A meeting of the joint Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions is scheduled for 8:30 a.m., Thursday, April 30, 2020. This will be a virtual meeting.

To join the meeting click https://us02web.zoom.us/j/86148351365. Or go to www.zoom.us and click Join A Meeting and use Meeting ID: 861 4835 1365. If you don’t have audio capabilities on your computer you can also join by voice on the numbers below to participate in the meeting.

+13126266799,,86148351365# US (Chicago)
+19292056099,,86148351365# US (New York)

**AGENDA**

1. Call to Order.
   a. Roll Call.
   b. Approve Agenda.*
   c. Approve Minutes of Last Meeting.*

2. City of Crystal Cost Share Application.*
   a. Plans and drawings.*

3. Lake Pepin Nutrient TMDL.*

   a. Kennedy-Graven Memo.*
   b. Wenck Memo.*

5. Initial 2021 Budget Discussion.
   a. Shingle Creek.*
   b. West Mississippi.*

6. Connections II Project.*

7. Other Business.

8. Next TAC meeting is scheduled for _______.

MINUTES
March 30, 2020

A virtual 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 1:06 p.m., Monday, March 30, 2020.

Present were: Andrew Hogg, Brooklyn Center; Mitch Robinson, Brooklyn Park; Mark Ray, Crystal; Liz Stout and Shahram Missaghi, Minneapolis; Megan Hedstrom, New Hope; Ben Scharenbroich, Plymouth; Richard McCoy and Marta Roser, Robbinsdale; Ed Matthiesen, Diane Spector, and Erik Megow, Wenck Associates, Inc.; and Amy Juntunen and Judie Anderson, JASS.

Not represented: Champlin, Maple Grove, and Osseo.

Also present: Tim Olson and Kevin Kielb, Bolton-Menk.

I. Motion by Ray, second by Stout to approve the agenda.* Motion carried unanimously.

II. Motion by Ray, second by Hogg to approve the minutes* of the February 13, 2020 meeting. Motion carried unanimously.

III. 2020 CIP and Minor Plan Amendment.*

Typically, the TAC hears feasibility studies for proposed projects and makes a recommendation to the Commissions in April of each year as to which projects to consider for that year’s CIP and whether any minor plan amendments are necessary. This all goes to the Commissions, which then set the maximum levies and forward that information to Hennepin County. The County then goes through its public hearing and maximum levy setting process that is usually done by the end of June. The process then goes back to the Commissions to hold public hearings on proposed projects and set a final levy.

Included in Staff’s March 25, 2020 memo are the current draft CIPs for each Commission. They reflect the Minor Plan Amendments approved in 2019 and the rescheduling of some projects to future years. Shown are the potential projects for consideration in 2020 and the associated estimated levies.

In 2019 the Commissions amended their Management Plan to raise the annual voluntary maximum levy to $750,000. As proposed, Shingle Creek would exceed that $750,000 voluntary cap. Both the Cost-Share program and the Partnership Cost Share program have balances, currently about $120,000 (plus an additional $100,000 to be received this year) and $150,000 (plus $50,000) respectively. The Commission could get by without certifying levy for either of these programs in 2020 if need be. The Shingle Creek Commission would also expect to submit grant applications for the Meadow Lake and two stream projects, and there will be another round of Watershed-Based Funding from BWSR that could also provide funding for these projects.
The members discussed options for proceeding with a proposed levy that exceeds the voluntary cap of $750,000. The cost share of Plymouth’s enhanced street sweeper and the three capital projects are all TMDL implementation projects that will be of benefit to the lakes/streams and make required phosphorus and sediment load reductions. Grant applications for two of the three projects were pursued in the past but were not funded. Additional grant funding can be pursued for all three of the projects in 2020. The cities also expect to continue to make use of both the public and private cost share funds. The TAC recommends to the Commissions that the 2020 maximum levies be approved as shown below:

