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August 1, 2019

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, August 8, 2019**, 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 meeting on a proposed Minor Amendment to the Shingle Creek/West Mississippi Third Generation Watershed Management Plan. The regular meetings will resume immediately after the public meeting concludes.

Please email me at judie@jass.biz to confirm whether you or your Alternate will be attending the regular meeting.

Your meal choices are:

_____ Mango Chicken Salad, Bibb Lettuce, Grape Tomatoes, Cucumber, Mint, Scallion,
 Creamy Citrus Dressing (All Dressing will be served on the side), Freshly Baked Breads

_____ Creamy Tuna Salad Sandwich, Capers, Olive, Cornichon, Roasted Tomato, Lettuce,
 Tarragon, Shaved Fennel, Lemon Mayo, Focaccia, Kettle Chips

_____ Balsamic-Glazed Short Ribs, Roasted Garlic Potato Puree, Broccolini

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

_____ I will not be attending the regular meeting.

We must make final reservations by **5:00, Monday, August 5, 2018**. 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
 Metropolitan Council

Member Cites
 Wenck Associates

Troy Gilchrist

TAC Members

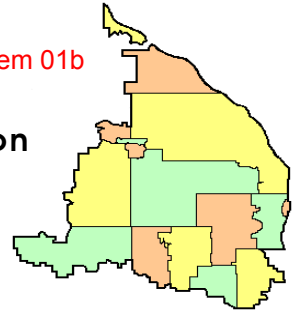
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Shingle Creek Watershed Management Commission



item 01b



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A combined regular meeting of the Shingle Creek and West Mississippi Watershed Management Commissions will be convened on Thursday, August 8, 2019, at 12:45 p.m. at Edinburgh USA, 8700 Edinbrook Crossing, Brooklyn Park, MN. 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.*

2. Reports.

- ✓ SC a. Treasurer's Report.**
- ✓ SC b. Approve Claims** - voice vote.
- ✓ WM c. Treasurer's Report.**
- ✓ WM d. Approve Claims** - voice vote.

Suspend regular meetings.

- SCWM 3. Public Meeting for Minor Plan Amendment to SCWM Third Generation Plan.
- SCWM a. Staff Report.*
- ✓ SCWM 1) Cost Share Policy.*
- SCWM b. Commission discussion.
- SCWM c. Open Public Meeting.
- SCWM 1) Receive Written Comments.
- SCWM 2) Receive Comments from Public.
- SCWM d. Close Public Meeting.
- SCWM e. Commission Discussion.
- ✓ SC f. Consider Resolution SC2019-02.*
- ✓ WM g. Consider Resolution WM2019-02.*

Resume regular meetings.

Open Forum.

4. Project Reviews.

- ✓ SC a. SC2019-010 IBEW Local Union 292 Corp. Office, Brooklyn Park.*

5. Watershed Management Plan.

- ✓ SCWM a. 2019 Capital Improvement Program.*
- ✓ SC 1) Crystal Lake Management Plan Feasibility Study and Cost Estimate.*

6. Water Quality.

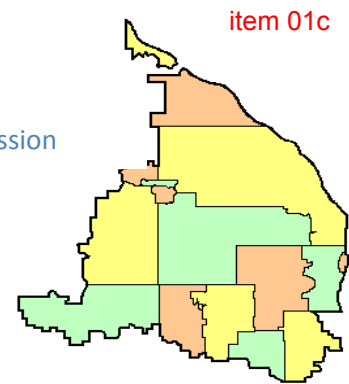
- SCWM a. Verification and Certification of Stormwater Manufactured Treatment Devices (MTDs).*
- SCWM b. Next TAC meeting –8:30 a.m., Thursday, August 22, 2019, Crystal City Hall.
- 1) July 25, 2019 TAC Meeting Minutes* - information only.

- 7. Education and Public Outreach.
 - ✓ SCWM a. Road Salt Symposium Sponsorship.*
 - SCWM b. Next WMWA meeting – 8:30 a.m., Tuesday, August 13, 2019, Plymouth City Hall.
- 8. Grant Opportunities and Updates.
 - ✓ SC a. Meadow Lake Management Plan CWF Grant.*
 - ✓ SC b. Shingle Creek Restoration Regent to Brooklyn Boulevard.*
 - ✓ SC c. Ryan Creek Assessment and Modeling Results.*
- 9. Communications.
 - SCWM a. Communications Log.*
- 10. Other Business.
- 11. Adjournment.

packet ** Emailed or available at meeting Z:\Shingle Creek\Meetings\Meetings 2019\08 Agenda Regular meeting.docx* In meeting
Previously transmitted * Available on website ✓ Item requires action



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MINUTES Regular Meeting July 11, 2019

(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 12:47 p.m. on Thursday, July 11, 2019, at Edinburgh, USA, 8700 Edinbrook Crossing, Brooklyn Park, MN.

Present for Shingle Creek were: David Vlasin, Brooklyn Center; John Roach, Brooklyn Park; Burton Orred, Jr., Crystal; Karen Jaeger, Maple Grove; Bill Wills, New Hope; Harold E. Johnson, Osseo; Andy Polzin, Plymouth; Wayne Sicora, Robbinsdale; Ed Matthiesen and Sarah Nalven, Wenck Associates, Inc.; Troy Gilchrist, Kennedy & Graven; and Judie Anderson, JASS.

Not represented: Minneapolis.

Present for West Mississippi were: David Vlasin, Brooklyn Center; Steven Chesney, Brooklyn Park; Gerry Butcher, Champlin; Karen Jaeger, Maple Grove; Harold E. Johnson, Osseo; Ed Matthiesen and Sarah Nalven, Wenck Associates, Inc.; Troy Gilchrist, Kennedy & Graven; and Judie Anderson, JASS.

Also present were: Mitch Robinson, Brooklyn Park; Todd Tuominen, Champlin; Mark Ray and Michelle LaPage, Crystal; Mark Lahtinen, Maple Grove; Megan Hedstrom and Jodi Taitt, New Hope; Leah Gifford, Katerina Meybaum, and Alex Larson, Plymouth; and Marta Roser, Robbinsdale.

II. Agendas and Minutes.

Motion by Willis, second by Jaeger to approve the revised **Shingle Creek agenda**.* *Motion carried unanimously.*

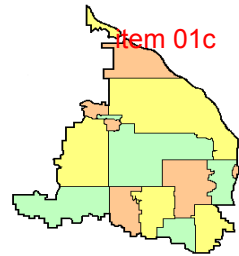
Motion by Johnson, second by Chesney to approve the revised **West Mississippi agenda**.* *Motion carried unanimously.*

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

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

III. Finances and Reports.

A. Motion by Orred, second by Jaeger to approve the **Shingle Creek July Treasurer's Report**.* *Motion carried unanimously.*



Motion by Orred, second by Roach to approve the **Shingle Creek July claims.*** Claims totaling \$72,779.18 were *approved by roll call vote*: ayes – Vlasin, Roach, Orred, Jaeger, Wills, Johnson, Polzin, and Sicora; nays – none; absent – Minneapolis.

B. Motion by Butcher, second by Chesney to approve the **West Mississippi July Treasurer's Report.*** *Motion carried unanimously.*

Motion by Jaeger, second by Johnson to approve the **West Mississippi July claims.*** Claims totaling \$16,417.40 were *approved by roll call vote*: ayes – Vlasin, Chesney, Butcher, Jaeger, and Johnson; nays – none.

IV. Open Forum.

A. Jaeger informed the Commissioners of an article in the July 11 issue of the *StarTribune*, “Meet the scientists working to stop spread of zebra mussels in state.”

B. LaPage, Taitt, Larson, and Meybaum were introduced. LaPage and Taitt are residents in the watershed; Larson and Meybaum are interning at the City of Plymouth.

C. Roach announced his resignation from the Commission. He is moving out of the City of Brooklyn Park and will be replaced by a resident of Brooklyn Park per the city’s requirements.

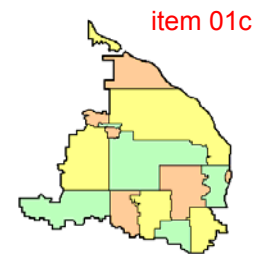
V. Project Reviews.

A. **SC2019-009 Lake Road Apartments, Robbinsdale.*** Demolition of an existing building and construction of a new apartment building with parking lot on 3.95 acres located at 4600 Lake Road. Following development, the site will be 50.6 percent impervious with 2.0 acres of impervious surface, an increase of 0.7 acres. A complete project review application was received on May 29, 2019.

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 - 85% TSS removal and 60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

Runoff from the apartments and southern portion of the parking lot is proposed to be routed to an underground iron-enhanced sand filtration basin. Before entering the filtration basin, the water will pass through a 4’ sump with a SAFL Baffle insert to provide pretreatment. Additionally, once in the basin, a drawdown riser will provide additional TSS removal. The runoff will then percolate 98 horizontal feet through the filter before exiting the basin. Runoff from the northern portion of the parking lot is proposed to be routed through a treatment filter manhole (outfitted with a Kraken membrane filter to remove 85% TSS and 72% TP at 0.45 cfs) before joining with the water exiting the filtration basin. Both subcatchments will ultimately drain to Lower Twin Lake, which is adjacent to the property. Runoff from the pool, patio, and lakeside trails is proposed to be treated via overland flow over amended topsoil before draining directly into the lake. A small amount of runoff from the eastern side of the site (subcatchment is 0.004 acres and is not proposed to be affected by construction) will be treated via overland flow and then drain to the adjacent property to the east. The applicant meets Commission water quality treatment requirements.

Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. The majority of runoff (runoff from 1.66 acres of impervious surface, including



the apartment buildings and the central parking lots) will be routed to an underground iron-enhanced sand filtration basin, which reduces runoff rates. The applicant meets Commission rate control requirements.

Commission rules also require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 2.0 acres, requiring infiltration of 7,260 CF within 48 hours. However, the high seasonal groundwater elevation onsite makes 3 feet of separation between an infiltration practice and groundwater impossible, so filtration of 7,260 CF is instead required. The applicant proposes to route runoff to an underground filtration basin and a treatment filter manhole that have the capacity to filtrate the required volume within 48 hours. The applicant meets Commission volume control requirements.

A wetland site investigation was performed on site on April 19, 2019, and the boundaries of two wetlands were delineated. The Commission is LGU for WCA administration in Robbinsdale and approved this delineation on May 30, 2019 (after boundary revision). Wetland buffers a minimum of 20 feet in width and averaging 30 feet in width are provided, although a firepit and gravel path are proposed inside the buffer. The applicant meets Commission wetland requirements.

Lower Twin Lake is a DNR Public Water on the southern edge of this site. Until recently, this lake exceeded state eutrophication standards and was on Minnesota's list of impaired waters. However, in 2014 the lake was delisted due to improved water quality. The proposed project is not anticipated to cause changes to the water quality on Lower Twin Lake. The applicant meets Commission Public Waters requirements.

There is FEMA 100-year floodplain on the southern edge of this site, adjacent to Lower Twin Lake. The applicant proposes 197.3 CY of floodplain fill on the site and 266.8 CY of floodplain cut on the site for a net increase of 69.5 CY of floodplain. The low floor elevation of the proposed building is 857.2 which is at least one foot higher than the FEMA 100-year floodplain elevation of 856.1. The floodplain cut is placed adjacent to an existing building offsite, however, the building has a low floor elevation of 857.8 which is greater than one foot higher than the FEMA 100-year floodplain elevation. The applicant meets Commission floodplain requirements.

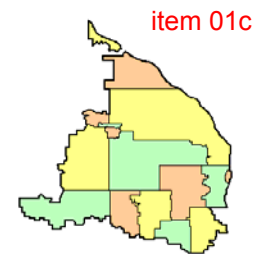
The erosion control plan includes a rock construction entrance, perimeter silt fence/biolog, silt fence surrounding detention ponds/infiltration basins, inlet protection, rip rap at inlets, slope checks, erosion blankets provided on steep slopes, double row silt fence/biology surrounding wetlands and the lake, and native seed specified on the pond slopes. The erosion control plan meets Commission requirements.

A public hearing on the project will be conducted on July 19, 2019 as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

A draft Operations & Maintenance (O&M) agreement between the applicant and the City of Robbinsdale was provided.

Motion by Orred, second by Sicora to advise the City of Robbinsdale that Project Review 2019-009 is approved subject to receipt of a copy of a completed O&M agreement between the applicant and the City for all stormwater facilities on the project site. (A draft agreement was provided with this application.) *Motion carried unanimously.*

B. WM2019-005: Data Recognition Center Addition, Brooklyn Park.* Demolition of existing parking lot and construction of building addition and parking on 10.7 acres located at 8900 Wyoming



Avenue. Following development, the site will be 49.3 percent impervious with 5.3 acres of impervious surface, an increase of 1.5 acres. A complete project review application was received June 11, 2019.

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 - 85% TSS removal and 60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

Runoff from the new parking lot and building (3.0 ac impervious surface on a 4.1 ac drainage area) is proposed to be routed to an infiltration basin in the northern portion of the site, which has the capacity to infiltrate 1.3 inches of runoff. Pretreatment for the infiltration basin will be provided by a sump with 6' depth and 6' diameter and a SAFL Baffle insert. Because the site is located in the high-risk area of a DWSMA (drinking water supply management area) the applicant proposes to place into the infiltration basin 24 inches of a 20% organic/80% sand soil mix. This will provide adequate water filtration prior to infiltration. The infiltration basin then drains into the pond to the east of the site, which will provide additional water quality benefit. The applicant meets Commission water quality treatment requirements.

Commission rules require that site runoff be limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Runoff from the new 3.0 acres of impervious surface is proposed to be routed to an infiltration basin. Runoff from the basin will then be routed to a pond to the east of the site in the northern portion of the site. Runoff from the existing parking lot and building will be routed off site to Wyoming Avenue without treatment. Runoff from the southern subcatchment will be routed south offsite to 89th Ave without treatment. Runoff from the northern subcatchment will be routed north offsite to an existing low area. The applicant meets Commission rate control requirements.

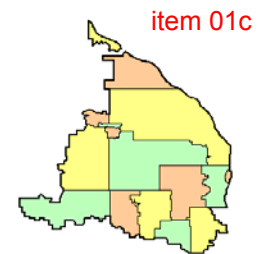
Commission rules also require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 3.0 acres, requiring infiltration of 10,890 CF within 48 hours. The applicant proposes to route runoff to an infiltration basin that has the capacity to infiltrate the provided volume within 48 hours. The applicant meets Commission volume control requirements.

The National Wetlands Inventory and the Hennepin County Wetlands Inventory identify multiple probable wetlands on the property. However, the construction limits do not overlap with these probable wetlands. The applicant meets Commission wetland requirements.

There are no Public Waters on this site. The applicant meets Commission Public Waters requirements. There is no floodplain on this site. The low floor elevations of the buildings are at least two feet higher than the high-water elevation of the infiltration basins according to Atlas 14 precipitation. The applicant meets Commission floodplain requirements.

The erosion control plan includes rock construction entrances, perimeter silt fence, silt fence surrounding infiltration basins, inlet protection, rip rap at inlets, and native seed specified on the pond slopes. The erosion control plan meets Commission requirements.

