

Recommended Commission Action	Conduct the public hearing. Adopt resolutions ordering TAC/staff-recommended projects and certifying levies.

On August 10, 2017 the Shingle Creek Commission received a feasibility report on Project 2017-02 Shingle Creek DO Art Aeration Project Phase 2 and the West Mississippi Commission received a report on proposed Project 2017-05 Mississippi Crossings Rain Garden. After discussion Shingle Creek chose to discontinue proceeding with the aeration project. The Commissions chose to proceed with the annual cost-share projects 2017-01 Shingle Creek Retrofit Projects, 2017-03 Shingle Creek Priority BMP Retrofit Projects, and 2017-04 West Mississippi Retrofit Projects. At that August meeting the Commissions called for a public hearing on September 14, 2017 to consider the projects. Member cities and the county have been notified and notice has been duly published..

COMMISSION ACTION

The purpose of the public hearing is to present the proposed projects and proposed financing and to take comment from the member cities and the public. The recommended order of business is as follows:

1. Staff report on projects and proposed financing
2. Commissioner discussion
3. Each Commission should open a public hearing, which can run concurrently
4. Take comments from member cities
5. Take comments from the public
6. Close the public hearings
7. Commissioner discussion
8. The Shingle Creek Commission should consider the following resolution (a 2/3 majority is required):
   A RESOLUTION ORDERING 2017 IMPROVEMENTS, MAKING FINDINGS AND CERTIFYING COSTS TO HENNEPIN COUNTY PURSUANT TO MINNESOTA STATUTES, SECTION 103B.251
9. The West Mississippi Commission should consider the following resolution (a 2/3 majority is required):
   A RESOLUTION ORDERING 2017 IMPROVEMENTS, MAKING FINDINGS AND CERTIFYING COSTS TO HENNEPIN COUNTY PURSUANT TO MINNESOTA STATUTES, SECTION 103B.251
10. Continue with regular meetings

Table 1. Proposed Shingle Creek 2017 capital projects.

Shingle Creek Projects	Total Project Cost	Commission Levy	Grant Funds	City Funds
Cost share (city projects)	$200,000	$100,000		$100,000
Priority BMP retrofits (private projects)	100,000	50,000		50,000
TOTAL	$300,000	$150,000		$150,000
5% additional for legal/admin costs		**7,500**		
TOTAL LEVY (101% for uncollectable)		**$159,075**		

Table 2. Proposed West Mississippi 2016 capital projects.

West Mississippi Projects	Total Project Cost	Commission Levy	Grant Funds	City Funds
Cost share (city projects)	$100,000	$50,000		$50,000
Mississippi Crossings Rain Garden	219,000	54,800		164,200
TOTAL	$319,000	$104,800		$214,200

STAFF REPORT

Project Descriptions

Project: 2017-01, Shingle Creek Retrofit Projects
Location: Within the Shingle Creek watershed.
Description: Small BMPs such as iron-enhanced pond filter benches; bioinfiltration basins; native buffers; and tree trenches that can be retrofit in existing areas to provide additional infiltration and water quality treatment.
Cost: The estimated project(s) cost is $200,000, with $100,000 borne by the city(ies) in which the project(s) are located. The Shingle Creek Commission proposes to fund a matching $100,000 by certifying this cost to Hennepin County for collection with the county ad valorem tax levy.

TAC/Staff Recommendation: Recommends that the Shingle Creek Commission order the project and that cost share projects be solicited and selected based on the Cost-Share Program Guidelines.

Project: 2017-02 Shingle Creek DO Art Aeration Phase 2
Location: In three locations on Shingle Creek in Brooklyn Park and Brooklyn Center.
Description: The proposed project would add both solar and grid power to the art structure.
Cost: The estimated project cost is $145,000 to be funded by certifying this cost to Hennepin County for collection with the county as valorem tax levy. Quotes received significantly exceeded the budget, making the project infeasible.

TAC/Staff Recommendation: Recommends that the Shingle Creek Commission discontinue further consideration of the project, to which the Commission agreed on August 10, 2017.

Project 2017-03 Shingle Creek Priority BMP Retrofit Projects
Location: Within the Shingle Creek watershed.
Description: Provide cost-share incentives to public and private property owners for BMP retrofit projects.
Cost: The estimated project(s) cost is $100,000, with $50,000 borne by city(ies) in which project(s) are located. The Shingle Creek Commission proposes to fund a matching $50,000 by certifying this cost to Hennepin County for collection with the county ad valorem tax levy.

TAC/staff Recommendation: Recommends that the Shingle Creek Commission order the project and that cost share projects be solicited and selected based on the Cost-Share Partnership Program Guidelines.

Project: 2017-04 Mississippi Crossings Rain Garden.
Location: Champlin
Description: Construction of two large bioinfiltration basins to treat runoff in the old town center area near TH 169 and West River Road.
Cost. The estimated project(s) cost is $219,000, with $164,200 borne by the City of Champlin. The West Mississippi Commission proposes to fund a matching $54,800 by certifying this cost to Hennepin County for collection with the county ad valorem tax levy.

TAC/Staff Recommendation: Recommends that the West Mississippi Commission order the project.

Project: 2017-05, West Mississippi Retrofit Projects
Location: Within the West Mississippi watershed.
Description: Small BMPs such as iron-enhanced pond filter benches; bioinfiltration basins; native buffers; and tree trenches that can be retrofit in existing areas to provide additional infiltration and water quality treatment.
Cost: The estimated project(s) cost is $100,000, with $50,000 borne by the city(ies) in which the project(s) are located. The West Mississippi Commission proposes to fund a matching $100,000 by certifying this cost to Hennepin County for collection with the county ad valorem tax levy.

TAC Recommendation: Recommends that the West Mississippi Commission order the project and that cost share projects be solicited and selected based on the Cost-Share Program Guidelines.

SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION

RESOLUTION NO. 2017-02

ORDERING 2017 IMPROVEMENTS, MAKING FINDINGS,
AND CERTIFYING COSTS TO HENNEPIN COUNTY
PURSUANT TO MINNESOTA STATUTES, SECTION 103B.251

WHEREAS, on April 11, 2013, the Shingle Creek Watershed Management Commission adopted its *Shingle Creek and West Mississippi Third Generation Watershed Management Plan*, which includes a Capital Improvement Program (CIP) that has subsequently been amended three times to modify the CIP; and

WHEREAS, the *Third Generation Watershed Management Plan* specified a county tax levy under Minn. Stat. § 103B.251 as the source of the Commission's share of funding for capital projects proposed in the Commission's CIP; and

WHEREAS, the CIP includes annual allocations for Shingle Creek Retrofit Projects, hereby known as "Project 2017-01," and Shingle Creek Priority BMP Retrofit Projects, hereby known as "Project 2017-03," and specified a county tax levy under Minn. Stat. § 103B.251 as the source of the Commission's share of funding; and

WHEREAS, on September 14, 2017, following published and mailed notice in accordance with the Commission's Joint Powers Agreement and Minnesota Statutes Section 103B.251, the Commission conducted a public hearing on the projects.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the Shingle Creek Watershed Management Commission as follows:

1. The 2017 Projects will be conducive to the public health and promote the general welfare and are in compliance with Minnesota Statutes Sections 103B.205 to 103B.255 (the "Act") and with the Commission's surface water management plan as adopted and amended in accordance with the Act.

2. The cost of the projects is estimated to be: Project 2017-01: $200,000 and Project 2017-03: $100,000, plus an additional 6.05% levy for administrative costs and uncollectable levy.

3. On July 11, 2014 the Commission adopted Guidelines and procedures governing the use of the Commission Fund for Retrofit Projects. The Shingle Creek Watershed Management Commission will complete Project 2017-01 in accordance with those Guidelines.

4. On December 10, 2015 the Commission adopted Guidelines and procedures governing the use of the Commission Partnership Cost Share Program. The Shingle Creek Watershed Management Commission will complete Project 2017-03 in accordance with those Guidelines.

5. The Commission's $159,075 share of the cost of the 2017 Projects is hereby certified to Hennepin County in accordance with Minnesota Statutes, Section 103B.251 for payment by the County in accordance with Minnesota Statutes, Section 103B.251, Subd. 6 and the

Commission's joint powers agreement. The Commission understands that the County may pay such costs with taxes levied in 2017 and paid in 2018. The Secretary is directed to transmit a certified copy of this resolution to Hennepin County prior to October 1, 2017.

Adopted by the Commissioners of the Shingle Creek Watershed Management Commission the fourteenth day of September, 2017.

_____
R.A. Polzin, Chair

ATTEST:

_____
Judie Anderson, Recording Secretary

State of Minnesota

Hennepin County

I, Judie Anderson, do hereby certify that I am the custodian of the minutes of all proceedings had and held by the Board of Commissioners of said Shingle Creek Watershed Management Commission, that I have compared the above resolution with the original passed and adopted by the Board of Commissioners at a meeting thereof held on the fourteenth day of September, 2017, at 12:45 pm., that the above constitutes a true and correct copy thereof, that the same has not been amended or rescinded and is in full force and effect.

In witness whereof, I have hereunto placed my hand and signature this fourteenth day of September, 2017.

Print name: Judie Anderson Title: Administrator

Authorized signature: _____ Date: _____

(NO SEAL)

WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION

RESOLUTION NO. 2017-02

ORDERING 2017 IMPROVEMENTS, MAKING FINDINGS,
AND CERTIFYING COSTS TO HENNEPIN COUNTY
PURSUANT TO MINNESOTA STATUTES, SECTION 103B.251

WHEREAS, on April 11, 2013, the West Mississippi Watershed Management Commission adopted its *Shingle Creek and West Mississippi Third Generation Watershed Management Plan*, which includes a Capital Improvement Program (CIP) that has subsequently been amended three times to modify the CIP; and

WHEREAS, the *Third Generation Watershed Management Plan* specified a county tax levy under Minn. Stat. § 103B.251 as the source of the Commission's share of funding for capital projects proposed in the Commission's CIP; and

WHEREAS, on August 10, 2017 the Commission received a Feasibility Study on proposed CIP project Mississippi Crossings Rain Garden, hereby known as "Project 2017-05;" and

WHEREAS, the CIP includes an annual allocation for West Mississippi Retrofit Projects, hereby known as "Project 2017-04," and specified a county tax levy under Minn. Stat. § 103B.251 as the source of the Commission's share of funding; and

WHEREAS, on September 14, 2017, following published and mailed notice in accordance with the Commission's Joint Powers Agreement and Minnesota Statutes Section 103B.251, the Commission conducted a public hearing on the projects.