<table>
<thead>
<tr>
<th>Shingle Creek Project</th>
<th>Total Estimated Cost</th>
<th>City/Private</th>
<th>Grant</th>
<th>Commission Share</th>
<th>Total Levy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost share (city projects)</td>
<td>$200,000</td>
<td>$100,000</td>
<td>0</td>
<td>$100,000</td>
<td>$106,050</td>
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<tr>
<td>Connections II Stream Restoration</td>
<td>400,000</td>
<td>0</td>
<td>0</td>
<td>400,000</td>
<td>424,200</td>
</tr>
<tr>
<td>Plymouth Street Sweeper</td>
<td>350,000</td>
<td>275,000</td>
<td>0</td>
<td>75,000</td>
<td>79,540</td>
</tr>
<tr>
<td>Meadow Lake Management Plan</td>
<td>300,000</td>
<td>0</td>
<td>0</td>
<td>300,000</td>
<td>318,150</td>
</tr>
<tr>
<td>Bass Creek Restoration</td>
<td>400,000</td>
<td>0</td>
<td>0</td>
<td>400,000</td>
<td>424,200</td>
</tr>
<tr>
<td>Partnership cost share (private projects)</td>
<td>100,000</td>
<td>50,000</td>
<td>0</td>
<td>50,000</td>
<td>53,025</td>
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<tr>
<td></td>
<td><strong>Subtotal</strong></td>
<td><strong>$1,750,000</strong></td>
<td><strong>$425,000</strong></td>
<td><strong>$0</strong></td>
<td><strong>$1,325,000</strong></td>
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<td></td>
<td>5% additional for legal/admin costs</td>
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<td></td>
<td>66,250</td>
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<td></td>
<td><strong>Subtotal</strong></td>
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<td></td>
<td><strong>1,391,250</strong></td>
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<tr>
<td>TOTAL LEVY (101% for uncollectable)</td>
<td>$1,405,165</td>
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<td><strong>$1,405,165</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>West Mississippi Project</th>
<th>Total Estimated Cost</th>
<th>City/Private</th>
<th>Grant</th>
<th>Commission Share</th>
<th>Total Levy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost share (city projects)</td>
<td>$100,000</td>
<td>$50,000</td>
<td>0</td>
<td>$50,000</td>
<td>$53,025</td>
</tr>
<tr>
<td>River Park Stormwater Improvements</td>
<td>485,000</td>
<td>363,750</td>
<td>0</td>
<td>121,250</td>
<td>128,585</td>
</tr>
<tr>
<td></td>
<td><strong>Subtotal</strong></td>
<td><strong>$585,000</strong></td>
<td><strong>$413,750</strong></td>
<td><strong>$0</strong></td>
<td><strong>$171,250</strong></td>
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<td></td>
<td>5% additional for legal/admin costs</td>
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<td>8,560</td>
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<td></td>
<td><strong>Subtotal</strong></td>
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<td><strong>179,810</strong></td>
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<tr>
<td>TOTAL LEVY (101% for uncollectable)</td>
<td>$181,610</td>
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<td><strong>$181,610</strong></td>
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</table>

**IV. Cost Share Program.* **

The City of Brooklyn Park has submitted an application for cost share funding in the West Mississippi watershed. The project, called River Park, is located at 81st Avenue and Mississippi Lane. The total project cost is $2,600,000; $660,000 of that amount is stormwater basin costs. A stormwater pond is proposed near the exiting 60” piped outlet to the river and would be designed to have a natural feel, with slight drops in elevation from one cell to the next, slowly sloping to the river. Other sources of funding for this project include a Hennepin County Grant ($100,000) and a State of Minnesota Legacy Heritage Grant ($250,000). Construction is expected to begin in summer 2020.

The TAC discussed the project. Staff noted that the Watershed-Based Funding resources were allocated by the Commission to the Cost Share Program as a convenience for disbursal, and are really just pass-through grant funds similar to other grants the Commission receives that are then passed-through to the cities. The members agreed that allocating the WBF funds currently residing in the Cost Share Program account to the River Park project would not violate the limitation on receiving both Cost Share and CIP funds from the county levy and recommended that the Commission authorize the allocation of the $35,422 Watershed Based Funding to Brooklyn Park’s River Park stormwater basin.
V. Effectiveness of the Preserver and the SAFL Baffle.*

Staff’s February 20, 2020 memo discusses the effectiveness of the Preserver and the SAFL Baffle in removing and retaining suspended sediment in sumps. In summation, both devices are effective in removing suspended sediment from sump inflow, but their performance differs based on flow rate and sediment particle size. The choice between the two devices should depend on predicted flow rates and sediment size in the sump and other construction, installation, and maintenance logistics.