In a June 27, 2019 email to Mitch Robinson at the City of Brooklyn Park it was shown that a public hearing on the project is not required as the site is in a non-residential area. The applicant meets Commission public notice requirements.



Motion by Jaeger, second by Chesney to advise the City of Brooklyn Park that Project Review WM2019-005 is approved subject to the following two conditions:

1. Perform post-construction double ring infiltrometer test to verify 0.45 in/hr infiltration rate of basin.
2. Provide a completed O&M agreement between the applicant and the City for all stormwater facilities on the project site. (A draft agreement was provided with this application.)

Motion carried unanimously.

C. WM2019-006 Pemberly, Brooklyn Park.* Construction of a residential townhome development on 14.9 acres located at 5300 94th Avenue North. Following development, the site will be 41 percent impervious with 14.2 acres of impervious surface, an increase of 14.1 acres. A complete project review application was received June 11, 2019.

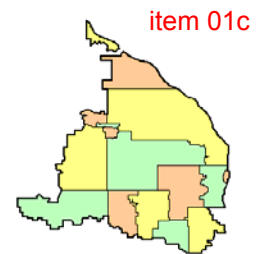
To comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 85% TSS removal and 60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

Runoff from the site is proposed to be routed through a series of three infiltration basins, ending with the largest basin in the southeast corner of the site. This basin then discharges into existing City storm sewer associated with Regent Avenue. Prior to entering each infiltration basin, runoff will be pretreated using three sumps of 4 ft. depth and 4 ft. diameter, each with 4 ft. SAFL Baffle inserts. Because the site is located in a Drinking Water Supply Management Area (DWSMA), the applicant proposes to add 3 inches of compost to the bottom of each infiltration basin and then till the top 12 inches of soil. This will provide adequate water filtration prior to infiltration. The applicant meets Commission water quality treatment requirements.

Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Runoff from the site will be routed to a series of three infiltration basins, which slow the rate of runoff before discharging to the City storm sewer. The series of infiltration basins begins in the northwest portion of the site (9.2 acres total with 2.4 acres impervious surface), where runoff will be routed to an infiltration basin in the northwest corner of the site. Discharge from this basin, in addition to runoff from the northeast portion of the site (3.6 acres total with 1.3 acres of impervious), will drain to the infiltration basin located in the northeast corner of the site. The discharge from this northeast basin, in addition to discharge from two offsite infiltration basins and the remaining part of the site (10.4 total acres with 3.8 acres of impervious) will discharge to the infiltration basin in the southeast. The applicant meets Commission rate control requirements

Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 6.0 acres, requiring infiltration of 0.49 acre-feet within 48 hours. The applicant proposes to route runoff through a series of infiltration basins which have the capacity to infiltrate the required volume, meeting the Commission volume control requirements.

The Hennepin County Wetlands Inventory identifies two potential wetlands on the site. One potential wetland is 7.27 acres with 4.86 acres on the site and the other is 0.15 acres, with just 0.03 acres on the site. Although Hennepin County identifies these areas as potential wetlands, it is evident that



these areas have been used recently as cultivated cropland. There are no jurisdictional wetlands on site. The applicant meets Commission wetland requirements.

There are no Public Waters on this site. The applicant meets Commission Public Waters requirements. There is no floodplain on this site. The low floor elevations of the buildings are at least two feet higher than the high-water elevation of the infiltration basins according to Atlas 14 precipitation. The applicant meets Commission floodplain requirements.

The erosion control plan includes a rock construction entrance, perimeter silt fence, silt fence surrounding infiltration basins, inlet protection, rip rap at inlets and outlets, rip rap and vegetation on emergency overflows, slope checks, and native seed specified on the pond slopes. The erosion control plan meets Commission requirements.

A public hearing on the project was conducted on July 10, 2019 as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

Motion by Chesney, second by Johnson to advise the City of Brooklyn Park that Project Review WM2019-006 is approved subject to the following two conditions:

1. Provide a complete O&M agreement between the applicant and the City of Brooklyn Park for all stormwater facilities on the project site. (A draft agreement has been provided.)
2. Demonstrate by post-construction double ring infiltrometer or witness test that the site can meet the design infiltration rates.

Motion carried unanimously.

VI. Watershed Management Plan - Minor Plan Amendment.*

The Commissions and the Technical Advisory Committee (TAC) have been in ongoing discussions regarding two possible amendments to the Watershed Management Plan and CIP.

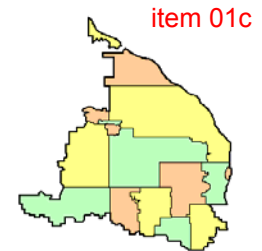
The first amendment would revise the CIP cost sharing policy to include funding nonstructural Best Management Practices (BMPs) such as upgrading to regenerative air street sweepers. The second would be to specify that the 2020 generic Lake Internal Load project on the CIP will be the Meadow Lake Management Plan.

A proposed Minor Plan Amendment* was included in the meeting packet for consideration. The proposed Cost Share Policy for Capital Improvements had previously been provided to the Commissions' attorney, BWSR, and Hennepin County. To date, no comments have been received from those parties. Assuming there are no objections from them, Staff recommends proceeding with the Minor Plan Amendment process by setting August 8, 2019 as the public meeting at which the amendment will be heard and making the appropriate notifications.

The proposed minor plan revision is shown below as additions (underlined) or deletions (~~strike outs~~).

Section 4.3.7 and Appendix F of the Shingle Creek WMC Third Generation Plan are hereby revised as follows:

Option 1 - Cost Share Policy. For capital ~~projects~~ improvements that have been identified in a Commission-adopted or approved TMDL or management plan or as approved by the



Commissions for cost participation in accordance with the Commissions' Cost Share Policy for Capital Improvements. ~~Projects~~ Improvements constructed to meet Commission development or redevelopment requirements are not eligible for cost participation.

1. The Commission's share will be 25 percent of the final cost of the ~~project~~ improvement, with a minimum share of ~~\$25,000~~ \$50,000.

Table 4.5. Shingle Creek WMC Third Generation Plan Implementation Plan is hereby revised as follows:

Action	2018	2019	2020	2021	2022
Lake Internal Load Improvement Project			200,000		200,000
-Commission Contribution			200,000		200,000
-Local Contribution			0		0
<u>Meadow Lake Management Plan</u>			300,000		
<u>-Commission Contribution</u>			300,000		
<u>-Local Contribution</u>			0		

A. The Cost Share Policy for Capital Improvements* is a new document, but much of the proposed policy is already in place in memos and guidance documents and is how the Commissions have been operating to date. This is the first time those operating policies have been gathered into a formal policy. What is new is most of the second paragraph under Capital Improvements, and the effectiveness monitoring requirements in the guidelines section. The proposed Minor Plan amendment would modify the plan simply to state that the Commissions will implement the CIP using the Cost Share Policy.

It was suggested that Guideline 4 of the proposed Cost Share Policy be iterated in the Criteria section of the document as well.

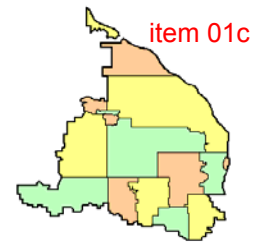
B. Meadow Lake Management Plan. As the Commissions have done previously, the second part of the Minor Plan Amendment would add specificity to the generic 2020 Lake Internal Load project to be the proposed Meadow Lake Management Plan. While the levy for this project could not be certified until 2021, revising the CIP now will be beneficial for the upcoming Clean Water Fund grant application.

With the suggested revision to the proposed Cost Share Policy, motion by Wills, second by Sicora to approve the proposed Minor Plan Amendment and set the Commission's August 8, 2019 meeting as the public meeting to consider the amendment. *Motion carried, Vlasin voting nay.*

With the suggested revision to the proposed Cost Share Policy, motion by Jaeger, second by Chesney to approve the proposed Minor Plan Amendment and set the Commission's August 8, 2019 meeting as the public meeting to consider the amendment. *Motion carried, Vlasin voting nay.*

VII. Water Quality.

The next **Technical Advisory Committee (TAC) meeting** is scheduled for 8:30 a.m., Thursday, July



25, 2019, at Crystal City Hall. The June 21, 2019 TAC meeting minutes* are included in the meeting packet for informational purposes.

VIII. Education and Public Outreach.*

A. Watershed PREP and Education and Outreach Events. Educators have finished up spring classroom visits. The educators are finding that schools are tending to schedule them more in the fall semester than in the spring semester. A reminder that the educators are available to table at city and school events, contact Amy Juntunen at amy@jass.biz. The educators are still researching options to make a short, 3-5 minute promotional video for Watershed PREP for use both in marketing to schools in the four watersheds as well as informing other watershed organizations about the program.

B. Website/Social Media. The group will be reviewing the WMWA website to refresh and update content. Any input is appreciated. westmetrowateralliance.org/. The website Google Analytics for June 2019 are attached to Staff's memo,* as are the Facebook insights for the last 30 days for both Shingle Creek and WMWA and the WMWA Twitter metrics. Facebook Impressions are the numbers of times a post is viewed in a feed, Engagement is an action - a click, comment, share, or reaction.

C. Special Project Discussion. Each year the four watersheds budget \$8,000 to undertake a large project. The group continues to discuss purchasing a copy of the Blue Thumb native plant root puller display, which is extremely popular among both adults and youth. The displays educate users about one of the many features of native plants, their root lengths compared to turf grass and ornamental plants. This makes them ideal for stabilizing streambanks and lakeshores and for promoting infiltration by creating deep root channels. The display allows the user to pull out a string that is as long as the roots are deep.

D. WMWA is discussing reallocating money from the administrative and special projects budgets to contract with a **part-time coordinator** to provide enhanced general education and coordination across the four member watersheds. Some of the potential activities include coordinating chloride management education and outreach to private entities; restarting the lake association summit; coordinating with the Master Water Stewards in the area; and enhanced outreach to the media.

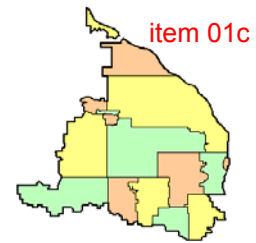
E. Blue Thumb is a valuable source of information, including educational materials, how-to guides, a plant finder tool, and more. <http://www.blue-thumb.org/public-resources/>

F. Ten Things Brochure. The brochure has been completed and printed and WMWA has received about 10,000 copies printed at no charge by Hennepin County. The brochure can be found at: shinglecreek.org/uploads/5/7/7/6/57762663/2019_ten_things_final.pdf. Copies can be requested from the administrative office. Brochures are also being distributed to member cities through their TAC representatives.

G. The **next WMWA meeting** is scheduled for 8:30 a.m., Tuesday, August 13, 2019, at Plymouth City Hall.

IX. Grant Opportunities and Updates. The Commissioners received updates* on the following:

A. Notice of deadline for **BWSR Clean Water Fund Competitive Grant applications*** - September 9, 2019.



The **Meadow Lake Management Plan*** would be eligible for this program. Preliminary estimate of the cost of the project is about \$270,000. The estimated grant request would be \$216,00; the Commission's match \$54,000. The project would run spring-fall 2020 through spring-fall 2023. The Technical Advisory Committee will discuss this project at its July meeting. Staff is requesting authorization to expend \$5,000 from the Closed Project Account to prepare the grant application and feasibility report for review at the August meeting.

Motion by Orred, second by Johnson to table this request pending determination that the application can be prepared with Closed Project funds. *Motion carried unanimously.*

Upon determination by Attorney Gilchrist that Closed Project funds can be used for this purpose, motion by Jaeger, second by Vlasin to remove this item from the table. *Motion carried unanimously.*

Motion by Wills, second by Vlasin to authorize Staff to prepare the grant application for the Meadow Lake Management Plan using up to \$5,000 from the Closed Project account. *Motion carried unanimously.*

B. The Commissioners received an update on the **Bass-Pomerleau Lakes alum treatment** which occurred on May 15. A copy of an article by Daniel Ackerman about the treatment appeared in MPR News, <https://www.mprnews.org/story/2019/07/05/algae-lake-chemical-treatment> and is included in the meeting packet.

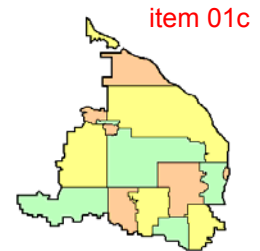
C. The Section 319 grant-funded **SRP Reduction Project** is now underway. Nalven made a presentation at the meeting about the project purpose and details about the project design.

Wetlands that have received many decades of nutrient and sediment-rich runoff from agricultural and developed land uses are at risk of transforming from nutrient sinks to nutrient sources. The hydrology of these wetlands has also often been altered by inflow from increased runoff volumes and ditching for drainage and flood prevention. This can have the effect of alternately flooding and drying out the wetland soils, making them more susceptible to sediment nutrient release under anoxic conditions. The discharge from these altered wetlands is often high in SRP (soluble reactive phosphorus) and low in dissolved oxygen.

In the Shingle Creek watershed, where nearly all of the remaining wetlands are highly disturbed and altered, these high concentrations of SRP can negatively impact downstream waterbodies. In this watershed, a number of wetlands discharge into conveyances to the ten nutrient-impaired lakes. There are also several large wetlands through which flow Shingle Creek or its tributaries. Both Shingle Creek and its primary tributary, Bass Creek, are impaired streams for DO and biotic integrity.

This SRP Reduction Project targets two high-priority locations to test and implement SRP reduction filters -- the outlet of wetland 639W and the outlet of Cherokee Wetland in Bass Creek Park in Brooklyn Park. (Wetland 639W is located in the cities of Crystal, Brooklyn Park, and Brooklyn Center; the outlet in the city of Crystal).

Phase 1, the testing phase, will be at the Wetland 639W outlet site. The overflow outlet is a three-sided weir, the interior of which is filled with limestone rock. Flow over the weir filters down through the limestone and into a small channel that outlets back into the wetland below the primary



outlet weir. The limestone will be excavated from the weir box, which will be modified to provide three temporary chambers to test the three different media. Each chamber will be fitted with an outflow pipe to measure the volume of flow through each chamber and to allow for grab sampling for water quality.

In Phase 2 of the project at the Cherokee Wetland outlet site, the treatment device will be a constructed metal box containing the filter medium, placed directly in Bass Creek just downstream of the outlet in Bass Creek Park.

Nalven answered many questions and will keep the Commissioners and TAC members updated on the project.

X. Communications.

June Communications Log.* Matthiesen answered questions regarding the Highway 252 project. No items required action.

XI. Other Business.

The terms of representatives from Champlin and Minneapolis expired January 31, 2019. Staff have not received updated appointments as of this date.

XII. Adjournment. There being no further business before the Commissions, the joint meeting was adjourned at 2:28 p.m.

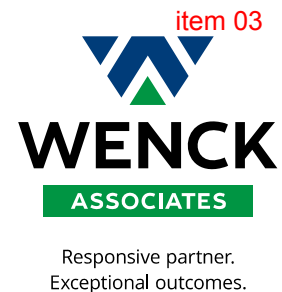
Respectfully submitted,

A handwritten signature in black ink, reading 'Judie A. Anderson'.