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the West Mississippi Watershed Management Commission as follows:

1. The 2017 Projects will be conducive to the public health and promote the general welfare and are in compliance with Minnesota Statutes Sections 103B.205 to 103B.255 (the "Act") and with the Commission's surface water management plan as adopted and amended in accordance with the Act.

2. The cost of the projects is estimated to be: Project 2017-04: $50,000 and Project 2017-05: $54,000.

3. The Commission receives, accepts and approves the feasibility report for Project 2017-05, Mississippi Crossings Rain Garden prepared by the City of Champlin, which project is hereby ordered. The Project is described generally as construction of two large bioinfiltration basins to treat runoff in old town center area near TH169 and West River Road.

4. Up to $54,800 of the cost of Project 2017-05 will be paid by the Commission from proceeds received from Hennepin County pursuant to Minnesota Statutes, Section 103B.251. Additional costs will be paid by the City of Champlin.

5. On July 11, 2014 the Commission adopted Guidelines and procedures governing the use of the Commission Fund for Retrofit Projects. The West Mississippi Watershed Management Commission will complete Project 2017-04 in accordance with those Guidelines.

6. The Commission's $104,800 share of the cost of the 2017 Projects is hereby certified to Hennepin County in accordance with Minnesota Statutes, Section 103B.251 for payment by the County in accordance with Minnesota Statutes, Section 103B.251, Subd. 6 and the Commission's joint powers agreement. The Commission understands that the County may pay such costs with taxes levied in 2017 and paid in 2018. The Secretary is directed to transmit a certified copy of this resolution to Hennepin County prior to October 1, 2017.

Adopted by the Commissioners of the West Mississippi Watershed Management Commission the fourteenth day of September, 2017.

_____
Gerald Butcher, Chair

ATTEST:

_____
Judie Anderson, Secretary

State of Minnesota

Hennepin County

I, Judie Anderson, do hereby certify that I am the custodian of the minutes of all proceedings had and held by the Board of Commissioners of said Shingle Creek Watershed Management Commission, that I have compared the above resolution with the original passed and adopted by the Board of Commissioners at a meeting thereof held on the fourteenth day of September, 2017, at 12:45 pm., that the above constitutes a true and correct copy thereof, that the same has not been amended or rescinded and is in full force and effect.

In witness whereof, I have hereunto placed my hand and signature this fourteenth day of September, 2017.

Print name: Judie Anderson Title: Administrator

Authorized signature: _____ Date: _____

(NO SEAL)

SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION

PROJECT REVIEW SC2017-007: Arbor Lakes Business Park Building A

Owner: Duke Realty- Bill Shank
1550 Utica Ave S
Suite 400
Minneapolis, MN 55416

Engineer: Mike Brandt
Company: Kimley-Horn
Address: 2550 University Ave W
Suite 238 N
St. Paul, MN 55441
Phone: 651-643-0428
Email: mike.brandt@kimley-horn.com

Purpose: Construction of a 222,444 square-foot office building/warehouse and associated parking (Building A), and grading for an additional 220,668 square-foot building on 23.08 acres (Building B).

Location: Southeast corner of Zachary Lane and Elm Creek Boulevard, Maple Grove, MN; approximately 10900 Elm Creek Boulevard N (Figure 1).

Exhibits:

1. Project review application and project review fee of $3,000, dated 8/11/17, rcvd. 8/12/17.

2. Site plan, grading, utility, erosion control, and landscaping plans dated 8/4/17, rcvd. 8/12/17 (Figure 2).

Findings:

1. The proposed project is the construction of a 222,444 square-foot office building/warehouse and associated parking (Building A), and grading for an additional 220,668 square-foot building (Building B; Figure 2). The site is 23.08 acres. The lot for Building A is 9.49 acres and the lot for Building B is 9.51 acres. Following this phase of the project (future phases will include Buildings C and D), there will be 10.68 acres of impervious surface. Therefore, following this phase of development, lots for Buildings A and B combined will be 56 percent impervious.

2. The complete project application was received on 8/12/17. To comply with the 60-day review requirement, the Commission must approve or deny this project no later than the 9/14/17 meeting. Sixty calendar-days expires on 10/11/17.

3. To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 80-85% TSS removal and 50-60% TP removal. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

   This project is located within the Gravel Mining Area at Arbor Lakes (Figure 3) and all water leaving the site has been accounted for by the regional ponds under city ownership. In addition, runoff from the site is proposed to first be routed to existing ponds on-site. The applicant meets Commission water quality treatment requirements.

4. Commission rules require that site runoff be limited to predevelopment rates for the 2-, 10-, and 100-year storm events. This project is located within the Gravel Mining Area at Arbor Lakes. Runoff is proposed to be routed to on-site and regional ponds. The applicant meets the Commission's rate control requirements.

5. Commission rules require the site to infiltrate 1.0" of runoff from new impervious area within 48 hours. The new impervious area on this site is 10.68 acres. This project falls within The Gravel Mining Area at Arbor Lakes, and the applicant proposes to use the city infiltration credit that has the capacity to infiltrate the required volume within 48 hours. The applicant meets Commission infiltration requirements.

6. The National Wetlands Inventory shows several small wetlands located within the property boundaries. However, these wetlands were located in an area that was historically mined for gravel. Maple Grove is LGU for WCA administration and determined that these wetlands were incidentally created and are not regulated under WCA. The applicant meets Commission wetland requirements.

7. There are no Public Waters on this site.

8. There is no floodplain on this site. The low floor elevations of the buildings are at least two feet higher than the basins to the east.

9. An erosion control plan was submitted with the project review, and includes inlet protection, perimeter silt fence and rock construction entrance(s). The erosion control plan meets Commission requirements.

10. A public hearing on the project will be conducted on 8/28/17 as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

11. A project review fee of $3,000 has been received.

Recommendation: Recommend approval with no conditions.

Wenck Associates, Inc.
Engineers for the Commission

_____ _____

Ed Matthiesen, P.E. Date

Figure 1. Site location

Figure 2. Grading Plan

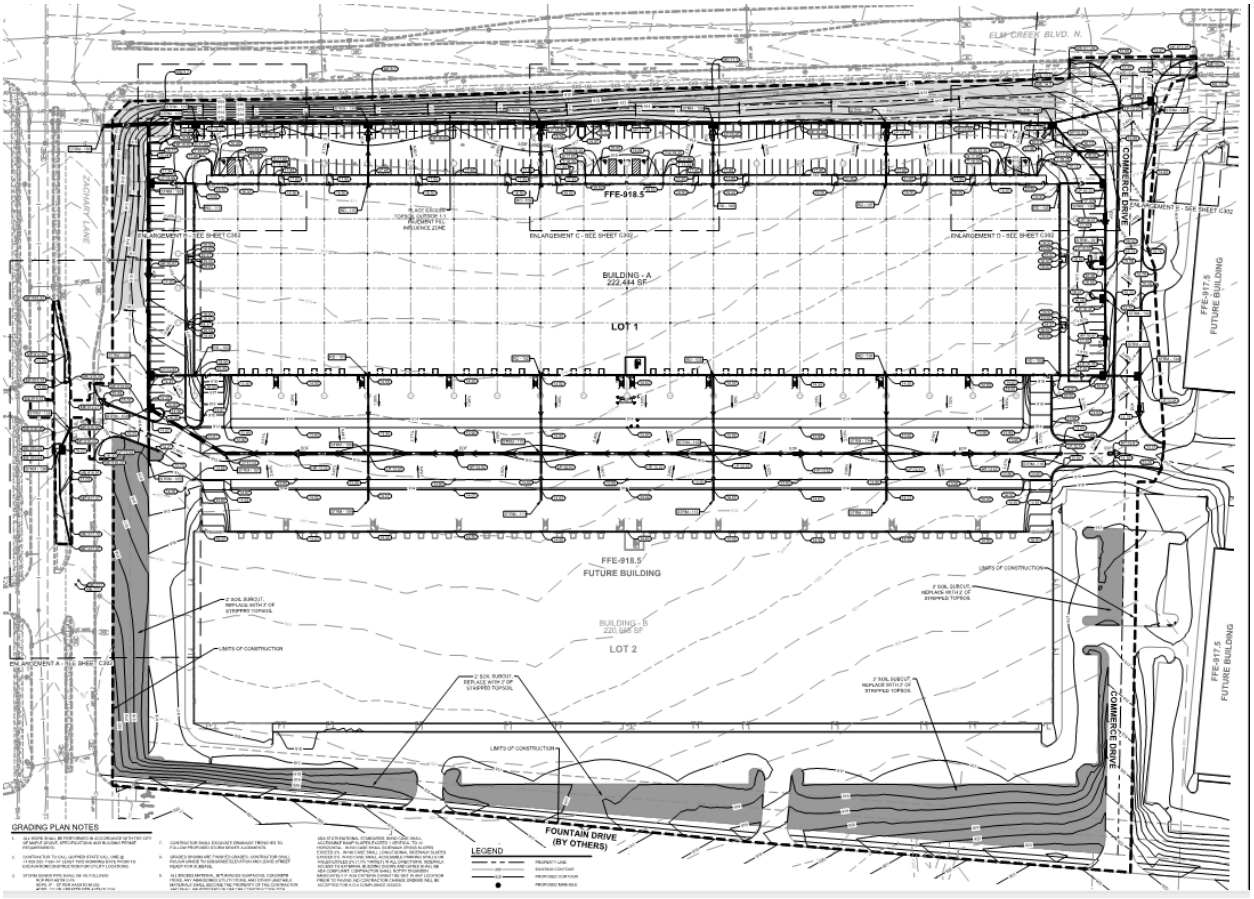
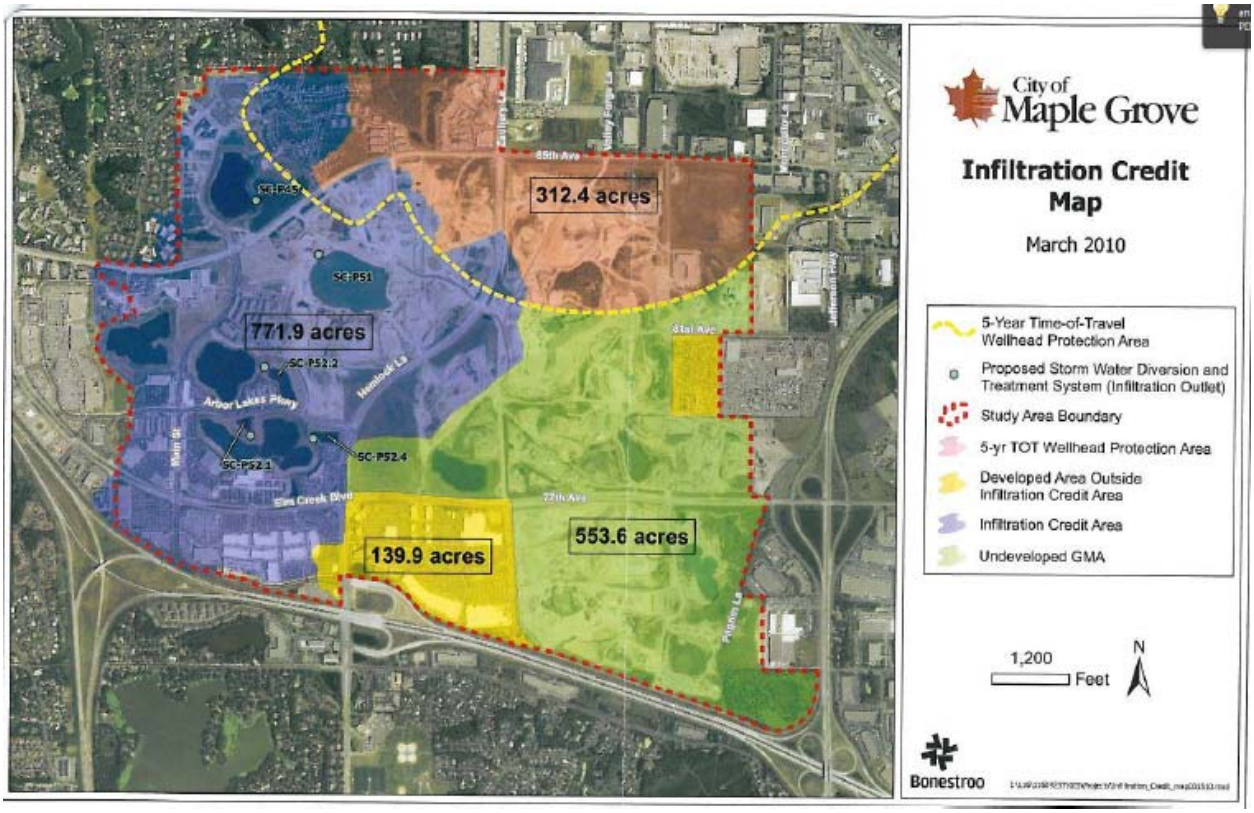