Members had been asked to describe their experiences with these devices. Derek Asche from the City of Maple Grove responded,

Our experience with at least one Preserver, is that the energy dissipater is fine and allows for maintenance with a vac truck, but the skimmer has been difficult to install and has been crushed, blocking the outlet pipe. We are concerned there may be some design or material strength issues with the Preserver skimmer when the inlet and outlet are not “in-line” with each other.

The SAFL baffle has been easy to install and we can maintain easily with a vac truck.

I suspect in lab testing they are similar when it comes to trapping material, however, when it comes to practical details in the field such as how pipes come into manholes, as well as maintenance, there could be differences in performance.

Given Maple Grove’s standard operating procedure to regularly vac sump manholes (many with SAFL baffles) and inspect all outfalls, the SAFL baffle works better in our community.

VI. Other Business.

VII. Next Meeting.

The next Technical Advisory Committee meeting is scheduled for 8:30 a.m. Thursday, April 30, 2020. It will be a virtual meeting.

The meeting was adjourned.

Respectfully submitted,

Judie A. Anderson
Recording Secretary
1. Describe the BMP(s) proposed in your project. Describe the current condition and how the BMP(s) will reduce pollutant loading and/or runoff volume. Note the estimated annual load and volume reduction by parameter, if known, and how they were calculated. Attach figures showing project location and BMP details including drainage area to the BMP(s).

In 2015 SCWMC completed a sub-watershed assessment of the Crystal shopping center area. One of the projects identified in the assessment was an underground infiltration system a lot just north of 5747 W Broadway Ave. At the time this lot was a separate, tax-forfeited property. In addition to putting this project in the City’s storm water capital improvement program, over the past few years the City acquired the property from Hennepin County, put a storm water easement over the entire property, then sold the property to 5747 W. Broadway. The property owner at 5747 then replanted the two lots into a single property with the address of 5757 W. Broadway.

In 2019, the City contracted with Wenck and started design of the underground system. The design is now complete and project will be going out for bid in April. Construction will occur in either 2020 or 2021. Two years were provided for construction to maximize contractor flexibility and thus minimize costs.

The proposed project will have two layers of sediment containment prior to entering the chambers. Overall the system can hold 21,000 cubic feet of water (157,000 gallons).

2. If this request is for cost share in “upsizing” a BMP, explain how the upsize cost and benefit were computed.
This is a new facility.

3. Show total project cost, amount of cost share requested, and the amount and source of matching funds.

The City is currently requesting $50,000 from Shingle Creek Watershed Public Cost-Share project in 2020/2021 to help cover a portion of the construction cost. The balance of the project costs will come from the City’s storm water utility fund ($400,000 budgeted).

4. What is the project schedule, when will work on the BMP(s) commence and when will work be complete?

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan - April 2020</td>
<td>Finalize all plans</td>
</tr>
<tr>
<td>April 2020</td>
<td>Bidding for construction.</td>
</tr>
<tr>
<td>May/June 2020</td>
<td>Award construction.</td>
</tr>
<tr>
<td>June – Oct 2020</td>
<td>Construction</td>
</tr>
<tr>
<td>2021</td>
<td>Alternate construction timeline</td>
</tr>
</tbody>
</table>
SITE CONSTRUCTION PLANS
FOR
KENTUCKY AVENUE WATER QUALITY IMPROVEMENT
CRYSTAL, MINNESOTA
APRIL 2020

WARNING:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES. THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

GOPHER STATE ONE CALL
TWIN CITY AREA: 651-454-0002
TOLL FREE 1-800-252-1166
CALL BEFORE YOU DIG

ENGINEER
WENCK ASSOCIATES, INC.
7500 OLSON MEMORIAL HWY SUITE 300
GOLDEN VALLEY, MN 55427
(P) - 763-252-6800
CONTACT: BRIAN KALLIO, P.E.