Judie A. Anderson
Recording Secretary
JAA:tim

Z:\Shingle Creek\Meetings\Meetings 2019\07 Regular Meeting Minutes.doc

Technical Memo



To: Shingle Creek/West Mississippi WMO Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: August 2, 2019

Subject: Proposed Minor Plan Amendment Public Meeting

Recommended Commission Action	Discuss Minor Plan Amendment. Each Commission should by motion adopt the attached Cost Share Policy and by resolution adopt the amendment.
--	--

The Shingle Creek and West Mississippi Third Generation Watershed Management Plan and Capital Improvement Programs (CIP) are proposed for a Minor Plan Amendment (MPA). The Plan would be revised to adopt the CIP cost sharing policy to include funding nonstructural Best Management Practices. The revision will also specifies that the 2022 generic Lake Internal Load project on the CIP will be the Meadow Lake Management Plan and reschedules it to 2020.

The Commissions initiated a MPA on July 11, 2019. Notice was sent to the member cities, county, and reviewing agencies, and published as required by statute and the Plan. The purpose of the August 8, 2019 Commission public meeting is to discuss the proposed minor plan amendment and any comments received prior to or at a public meeting. (Note this is not a formal public hearing.) After that discussion, each Commission may consider a resolution adopting the MPA contingent on County Board approval of the Minor Plan Amendment, which will be heard at a County Board hearing in November 2019.

Cost Share Policy for Capital Improvements. The attached Cost Share Policy for Capital Improvements is a new document, but much of the proposed policy is already in place in memos and guidance documents. This is the first time those operating policies have been gathered into a formal policy. What is new is most of the second paragraph under Capital Improvements, and the effectiveness monitoring requirements in the guidelines section. The proposed Minor Plan amendment would modify the plan simply to state that the Commissions will implement the CIP using the Cost Share Policy.

Meadow Lake Management Plan. As the Commissions have done several times now, the second part of the Minor Plan Amendment would move the 2022 generic project Lake Internal Load project to 2020 and specify that it would be the proposed Meadow Lake Management Plan.

Recommended Commission Action

The proposed minor plan amendment is attached. BWSR has responded that they have no comments, and Hennepin County has reviewed and approved it. The Commissions should each adopt the attached Cost Share Policy and respective resolution adopting the proposed amendment.

**Notice of Minor Plan Amendment
Shingle Creek and West Mississippi Watershed Management Commissions**

The Shingle Creek and West Mississippi Watershed Management Commissions propose to amend their joint *Third Generation Watershed Management Plan* to adopt a revision to the Plan and to the Capital Improvement Program (CIP). This revision revises capital project cost share policies and reschedules and specifies the location of one project on the Shingle Creek CIP.

The proposed minor plan revision is shown as additions (underlined) or deletions (~~strike-outs~~).

Section 4.3.7 and Appendix F of the Shingle Creek WMC Third Generation Plan are hereby revised as follows:

Option 1 - Cost Share Policy. For capital ~~projects~~ improvements that have been identified in a Commission-adopted or approved TMDL or management plan or as approved by the Commissions for cost participation in accordance with the Commissions' Cost Share Policy for Capital Improvements. ~~Projects~~ Improvements constructed to meet Commission development or redevelopment requirements are not eligible for cost participation.

1. The Commission's share will be 25 percent of the final cost of the ~~project~~ improvement, with a minimum share of ~~\$25,000~~ \$50,000.

Table 4.5. Shingle Creek WMC Third Generation Plan Implementation Plan is hereby revised as follows:

Action	2018	2019	2020	2021	2022
Lake Internal Load Improvement Project					<u>200,000</u>
-Commission Contribution					<u>200,000</u>
-Local Contribution					<u>0</u>
<u>Meadow Lake Management Plan</u>			<u>300,000</u>		
<u>-Commission Contribution</u>			<u>300,000</u>		
<u>-Local Contribution</u>			<u>0</u>		

Technical Memo



Responsive partner.
Exceptional outcomes.

To: Shingle Creek/West Mississippi WMO Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: August 2, 2019

Subject: 2019 Capital Improvement Program and Feasibility Studies

Recommended Commission Action

Receive the feasibility studies for proposed 2019 capital projects. Decide which projects to proceed. Call for a Public Hearing on September 12, 2019 to consider some or all the proposed projects and proposed levies.

Earlier this year the Commissions undertook a Minor Plan Amendment to revise the Capital Improvement Program (CIP) for 2019 to specify that the 2020 lake internal load project would be the Crystal Lake Management Plan. 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 you desire to move forward. Attached to this memo are feasibility summaries for the proposed capital projects. Tables 1 and 2 below show the projects under consideration and their funding.

Table 1. Shingle Creek 2019 CIP Projects (2020 levy).

Project	Total Estimated	City/ Private	Grant	Commission Share
Cost share (city projects)	\$200,000	\$100,000	0	\$100,000
Crystal Lake Management Plan	\$370,506	\$0	0*	\$370,500
Partnership cost share (private projects)	\$100,000	\$50,000	0	\$50,000
Subtotal	\$670,506	\$150,000	\$ 0	\$520,500
5% additional for legal/admin costs				26,025
Subtotal				546,525
TOTAL LEVY (101% for uncollectable)				\$551,990

*The Commission has preliminarily been awarded a \$216,066 Section 319 grant from the MPCA, which is being processed for final approval at the EPA.

Project	Total Levy
Cost share (city projects)	\$106,050
Crystal Lake Management Plan	\$392,915
Partnership cost share (private projects)	\$53,025
Total	\$551,990

Table 2. West Mississippi 2019 CIP Projects (2020 levy).

Project	Total Estimated	City/ Private	Grant	Commission Share
Cost share (city projects)	\$100,000	\$50,000	0	\$50,000
Subtotal	\$100,000	\$50,000	\$ 0	\$50,000
5% additional for legal/admin costs				2,500
Subtotal				52,500
TOTAL LEVY (101% for uncollectable)				\$53,025

Project	Total Estimated
Cost share (city projects)	\$53,025
Total	\$53,025

Shingle Creek Projects

Commission Fund for Retrofit Cost Share (City Projects). This annual project provides cost sharing to retrofit smaller BMPs. The TAC developed policies and procedures to administer these funds, and makes recommendations to the Commissions on which projects should be funded. Brooklyn Park, Brooklyn Center, Minneapolis, Crystal, Robbinsdale, and New Hope have all received matching funds for small voluntary BMP projects. The annual levy is \$100,000, to be matched at least one-to-one by a member city or cities. Applications are open until funds are depleted. Potential cost-share projects for 2020 will be solicited in November-December 2019, but the program is open until all funds have been used.

Priority BMP Retrofits (Private Partnership Projects). One project has been funded in 2017 (Phase 1 of Autumn Ridge). The annual levy is \$50,000, and funding does not require a match. Phase 2 of Autumn Ridge is expected to be submitted this summer. Potential cost-share projects are open year round until the funds are depleted.

Crystal Lake Management Plan. This project is rough fish and aquatic vegetation management, alum treatments applied over two years, and lake monitoring. The Shingle Creek Commission has previously received a Feasibility Study for this project at the time the Section 319 grant application was approved in April 2019. It is attached for reference. Robbinsdale is the lead city on this project.

West Mississippi Projects

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 2015 or 2016 to date.

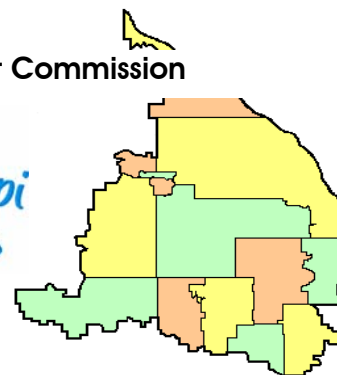
Staff Recommendation

Receive the staff report, and call for a public hearing on the proposed projects to be held on September 12, 2019. At that time the Commissions will also certify levies to Hennepin County, and authorize the execution of cooperative agreements with the lead cities to contract the ordered projects.

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3235 Fernbrook Lane N • Plymouth, MN 55447
 Tel: 763.553.1144 • Fax: 763.553.9326
 Email: judie@iass.biz • Website: www.shinglecreek.org



Shingle Creek and West Mississippi Watershed Management Commissions Cost Share Policy for Capital Improvements Adopted 8/8/19

The Shingle Creek and West Mississippi Watershed Management Commissions share the cost of watershed-priority capital improvements and demonstration projects through the Commissions' Capital Improvements Program (CIP). High-priority watershed capital improvements are those activities that go above and beyond general or routine city management activities to provide a significant improvement to the water resources in the watershed. This Cost Share Policy establishes the basis for and amount of Commission contribution to qualifying projects.

Capital Improvements

High priority activities that result in Wasteload Allocation reductions toward a TMDL, help solve a regional flooding problem, or are otherwise determined by the Technical Advisory Committee (TAC) and Commissions to be high priority are eligible to receive up to 25 percent of the final improvement cost in Commission cost-share, funded by the county ad valorem tax levied on all property in the watershed. The balance of the improvement cost, less any grant or other funds received, must be funded by the local government(s) participating in or benefiting from the improvement. *The Commissions' minimum share is \$50,000. There is no maximum share; the maximum is limited by the amount the Commission is willing/able to certify as a levy.*

Eligible improvements include both structural and nonstructural activities. Routine maintenance or localized improvements are not eligible for cost share. Thus, a local street flooding issue is not of watershed priority, but a local flooding issue that creates significant erosion and sedimentation impacting a downstream resource may be a watershed priority. Capital equipment that has been demonstrated to reduce loading of TMDL pollutants such as TP, TSS, or chloride, may be eligible if: 1) the equipment is new or an upgrade and not simply a replacement of existing equipment; 2) the equipment is to allow the member city to undertake a new or expanded load-reducing activity; 3) use of the equipment for the load reductions is supported by academic or governmental research; and 4) the city agrees to document for at least five years the effectiveness of the capital equipment in achieving the load reductions. The demonstrated effectiveness, or lack thereof, of a particular item of capital equipment in achieving load reductions may affect the eligibility of such equipment for funding in the future. Examples of equipment purchase that may be eligible include equipment to begin or expand pre-wetting or anti-icing, or adding or upgrading to a regenerative air street sweeper. Only the incremental cost of such an upgrade would be eligible for cost share.

The Commissions have developed a set of criteria by which proposed activities may be scored, with only those that pass screening questions advancing to a prioritization stage by the Technical Advisory

Committee (TAC). Prioritization will be based on cost effectiveness, amount of improvement achieved, and regional significance.

Activities of Watershed-Wide Benefit

The capital cost of activities addressing TMDL Load Allocation reductions and projects of watershed-side benefit may be funded 100 percent by the ad valorem tax levy. These types of activities include but are limited to:

- Lake Internal Load Reduction Actions
 - Alum treatments
 - Rough fish management
 - With Hennepin County and DNR concurrence, initial, whole-lake invasive aquatic vegetation management treatments performed for water quality, excluding those for recreation, aesthetics, or navigation
- Stream Internal Load Reduction Activities
 - Channel narrowing or creation of a low-flow channel to reduce sediment oxygen demand
 - Projects to increase DO at wetland outlets
- Non-TMDL Parameters (actions required by TMDLs not associated with a pollutant for which a numerical reduction of improvement can be specified)
 - Restoration or enhancement of in-stream habitat
 - Increases in channel roughness to enhance DO
 - Removal or bypass of barriers to connectivity
 - Streambank restoration below the top of the bank
- Other Watershed Benefiting Improvements as Recommended by the TAC

Guidelines

1. Capital improvements must be for water quality or ecological integrity improvement, and must be for improvement above and beyond what would be required to meet Commission rules or common practice. Only the cost of “upsizing” a BMP above and beyond is eligible.
2. Preexisting routine maintenance activities are not eligible.
3. The effectiveness of any proposed nonstructural improvements must be supported by literature or academic/practitioner experience and documentation.
4. The applicant must agree to document the effectiveness of any proposed nonstructural improvements and report those results to the Commissions for at least five years.
5. The standard Commission/Member Cooperative Agreement will be executed prior to BMP implementation. This Agreement will specify the type and adequacy of effectiveness reporting.

SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION
STATE OF MINNESOTA

RESOLUTION NO. 2019-02

RESOLUTION ADOPTING A MINOR PLAN AMENDMENT TO THE THIRD GENERATION PLAN REVISING
THE COST SHARE POLICY AND THE CAPITAL IMPROVEMENT PROGRAM

WHEREAS, on April 11, 2013, the Commission and the West Mississippi Watershed Management Commission jointly adopted the Shingle Creek and West Mississippi Third Generation Watershed Management Plan (the "Plan"); and

WHEREAS, the Plan includes a Capital Improvement Program ("CIP"); and

WHEREAS, the Commission has proposed a Minor Plan Amendment that would revise the CIP to reschedule and add specificity to a project and to adopt a cost-share policy for capital improvements; and

WHEREAS, the proposed Minor Plan Amendment has been reviewed in accordance with the requirements of Minnesota Statutes, Section 103B.231; and

WHEREAS, the Commission has determined that it would be reasonable and appropriate and in the public interest to adopt the Minor Plan Amendment.

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

1. The Minor Plan Amendment is approved and adopted, subject to Hennepin County review.
2. Commission staff is directed to notify appropriate parties of the Amendment to the Plan.

Adopted by the Board of Commissioners of the Shingle Creek Watershed Management Commission this eighth day of August, 2019.

Andy 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 eighth day of August, 2019, 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 eighth day of August, 2019.

Print
name: Judie A. Anderson Title: Administrator
Authorized
signature: _____ Date: _____

(NO SEAL)

WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION
STATE OF MINNESOTA

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Gerry Butcher, Chair

ATTEST:

Judie Anderson, Recording Secretary

State of Minnesota

Hennepin County

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In witness whereof, I have hereunto placed my hand and signature this eighth day of August, 2019.

Print
name: Judie A. Anderson Title: Administrator
Authorized
signature: _____ Date: _____

(NO SEAL)

8/1/2019

SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION**PROJECT REVIEW SC2019-010: Local Union 292 Corp. Office**

Owner: IBEW Local 292
Company:
Address: 312 Central Ave SE
 Suite 292
 Minneapolis, MN 55414

Engineer: Mike St. Martin
Company: Loucks
Address: 7200 Hemlock Lane Suite 300
 Maple Grove, MN 55369

Phone: (763) 496-6713
Email: MStMartin@Loucksinc.com

Purpose: Construction of an office building with associated parking, storm sewer system, infiltration basin, and utilities on 4.35 acres.

Location: 6700 W Broadway Ave, Brooklyn Park, MN 55428 (Figure 1).

- Exhibits:**
1. Project review application and project review fee of \$2,200, dated 6/14/2019, received 6/17/19.
 2. Site, grading (Figure 2), utility, erosion control, and landscaping plans dated 6/14/19, received 6/17/19.
 3. Hydrologic calculations by Loucks, dated 5/1/19 (existing conditions) and 6/13/19 (proposed conditions), received 6/17/19.