Figure 3. Gravel Mining Area Infiltration Credit Map



Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek WMC Commissioners

From: Ed Matthiesen, P.E. Jeff Strom
Diane Spector Tom Langer

Date: September 8, 2017

Subject: Fish Survey Results

As part of the routine, in-depth lake monitoring completed in advance of conducting TMDL Five Year Reviews, we are now performing fish surveys in addition to aquatic vegetation surveys and water quality sampling. This year fish surveys were completed on Lake Magda in Brooklyn Park and Meadow Lake in New Hope.

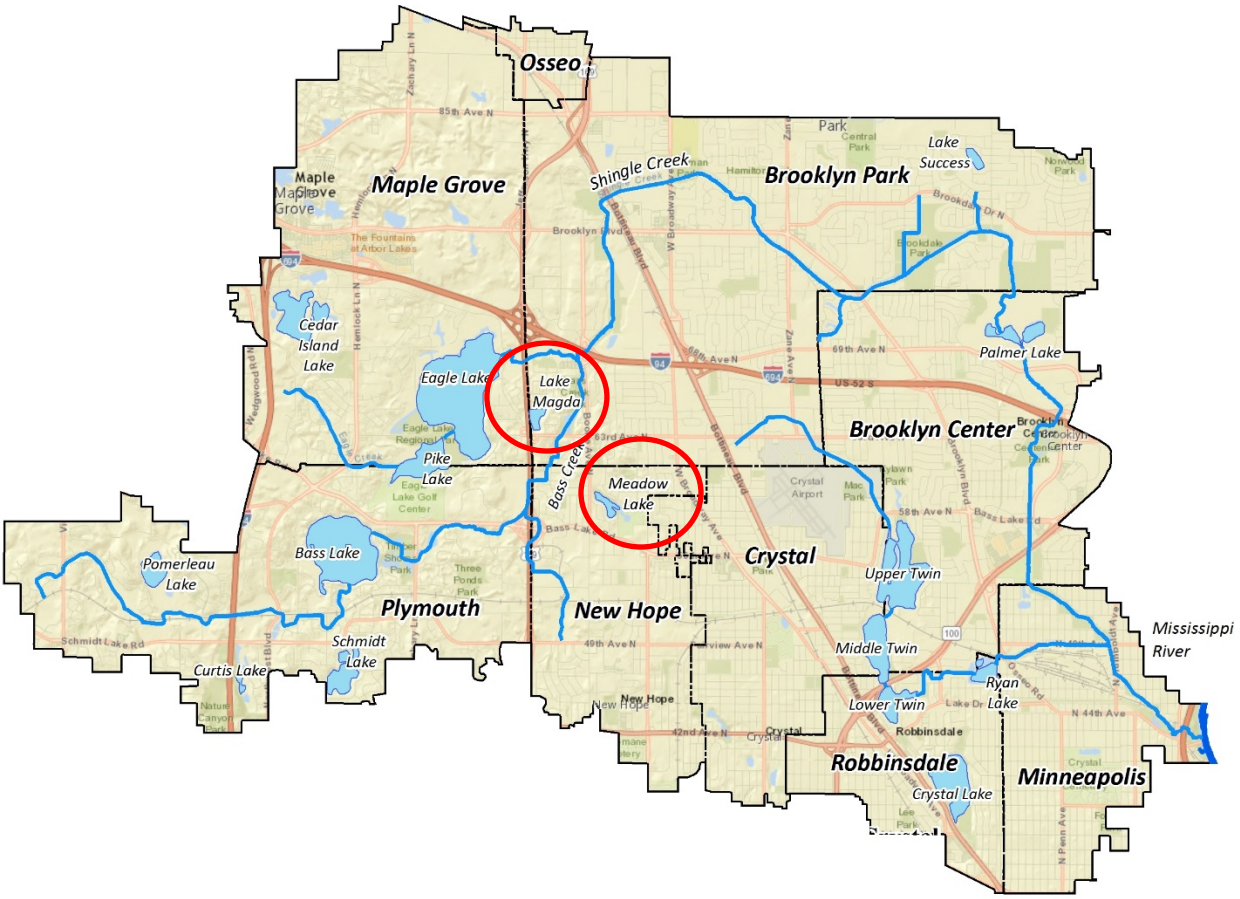
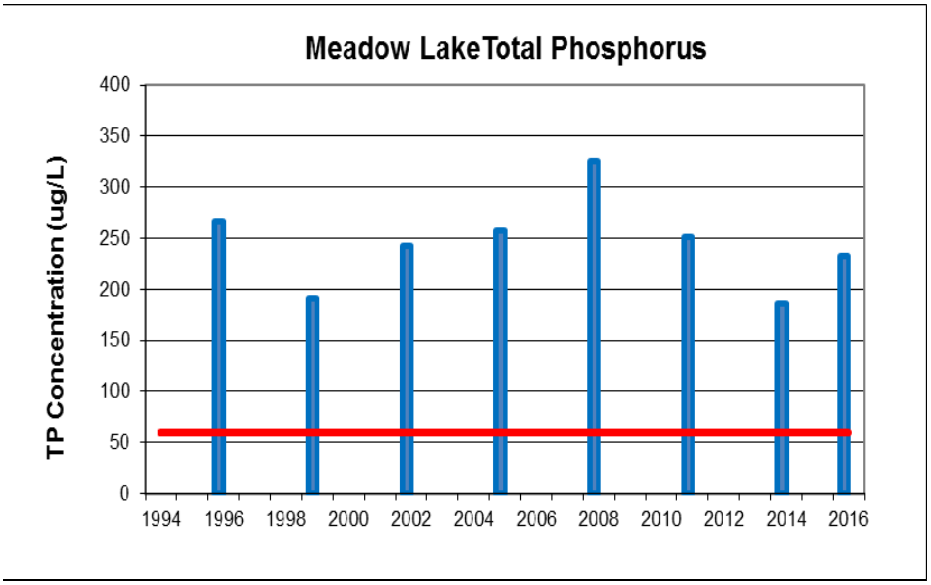
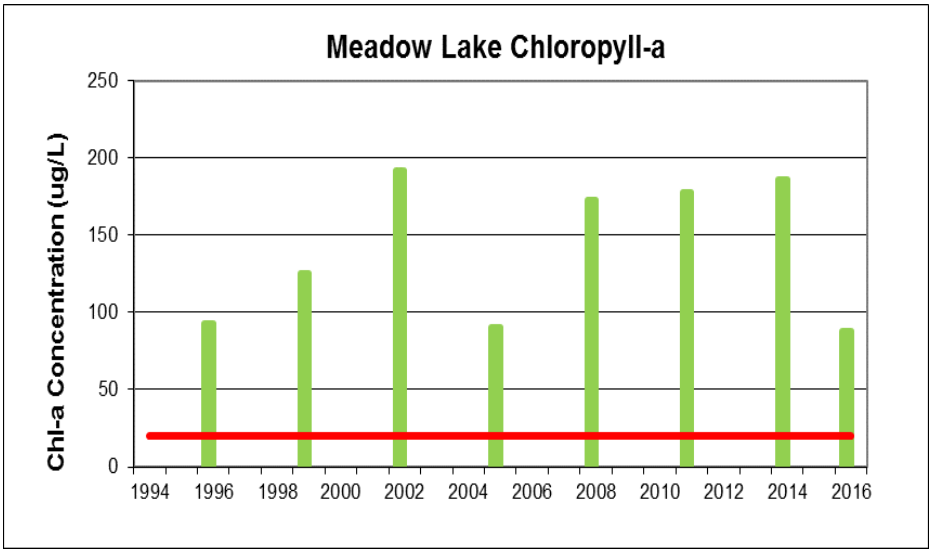


Figure 1. Meadow and Magda Lake locations.