SHEET INDEX

<table>
<thead>
<tr>
<th>Sheet Number</th>
<th>Sheet Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-001</td>
<td>COVER SHEET</td>
</tr>
<tr>
<td>C-002</td>
<td>NOTES</td>
</tr>
<tr>
<td>C-003</td>
<td>EXISTING CONDITIONS</td>
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<tr>
<td>C-004</td>
<td>REMOVALS PLAN AND PRECONSTRUCTION EROSION CONTROL PLAN</td>
</tr>
<tr>
<td>C-051</td>
<td>SITE PLAN</td>
</tr>
<tr>
<td>C-052</td>
<td>STORM SEWER PLAN</td>
</tr>
<tr>
<td>C-053</td>
<td>DETAILS</td>
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</table>

UNDERGROUND STORM CHAMBER SYSTEM BY ADVANCED DRAINAGE SYSTEMS (SHEETS 1 TO 7 OF 7) ARE APPENDED TO THIS SET.
SANITARY SEWER AUTHORITY. THE CONTRACTOR MUST REPLACE AND CLEAN THE FILTER MEDIA USED IN DEWATERING INCORPORATE THE BACKWASH WATER INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION. THE CONTRACTOR IS USING FILTERS WITH BACKWASH WATER, THE CONTRACTOR MUST HAUL THE BACKWASH INUNDATION IN WETLANDS CAUSING SIGNIFICANT ADVERSE IMPACT TO THE WETLAND.

MJS

PROJECT NO.

ENGINEER IMMEDIATELY. ALL CONTAINERS OR TANKS MUST BE DISPOSED OF PROPERLY AT A REGULATED/PERMITTED ENGINEER UNDER THE LAWS OF THE

CONTRACTOR MUST DISCHARGE TURBID OR SEDIMENT-LADEN WATER RELATED TO DEWATERING OR BASIN DRAINING CONSTRUCTION SHALL REVIEW FEATURES NOT SPECIFICALLY IDENTIFIED ON PLAN FOR SALVAGE OR REMOVAL THAT

CONTRACTOR SHALL PROVIDE 10 FEET MINIMUM HORIZONTAL SEPARATION (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF SPECIFICATIONS.

HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO OIL, GASOLINE, PAINT AND ANY HAZARDOUS SUBSTANCE PROJECT SITE AND OTHER PERSONS AND ORGANIZATIONS WHO MAY BE AFFECTED BY THE PROJECT. CONTRACTOR’S

CONTRACTOR SHALL PHASE GRADING WORK TO MINIMIZE THE DURATION THAT DISTURBED SOIL IS EXPOSED.

CONSTRUCTION (BOTH PIPED AND OVERLAND FLOW).

CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES INCLUDING, BUT NOT TO PERSONNEL MONITORING, USE OF TRENCHING, SHEETING, AND SHORING, ; IN ADDITION TO WORK AROUND OR UNDER UTILITIES, IS THE RESPONSIBILITY OF THE CONTRACTOR WITH NO

CONTRACTOR SHALL INSTALL, MAINTAIN, AND CLEAN SEPTIC TANKS AND DRAINFIELDS IN CONFORMANCE WITH STATE AND LOCAL CODES.

CONTRACTOR SHALL PROVIDE DEWATERING MEASURES AS REQUIRED OR AS DIRECTED BY THE GEOTECHNICAL ON SITE EMBANKMENT MATERIAL FREE OF ORGANIC SOIL AND DEBRIS MAY BE CONSIDERED FOR REUSE AS FILL

A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE EXACT LOCATION OF PAVEMENT MARKINGS TO MATCH EXISTING.

CONTRACTOR SHALL REVIEW FEATURES NOT SPECIFICALLY IDENTIFIED ON PLAN FOR SALVAGE OR REMOVAL THAT

CONTRACTOR SHALL PHASE GRADING WORK TO MINIMIZE THE DURATION THAT DISTURBED SOIL IS EXPOSED.

CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES INCLUDING, BUT NOT TO PERSONNEL MONITORING, USE OF TRENCHING, SHEETING, AND SHORING, ; IN ADDITION TO WORK AROUND OR UNDER UTILITIES, IS THE RESPONSIBILITY OF THE CONTRACTOR WITH NO

CONTRACTOR SHALL INSTALL, MAINTAIN, AND CLEAN SEPTIC TANKS AND DRAINFIELDS IN CONFORMANCE WITH STATE AND LOCAL CODES.