- Findings:**
1. The proposed project is the construction of an office building on 4.35 acres. Following development, the site will be 72% impervious with 3.12 acres of impervious surface, an increase of ~3.12 acres.
 2. The complete project application was received on 6/17/19. To comply with the 60-day review requirement, the Commission must approve or deny this project no later than the 8/8/19 meeting. Sixty calendar-days expires on 8/16/19.
 2. 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 - 85% TSS removal and 60% TP removal. Infiltrating 1.3-inches of runoff, for example, is considered sufficient to provide a similar level of treatment. If a sump is used the MnDOT Road Sand particle size distribution is acceptable for 80% capture.

Runoff from the site is proposed to be routed to an infiltration basin on the east side of the property that has the capacity to infiltrate 1.3 inches of rainfall off new impervious surface (13,252 cubic feet). The applicant meets Commission water quality treatment requirements.

3. Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. The site does not

SC2019-010: IBEW Local Union 292 Corp. Office

discharge under existing conditions, even during a 100-year back-to-back rainfall event. Therefore, the site was designed to have a landlocked infiltration basin that also does not discharge during a 100-year back-to-back rainfall event. The applicant meets Commission rate control requirements (Table 1).

Table 1. Runoff from site (cfs).

Drainage Area	2-year event		10-year event		100-year event		100-year back-to-back	
	Pre-	Post-	Pre-	Post-	Pre-	Post-	Pre-	Post-
Entire site	0	0	0	0	0	0	0	0

4. Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. The new impervious area on this site is 2.8 acres, requiring infiltration of 13,352 cubic feet within 48 hours. The applicant proposes to route runoff to an infiltration basin that has the capacity to infiltrate the required volume within 48 hours. The applicant meets Commission volume control requirements.
5. The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements.
6. There are no Public Waters on this site. The applicant meets Commission Public Waters requirements.
7. There is no FEMA-regulated floodplain on this site. The low floor elevations of the buildings are at least two feet higher than the high water elevation of the detention infiltration basin according to Atlas 14 precipitation. The applicant meets Commission floodplain requirements.
8. The erosion control plan includes a rock construction entrance, perimeter silt fence, silt fence surrounding the infiltration basin, inlet protection, rip rap at inlets, and native seed specified on the pond slopes. The erosion control plan meets Commission requirements.
9. A public hearing on the project was conducted on 6/19/19 as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.
10. A draft Operations & Maintenance (O&M) agreement between the applicant and the City of Brooklyn Park was provided.
11. A Project Review Fee of \$2,200 has been received.

Recommendation: Recommend approval subject to the following conditions:

1. Provide a completed O&M agreement between the applicant and the City of Brooklyn Park for all stormwater facilities on the project site. (A draft agreement was provided with this application.)
2. Demonstrate by double ring infiltrometer or witness test that the site can meet the design infiltration rate of 0.45 inches/hour post construction.

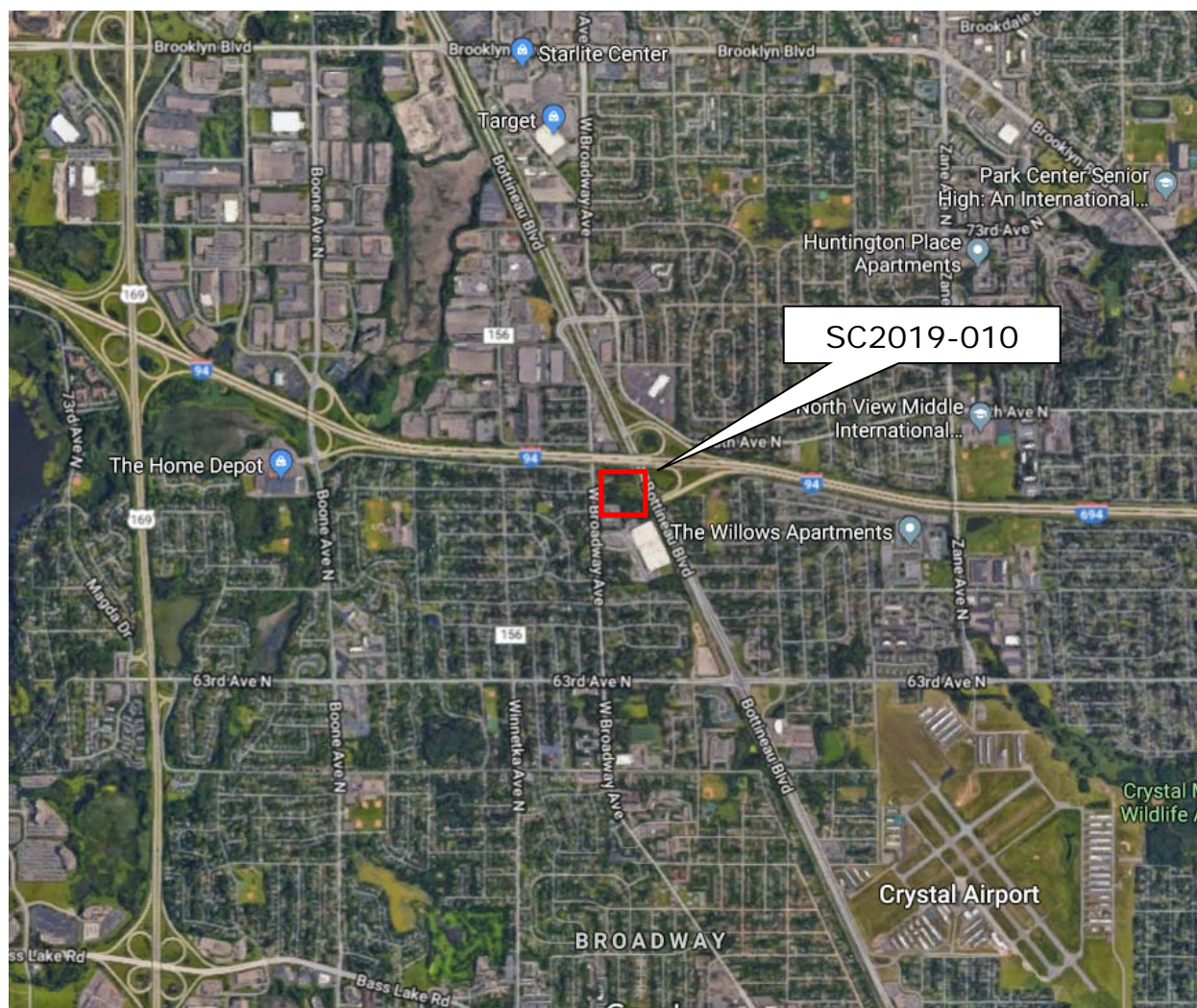
SC2019-010: IBEW Local Union 292 Corp. Office

Wenck Associates, Inc.
Engineers for the Commission

Ed Matthiesen, P.E.

Date

Figure 1. Site location.



Technical Memo



Responsive partner.
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To: Shingle Creek/West Mississippi WMO Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: August 2, 2019

Subject: 2019 Capital Improvement Program and Feasibility Studies

Recommended Commission Action

Receive the feasibility studies for proposed 2019 capital projects. Decide which projects to proceed. Call for a Public Hearing on September 12, 2019 to consider some or all the proposed projects and proposed levies.

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Shingle Creek Projects

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West Mississippi Projects

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Staff Recommendation

Receive the staff report, and call for a public hearing on the proposed projects to be held on September 12, 2019. At that time the Commissions will also certify levies to Hennepin County, and authorize the execution of cooperative agreements with the lead cities to contract the ordered projects.

Technical Memo



Responsive partner.
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To: Shingle Creek WMC Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: April 16, 2019

Subject: Crystal Lake Management Plan Feasibility and Cost Estimate

INTRODUCTION AND BACKGROUND

Crystal Lake is a 126-acre nutrient-impaired lake located in the city of Robbinsdale. It is popular among anglers, and there are several city parks abutting the lake as well as a regional bike trail. There is a public boat landing on the south end and a fishing pier on the north end. Summer ten-year average TP concentration is 63 ug/L compared to the deep lake standard of 40 ug/L. The excessive concentration of phosphorous causes nuisance algae blooms and has inhibited the growth of aquatic plants, limiting fish habitat and the aesthetic appeal of the lake. The carp in the lake mobilize phosphorus-containing sediment on the bottom as they feed, impacting water clarity and causing further phosphorus release. This is becoming an even greater issue as carp increase in density in the lake. Reduction in the in-lake phosphorus concentration and the carp population is needed to promote a healthy ecosystem and bring a greater recreational appeal to the lake.

The Crystal Lake Nutrient TMDL was approved in 2008, and the cities of Robbinsdale and Minneapolis and Hennepin County have been actively implementing BMPs in the lakeshed. The TMDL requires a 90% decrease in TP from internal sources (255 pounds) and a 59% decrease from watershed sources (256 pounds). In 2016 the Shingle Creek Watershed Management Commission completed a TMDL Progress Review. It estimated that the cities and county had achieved about 73 pounds of the required annual 256 pound TP wasteload reduction. The city of Crystal also installed and continues to run a hypolimnetic withdrawal flocculation treatment facility in Lakeview Terrace Park, which has averaged the removal of 147 pounds per year over the three years it's been in service. However, when the hypolimnetic water withdrawn for treatment becomes anoxic, the system produces a foul smell, which is not acceptable to the park users or the adjacent residential neighborhood. When there are odor issues, the system is switched over to epilimnetic withdrawal, which is less efficient at controlling phosphorus from sediment release.

In addition to nutrient issues, a recent carp assessment estimated the current mean biomass of carp in Crystal Lake as about 126 kg/ha. Research suggests that high densities of common carp can reduce submersed aquatic vegetation coverage, lower water fowl populations, and increase turbidity. These impacts begin to occur when the carp population exceeds a 100 kg/ha critical density threshold (Bajer et al. 2009). Crystal Lake does not currently sustain a robust aquatic vegetation community, likely limited

by the presence of carp and excess turbidity. Curly-leaf pondweed is known to be present in the system, although currently at low densities.

PROPOSED PROJECT

The purpose of the proposed Crystal Lake Management Plan Project is to improve the water quality and ecological integrity of Crystal Lake and to restore beneficial uses and progress the lake toward achieving the state water quality standard for TP. As the largest lake in the city of Robbinsdale and with significant adjacent park acreage and a public access, it is a popular destination for water recreation and fishing. The proposed project takes a whole-lake management approach, significantly reducing internal phosphorus release from sediments, reducing the carp population to a more manageable carrying capacity, and as water clarity improves, encouraging the restoration of a healthy native plant community and addressing the potential increase in invasive aquatic plant populations.

Lake Alum Treatment. The first component of the project is a lake alum treatment to seal the sediments and reduce the need and frequency of withdrawing from the hypolimnion. Upon application, alum forms a flocculant that binds with phosphorus to form an aluminum phosphate compound that can no longer be used as food by algae. As the flocculant slowly settles, some phosphorus is removed from the water column, along with other suspended particles. On the bottom of the lake, the flocculant forms a layer that acts as a phosphorus barrier. To maximize the effectiveness of the alum treatment, it would be performed in two doses. Initial sediment cores would be used to compute the effective dose, and water column DO measurements would be used to identify the anoxic zone and the limits of alum treatment. One-half the recommended dose would be applied the first year, and additional sediment cores taken and evaluated. Based on the initial results, dosing for the second treatment may be adjusted. Following the second treatment, a final set of sediment cores would be used to confirm the effectiveness of the treatment at reducing the sediment release rate.

Rough Fish Management. The second component is carp harvesting to reduce the population to a level well below the impairment threshold. An initial carp assessment has already been completed in September 2018. The assessment concluded that the carp biomass was just above the critical impairment threshold, but more importantly that the carp were relatively small in size. This suggests that carp issues in the lake are likely to worsen as they grow and reproduce. Prior to the alum treatment, the carp population assessment would be repeated and RTF tags placed in a sample of the fish for radio tracking to determine their overwintering locations. Based on an initial carp assessment, approximately 3,500-4,000 kg of carp will need to be removed from the lake to reduce the population density below the 100 kg/ha density threshold. The Commission will work with the commercial fisherman assigned to this area to harvest carp and other undesirable rough fish.

Submersed Aquatic Vegetation (SAV) Management. Following alum treatment and carp removal, the project objective is to restore a healthy native aquatic vegetation community by treating invasive plants as water quality improves and take any necessary management steps to keep the lake healthy and native. Previously completed aquatic vegetation surveys show an extreme lack of submersed aquatic vegetation, with few native pondweed species common in healthy shallow and deep lakes throughout Minnesota.

As water clarity improves post alum treatment and carp removal, a positive vegetative response would be anticipated. Exactly what that would look like is unknown at this time. A desirable outcome would be one in which a diverse community of native vegetation becomes established, out-competing aquatic

invasive species (AIS) but remaining below nuisance levels. However, because AIS have been observed in the lake during plant surveys and anecdotal evidence suggests these species used to be at nuisance levels along the northwest shore, the possibility exists that AIS may try to reestablish, requiring active management. The Commission will monitor submersed aquatic vegetation for invasive aquatic plants and manage those by using spot treatments.

ESTIMATED LOAD REDUCTION

The current internal load is estimated to be 284 lbs/yr TP. Alum treatments dosed correctly can achieve a 90-95% reduction in sediment release. The goal of the Crystal Lake alum treatment is a 90% reduction, or 255 pounds TP reduction per year, which is the TMDL internal load reduction requirement. This improvement would allow the flocculation system to focus on reducing phosphorus in the epilimnion, which would help treat the watershed load and extend the life of the alum treatment.

Rough fish as SAV management have less direct nutrient reduction impacts, but are important for biotic integrity in the lake. Fewer carp stirring up the bottom sediments should result in less sediment and pollutants being contributed from the bottom of the lake, improving clarity. The rough fish management goal is the removal of 4,000 kg of carp from the lake. The effective removal of invasive SAV species does promote growth of a healthy natural ecosystem, which would also be beneficial to the fish community.

PROJECT TASKS, COST AND SCHEDULE

The project has been broken down into five general tasks, which are described below and for which the cost is shown in Table 1. This project has been awarded a EPA/MPCA Section 319 grant for funding in 2020, and matching funds will be levied in September 2019 for the Commission's share. If this project proceeds in 2020, Table 2 shows an estimated schedule.

Objective 1: Reduce Phosphorus Levels in Crystal Lake

Task 1: Dosing and Effectiveness Monitoring. Initial sediment cores will be taken from the lake in approximately February 2020 and evaluated for redox-P by Professor Bill James at the Center for Limnological Research and Rehabilitation at UW-Stout. The results will allow the calculation of a maximum initial dosage for alum. Dissolved oxygen profiles previously taken on Crystal Lake will be used to establish the treatment area. Additional cores and DO profiles will be taken following the initial alum dose and results used to make any necessary adjustments to application rates and areas. A final set of cores taken following the second application will be evaluated to verify that the desired reductions have been achieved. Responsible party(ies): Commission Engineer, Bill James

Task 2: Alum Application. The first dose of aluminum sulfate treatment would be applied in Spring 2021. The second dose would likely be applied in Spring 2022. Responsible party(ies): The City of Robbinsdale will act as contracting agent for this publicly bid project, in consultation with the Engineer.