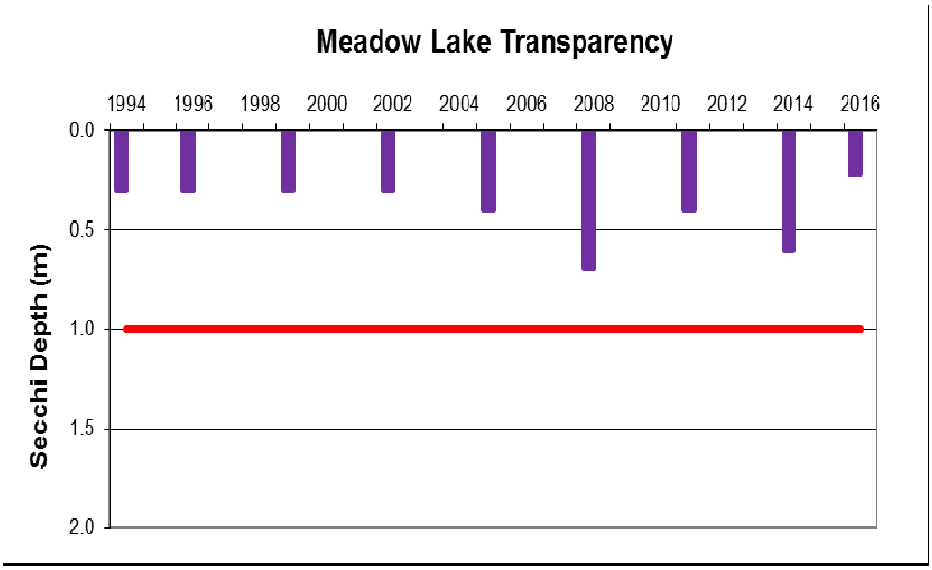


Figure 2. Meadow Lake historic water quality.

Table 1. 2017 Meadow Lake fish survey results.

2017	Fathead Minnow		Creek Chub		Snapping Turtle	Painted Belly
	Count	Mass (g)	Count	Mass (g)	Count	Count
TN 1	1,197	2,772	1	10	2	43
TN 2	971	2,010	--	--	3	36
TN 3	1,931	4,000	--	--	1	25
GN	--	--	--	--	--	--

TN = trap net; GN=gill net

Table 2. Historic Meadow Lake fish survey results.

Sample Year	Lake State	Fathead Minnow (g)	Black Bullhead (g)	Creek Chub (g)
2009	Clear	2,400	0	0
2010	Clear	350	0	0
2011	Turbid	0	11,900	0
2017	Turbid	8,782	0	10

Dominated by fathead minnows, which:

- Consume zooplankton
- Consume detritus
- Resuspend and relocate nutrients into water column
- Very tolerant of low DO
- Can survive winterkills

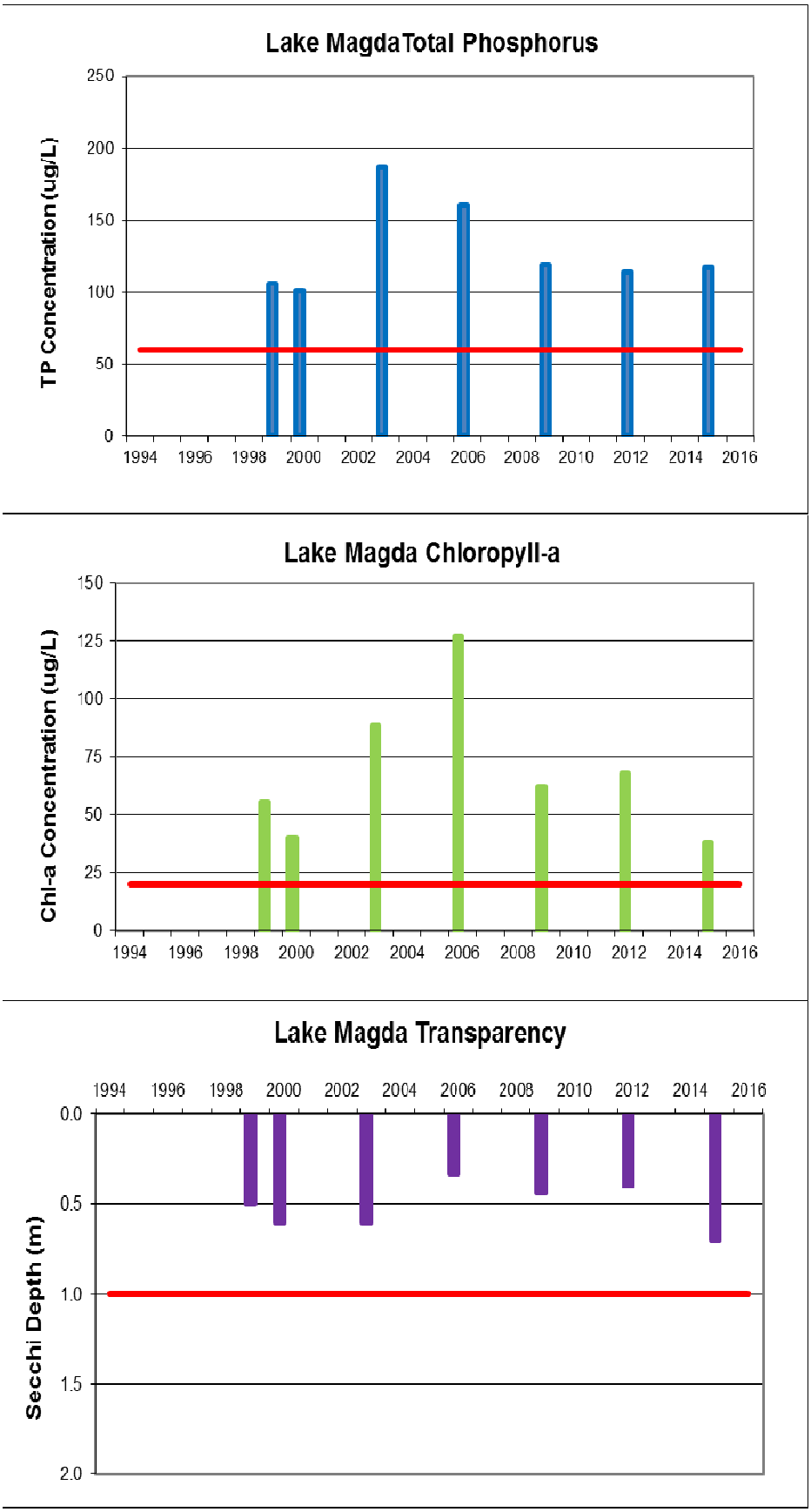


Figure 3. Lake Magda historic water quality.

Table 3. 2017 Lake Magda fish survey results.

2017	Black Bullhead		Black Crappie		Smallmouth Buffalo		Snapping Turtle	Painted Belly
	Count	Mass (g)	Count	Mass (g)	Count	Mass (g)	Count	Count
TN 1	14	990	82	1,820				
TN 2			162	3,700				6
TN 3	5	760	108	3,700			2	12
GN	45	4,129	162	3,938	3	516		

TN = trap net; GN=gill net

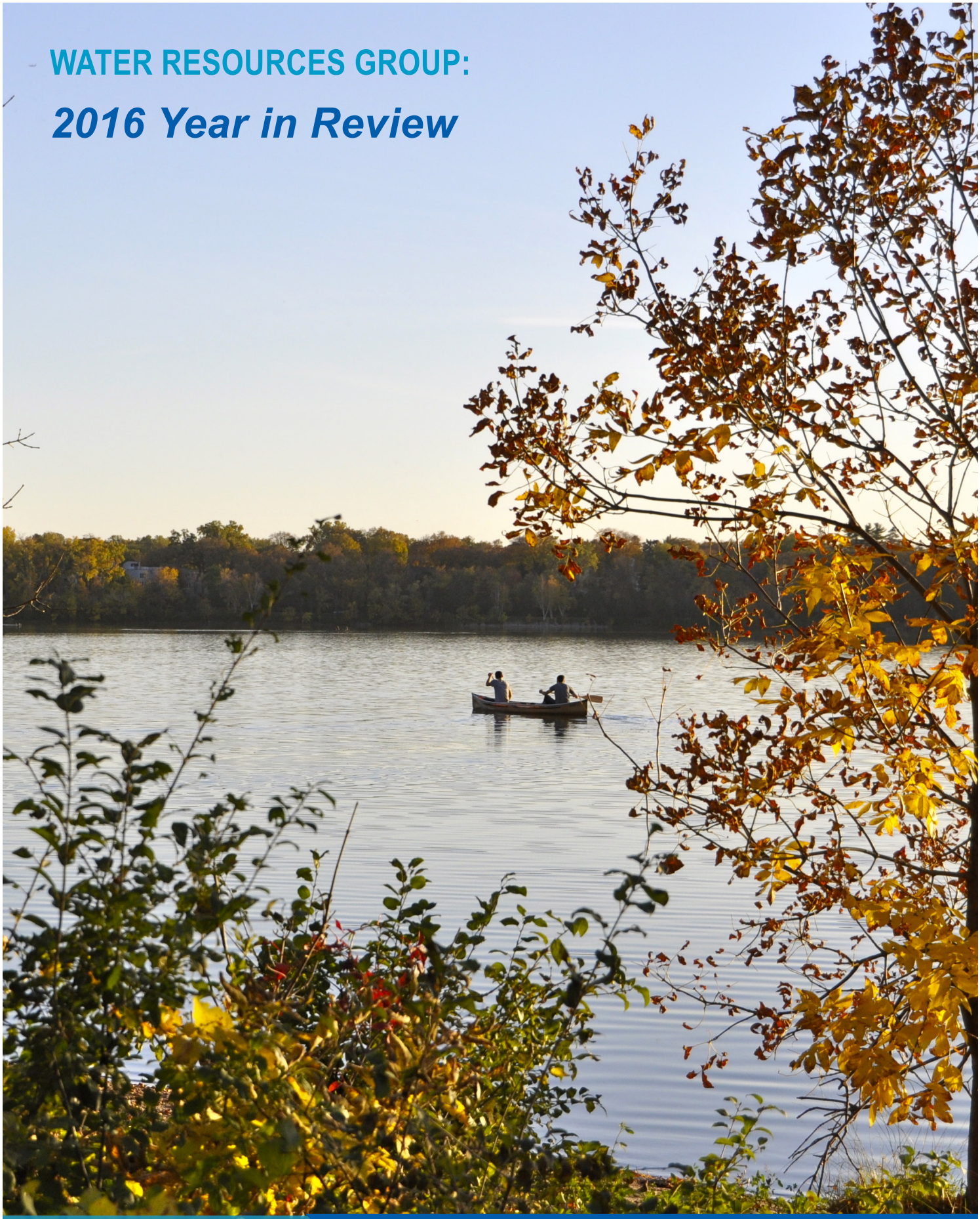
There are no historic fish survey data for Lake Magda.