CONTRACTOR SHALL PROVIDE DEWATERING MEASURES AS REQUIRED OR AS DIRECTED BY THE GEOTECHNICAL ON SITE EMBANKMENT MATERIAL FREE OF ORGANIC SOIL AND DEBRIS MAY BE CONSIDERED FOR REUSE AS FILL

A TOLERANCE OF 1/4 INCH UNDER OR 1/4 INCH OVER THE SPECIFIED WIDTH WILL BE ALLOWED FOR STRIPING PROVIDED THE EXACT LOCATION OF PAVEMENT MARKINGS TO MATCH EXISTING.
INSTALL ROCK CONSTRUCTION ENTRANCE

CALL BEFORE YOU DIG
GOPHER STATE ONE CALL
TOLL FREE 1-800-252-1166

SHEET NO.: 004

PROJECT NO.: 1886-0010

DATE: 04/15/2020

STATE OF MINNESOTA
DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE

ENGINEER
PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A

SPECIFICATION, OR REPORT WAS
I HEREBY CERTIFY THAT THIS PLAN,

REQUIRED. COORDINATE WITH ENGINEER.

WARNING:
ACCUMULATED SEDIMENTS AT END OF EACH DAY

REMOVED FROM SITE BEFORE LEAVING.

CONSTRUCTION AT NO COST TO THE OWNER.
THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED
THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR

COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

EXISTING 8" WATERMAIN IN THIS AREA NOT SURVEYED AND SHOWN FOR REFERENCE ONLY -
EXISTING STORM SEWER STRUCTURE AND PIPES
PROTECT EXISTING STORM STRUCTURE AND PIPES
REMOVE STORM SEWER PIPE
REMOVE STORM SEWER MANHOLE
REMOVE STORM SEWER INLET
REMOVE CURB AND GUTTER (TYP.)
REMOVE BITUMINOUS PAVEMENT (TYP.)
SALVAGE ROCK TO REPLACE IN SAME LOCATION AND REMOVE PARKING LOT ISLAND
CLEAR AND GRUB AREA (TYP.). SALVAGE AND STOCKPILE EXISTING TOPSOIL.
INLET PROTECTION
PROTECT EXISTING SANITARY STRUCTURE AND PIPE
REMOVE STORM SEWER STRUCTURE
REMOVE STORM SEWER PIPE
BIOROLL
EXISTING STORM SEWER INLET
EXISTING STORM SEWER
REMOVE BITUMINOUS SURFACE REMOVAL.
UNDERGROUND INSTALLATION PROGRESS
ACCUMULATED SEDIMENTS AT END OF EACH DAY
BACKFILL EXCAVATIONS IN THE RIGHT OF WAY AT THE END OF EACH WORK DAY.
OFF-SITE TRANSPORTATION AND DISPOSAL ARE INCLUDED WITH REMOVAL BID ITEMS.
MOVE AS NEEDED THROUGHOUT THE WORK.
NOT IN USE.
WORK AREAS.
CONTRACTOR SHALL CONSTRUCT BARRIERS OR CONSTRUCTION FENCE SURROUNDING ALL
CONTRACTOR SHALL CONSTRUCT BARRIERS OR CONSTRUCTION FENCE SURROUNDING ALL

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NOTES:

1. SEE SHEET C-002 FOR OTHER CONSTRUCTION NOTES.

KEYNOTES:

1. EXISTING CURB AND GUTTER
2. TURF ESTABLISHMENT
3. BITUMINOUS PAVEMENT
4. SALVAGED ROCK
5. FIGURES SHOWN ARE FOR EXPLANATION ONLY

LEGEND:

1. PROPERTY Boundary
2. EXISTING MAJOR CONTOUR
3. PROPOSED MAJOR CONTOUR
4. EXISTING MINOR CONTOUR
5. PROPOSED MINOR CONTOUR
6. EXISTING PROPERTY LINE
7. EXISTING CURB AND GUTTER
8. BITUMINOUS PAVEMENT
9. SALVAGED ROCK
10. UNDERGROUND INFILTRATION SYSTEM FOOTPRINT
11. CURB AND GUTTER WITH RAIN GUARDIAN TURRET

WARNING:

THE CONTRACTOR SHALL CONTRACTOR REQUIREMENTS PRIOR TO WORKING IN THE COURSE OF ALL UNDERGROUND PIPES, DUCTS, CONDUITS, OR OTHER BURIED STRUCTURES. THE CONTRACTOR SHALL CONTRACTOR REQUIREMENTS PRIOR TO WORKING IN THE COURSE OF ALL UNDERGROUND PIPES, DUCTS, CONDUITS, OR OTHER BURIED STRUCTURES. THE CONTRACTOR SHALL CONTRACTOR REQUIREMENTS PRIOR TO WORKING IN THE COURSE OF ALL UNDERGROUND PIPES, DUCTS, CONDUITS, OR OTHER BURIED STRUCTURES. THE CONTRACTOR SHALL CONTRACTOR REQUIREMENTS PRIOR TO WORKING IN THE COURSE OF ALL UNDERGROUND PIPES, DUCTS, CONDUITS, OR OTHER BURIED STRUCTURES.

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SELECT GRANULAR SUBGRADE MEETING MNDOT SPEC 3149-4 (SALVAGE ON SITE)

1.5" SPWEA340C WEAR COURSE PER MNDOT 2360

2" SPNWB330B NON-WEAR COURSE PER MNDOT 2360

6" MNDOT CLASS 5 AGGREGATE BASE (100% CRUSHED)

BITUMINOUS TACK COAT PER MNDOT 2357

1.5" SPWEA340C WEAR COURSE PER MNDOT 2360

1.5" SPNWB330B NON-WEAR COURSE PER MNDOT 2360

6" MNDOT CLASS 5 AGGREGATE BASE (100% CRUSHED)

SELECT GRANULAR SUBGRADE MEETING MNDOT SPEC 3149-4 (SALVAGE ON SITE)
RAIN GUARDIAN TUNNEL
PRETREATMENT CHAMBER
BIORETENTION PONDING DEPTH: 1'
TYPICAL DETAIL

1. HOLE IN RAIN GUARDIAN BASE
2. EMBED 2 - 5 8" DIAMETER CONCRETE ANCHORS IN CURB APRON. TIE TO REBAR. MINIMUM 2" CONCRETE COVER OVER TOP AND BOTTOM OF ANCHOR
3. USE SALT TOLERANT SOD
4. SHINGLED OVERLAY SOD IN LOW DIRECTION

SAVAGED ROCK FROM CENTER ISLAND. THICKNESS DEPENDENT ON AVAILABLE QUANTITY. MAXIMUM 3''.
OVERFLOW STRUCTURE INLET ELEV. 871.5
MATCH TOP OF CURB ELEVATION
SHINGLE/OVERLAP SOD IN FLOW DIRECTION
SOD INSTALLATION
COMPACTED BACKFILL

C802 PIPE BEDDING
SOD INSTALLATION

CENTER ISLAND INFILTRATION BASIN

C802 ANCHOR RAIN GUARDIAN
NOT TO SCALE

DATE: 04/15/2020
ISSUE NO.: C-802
SHEET NO.: 4
SHEET TITLE: DETAILS
MC-3500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOYLMER.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
4. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE.
5. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION
   • TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   • TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   • TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 75° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   • THE STRUCTURAL EVALUATION SHALL BE SCALE BY A REGISTERED PROFESSIONAL ENGINEER.
   • THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.65 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   • THE TEST DERIVED CREEP MODULUS AS DEFINED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER’S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLER.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS.
4. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   • STONE SHOOTER LOCATED OFF THE CHAMBER BED.
   • BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   • BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
5. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
6. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
7. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
   • NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   • FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.
8. STORMTECH RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
   • NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   • NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   • WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.
   • USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD.
   • ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.
NOTES

- **Manifold Size** to be determined by Site Design Engineer. See Technical Note 6.32 for Manifold Sizing Guidance.
- **Due to the adaptation of this Chamber System to specific site and design constraints, it may be necessary to cut and couple additional pipe to standard manifold components in the field.**
- This Chamber System was designed without site-specific information on soil conditions or bearing capacity. The Site Design Engineer is responsible for determining the suitability of the soil and providing the bearing capacity of the in situ soils. The base stone depth may be increased or decreased once this information is provided.