Task 3: Water Quality Monitoring. The Commission's engineer will perform follow-up water quality monitoring in 2021 and 2022 to document changes in water quality and clarity. The lake will be monitored for surface and bottom TP, SRP, chl-a, and Secchi depth and DO and temperature profiles, bimonthly from late May to late September. This data will be compared to historical monitoring data to

help evaluate project effectiveness. Prior to undertaking monitoring the Commission will work with the MPCA to prepare a QAPP establishing monitoring procedures. A Crystal Lake monitoring station is already established in EQuIS, and collected data will continue to be uploaded as required.

Objective 2: Carp Removal

Task 1: Carp Population Assessment and Tracking. The previously-conducted carp assessment will be updated by the Commission's engineer using electrofishing techniques. During this assessment 10-15 carp will be tagged with radio transmitter markers. The tagged carp will periodically be tracked using portable trackers to identify overwintering locations. Following removals, a follow-up carp assessment will be completed to verify that the density goal has been achieved. This task includes coordination and permitting with the DNR.

Task 2: Commercial Fish Removal. The Commission will contract with the commercial fishermen assigned to this area to remove and sell or dispose of carp. The primary carp removal effort will be in late winter 2021, just prior to the first alum dose. Additional removals may occur in later, smaller efforts depending on the results of the follow-up population assessment.

Objective 3: Invasive Species Management

Task 1: Field Surveys and Permit Application. The Commission's Engineer will perform submersed aquatic vegetation (SAV) surveys in May and September 2020, 2021, and 2022. If invasive species management is required, the engineer will obtain necessary permits from and prepare required reports to the DNR.

Task 2: Herbicide Spot Treatments. Spot treatments for invasive plant species will be conducted as necessary in 2020, 2021, and 2022. Responsible party(ies): Commission Engineer.

Objective 4: Administration/Semiannual and Final Reports

Semiannual reports will be completed and submitted to MPCA by February 1st and August 1st each year during the Grant term. A final report will be submitted to MPCA within 30 days from the end of the Grant. The final report will set forth dosing calculations and document treatment applied; detail monitoring data collected pre- and post-project; the results of the before and after population carp assessment and record biomass removed from the lake; and document SAV treatment. Best Management Practices will be reported each year they are implemented by February 1st to the Statewide eLINK data system. Invoices will be submitted to MPCA at least quarterly. Methods and findings will be compiled into a final technical report that will be submitted as part of the Final Report for this grant. Responsible party(ies): Commission Engineer

Table 1. Estimated project cost.

Objective and Task		Grant	Commission	Total
Objective 1: Reduce Phosphorus Levels in Crystal Lake				
	Task 1: Dosing and effectiveness monitoring	\$35,846.00		\$35,846.00
	Task 2: Alum application	112,916.00	\$100,000.00	212,916.00
	Task C: Water quality monitoring	13,222.00	200.00	13,422.00
Objective 2: Carp Removal				0.00
	Task A: Carp population assessment and tracking	13,582.00	8,000.00	21,582.00
	Task 2: Commercial carp removal	10,632.00	20,000.00	30,632.00
Objective 3: Invasive Species Management				0.00
	Task A: Field surveys and permit application	19,740.00		19,740.00
	Task B: Herbicide spot treatments		26,240.00	26,240.00
Objective 4: Admin/Semi-Annual/Final Reports				0.00
	Task A: Administration/Semi-Annual/Final Reports	10,128.00		10,128.00
TOTAL		\$216,066.00	\$154,440.00	\$370,506.00

Table 2. Project schedule.

Component	Activity	Month/Year
Internal Loading (sediment)	Sediment coring	February 2020
	Laboratory sediment analysis	March 2020
	Reporting, alum dosing & monitoring	April-May 2020
Fish Population Management	Field survey	June 2020
	Permit procurement, report	June 2020
	Analysis & Discussion of Next Steps	June 2020
	Permit procurement	July 2020
	Commercial carp removal	July 2020
Internal Loading (sediment)	Alum application	September/2020
	Follow-up water quality monitoring	Sept 2020-Oct 2021
	Follow-up sediment coring	February/2021
Aquatic Plant Management	Post-alum application & herbicide field surveys	May & Sept 2021
	Permit procurement	May 2021
	Herbicide spot treatments	June 2021
	Reports	June & October 2021
Internal Loading (sediment)	Second alum application	September 2021
Fish Population Management	Post-alum application field survey	Aug-Sept 2021
Internal Loading (sediment)	Final sediment coring & water quality monitoring	February/2022

FEASIBILITY

This Crystal Lake Management Plan addresses the primary sources of internal phosphorus loading by reducing phosphorus release from the sediments via an alum treatment that will accomplish the entire internal load reduction required by the Crystal lake Nutrient TMDL. Biotic health will be improved by the removal of rough fish and aquatic invasive submersed aquatic vegetation. This proposed project is feasible and cost effective.

Z:\Shingle Creek\Lakes\Crystal Lake\M-crystal lake mgmt plan feasibility.docx



Bassett Creek Watershed Management Commission

July 26, 2019

Mr. Mike Trojan
Minnesota Pollution Control Agency
520 Lafayette Road North
St Paul, MN 55155

Re: Verification and Certification of Stormwater Manufactured Treatment Devices (MTDs)

Dear Mr. Trojan:

The Bassett Creek Watershed Management Commission (BCWMC) and many other watershed districts and organizations (watersheds) across the metro area have seen an increase in the use of proprietary stormwater manufactured treatment devices (MTDs) proposed in development and redevelopment projects. Although some MTDs undergo testing and third party review, there are no widely accepted levels of treatment or pollutant removal efficiencies associated with these devices. Hence, the watersheds are forced to independently determine the pollutant removal efficiency of each device to evaluate whether a proposed project meets the watersheds' water quality standards.

The BCWMC and the watersheds listed below, recognize that this issue extends beyond our respective boundaries. We concluded that, ideally, there should be a nationwide, regional, or statewide program developed to evaluate and certify MTDs, including a determination of how the devices perform in Midwestern climates. In recognition of this need, we formally request that the MPCA take one of the following actions to address this issue at a broad level:

- 1) Cooperate with and support the implementation of the Water Environment Federation's (WEF) Stormwater Testing and Evaluation of Products and Practices (STEPP) verification program, currently under development. We prefer this option because the STEPP verification program is already well along in its development, it will be a nationwide program, and we understand that MPCA staff are already engaged in the program. Once implemented, the STEPP verification program would validate MTD performance; it would be up to the states (e.g., the MPCA) to certify the MTDs.
- 2) Develop its own statewide program for evaluating and certifying stormwater MTDs.

In either scenario, we also request that the MPCA include verified/certified MTDs in the Minnesota Stormwater Manual, if appropriate.

If you have questions, please contact me or any of the following watershed contacts to discuss.

Sincerely,

Laura Jester
Administrator,
BCWMC

Randy Anhorn
Administrator, Nine
Mile Creek WD

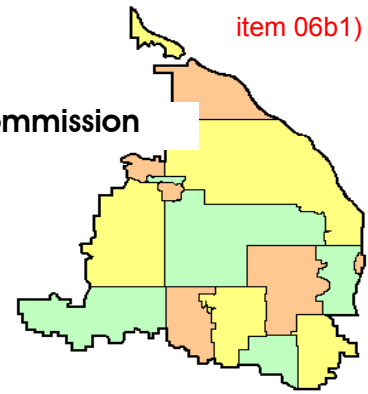
Tina Carstens
Administrator,
Ramsey Washington
Metro WD

Claire Bleser
Administrator,
Riley Purgatory
Bluff Creek WD

R. A. Polzin
Chair, Shingle
Creek WMO

Gerald E. Butcher
Chair, West
Mississippi WMO

c: Ryan Anderson, Minnesota Pollution Control Agency
John Jaschke, Minnesota Board of Water and Soil Resources



MINUTES

July 25, 2019

A meeting of the Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions was called to order by Chairman Richard McCoy at 8:31 a.m., Friday, July 25, 2019, at Crystal City Hall, 4141 Douglas Drive North, Crystal, MN.

Present were: Andrew Hogg, Brooklyn Center; Mitchell Robinson, Brooklyn Park;; Mark Ray, Crystal; Derek Asche, Maple Grove; Megan Hedstrom, New Hope; Ben Scharenbroich, Plymouth; Richard McCoy, Robbinsdale; Ed Matthiesen Diane Spector, Erik Megow, and Hagen Kaczmarek, Wenck Associates, Inc.; and Judie Anderson, JASS.

Also present: Amy Riegel, Plymouth; and Marta Roser, Robbinsdale.

Not represented: Champlin, Minneapolis and Osseo.

- I. Motion by Ray, second by Hogg to **approve the agenda**. * *Motion carried unanimously.*
- II. Motion by Ray, second by Hogg to **approve the minutes*** of the June 21, 2019 meeting. *Motion carried unanimously.*

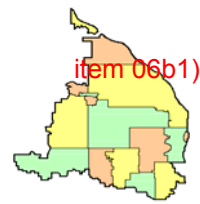
III. **Ryan Creek Assessment.***

A. Staff have completed an assessment of Ryan Creek conditions and prepared a PC-SWMMM model for the Twin Lake-Ryan Creek-Ryan Lake drainage system. They also modeled some scenarios. Megow presented preliminary results and some recommendations for further consideration. He noted that during the field survey the team saw no excessive erosion, but that excessive vegetation was prevalent. The scenarios included:

- 1. 1-, 10-, and 100-year elevations for each lake comparing TP-40 and Atlas 14 24-hour events.
- 2. Water Surface Areas of inundation for 1-, 10-, and 100-year Atlas 14 24-hour events.
- 3. Modeled impact on 1- and 100-year elevations from temporary pumping from Crystal Lake to Lower Twin Lake
- 4. Ryan Creek profiles for 1-, 10-, and 100-year events without pumping and with pumping
- 5. Elevations, inundation areas, and profiles assuming pumping and channel cleanout

B. Discussion by the members included identifying strategic areas for clean-out, long-term goal of getting more water through the system during storm events, adjusting the weir, and need for resizing conveyances.

C. Members indicated a need for more information regarding the fish barrier, removal of the weir, more detail on when peaks occur, property buy-outs, how a project would conform to the JPA, and what entity(ies) would be responsible for the project.



D. McCoy will take the substance of this discussion back to his City Council. Citizen callers will be advised that [we] are cleaning out Ryan channel and maintaining the France Avenue fish barrier, and that future actions are being investigated by the TAC/Commission.

IV. Shingle Creek Regent Avenue to Brooklyn Boulevard.*

Staff have been assessing the condition of Shingle Creek between Regent Avenue and Brooklyn Boulevard for a potential stream improvement project, which is on the Commission's CIP for 2020. This is the segment between the restoration project done in conjunction with the Village Creek North development and the more recent Connections project on the east side of Brooklyn Boulevard. This is the last reach of the creek to undergo improvement.

Working with the cities of Brooklyn Center and Brooklyn Park, they have developed 30% conceptual plans for the restoration of this segment. It is anticipated that the nature of the work will be very similar to the other reaches that have been completed. There are some segments of the reach that are experiencing severe erosion that will require more stabilization.

Kaczmarek's presentation described conditions and conceptual plans for the reach. This potential project would fall under the Commissions' revised cost share policy whereby the Commission would fund the cost of Load Allocation reduction projects 100%. Since the proposed project would address the DO and biotic impairments, Staff recommend that a Clean Water Fund grant application be submitted for this project. Estimated cost of the project is \$400,000.

Motion by Hogg, second by Asche to recommend to the Commission that the application be submitted to BWSR by the September 9 deadline and that Staff continue to work with the cities to refine the design and update the cost estimate. *Motion carried unanimously.*

V. Meadow Lake Management Plan.

This project consists of two phases – 1) draw down, and 2) chemical phase. DNR wants this type of project completed in three years; it is more realistically a 4-5-year project. Staff is trying to come up with an increase in cost-benefit in order to make the project more grant-eligible.

VI. Other Business.

A. Lake No-Wake Declarations. The members continued their discussion regarding the high-water levels in watershed lakes and how no-wake declarations are set. The members will inform each other when high water events occur and when no-wake declarations should occur or be removed.

B. Staff reported that the **SRP project** is working as intended. Spector showed a graph from the first sampling showing concentrations, not volume. The data must still be analyzed.

C. The **next meeting** of the Technical Advisory Committee is scheduled for 8:30 a.m., Thursday, August 22, 2019, Crystal City Hall.

D. The meeting was adjourned at 10:08 a.m.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Judie A. Anderson".

Judie A. Anderson
Recording Secretary

Z:\Shingle Creek\TAC\2019 TAC\07-25-2019 minutes.docx

Judie Anderson

From: John Linc Stine <JLStine@freshwater.org>
Sent: Thursday, August 01, 2019 10:41 AM
To: Judie Anderson
Subject: Partnering for lowering salt in our waters - Road Salt Symposium
Attachments: Sponsorship_RoadSalt_Freshwater_Oct2019.pdf

Greetings, Judie – thanks for taking my call about this and about connecting in-person sometime for a “Freshwater feedback” conversation. I am really looking forward getting your input as I begin my work here at Freshwater. I have openings (usually on Wednesday or Thursday) later in August and September and we can meet at a location that’s convenient for you.

19 years ago, Freshwater began hosting our annual Road Salt Symposium. This one-day event features the people that have the difficult task of balancing transportation, successful business operations and environmental protection. People like snow plow operators, public works officials, MnDOT planners and road maintenance experts and private business owners and contractors who consistently say they love this Symposium because they are hearing directly from each other about their real world experiences with reducing salt pollution to Minnesota’s freshwater. The Symposium is making a difference – we will hear again from business and government folks who are saving money while protecting freshwater!

This year, after getting lots of helpful feedback from the nearly 300 folks who annually attend the Road Salt Symposium, we adjusted this event away from winter to be in the Fall - on Oct. 24, 2019 in the northeast Metro – at Jimmy’s Event Center in Vadnais Heights. We think it’s best to get a jump on the snow and ice season by holding the event in October – that’s our goal going forward. The attached flyer gives all the details.

We would love to have your watershed organizations (Elm Creek, Shingle Creek and West Mississippi) as a sponsor again at this year’s 19th Annual Road Salt Symposium! We enjoy extensive media coverage every year, and we expect significant interest again in this year’s event. Although we are holding two events in the same year, this should be the only time that happens. I hope you can find a sponsorship level that fits your interests.

I appreciate your willingness to present our request to you board at their upcoming meeting. The flyer shows sponsorship levels and what comes with each. It also includes a breakdown of our audience of MnDOT, municipal, and private maintenance professionals. Please call me if you have any questions.

Best regards,

John Linc Stine *Executive Director*
 Freshwater Society
 2424 Territorial Rd Suite B
 St. Paul, MN 55114
 (651) 313-5811 Desk
 (651) 468-7075 Mobile

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FRESHWATER

Item 07a 19TH ANNUAL ROAD SALT SYMPOSIUM SPONSORSHIP OPPORTUNITY



Why sponsor?