Notes regarding the Lake Magda fish community:

- Black bullhead are benthivores who feed on organisms in the sediment
- Black crappies consume zooplankton and invertebrates
- Smallmouth buffalo feed on detritus and organisms in sediment
- All of these fish resuspend and relocate nutrients into water column

WATER RESOURCES GROUP:

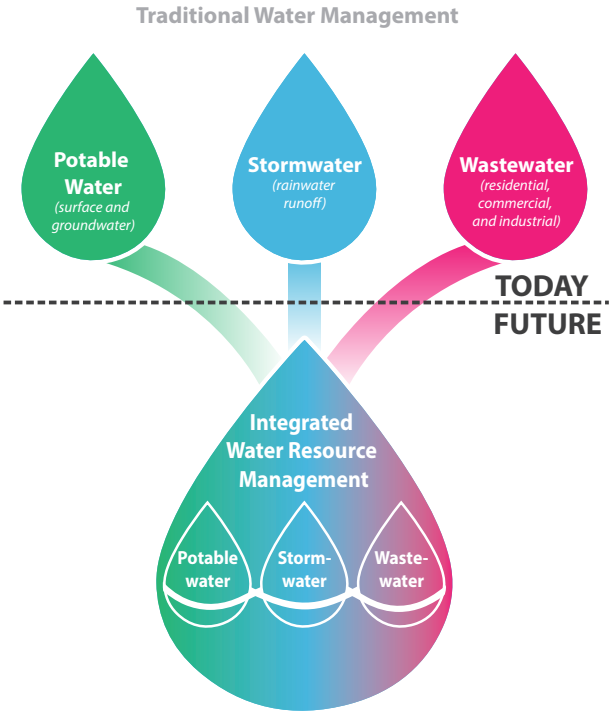
2016 Year in Review



METROPOLITAN COUNCIL **ENVIRONMENTAL SERVICES**

ABOUT US

Metropolitan Council Environmental Services (MCES) is starting to rethink traditional water management practices. Instead of viewing surface water, groundwater, stormwater, and wastewater separately, we are now beginning to address them in an integrated way. We intend to lead in developing integrated water resource management solutions for our region's complex water issues and are working to guide the use of water resources in the most sustainable way.



One organization cannot do this alone. Integrated management means that we will collaborate across traditional silos both internally and externally with government partners and other sectors. Our collective wisdom will help us build a sustainable future for our region.

To help overcome internal silos, our former Environmental Monitoring and Water Resources Assessment groups merged into one unit – Water Resources – in 2016. The mission of the Water Resources group is to:

"Provide leadership and information to ensure clean, healthy, and sustainable water resources."

The Water Resources group provides a diverse set of services to work toward the goals of integrated water resource management. Our primary focus is monitoring and assessment of water in the Twin Cities metro area and planning to ensure these water resources are used and managed responsibly. The stories on the following pages of this *Year in Review* highlight these themes.

The Water Resources group is managed by Judy Sventek. Dan Henely is the assistant manager and focuses on the group's monitoring efforts. He has been taking over many responsibilities from Kent Johnson, who retired in June 2017 as the manager of the former Environmental Monitoring group. Feel free to contact Judy or Dan with any questions about Water Resources.

JUDY SVENTEK
Manager
Judy.Sventek@metc.state.mn.us
651.602.1156

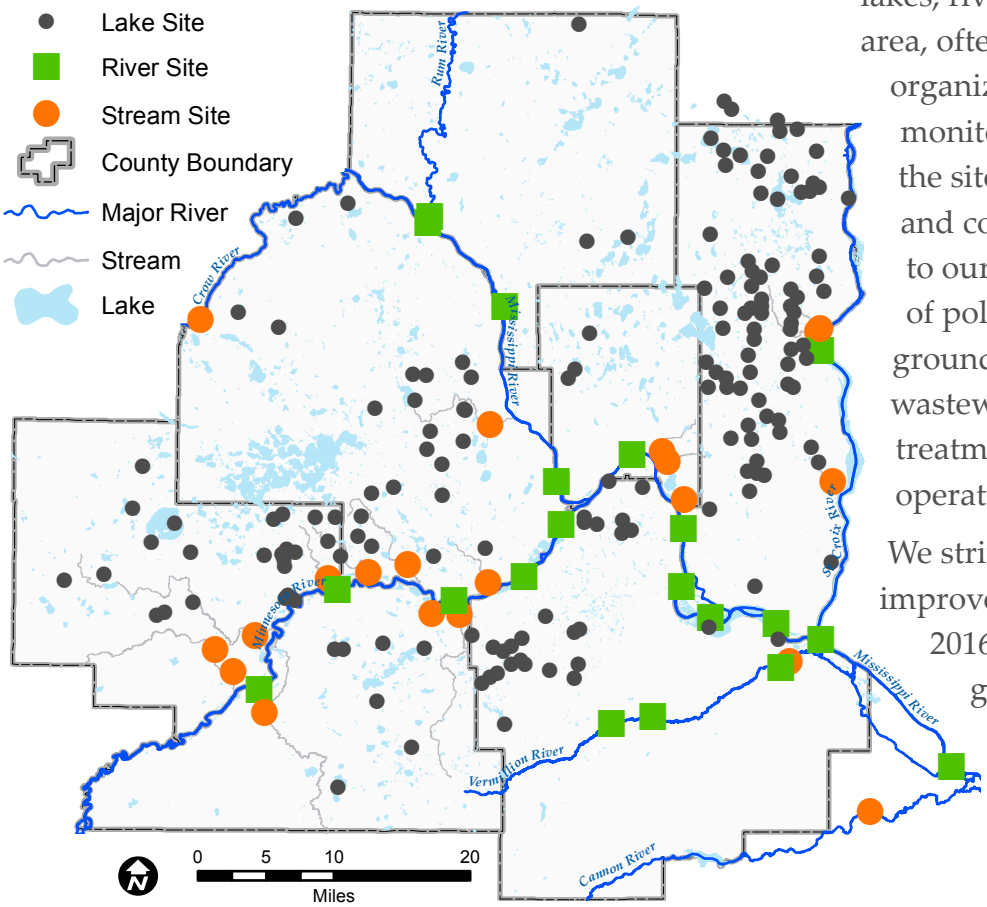
DAN HENELY
Assistant Manager
Daniel.Henely@metc.state.mn.us
651.602.8085

UNDERSTANDING OUR WATER RESOURCES

Water Monitoring

We operate several long-term programs to monitor the water quality of rivers, streams, and lakes across the metro area, as well as stream flow. The data from these programs are used by our organization and others for a variety of purposes, such as evaluating current water quality conditions and compliance with standards, assessing the performance of MCES-operated wastewater treatment plants, identifying sources of pollution, determining trends, and aiding in water resource management decisions.

2016 Monitored Lakes, Rivers, and Streams



In 2016, we monitored 221 locations in 192 lakes, rivers, and streams across the metro area, often in collaboration with other organizations and citizens. Generally, monitoring included taking readings at the site, operating continuous sensors, and collecting water samples to send to our laboratory to test for a variety of pollutants. We also monitored groundwater and the toxicity of treated wastewater at MCES wastewater treatment plants to ensure they were operating effectively.

We strive to continuously evaluate and improve our monitoring programs. In 2016, we reviewed the programs' goals and identified areas for improvement. Changes have already been implemented and will continue through the coming years.

For more information about our monitoring programs, visit: https://metrocouncil.org/Wastewater-Water/Services/Water-Quality-Management.aspx.
Data from our programs are available to download at: https://eims.metc.state.mn.us/.

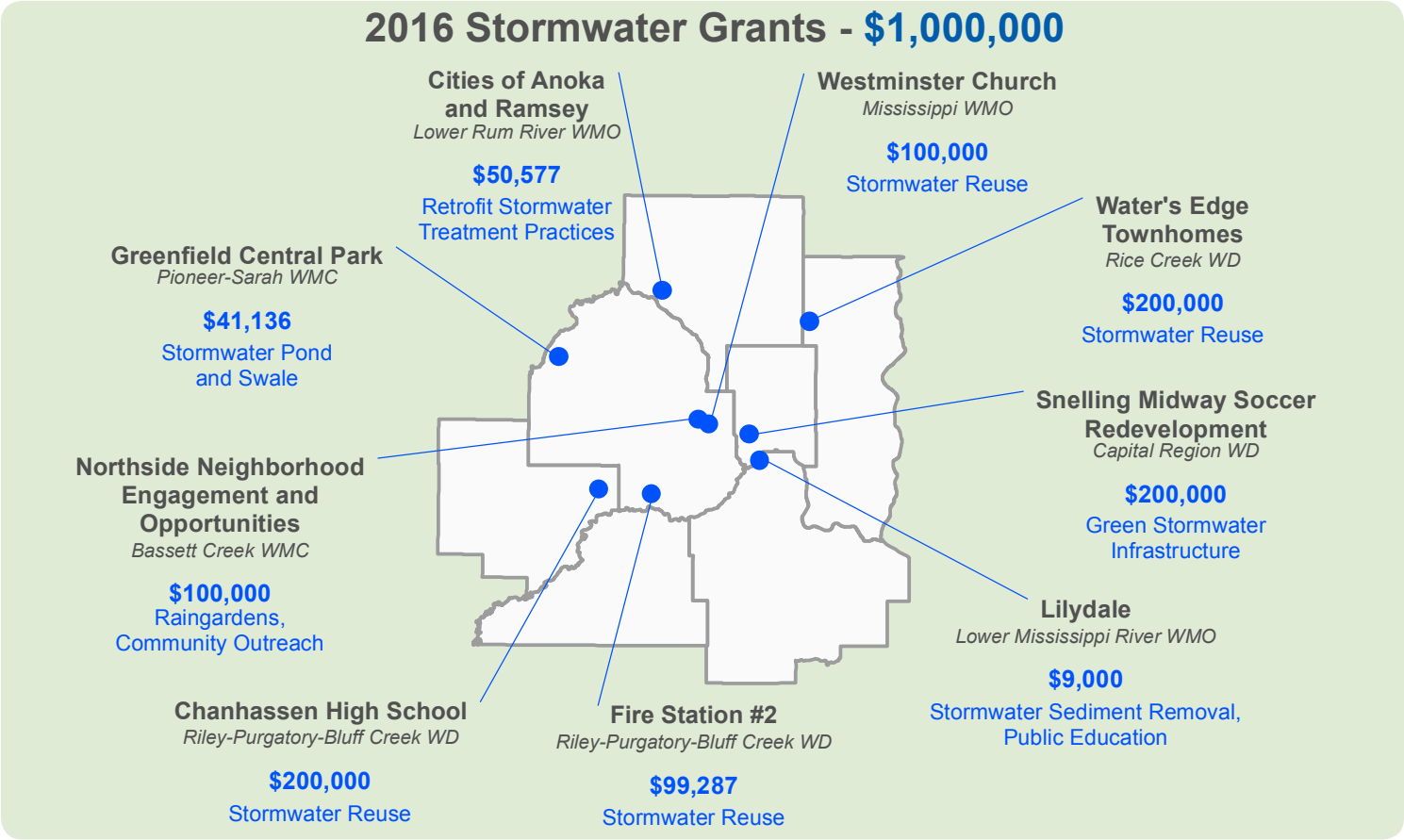
2016 Monitoring By the Numbers

PROTECTING OUR WATER RESOURCES

Surface Water Management Planning and Stormwater Grants

In 2016, Water Resources staff were actively involved with "PlanIt", an effort created by the Council's Community Development Division to educate and assist communities in revising and updating their local comprehensive plans. PlanIt includes podcasts, tutorials, webinars, workshops, conferences, and online resources. You can find more information at: https://metrocouncil.org/Handbook/PlanIt.aspx.