PROPOSED ELEVATIONS

- **877.00** Maximum Allowable Grade (Top of Pavement/Unpaved)
- **871.00** Minimum Allowable Grade (Unpaved With Traffic)
- **870.50** Minimum Allowable Grade (Base of Pavement)
- **870.00** Minimum Allowable Grade (Top of Rigid Pavement)
- **869.00** Top of MC-3500 Chamber
- **867.30** 15" Top Manifold/Connection Invert
- **865.42** 24" Isolator Row Connection Invert
- **865.25** Bottom of MC-3500 Chamber
- **864.50** Bottom of Stone

**DESCRIPTION**

- **4640 TRUEMAN BLVD**
- **HILLIARD, OH  43026**
- **ADVANCED DRAINAGE SYSTEMS, INC.**

**DATE**

- **04/06/20**

**CHECKED**

- **TSG**

**ADJ BOC ELEVATION TO 865.25 / MOVE 4 CHAMBERS / ADJ VOLUME**

**0 20' 40' 60' 80' 100' 120'**

**520 CROMWELL AVENUE**

**| ROCKY HILL | CT | 06067**

**860-529-8188**

**| 888-892-2694**

**WWW.STORMTECH.COM**

**PROPOSED LAYOUT**

- **100** STORMTECH MC-3500 CHAMBERS
- **28** STORMTECH MC-3500 END CAPS
- **9** STONE ABOVE (in)
- **49** STONE BELOW (in)
- **20.262** INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)
- **6.097** SYSTEM AREA (ft²)
- **326** SYSTEM PERIMETER (ft)

**NOTES**

- **15" X 15" ADS N-12 TOP MANIFOLD**
  - Invert 23.39" Above Chamber Base (See Notes)

- **STRUCTURE STMH-2 PER PLAN**
  - Elev. 30" Nyloplast Basin (Relocated)
  - Weleveled Bypass Connection (24" Sump Min)

- **PLACE MINIMUM 17.5' OF ADS GEOSYNTHETICS 310WTM WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER**
  - FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

- **ISOLATOR ROW**
  - (See Detail / Typ 2 Places)

- **INSPECTION PORT**
  - (Typ 2 Places)
THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

Advanced Drainage Systems, Inc.

532450 S2017521

Kentucky Ave WQ Improvements
Crystal, MN

4640 Trueman Blvd
Hilliard, OH 43026

Description

04/01/20
GGC
NAB
Redraw per revised layout

04/06/20
TSG
Adj BOC elevation to 865.25 / move 4 chambers / adj volume

15'
30'
520 Cromwell Avenue
Rocky Hill
CT
06067

860-529-8188
888-892-2694
www.stormtech.com

Detention Retention Water Quality
NOTE(S):

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, “STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS” CHAMBER CLASSIFICATION 45/75 DESIGNATION SS.
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 “STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS”.
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   • TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   • TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   • TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN.
   • TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

<table>
<thead>
<tr>
<th>MATERIAL LOCATION</th>
<th>DESCRIPTION</th>
<th>AASHTO MATERIAL CLASSIFICATIONS</th>
<th>COMPACTION / DENSITY REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNEARTHED FINSIHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER</td>
<td>ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.</td>
<td>PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRONGER MATERIAL AND PREPARATION REQUIREMENTS.</td>
</tr>
<tr>
<td>C</td>
<td>INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24&quot; (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.</td>
<td>GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, &lt;35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.</td>
<td>BEGIN COMPACIONS AFTER 24&quot; (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12&quot; (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.</td>
</tr>
<tr>
<td>B</td>
<td>EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.</td>
<td>CLEAN, CRUSHED, ANGULAR STONE</td>
<td>NO COMPACTION REQUIRED.</td>
</tr>
<tr>
<td>A</td>
<td>FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.</td>
<td>CLEAN, CRUSHED, ANGULAR STONE</td>
<td>PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.</td>
</tr>
</tbody>
</table>

PLEASE NOTE:

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR, FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGE WITH A VIBRATORY COMPACTOR.
3. WHERE INFLATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45/75 DESIGNATION SS.
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   • TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
**INSPECTION & MAINTENANCE**

**STEP 1)** INSPECT ISOLATOR ROW FOR SEDIMENT

A. **INSPECTION PORTS (IF PRESENT)**
   A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
   A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
   A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
   A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
   A.5. IF SEDIMENT IS AT OR ABOVE 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

B. **ALL ISOLATOR ROWS**
   B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
   B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
      i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
      ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
   B.3. IF SEDIMENT IS AT OR ABOVE 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

**STEP 2)** CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS

A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
C. VACUUM STRUCTURE SUMP AS REQUIRED.