The Annual Road Salt Symposium is the region's premiere event focused on the latest innovations, trends, and best practices for reducing salt use while maintaining safe roads. The symposium has doubled attendance in recent years to over 300, with attendees from around the region eager to share ideas about wise salt use, creating a win-win that protects our communities *and* our environment. The symposium is co-hosted with Connie Fortin of Fortin Consulting, a leader in the chloride reduction field.

This high profile event is often featured by local news stations. Sponsors are promoted in print and digital marketing channels that reach thousands. With dozens of lakes statewide having excessive levels of chloride from road salt runoff, we must continue to educate people and develop strategies for reducing salt use. Your sponsorship will show your support for this important topic and help keep Minnesota on the leading edge of finding solutions.

What we do

Freshwater is a nonprofit organization working to inspire and empower people to value and preserve our freshwater resources. e focus on ensuring Minnesota's groundwater supplies are sustainable and preventing polluted runoff from contaminating our lakes, rivers, and streams.

See reverse for sponsorship levels.



EVENT DETAILS

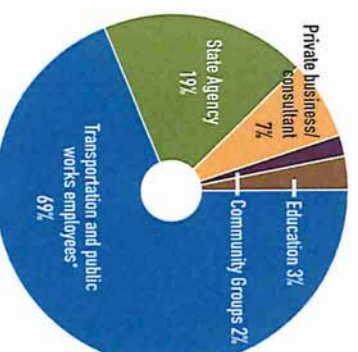
WHAT: 19th Annual Road Salt Symposium, a high profile, day-long conference on trends and techniques in winter road maintenance that are a win-win for both public safety and the health of lakes and streams.

WHEN: Thursday, October 24, 2019

WHERE: Jimmy's Event Center, Vadnais Heights

WHO: Transportation and public works employees, local government and state agency staff, private businesses, and community groups

Attendees



*city, county, regional, tribal

FRESHWATER

item 07a

ROAD SALT SYMPOSIUM SPONSORSHIP LEVELS

***SIGN UP
BY AUGUST 31 FOR
TWO ADDITIONAL FREE
REGISTRATIONS AT
CHAMPION & STEWARD
LEVELS**

	CHAMPION* (\$5,000)	STEWARD* (\$2,500)	SUSTAINER (\$1,000)	ENTHUSIAST (\$500)
Logo display** print & digital (invitations**, event program and signage, website, social media)	X	X	X	X
On-screen display at symposium	X	X	X	X
Event registrations included	Three	Two	One	
Verbal recognition from podium†	X	X	X	
Vendor table	Full table, premier placement	Full table	Exhibit space	
Logo printed on table displays	X	X		
Optional promotion item at each event seat*	X			

*Promotional item subject to agreement

**Logo placement and dimensions commensurate with level

***Sponsorship must be confirmed early to ensure this benefit

† Contact Mary to discuss an opportunity to speak from the stage.

Freshwater Society is a 501(c)(3) nonprofit organization. Your contribution is tax deductible to the fullest extent of the law.

To sponsor, contact Mary Salisbury at 651-313-5817
or msalisbury@freshwater.org.

Interested in becoming the lead sponsor?
Contact Mary to discuss the custom benefits.

Learn more about the Road Salt Symposium:
freshwater.org/road-salt

**MARKETING
REACH**

Facebook/Twitter	3K+
Email invites	11K
Newsletter/blog	3K+
Annual report	8K
Gala attendees	300+

Technical Memo



Responsive partner.
Exceptional outcomes.

To: Shingle Creek WMC Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: August 2, 2019

Subject: Meadow Lake Management Plan CWF Grant Draft

Attached is a draft of the proposed Clean Water Fund grant application for the Meadow lake management Plan. Some of the answers are incomplete at this time or could be enhanced. We expect to send out a more complete version of the application prior to the Commission meeting.

We are also working on the accompanying Feasibility Study. We have all the information, we are in the midst of writing the report, and will have it to the Commission prior to the meeting on August 8, 2019.

Meadow Lake Management Plan
DRAFT 8/2/19

Project Summary

Project Abstract (5 points): Succinctly describe what you are trying to achieve and how you intend to achieve those results, including the type and quantity of projects and/or practices included in the application budget and anticipated outcomes.

The purpose of the Meadow Lake Management Plan is to improve water quality and biotic integrity in Meadow Lake in New Hope, an Impaired Water for excess nutrients that also suffers from nuisance curly-leaf pondweed and fathead minnow infestations. The two-phase project includes one or more whole-lake drawdowns to control the invasive fish and vegetation, consolidate sediments, and regenerate the native seed bank; installation of fish barriers; an alum application to seal the lake sediments; and development and implementation of maintenance practices to help protect future water quality.

Does your organization have any active CWF competitive grants? If so, specify FY and percentage spent. Also, explain your organization's capacity (including available FTEs or contracted resources) to effectively implement additional Clean Water Fund grant dollars.

Yes, the Crystal Becker Park Infiltration Project. Commission as grantee has expended xx%, but the city of Crystal as project lead has expended 100% and is awaiting reimbursement from the Commission.

Water Resource: Identify the water resource the application is targeting for water quality protection or restoration.

Meadow Lake, 27-0057-00, in the City of New Hope in Hennepin County.

Proposed Measurable Outcomes: Succinctly describe the proposed measurable outcomes of this grant application.

- 1) Remove as much of the fathead minnow population as possible and prevent recolonization by adding fish barriers to the outlet and the outfall from an upstream pond system and educating lake users not to dispose of their unused bait in the lake.
- 2) Reduce curly-leaf pondweed to non-nuisance levels and restore the native vegetation community.
- 3) Consolidate sediments to limit wind-driven resuspension.
- 4) Collect additional sediment cores to prepare for potential alum application in Phase 2 of this project.

Prioritization (Relationship to Plan)

Question 1. (17 points):

- (A) Describe why the water resource was identified in the plan as a priority resource. For the proposed project, identify the specific water management plan reference by plan organization (if different from the applicant), plan title, section, and page number.

Thirteen of the 16 lakes in the Shingle Creek watershed were designated Impaired Waters by the MPCA for excess nutrient concentrations, and TMDLs were completed during 2007-2010. The Commission and the cities have been focused on reducing TP loading from the watershed to the lakes,

Meadow Lake Management Plan
DRAFT 8/2/19

and since that time three lakes have been delisted due to improved water quality. Internal load management activities have been completed or are in progress on five of the remaining ten lakes. The City of New Hope and the Meadow Lake Association have been active in reducing watershed load and were ready to start addressing internal load.

(B) In addition to the plan citation, provide a brief narrative description that explains whether this application fully or partially accomplishes the referenced activity.

This is the first phase of what will likely be a series of actions over six or more years. This phase will focus on improving the biology of this very shallow lake by significantly reducing aquatic invasive fish and vegetative species, allowing the lake to flip to a clear-water state. This will take three to four years. The second phase will address internal phosphorus load through a chemical treatment of the high-release-rate sediments. That phase will take an additional three or more years. Future maintenance actions may be necessary to keep invasive vegetation and fish in check.

(C) Provide weblinks to all referenced plans.

Shingle Creek watershed Management Plan: <http://www.shinglecreek.org/management-plan.html>
 Meadow Lake TMDL and Implementation Plan: <https://www.pca.state.mn.us/water/tmdl/meadow-lake-excess-nutrients-tmdl-project>
 Meadow Lake TMDL 5 Year Review: <http://www.shinglecreek.org/tmdls.html>

Question 2. (3 points):

(A) Describe how the resource of concern aligns with at least one of the statewide priorities referenced in the Nonpoint Priority Funding Plan (also referenced in the “Projects and Practices” section of the RFP).

The project aligns with the statewide priority “Restore and protect water resources for public use and public health, including drinking water.” Phase one of the Meadow Lake Management Plan is the restoration of a balanced lake ecology. Water quality in shallow lakes is as dependent on a balanced fish/invertebrate/vegetation community as on the phosphorus load to the lake. Reducing the watershed load to zero would still result in a hypereutrophic lake with excessive algae blooms simply due to the presence of an unchecked minnow population and excessive curly-leaf pondweed infestation.

(B) Describe the public benefits resulting from this proposal from both a local and state perspective.

In its current condition the public cannot recreate in the lake and its aesthetics are unpleasing. It is not capable of sustaining a balanced ecology. The Meadow Lake Management Plan would restore the lake’s Aquatic Recreation beneficial use.

Targeting

Question 3. (15 points): Describe the methods used to identify, inventory, and target the root cause (most critical pollution source(s) or threat(s)). Describe any related additional targeting efforts that will be completed prior to installing the projects or practices identified in this proposal.

An initial fish survey documented the fathead minnow population. That survey would be

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repeated prior to lake drawdown and then again after the lake refills to estimate the biomass removed.

Question 4. (10 points): *How does this proposal fit with complementary work that you and your partners are implementing to achieve the goal(s) for the priority water resource(s) of concern? Describe the comprehensive management approach to this water resource(s) with examples such as: other financial assistance or incentive programs, easements, regulatory enforcement, or community engagement activities that are directly or indirectly related to this proposal.*

TBD – city and association activities, education and outreach, small practices

Measurable Outcomes and Project Impact

Question 5. (10 points): (A) What is the primary pollutant(s) this application specifically addresses? (B) Has a pollutant reduction goal been set (via TMDL or other study) in relation to the pollutant(s) or the water resource that is the subject of this application? If so, please state that goal (as both an annual pollution reduction AND overall percentage reduction, not as an in-stream or in-lake concentration number). (C) If no pollutant reduction goal has been set, describe the water quality trends or risks associated with the water resource or other management goals that have been established. (D) For protection projects, indicate measurable outputs such as acres of protected land, number of potential contaminant sources removed or managed, etc.

A) The primary pollutant addressed is nutrients, specifically total phosphorus. B) The Meadow Lake Nutrient TMDL requires a n 83%, 96 lb/yr reduction from the watershed and 85%, 62 pound reduction from internal load. Lake response modeling for the TMDL 5 Year Review using a longer and more recent data set suggests a 71%, 62 pound reduction from the watershed and a 93%, 110 pound reduction from internal load. An analysis conducted for the TMDL 5 Year Review shows that about 42 pounds of TP are removed annually by BMPs installed since the TMDL and by annual enhanced street sweeping.

Question 6. (10 points): (A) *What portion of the water quality goal will be achieved through this application? Where applicable, identify the annual reduction in pollutant(s) that will be achieved or avoided for the water resource if this project is completed.*

The proposed project is focused on restoring the biology of the lake to improve water clarity and chlorophyll-a concentrations. While it is difficult to say with certainty what the numeric TP benefit would be, lake response modeling using Walkers' BATHTUB estimates a residual annual load of 20-25 pounds TP that cannot be accounted for from the watershed or from sediment release based on the measured release rate. This may be the load attributable to resuspension from minnows foraging in the sediments, and from wind resuspension of the unconsolidated sediments. That residual is based on use of Nurnberg's shallow lakes equation for the anoxic factor, which may be conservative and attribute too much load to sediment release and not to residual. Based on experience gained from other shallow lake drawdowns (see for example Cleary Lake in Carver County), the initial lake response is likely a dramatic decrease in chl-a concentration and improvement in transparency. Phase Two of the Management Plan, to be completed in year 4-5, would focus on reducing phosphorus from sediment release though an alum application.

(B) *Describe the effects this application will have on the root cause of the issue it will address (most critical pollution source(s) or threat(s)).*

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Shallow lakes occur in one of two phases: a clearwater state or a turbid water state. Clear water states are sustained by a balanced biology. A healthy predator fish population keeps bottom feeders such as carp, bullheads and fathead minnows in check. Bottom feeders also prey on zooplankton such as *Daphnia*, which graze on phytoplankton. A healthy zooplankton community keeps algae from spreading unchecked, which enhances transparency of the water column. This transparency allows light to filter to the bottom and supports the growth of submersed and emergent aquatic vegetation. The root systems of these plants stabilize the lake bed, reducing resuspension due to wind and waves. When one of those factors becomes unbalanced, a cascade of effects occur. In the case of Meadow Lake, it is too shallow to support predator fish, so the introduction of fathead minnows allows them to reproduce unchecked. The fish suspend sediments as they feed along the lake bottom, and also prey on zooplankton. Without a healthy invertebrate population, algae grows unchecked, fueled by phosphorus released from the sediments. The turbid water prevents the growth of native aquatic vegetation and allows for invasive curly-leaf pondweed to thrive. Phase one of the management plan would re-set the biology of the lake by eliminating the fathead minnows and allowing beneficial zooplankton to thrive and keep algal growth in check. The drawdown would also significantly reduce curly-leaf pond and provide an opportunity for native vegetation to re-establish from the seedbank in the sediments. The drawdown would also consolidate sediments, reducing wind and wave resuspension. The goal is to significantly improve water clarity and minimize or at least reduce nuisance algal blooms.

Question 7. (5 points): *If the project will have secondary benefits, specifically describe, (quantify if possible), those benefits. Examples: hydrologic benefits, enhancement of aquatic and terrestrial wildlife species, groundwater protection, enhancement of pollinator populations, or protection of rare and/or native species.*

Minimal.

Cost Effectiveness and Feasibility

Question 8. (15 points): *(A) Describe why the proposed project(s) in this application are considered to be the most cost effective and feasible means to attain water quality improvement or protection benefits to achieve or maintain water quality goals. Has any analysis been conducted to help substantiate this determination? Discuss why alternative practices were not selected. Factors to consider include, but are not limited to: BMP effectiveness, timing, site feasibility, practicality, and public acceptance.*

Meadow Lake has a small (88 acres), fully developed watershed. A City improvement project several years ago installed grit chambers and a large boulevard rain garden to provide treatment of runoff prior to discharge into the lake. The City also undertakes enhanced street sweeping in the lakeshed. These actions have achieved about 2/3 the required watershed load reduction. Several homeowners have planted native buffers on their shoreline, and the Lake Association sponsors shoreline buffer plots at Meadow Lake Park. Shallow lakes are different than deep lakes, in that achieving a biotic balance is as crucial to achieving a clear water state as is managing nutrients. The lake does not currently have a balanced biology. The fish community is almost exclusively fathead minnows, and the aquatic vegetation community is dominated by curly-leaf pondweed. Fathead minnows are opportunistic feeders, rooting in the bottom sediments as well as consuming zooplankton that would ordinarily keep algae growth in check. The proposed drawdown would target eliminating as many of the minnows as possible, and install barriers on outfalls and the lake outlet to prevent colonization

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form nearby ponds and from Bass Creek. The drawdown would also help control the curly-leaf pondweed, allowing native vegetation an opportunity to establish. The City of New Hope had previously undertaken a partial drawdown to excavate sediment accumulated at outfalls, and the following year water clarity was good and native vegetation did grow, confirming that the seedbank is still present and viable. This first phase of the Meadow Lake Management Plan would focus on reestablishing biology in the lake. At the same time, sediment cores reveal a very high phosphorus release rate. Once the biology is restored, which will take 3-5 years Phase 2 of the project will be chemical control of sediment release, such as an alum treatment.

(B) If your application is proposing to use incentives above and beyond payments for practice costs, please describe rates, duration of payments and the rationale for the incentives' cost effectiveness.