As part of PlanIt, we helped produce a webinar explaining the minimum requirements for the surface water management chapter of the comprehensive plan. Additionally, we moderated a session at the December PlanIt conference to discuss the content that communities should include in the surface water management chapter, and how to go above and beyond the plan's minimum requirements to get the greatest benefits. We will continue offering communities assistance in revising their plans with a workshop in September 2017 and by providing direction with informal reviews through September 2018. Plans are due on December 31, 2018.



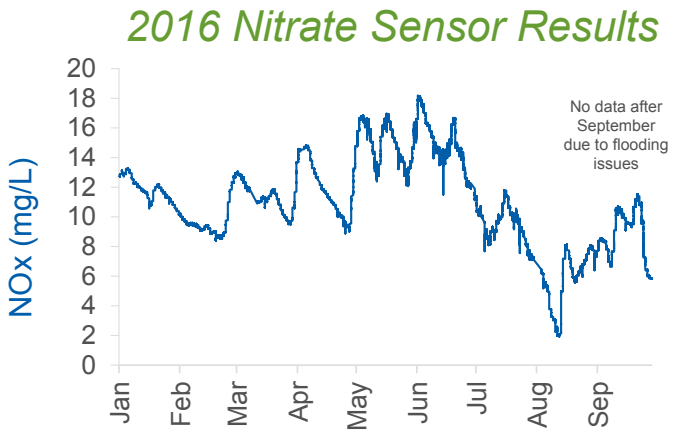
The Council approved $1 million in grants to fund stormwater management projects across the metro area in 2016. Council staff reviewed the proposals and selected nine innovative projects in the region. Four of the projects will collect stormwater to use for other purposes, such as irrigation and filling firetruck tanks. The other five projects will install features to clean up polluted stormwater runoff before it enters our lakes, rivers, streams, and wetlands.

USING NEW TECHNOLOGY FOR BETTER DATA

Nitrate Sensor

New and improving technology allows us to collect data more efficiently than ever before. To investigate nitrate concentrations in the Minnesota River, we installed a Nitratax sensor near Fort Snelling in late 2015. The sensor measures nitrate concentrations in the water every 15 minutes, providing a continuous series of results. Previously the river was sampled approximately 40 times a year.

The data from the sensor improves our understanding of nitrate fluctuations in the Minnesota River and how it's affected by changes in hydrology, geology, and land use. Additionally, it allows us to more precisely calculate nitrate loads flowing from the Minnesota River into the Mississippi River. These data help us identify sources of nitrate pollution and guide management decisions to improve the water quality of the region.



COLLABORATING ACROSS THE REGION

Streamflow Workshop

As a regional organization, we have the unique opportunity to facilitate discussions about water quality across the region. In early November, we hosted a workshop on streamflow monitoring principles and techniques. Presentations were provided by staff from the U.S. Geological Survey, Minnesota Department of Natural Resources, and MCES. Twenty-five metro-area professionals representing more than 80% of the region's watershed management organizations attended the workshop.

Attendees heard about and discussed streamflow measurement issues. They also spent time in the field at Battle Creek Regional Park, which featured several hands-on demonstrations of streamflow measurement techniques.

Feedback about the workshop was very positive, and the responses highlighted the value of getting together with other local professionals to build better relationships and connections in the region. Moving forward, we plan to help organize similar conversations focusing on other water monitoring and assessment topics.

ENGAGING CITIZEN SCIENTISTS

Citizen Assisted Monitoring Program (CAMP)

CAMP is a program managed by MCES that enables citizens to volunteer to monitor their neighborhood lakes in our region. Additionally, some lakes in CAMP are monitored by staff from watershed districts and city governments. CAMP participants collect lake surface water samples every two weeks from April to October and send them to our laboratory to test for pollutants. They also measure water temperature and clarity, as well as provide observations about the lake's condition.

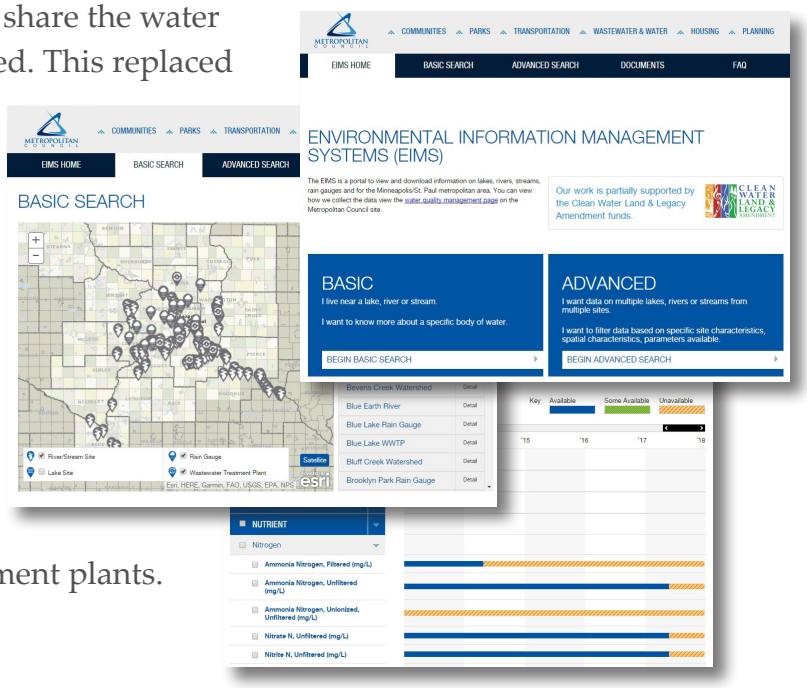
In 2016, CAMP volunteers monitored 166 lakes across the metro area. The data from CAMP help to document the conditions and long-term changes to the lakes in our region and can be used to make informed lake management decisions. CAMP also engages citizens to increase awareness of lake conditions, foster local efforts to protect lakes, and promote support for lake management.

For more information about lake monitoring and CAMP, visit: https://metrocouncil.org/Wastewater-Water/Services/Water-Quality-Management.aspx.

SHARING OUR KNOWLEDGE

Environmental Information Management Systems (EIMS)

In 2016, we launched a newly designed website to share the water quality data that we and our partners have collected. This replaced our previous, outdated data portal. With the new website, users have around-the-clock access to data and reports.



The new website offers flexible database search options. Users can search with a map or text filters to find monitored lakes, rivers, streams, and rain gauges. The website has information about each of our sampling sites and allows users to download data and reports. Additionally, users can find the locations and basic information about MCES's wastewater treatment plants. Check it out at: https://eims.metc.state.mn.us/.

LOOKING AHEAD

Planned Work for 2017

In 2017, we will continue our programs in the metro area and look for ways to improve them. Some of the major plans for 2017 are highlighted below.

Biological Sampling

The types of organisms that live in the water can tell us a lot about the water quality. In 2017, several of our programs will explore the value of collecting more biological information, which may include macroinvertebrates, algae, periphyton, zooplankton, and phytoplankton. We will analyze the results to identify how the biological information can be used and if it's beneficial to continue monitoring.

Workshops

Building off of the success of the streamflow workshop in November (page 5), we plan to hold additional workshops focused on water monitoring and assessment topics. In May 2017, we hosted water quality professionals from across the metro area to discuss future interest in additional workshops and potential topics.

River Trend Assessment

We will publish a river trend assessment report in the second half of 2017. This report documents changes in water quality of the Mississippi, Minnesota, and St. Croix Rivers in the metro area from 1976 to 2015. It shows the annual, seasonal, and spatial patterns of several parameters and identifies long-term changes of flow adjusted concentrations using the model QWTREND.

Policy Planning

Water Resources staff will partner with the Council's Water Supply group to offer a half-day workshop in September 2017 as part of PlanIt (page 4). The workshop will facilitate discussion on how communities can enhance their surface water and water supply management plans. We will review communities' preliminary and final comprehensive plans, which include their local water management plans, as the Council receives them.

Grants

The Council is offering another $1 million to fund innovative stormwater projects in 2017, and the selected projects were awarded in May. MCES also has a new grant program in 2017 offering $1 million to fund projects which integrate green infrastructure to solve water-related problems. Information about the green infrastructure grant program and a link to the application are available at: https://metrocouncil.org/Wastewater-Water/Funding-Finance/Available-Funding-Grants.aspx. Applications are due on July 17, 2017.

MCES's mission is to provide wastewater services and integrated planning to ensure sustainable water quality and water supply for the region

METROPOLITAN COUNCIL

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The Metropolitan Council is the regional planning organization for the seven-county Twin Cities area. The Council operates the regional bus and rail system, collects and treats wastewater, coordinates regional water resources, plans and helps fund regional parks, and administers federal funds that provide housing opportunities for low- and moderate-income individuals and families. The 17-member Council board is appointed by and serves at the pleasure of the governor.

On request, this publication will be made available in alternative formats to people with disabilities. Call Metropolitan Council information at 651.602.1140 or TTY 651.291.0904.

July 2017

METROPOLITAN COUNCIL **ENVIRONMENTAL SERVICES**

FRESHWATER SOCIETY
2424 Territorial Road, St. Paul, MN 55114
651-313-5800 | freshwater.org

BUDGET WITH FRESHWATER SOCIETY IN MIND

Freshwater Society works closely with many Minnesota watershed organizations to protect and conserve the quality and quantity of our freshwater resources. Our most prominent alliance is through the Master Water Stewards program, which supports 195 citizen volunteers whose on-the-ground projects are infiltrating two million gallons of stormwater each year.

As you plan your budget for the coming year, consider these ways to partner with Freshwater Society:

MASTER WATER STEWARDS

Now entering its sixth year, we continue to enhance training for citizen volunteers, who work on a neighborhood scale to advance your watershed's goals. Tuition is $2,500 per candidate and we recommend providing cost-share funds for their capstone projects.

SPONSORSHIP OPPORTUNITIES

Freshwater Society hosts several well-attended education events each year. Your financial sponsorship supports high-caliber speakers and helps us distribute the most current science and policy information, to advance our collective knowledge on watershed management and freshwater resources. Sponsorhip levels start at $500.

Road Salt Symposium This annual event brings together municipal and maintenance staff, decision-makers, watershed organization staff, and private salt applicators to learn about cutting-edge practices that reduce salt use.

MOOS Lecture Series We host two lectures each year (fall/spring) featuring national experts who address current hot topics that advance local knowledge of water resource policies and best practices.

State of Water Conference This bi-annual conference attracts employees of state and local governments plus a contingent lake association members and nonprofits. It's a showcase of applied research and case studies demonstrating local action to protect our waters.

CONSULTATION SERVICES

Freshwater Society works directly with organizations and groups to facilitate collaborations and create action plans that meet their goals.

Facilitation Services (cost varies) Using proven participatory engagement methods to help you move from conversation to action, our trained facilitators work with you to develop a process that meets the needs of your organization.

Community Leadership for Clean Water (cost varies) We work with lake associations and community groups you select to help them understand opportunities, procedures, and their role in effectively caring for their lakes, rivers, and wetlands.

To discuss these partnership opportunities, please contact Steve Woods at 651-313-5811, swoods@freshwater.org or Leslie Yetka at 651-313-5813, lyetka@freshwater.org.

Technical Memo

WENCK ASSOCIATES

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To: Shingle Creek/West Mississippi WMO Commissioners

From: Ed Matthiesen, P.E.

Date: September 8, 2017

Subject: Establishing Final Cost and Closing Project:
-Humboldt Avenue Pond Iron and Biochar-Enhanced Sand Filter
-North Lions Park Pond Iron and Biochar-Enhanced Sand Filter
-Champlin City Hall Pond Iron and Biochar-Enhanced Sand Filter

Recommended Commission Action	Shingle Creek Commission: accept final cost and close the Humboldt Avenue and North Lions Park Ponds projects. West Mississippi Commission: accept final cost and close the Champlin City Hall Pond project.

Construction is complete on the three iron- and biochar-enhanced sand filter projects. Tables 1, 2, and 3 show the cost and revenues for the three projects. In all cases the final cost was less than the cost estimated when the projects were let. The final construction cost for the Champlin City Hall pond exceeded the amount of levy, however, funds are available from the 319 grant to make up the difference. Staff recommends that each Commission accept the final costs and close the projects.

Table 1. Costs and revenues for the Lions Park Pond retrofit.

Cost	**As Estimated**	**As Quoted**	**As Final**
Construction	$87,335.00	$99,911.00	$88,133.90
Contingency	13,100.25	4,995.50	-0-
Construction Observation	8,035.00	8,392.50	3,829.96
Total	$107,470.25	$113,299.00	$91,963.86
Revenue	**As Estimated**	**As Quoted**	**As Final**
Commission Levy	$99,435.25	$104,906.50	$88,133.90
Section 319 Grant	8,035.00	8,392.50	3,829.96
Total	$107,470.25	$113,299.00	$91,963.86

Table 2. Costs and revenues for the Humboldt Avenue Pond retrofit.

Cost	**As Estimated**	**As Quoted**	**As Final**
Construction	$36,695.00	$41,726.00	$35,728.39
Contingency	5,954.25	2,086.30	-0-
Construction Observation	3,412.00	3,505.00	3,829.96
Total	$46,061.25	$47,317.30	$39,558.35
Revenue	**As Estimated**	**As Quoted**	**As Final**
Commission Levy	$42,649.25	$43,812.30	$35,728.39
Section 319 Grant	3,412.00	3,505.00	3,829.96
Total	$46,061.25	$47,317.30	$39,558.35

Table 3. Costs and revenues for the Champlin City Hall Pond retrofit.

Cost	**As Estimated**	**As Quoted**	**As Final**
Construction	$66,140.00	$88,268.50	$86,117.50
Contingency	7,460.00	4,413.50	-0-
Construction Observation	6,400.00	7,414.50	3,829.96
Total	$80,000.00	$100,096.50	$89,947.46
Revenue	**As Estimated**	**As Quoted**	**As Final**
Commission Levy	$80,000.00	$80,000.00	$80,000.00
Commission Grant Match Account		20,096.50	9,947.46
Total	$80,000.00	$100,096.50	$89,947.46

Technical Memo

WENCK ASSOCIATES

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To: Shingle Creek/West Mississippi WMO Commissioners

From: Ed Matthiesen, P.E.

Date: September 8, 2017

Subject: Authorizing Supplemental Pond Monitoring
Iron- and Biochar-Enhanced Sand Filters Project

Recommended Commission Action	Authorize reallocating $28,878 of excess levy funds to help fund the approved supplemental monitoring.

A few months ago we discussed with you adding some supplemental monitoring to the biochar project to better characterize what was happening in the pond filter itself. We worked with Dr. Beth Fisher at the U and Dr. Bill James at UW-Stout to put together a proposal to the MPCA and EPA as follows:

"The Shingle Creek WMC proposes adding additional monitoring tasks to the work plan to expand and refine our understanding of the effectiveness of biochar- and iron-enhanced sand filters. We propose to go beyond simple effectiveness monitoring to explore factors that may influence their effectiveness, including the binding capacity and mineral makeup of the medium, pond drawdown time, redox potential, and real-time water chemistry and physical conditions.

The ultimate goal is to not only document effectiveness but to establish and publish best management practices for selecting iron minerals for future installations of similar filter systems. Monitoring over several seasons will reveal the chemical environments that promote filter effectiveness and will indicate the chemical conditions when effectiveness wanes or terminates. This monitoring effort will reveal geochemical information about the formation conditions of iron-phosphorous compounds within the filter systems, and the response of iron-phosphorous filters to water surges such as storm events. It will also help to characterize how the minerals change with depth, and whether the filter is active and effective over all depths.

We propose to add the following monitoring/research tasks:

1. Characterize initial binding capacity of filter media. Evaluate core samples of the media at four locations along the each filter bench to establish baseline conditions
2. Characterize pond water quality performance for two years.
3. Characterize iron mineral makeup within the core samples taken in task 1 to determine which iron minerals are bonding with phosphorous .

We propose to subcontract with Dr. Bill James of UW-Stout to undertake new monitoring task #1 and with Dr. Beth Fisher with the Department of Earth Sciences at the University of Minnesota, working through the Institute for Rock Magnetism, to undertake new monitoring task #3. The Commission would

partner with Dr. Fisher to expand the existing task #2 to add real-time monitoring to three ponds. Schematics for the real-time monitoring and the iron mineral makeup characterization prepared by Dr. Fisher are attached.

The work plan would further be modified to reduce the number of ponds retrofitted with filters from four to three. Furthermore, to test a wider variety of conditions, one of the filter benches would during the life of the research program be installed with iron-enhanced sand only, one with of the benches would be biochar- and iron-enhanced sand, and a third would be biochar- and iron-enhanced sand for half its width and iron-enhanced sand only for the other half. In this way we can compare and contrast an iron-enhanced filter with a biochar- and iron-enhanced sand filter, as well as each type of filter in the same pond exposed to the same water quality and other conditions. Following the monitoring program, assuming the project demonstrates that adding biochar to the filter medium significantly increased effectiveness, the Commission would add biochar to the iron-only filters.

The Commission proposes to reallocate a portion of the approved work plan grant funds for a portion of the lab costs for monitoring Dissolved Organic Carbon and a portion of the grant match funds set aside for constructing the fourth pond filter."

We have now received approval from the MPCA and EPA which have approved a revised work plan and budget. The text below is excerpted from the revised work plan. Following the text are the revisions to the Budget and a schematic by Dr. Fisher of the proposed pond filter sensors. When the project concludes these will be available to use elsewhere in the watersheds.

We proposed to the MPCA/EPA reallocating $20,800 from the lab analysis budget by significantly reducing sampling for Dissolved Organic Carbon, as well as providing an additional $28,878 of cash match from excess levy funds. Since the pond projects came in below budget and the fourth pond was not constructed, these funds are available. **Staff recommends that you authorize this reallocation for supplemental monitoring.**

Revisions to the Work Plan, as approved by MPCA and EPA. Additions are shown in underline.

Task 2A: Pre- and post-construction BMP monitoring.

Conduct inflow and outflow water sampling for *E. coli*, total phosphorus, orthophosphorus, total suspended solids, dissolved organic carbon and nitrate+nitrite concentrations. Sample pond filter media to evaluate binding capacity and monitor water quality in the pond filter bed-water interface. One of the initial TAC tasks will be reviewing the proposed monitoring plan and suggesting any additional or modified monitoring that may be helpful in understanding the BMP effectiveness.

a) Pond retrofits:
   1) Characterize initial binding capacity of filter media. Evaluate core samples of the media at four locations along the each filter bench to establish baseline conditions.
      a) Perform a lab equilibrium phosphorus assay to calculate the phosphorus partition coefficient.
      b) Conduct a total iron and total phosphorus extraction to measure the initial phosphorus and iron concentrations in the filter media
      c) Measure sediment dithionate-extractable phosphorus. This extraction measures the phosphorus adsorbed to oxidized metals that can be reduced using dithionate.
   2) Characterize pond water quality performance for two years.
      a) Take inflow, outflow, and in-filter concentrations grab samples bi-monthly May-September during baseflow conditions, and during four rain events each year.
         i) Total P, ortho-P, TSS, NO_3 + NO_2, and *E. coli.*
         ii) DOC samples will be taken twice over the two years to characterize baseline conditions and whether any change is occurring.
      b) Monitor water quality at the filter bed-water interface real-time using in-situ sensors.
         i) Water level, which indicates how long filter drains.
         ii) Conductivity before and after filtration to log the total ionic activity in the water, which is a proxy for nutrients, salts, and metals, all of with could be iron-forming factors in filter and reveal when nutrient pulses occur (early, mid, late hydrograph) and the conditions when the filter is being required to remove phosphorous.
         iii) Redox in filter at various depths. Reducing (Fe^{2+}) or oxidizing (Fe^{3+}) conditions of the filter are directly related to the oxidation state of iron and the iron forming conditions in the filter. This monitoring will indicate if organic matter buildup in the filter media is creating anoxic conditions. If anoxic conditions exist, the iron filter media may begin to release phosphorus instead of adsorb phosphorus.
         iv) DO before, in-filter, and after filtration to estimate microbial oxygen consumption/demand throughout the system
   3) Characterize iron mineral makeup within filter media to determine which iron minerals are bonding with phosphorous .
      a) Use an established series of geophysical magnetic techniques that do not require drying, pulverization, or chemical alteration, allowing us to preserve the sampled state of iron minerals.
         i) Measure total concentration of magnetic material in samples (taken in subtask 1) above).
         ii) Several analyses will be conducted to determine what types of iron minerals exist within the filter media. This will help determine what type of iron surfaces are available for phosphorus adsorption. Grain size will also be measured to determine the total surface area of iron minerals available to adsorb phosphorus. These

measurements will be taken at several depths and spatial locations in the filter media to assess spatial variability within the filter bench.

b) Manhole structures with filter inserts: pipe inflow and outflow will be monitored during six storm events per year for two years for the same parameters as above.

c) Shingle Creek: upstream and outflow from the diversion and treatment structure will be monitored during base flow bi-monthly May to September for two years for the same parameters.