Note: *For in-lake projects such as alum treatments or carp management, please refer to the feasibility study or series of studies that accompanies the grant application to assess alternatives and relative cost effectiveness. Please attach feasibility study to your application in eLINK.*

A Feasibility Study is attached.

Project Readiness

Question 9. (8 points): What steps have been taken or are expected to ensure that project implementation can begin soon after the grant award? Describe general environmental review and permitting needs required by the project (list if needed). Also, describe any discussions with landowners, status of agreements/contracts, contingency plans, and other elements essential to project implementation.

The Commission has completed water quality monitoring and aquatic vegetation and fish surveys as well as taken a sediment core to measure the phosphorus release rate. The City of New Hope and Meadow Lake Association have been partners in developing the proposed Meadow Lake Management Plan, and have held public meetings to discuss the proposed improvements, including an Open house to which all residents in the lakeshed were invited. A DNR Work in Public Waters permit will be required to conduct temporary drawdowns, and the Commission has been in contact with the Area Hydrologist to be sure all permit procedures are followed. The Lake Association will assist in obtaining the required riparian property owner approvals.

Question 10. (2 points): What activities, if any proposed, will accompany your project(s) that will communicate the need, benefits, and long term impacts to your local community? This should go above and beyond the standard newsletters, signs and press releases.

The City of New Hope and the Lake Association are partners in this project. This project will be publicized on the Commission and City website, and we will also work with CCX Media to provide ongoing , local cable-access TV coverage over the life of the project.

Question 11. (0 points). All project applications for **feedlots** much include a work sheet with supplemental questions being answered. This worksheet is found on the BWSR webpage "Apply for Grants." Have you attached this worksheet?

N/A

The Constitutional Amendment requires that Amendment funding must not substitute traditional state

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funding. Briefly describe how this project will provide water quality benefits to the State of Minnesota without substituting existing funding.

The grant funds will allow the Commission to undertake a suite of activities that together will restore Meadow Lake to a clear-water state.

Technical Memo



To: Shingle Creek WMO Commissioners

From: Ed Matthiesen, P.E.
Diane Spector
Hagen Kaczmarek

Date: August 2, 2019

Subject: Shingle Creek Restoration, Regent to Brooklyn Boulevard

Recommended Commission Action

Authorize staff to work with the cities to prepare and submit a Clean Water Fund grant application.

Restoration of the reach of Shingle Creek between Regent/73rd Avenue and Brooklyn Boulevard is on the Commission's CIP for 2020. This is the segment between the restoration project done in conjunction with the Village Creek North development and the more recent Connections project on the east side of Brooklyn Boulevard (Figure 1). This is the last significant non-wetland reach of Shingle Creek to be completed outside of the MPRB segments in Minneapolis.

Shingle Creek is an impaired water for excess chloride and *E. coli*, low DO, and biotic integrity (macroinvertebrates). The primary aquatic life stressors are altered habitat, altered flow, low DO, loss of connectedness, and chloride. Contributors to the low DO impairment include the over-widened, flat-bottomed channel that reduces natural reaeration and results in excess sediment oxygen demand. The origin of that sediment oxygen demand is the sediment and nutrients transported to the stream from the watershed and from erosion of the streambanks. These restoration projects are identified in the TMDL Implementation Plan, and focus on stabilizing streambanks, adding some roughness and aeration to the streambed, enhancing habitat, and adding or enhancing native buffers in the stream corridor.

In consultation with the cities of Brooklyn Center and Brooklyn Park, we have developed 30% conceptual plans for the restoration of this segment. We anticipate that the nature of the work will be very similar to the other reaches that have been completed. There are some segments of the reach that are experiencing severe erosion that will require more stabilization (Figure 2).

Staff have prepared a report for the cities setting forth conditions and conceptual plans. Three concepts were considered, including lining the stream with boulder toe; using native vegetation to restore and stabilize the streambanks; and using some riprap and root wads to slightly remeander the stream within its existing valley. Figure 3 shows that concept schematically. Because these improvements address impairments to the stream, this project would fall under the Commissions' revised cost share policy whereby the Commission would fund the cost of Load Allocation reduction projects 100%. This project is currently on the CIP in 2020 for \$400,000. The estimated project cost of the estimated 1,730 LF of stream at the 30% design level, including a 15% contingency, is about \$360,000. When design and monitoring are added we estimate a total project cost of \$400,000.

Since the proposed project would address the DO and biotic impairments, we recommend that a Clean Water Fund grant application be submitted for this project. With a project cost of \$400,000, the grant request would be \$320,000 and the Commission's match would be \$80,000.

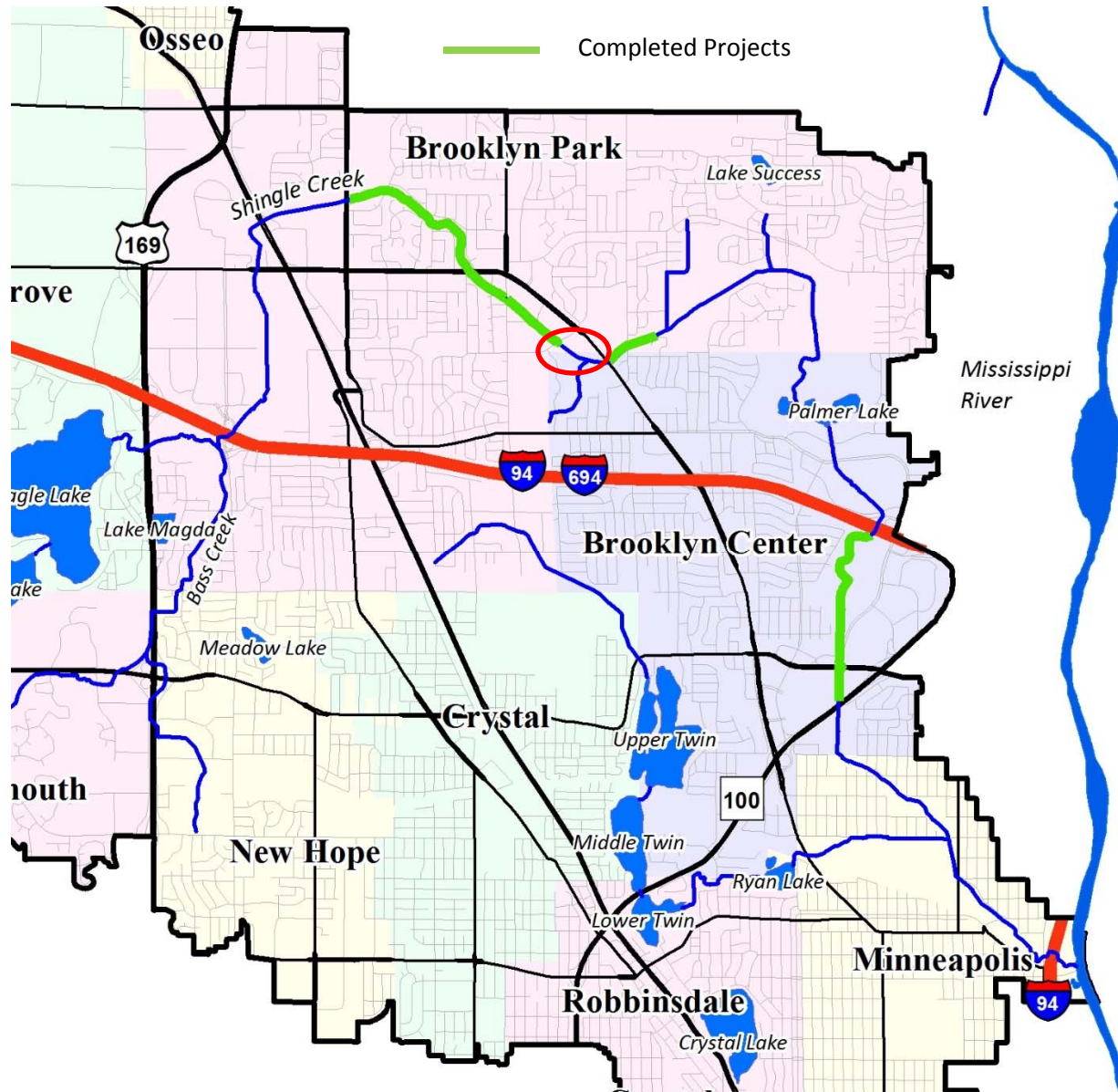
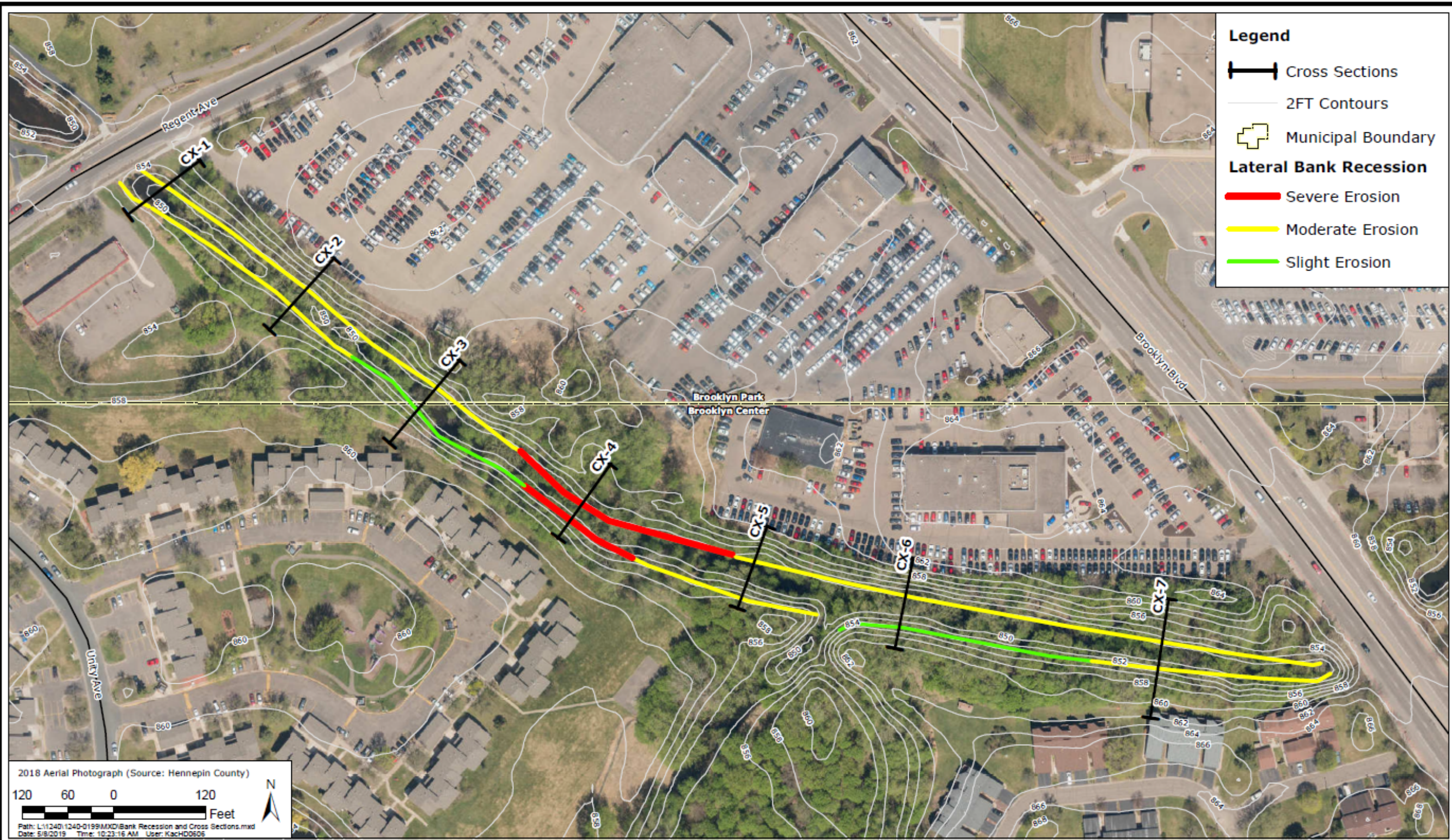


Figure 1. Stream restoration completed projects.



SHINGLE CREEK WATER MANAGEMENT ORGANIZATION

Bank Recession and Cross-Sections



MAY 2019

Figure 2

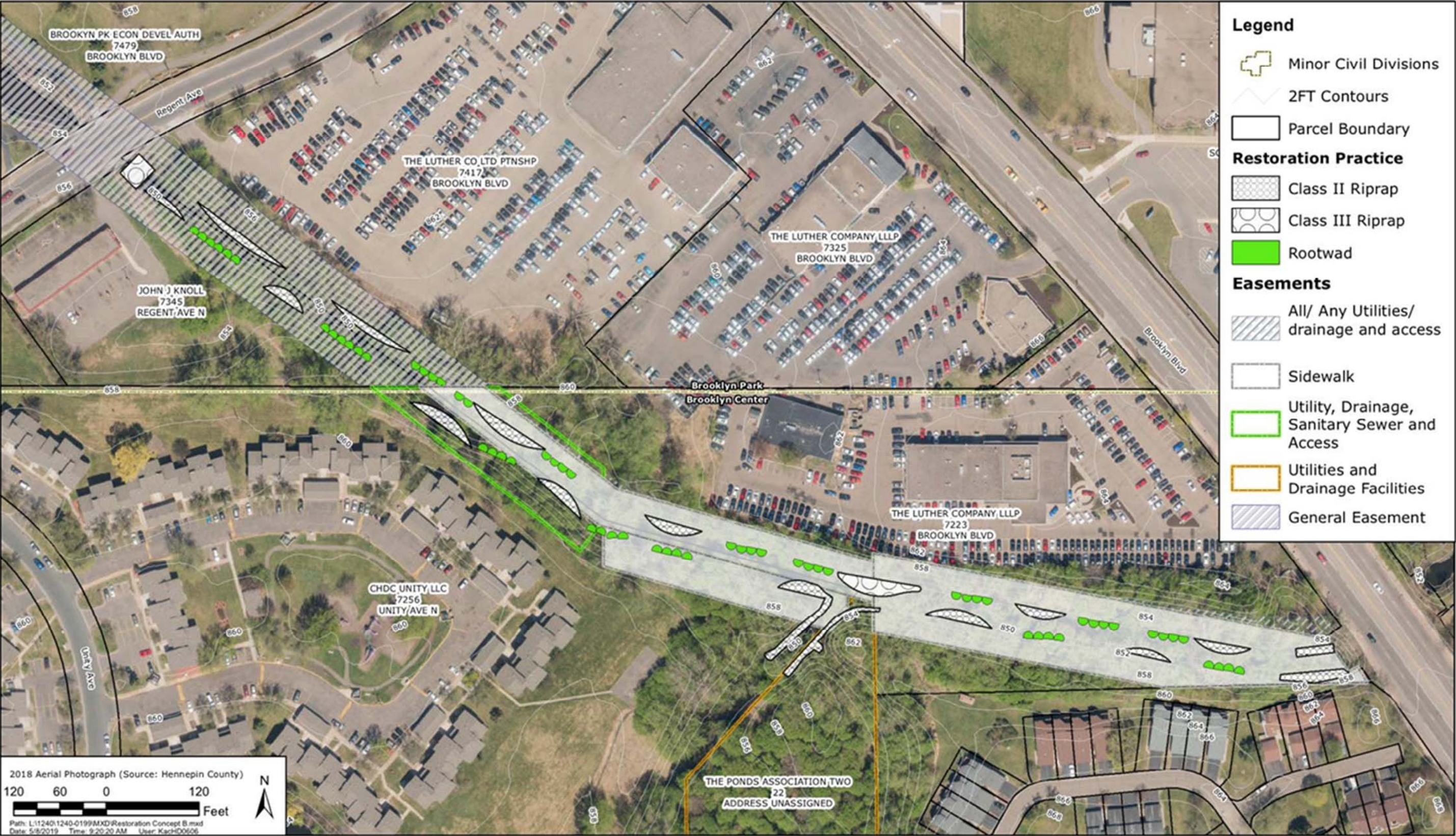


Figure 3. Preferred restoration concept.