Table 1. Revisions to Iron- and Bio-char Enhanced Sand Filters project budget, as approved by MPCA and EPA.

Objective	Cost Category	Unit Cost	Rate	Quantity	Grant	Cash Match	In-Kind Match	Budget Total
UW-Stout Laboratory analysis:								
Moisture content - Density	Lab Costs	15	ea	12	180.00	-	-	180.00
Dithionate-extractable P	Lab Costs	135	ea	12	600.00	-	-	1,620.00
Equilibrium and saturation phosphate concentration	Lab Costs	500	ea	12	6,000.00	-	-	6,000.00
Total Iron	Lab Costs	32	ea	12	384.00	-	-	384.00
	Mileage	Commissioner's Plan	ea	190	105.00	-	-	105.00
	Field Tech 2- Wenck	90	hr	19	1,710.00			1,710.00
	Consultant-James	100	hr	5	500.00			500.00
	Consultant -Fisher	200	hr	97.7	6,817.00	12,723.00		19,540.00
Sensor stations	Field equipment	5,045	ea	3		15,135.00		15,135.00
UWM Laboratory analysis:								
UWM IRM equipment fees	Lab Costs	3,479	ea	1	3,479.00			3,479.00
UMN Charfac instrument fees for Cryo/SEM/TEM	Lab Costs	750	ea	1	750.00			750.00
	Mileage	Commissioner's Plan	ea	500	275.00			275.00
Subtotal, Additions					**20,800.00**	**28,878.00**		**49,678.00**
Dissolved Organic Carbon	Lab Costs	50	ea	~~438~~	~~21900~~			~~$21,900.00~~
				22	1,100.00			1,100.00
					(20,800.00)			(20,800.00)
Modify OBJECTIVE 2 - TOTAL					$103,260.00	28,878.00		~~$103,260.00~~
								132,138.00
Modify TOTAL, Objectives 1-4	TOTAL				199,372.00	~~166,900.00~~		~~366,272.00~~
						195,778.00		395,150.00

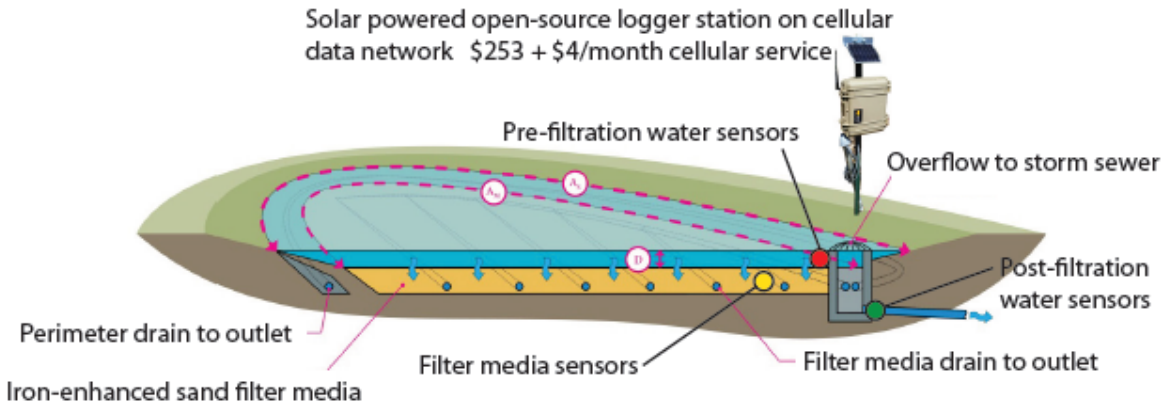
Real-time chemical monitoring

Chemical sensors in filter media will reveal chemical conditions that promote filter effectiveness, formation conditions of iron-phosphorous compounds, and geochemical responses to storms. Water level sensors will aid in timing water sample collection for laboratory analyses and enable estimates of water volume throughput. Water chemistry sensors will inform laboratory analyses to determine when effectiveness wanes or terminates, interpolate water chemical species throughput and retention, and calculate biological oxygen demand.

Logger station: Arduino-based logger provides flexible, user-defined logging rates. Logger can send data to internal data card and/or wirelessly to internet for a $4 monthly cellular data subscription. Solar-power recharges lithium ion battery daily. Weather-proof, lockable enclosure.

Filter media sensors: Dissolved oxygen sensor (YosemiTech) gives readings in saturated conditions. Moisture (Decagon 5TM) could be installed at multiple depths of interest (budget for one depth), and redox probe (Paleo Terra) can be built to custom specifications with multiple depths.

Water sensors: Water level sonar (Maxbotix) mounts on post or bridge above water. Three submerged sensors measure dissolved oxygen, turbidity, and conductivity (YosemiTech) are positioned pre- and post-filtration.



Filter media sensors:

Dissolved Oxygen	$665
Moisture	$180
Redox (4 depths)	$700

Total sensors for each retention pond type iron-phosphorous trap system $3,995

Water sensors:

- Dissolved Oxygen $665
- Turbidity (wiper option) $520-700
- Conductivity $180
- Water level sonar (above water on post or logger station) $120

Figure of filtration pond modified from Minnesota Stormwater Manual, Minnesota Pollution Control Agency.

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SHINGLE CREEK / WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION
MONTHLY COMMUNICATION LOG
August 2017

Date	From	To	SC	WM	Description
8-1-17	Dan Schmidt @ Sathre Bergquist	Ed Matthiesen	X		Requirements for a project on Dallas Ln N in Plymouth. Site is in BCWMC
8-8-17	Kyle Bemser (builder)	Ed Matthiesen	X		Review for a 1ac project split evenly with BCWMC in Plymouth
8-8-17	Andrew Hogg	Ed Matthiesen	X	X	Local plan update requirements
8-8-17	Jesse Struve	Ed Matthiesen		X	O&M for Cove at Northwoods WM 17-005
8-9-17	DNR MPARS	SC WMC	X		Work in Public Waters permit request for comments for culvert improvements on Twin Creek in Brooklyn Park
8-9-17	Rachel Olmanson, MPCA	SC WMC	X	X	Notice that Nick Gervino will be taking over from Rachel Olmanson as MPCA project manager for the Biochar project
8-9-17	SC WMC	BWSR	X		Submit Bass and Pomerleau Lakes Alum Treatment project to CWF
8-9-17	SCWM WMC	Weebly	X	X	Two year renewal of website hosting service
8-10-17	Mike Brandt @ Kimley-Horn	Ed Matthiesen	X		Stormwater requirements for proposed project in Arbor Lakes area in Maple Grove
8-10-17	Drew McGovern @ Hennepin County	Ed Matthiesen	X		Signalization plans on Hwy 81 @ HyVee in Robbinsdale
8-10-17	Chuck Holtman	SC WMC	X		Questions about the purpose of the monitoring at the pond at Humboldt and 49th. Replied with information about the biochar project and noted we will be posting informational signs soon.
8-15-17	Dennis Murray @ Interplan	Ed Matthiesen		X	Rules regarding proposed development in Champlin.
8-21-17	Dan Salzer @ Scannell Properties	Ed Matthiesen	X		Prior wetland work for Northland Business Center in Brooklyn Park re: SC1985-01
8-21-17	Joe Hashmall, resident on Upper Twin Lake	SC WMC	X		Email inquiry as to whether a recent algae bloom on Upper Twin Lake could be blue-green algae. Responded that we don't test for it, but that the conditions were right for it and some other lakes were experiencing blue-green blooms
8-22-17	Mark McGarvey @ SRF	Ed Matthiesen	X		Three Rivers Park District project at 639W for better boardwalks
8-24-17	William Risse @Merjent	Ed Matthiesen		X	Wetland permitting at Cove of North Woods in Brooklyn Park

Awards 2017

APWA's Awards Program recognizes outstanding individuals, groups and chapters representing the best in public works. In the April issue of the *APWA Reporter* we announced the recipients of the Excellence in Snow and Ice Control Award; in the May issue we announced the recipients of the Top Ten Public Works Leaders of the Year Award; and in the July issue we announced the recipients of the Public Works Projects of the Year Award. In this issue we announce the rest of this year's award winners, recognizing their achievements in excellence demonstrated by their vision, passion and delivery of service to their communities.

Myron Calkins Young Leader Award

The Myron Calkins Young Leader Award recognizes and encourages young APWA members who have demonstrated an initial commitment to the profession and the association and show potential for future growth within the association. The award promotes the concept that length of career does not necessarily indicate leadership abilities or potential for service.

Mark Ray, P.E.
Director of Public Works
City of Crystal, Minnesota

As the Director of Public Works for the City of Crystal, Minn., Mark Ray has embraced the need to actively promote public works within the city while overseeing the self-improvement of the department consistent with professional best practices. Shortly after starting with the City, he developed and rolled out an internal program called Public Works 2.0. The three main goals of Public Works 2.0 are: create an environment of public service; commitment towards self-improvement; and a respectful workplace. Ray worked to encourage and support staff that have demonstrated good public service and, as he puts it, "obsess on the good."

Soon after Ray started with Crystal, he learned that the Public Works Department did not have an asset management program, which was a major hindrance to operations and infrastructure management. He guided the staff through a selection process to identify the right package for Crystal Public Works. He then worked successfully to include funding for the new asset management program, and associated computer tablets, into the following year's budget. Since implementation, Public Works staff members have quickly adapted to the new program, using it regularly and commenting on how much time it has saved.

International Service Award

Established by the APWA International Affairs Committee, the APWA International Service Award recognizes an APWA member who has furthered the cause of international understanding and cooperation by becoming actively involved in exchanges, establishing a relationship with a public works entity from another country, or providing outstanding public works service on an international basis.

Mark Ray
Director of Public Works/City Engineer
7d

Grateful to be the recipient of APWA's Myron Calkins Young Leader Award for 2017. I would like to give special credit to **Jeannine Clancy** and **Anne Norris** for supporting me and my career growth in the public works profession.

APWA Reporter, August 2017 issue
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