Technical Memo



To: Richard McCoy, Public Works Director/City Engineer, City of Robbinsdale

From: Erik Megow, Wenck Associates, Inc.

Date: July 22, 2019

Subject: Ryan Lake Creek Assessment and Hydrologic & Hydraulic Modeling - DRAFT

The purpose of this memo is to summarize the stream assessment and hydraulic modeling of Ryan Lake Creek from its outlet at Lower Twin Lake in the City of Robbinsdale to its outfall at Shingle Creek in Minneapolis. The stream assessment was completed through a survey and walkdown of the channel system. The hydrologic and hydraulic modeling was completed with PC-SWMM using a combination of existing hydrology, existing stormsewer inputs from the City of Minneapolis, and survey data from the stream assessment to model the open channel hydraulics.

Section 1 – Ryan Lake Creek Assessment

To assess Ryan Lake Creek, Wenck surveyed the creek bottom, cross-sections, and hydraulic structure invert. The creek was surveyed from its outlet at Lower Twin Lake to where the creek enters the City of Minneapolis stormsewer near the intersection of 49th Ave N and Sheridan Ave N. To assess the condition of the stormsewer along 49th Ave N, the City of Minneapolis provided sewer televising data.

1.1 Assessment Overview

On April 24, 2019 Wenck staff surveyed and assessed Ryan Lake Creek from Lower Twin Lake in Robbinsdale to 49th Avenue in Minneapolis. Wenck also surveyed and assessed the outfall of Ryan Lake Creek at its confluence with Shingle Creek. Ryan Lake Creek is approximately 8,800 lineal feet from Lower Twin Lake to the confluence with Shingle Creek with approximately the last 3,400 LF traveling through stormsewer under 49th Avenue N. Figures 1 and 2, attached, show the 8,800 LF of Ryan Lake Creek that was assessed and where surveyed cross-sections were taken. The Creek was split into 16 reaches at hydraulic breaks (road crossings) or where channel geometry changed. Table 1 describes each reach and summarizes its condition. Figures 3 through 9 shows the reaches outlined in Table 1 and provide photos of the highlighted areas.

Table 1. Ryan Lake Creek Condition Overview

Reach	Stationing		Figure	Photo	Description	Condition
	Up-stream	Down-stream				
1	0+00	2+00	3	1	Open channel outlet of Lower Twin Lake	Cattails/excessive vegetation may restrict flow
2	2+00	5+00	3	2	Upstream of France Ave., adjacent to backyards	Channel is well-defined and free from debris
3	5+00	5+70	3-4	3	France Avenue Weir and Bridge Culvert	Weir and culvert in good condition. Minimal debris on fish barrier.
4	5+70	8+00	4	4	Open channel downstream of France Ave.	Some cattails and vegetation, downstream sections control flow.
5	8+00	11+80	4	5	Open channel between church and 47th Ave N	Channel widens and slows. Cattails and trash/debris in channel.
6	11+80	13+50	4-5	6	Open channel downstream of church.	Channel constricted by downed tree and branches.
7	13+50	15+50	5	7	Open channel between 46 1/2 and 47th Ave N	Channel is constricted by fencing and backyard debris
8	15+50	18+00	5	8	Open channel upstream of Ryan Lake	Channel is wide with cattail overgrowth and tree debris.
9	18+00	34+00	6	9	Ryan Lake	Cattails/excessive vegetation and floating silt curtain at chain link fence near outlet
10	34+00	41+00	6-7	10	Culvert and stormsewer under rail and Osseo Rd.	54" RCP outlet in good condition
11	41+00	46+30	7	11	Open channel south of CP Humboldt Yard	Channel is well-defined and in good condition.
12	46+30	47+45	7	12	Culvert under CP Access Road	66" RCP outlet in good condition.
13	47+45	49+25	8	13	Open channel south of 46th Ave	Channel is well-defined and in good condition.
14	49+25	54+00	8	14	Open channel south of 46th Ave to 46th Ave.	72" RCP Outlet in good condition.
15	54+00	86+20	9	N/A	MPLS Stormsewer under 46th Ave.	Good condition. See Appendix A for MPLS televising figures.
16	86+20	88+10	9	15 & 16	Outlet of Ryan Creek at Shingle Creek	Outlet and channel to Shingle Creek in good condition.





1.2 Degraded Areas

Table 1 summarizes the condition of each Reach of Ryan Creek from its outlet of Lower Twin Lake to its outfall at Shingle Creek. Although no areas of washout or excessive erosion were seen during the field investigation, the following reaches and areas are highlighted as being degraded or restricting flow:

- **Reach 1:** At the outlet of Lower Twin Lake, there is excessive cattail growth that may restrict flow, however, the hydraulic restriction in this section is currently the downstream weir at France Avenue (Reach 3).
- **Reach 4-5:** The channel through these reaches is not well-defined and has some excessive cattail build-up due to excessive inundation. This is likely due to the lack of hydraulic grade between France Avenue and Ryan Lake and the hydraulic restrictions in Reaches 6-8, directly upstream of Ryan Lake.
- **Reach 6:** A downed tree and fallen limbs and branches in Reach 6 restrict flow and create excessive inundation in reaches 4-5.
- **Reach 7:** Backyard debris and a chain link fence in this reach restrict flow to Ryan Lake.
- **Reach 8:** Downed trees, limbs, and various debris restrict flow in this reach where the channel is not well-defined.
- **Reach 9:** The outlet of Ryan Lake has some excessive cattail growth between the open water and the 54-inch RCP outlet. There is also a chain link fence with a floating silt curtain that is restricting flow.

The flow restrictions and channel conditions outlined above, except for the floating silt curtain, were included in an existing conditions hydrologic and hydraulic model. The channel widening, restrictions, and excessive vegetation were incorporated into the model with surveyed cross-sections and increased Manning's roughness values. A summary of the existing conditions model is outlined in Section 2 and a discussion of the modeling results and recommended next steps is outlined in Section 3.

Section 2 – Existing Conditions Hydrologic & Hydraulic Modeling

An existing conditions hydrologic and hydraulic model for Ryan Creek was created in PC-SWMM. Personal Computer Stormwater Management Model (PCSWMM) is a dynamic rainfall-runoff simulation model used for single and continuous rainfall event simulations of urban and rural watershed hydrology and hydraulics. PCWSMM uses a combination of GIS and US EPA SWMM 5 that allows the user to create model inputs from GIS shapefiles. Modeling methodology and results for the Existing Conditions model are outlined in the following sections.

2.1 Hydrologic Overview

The hydrology and subwatershed delineations for the Existing Conditions model was developed from two existing models:

- The existing Shingle Creek XP-SWMM model hydrology was used for the Lower Twin Lake system. Lower Twin Lake acts as the upper boundary condition for the Existing Conditions model.
- The existing City of Minneapolis XP-SWMM model hydrology and watersheds were used for the Existing Conditions model. The existing Minneapolis model inputs are

outlined in the North Minneapolis Region Hydrologic and Hydraulic Modeling Report Prepared by Barr Engineering, dated November 2017.

The model used the Runoff method to define the hydrology utilizing the following parameters for each subwatershed:

- Area,
- Imperviousness,
- Slope of the subwatershed,
- Width of the subwatershed, and
- Infiltration (via Green-Ampt method).

2.2 Hydraulic Overview

The hydraulic inputs for the model are a combination of open channels, culvert crossings, and Minneapolis stormsewer. The open channel and culvert crossings were surveyed by Wenck on April 24, 2019, while the Minneapolis stormsewer information came from the City of Minneapolis' existing XP-SWMM Model for the North Minneapolis Region (Barr, November 2017).

Open Channels and culverts along Ryan Lake Creek were modeled using survey information for cross sections, centerline elevations, and with field data and photos used to determine the existing conditions Manning's values.

2.3 H&H Results

To determine high water levels and hydraulics along Ryan Lake Creek, three Atlas 14, 24-hour storm events were modeled:

- 1-year (2.48")
- 10-year (4.28")
- 100-year (7.33")

Table 2 lists the high-water levels for Lower Twin and Ryan Lake for the three storm events.

Table 2. Modeling Results for Lower Twin and Ryan Lakes

Lake	Atlas 14, 24-hr storm event high water levels		
	1-yr (2.48")	10-yr (4.28")	100-yr (7.40")
Lower Twin	853.42	854.82	856.91
Ryan	849.79	850.76	853.66

Appendix B includes inundation maps for the three storm events, along with a profile of the high-water levels along with the creek bottom and the surface/grade elevation along 46th Avenue.

Section 3 – Discussion and Recommendations

3.1 Crystal Lake Pumping

During times of extended high water in Crystal Lake, which has no natural outlet, the City of Robbinsdale is permitted to pump water to the Lower Twin/Ryan Lake Creek/Ryan Lake system. The City is interested in understanding how this emergency high water pumping might affect levels in Twin and Ryan Lake. While the amount and duration of pumping varies based on specific circumstances, Wenck ran scenarios for pumping during a 1-, 10-, and 100-year, Atlas 14, 24-hour storm event. These scenarios used a pumping capacity of 1,000 gpm (2.2 cfs), the maximum rate permitted by the DNR. Table 3 shows a comparison of the modeled high water level with and without the pumping from Crystal Lake.

Table 3. Comparison of Modeled Lower Twin and Ryan Lake HWLs with 1,000 gpm of pumping from Crystal Lake

Lake	Atlas 14, 24-hr storm event high water levels (HWLs)					
	1-yr (2.48")		10-yr (4.28")		100-yr (7.40")	
	Existing	Pumping	Existing	Pumping	Existing	Pumping
Lower Twin	853.42	853.46	854.82	854.84	856.91	856.94
Ryan	849.79	849.82	850.76	850.78	853.66	853.68

Table 3 shows that the 1,000 gpm of pumping from Crystal Lake increases high water levels in Ryan and Lower Twin lakes between 0.02-0.04 feet for all storm events.

3.2 Channel Cleanout

While the stream assessment showed no significant erosion or instability needing repair, the section of Ryan Lake Creek between France Avenue and Ryan Lake had excessive vegetation (mainly cattails) and other obstructions that constrict flow in the channel. Wenck updated the model with a clean channel condition. The results of Table 4 show the resulting high water levels in Lower Twin and Ryan Lakes assuming the channel has been cleaned of excessive vegetation and other debris.

Table 4. Comparison of Modeled Lower Twin and Ryan Lake, Existing and Clean Channel HWLs

Lake	Atlas 14, 24-hr storm event high water levels (HWLs)					
	1-yr (2.48")		10-yr (4.28")		100-yr (7.40")	
	Existing	Clean Chnl.	Existing	Clean Chnl.	Existing	Clean Chnl.
Lower Twin	853.42	853.42	854.82	854.82	856.91	856.91
Ryan	849.79	849.79	850.76	850.75	853.66	853.63

Table 4 shows that cleaning the channel of excessive vegetation and debris would have no effect on Lower Twin as the weir at France Avenue is the hydraulic control. The increased flow through this section of channel and the Ryan Lake outlet would reduce the 10- and 100-year HWLs for Ryan Lake by 0.01 and 0.03 feet, respectively. These reductions would offset increases from pumping, outlined in Table 3.

SHINGLE CREEK / WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION
MONTHLY COMMUNICATION LOG
July 2019



Date	From	To	SC	WM	Description
7-3-19	Barb Peichel, BWSR	Diane S, Ed M	X	X	Request for permission to use Commission's biochar presentation for BWSR internal training
7-9-19	Steve Christopher, BWSR	Diane S	X	X	BWSR has no comments on the proposed minor plan amendment draft
7-9-19	Roxy Franta, WSB	Diane S		X	Question about wetland buffer rules application regarding a potential trail project in Champlin
7-10-19	Laura Jester, Bassett Creek	Diane S	X		Information about the upcoming July 27 AIS Early Detection Training Course at the Plymouth Library
7-12-19	Joel Scalzo, Plymouth resident	Diane S	X		Resident on Schmidt Lake, noticed the fish survey being done and wanted to know the results.
7-12-19	Diane Stauner, New Hope resident	Diane S, Jeff S, and city staff	X		Request to provide more information about the Meadow Lake Mgmt Plan to residents not directly on Meadow Lake
7-15-19	Marta Roser, Robbinsdale	Ed M and Diane S	X		Alert that Crystal Lake has experienced a fish kill recently
7-16-19	Heather Nelson @ WSB	Ed M.	X		Grant opportunities for CIC building expansion in Osseo.
7-18-19	John Molinero, Pioneer Engineering	Diane S		X	Confirmation that a single family housing development under 15 areas does not need to go to the Commission
7-18-19	Ben Scharenbroich, Plymouth	Sc WMC	X		WCA Notice of Decision Replacement Plan authorizing purchase of banking credits to mitigate wetland disturbance for the Legacy Greenway Trail Project
7-18-19	Doran Cote @ Brooklyn Center	Ed M.	X		Contaminated water in basement at Sears Auto
7-19-19	Anne Norris	Ed M.	X		Crystal resident asking about no-wake on Twin Lake
7-19-19	John Brand @ Plymouth	Ed M.	X		Resident with a wet basement and sinking yard
7-22-19	Brett Eidem @ MWMO	Ed M.	X	X	Mississippi Watershed Management Organization notice of plan update
7-23-19	Paul Otto @ Otto & Associates	Sarah N.	X		Wondering if addition to Caterpillar Paving site triggered watershed requirements. Sarah said no (no new impervious—addition going over existing parking lot).
7-24-19	John Young @ Brooklyn Park	Ed M.		X	Pond and wetland question for proposed project near Hwy 610
7-25-19	Steve Kautzman @ Allied Blacktop	Ed M.	X		Mill and overlay project review question for a project in Brooklyn Park
7-26-19	John Young @ Paramount Real Estate	Sarah N.		X	Wetland question for parcel near Hwy 610 and W Broadway
7-26-19	Diane S and Judie A	MPCA	X		Section 319 grant semiannual reports and quarterly invoices for Twin Lake Carp, Biochar, and SRP Reduction projects
7-29-19	Andrew Hogg, Brooklyn Center	Ed M.	X		Request from Mallard Creek Townhome Association for cost share in