**STEP 3)** REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

**STEP 4)** INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

**NOTES**

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACUATING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.
NOTE: ALL DIMENSIONS ARE NOMINAL

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"

CUSTOM PARTIAL CUT INVERTS ARE AVAILABLE UPON REQUEST.
INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.
### Traffic Loads
Concrete dimensions are for guideline purposes only. Actual concrete slab must be designed giving consideration for local soil conditions, traffic loading, and other applicable design factors.

### Adapter Angles
Variable 0°-360° according to plans.

### Variable Sump Depth
According to plans.

| Backfill Material Below and to Sides of Structure | Shall Be ASTM D2321 Class I or II Crushed Stone or Gravel and Be Placed Uniformly in 12" (305 mm) Lifts and Compacted to Min of 90% |

### Integrated Ductile Iron Frame & Grate/Solid to Match Basin O.D.

### Notes
1. 8-30" (200-750 mm) Grates/Solid Covers Shall Be Ductile Iron Per ASTM A536 Grade 70-50-05
2. 12-30" (300-750 mm) Frames Shall Be Ductile Iron Per ASTM A536 Grade 70-50-05
3. Drain Basin to Be Custom Manufactured According to Plan Details
4. Drainage Connection Stub Joint Tightness Shall Conform to ASTM D3212 for Corrugated HDPE (ADS & Hancor Dual Wall) & SDR 35 PVC
5. For Complete Design and Product Information: [www.nyloplast-us.com](http://www.nyloplast-us.com)
6. To Order Call: 800-821-6710

### Grate/Solid Cover Options

<table>
<thead>
<tr>
<th>A</th>
<th>PART #</th>
<th>GRATE/SOLID COVER OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot; (200 mm)</td>
<td>2808AG</td>
<td>Pedestrian Light Duty</td>
</tr>
<tr>
<td>10&quot; (250 mm)</td>
<td>2810AG</td>
<td>Pedestrian Light Duty</td>
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<tr>
<td>12&quot; (300 mm)</td>
<td>2812AG</td>
<td>Pedestrian AASHTO H-10 Light Duty</td>
</tr>
<tr>
<td>15&quot; (375 mm)</td>
<td>2815AG</td>
<td>Pedestrian AASHTO H-10 Light Duty</td>
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<tr>
<td>18&quot; (450 mm)</td>
<td>2818AG</td>
<td>Pedestrian AASHTO H-10 Light Duty</td>
</tr>
<tr>
<td>24&quot; (600 mm)</td>
<td>2824AG</td>
<td>Pedestrian AASHTO H-10 Light Duty</td>
</tr>
<tr>
<td>30&quot; (750 mm)</td>
<td>2830AG</td>
<td>Pedestrian AASHTO H-20 Light Duty</td>
</tr>
</tbody>
</table>

### Adapters
Various Types of Inlet and Outlet Adapters Available:

- 4-30" (100-750 mm) for Corrugated HDPE

### Invert
According to Plan Stake Off
BUILD NEW STORM MANHOLE
OVER EXISTING STORM SEWER

STMH-1
RIM=872.62
18" INV IN=868.70 (SW)
12" INV IN=868.80 (NW)
24" INV OUT=867.00 (S)
18" INV OUT=868.70 (NE)

H-\(\text{N}\)
1.88
(E)
0.85

42 LF OF 24" RCP @ 0.36%

STMH-2 WITH PRESERVER
RIM=873.03
24" INV IN=866.70 (W)
24" INV OUT=866.70 (E)
4' SUMP=862.70

STMH-1 TO ADS MC-3500 PROFILE

STMH-2 WITH PRESERVER
RIM=873.03
24" INV IN=866.70 (W)
24" INV OUT=866.70 (E)

~ADS MC-3500 SYSTEM NOT DRAWN TO SCALE
~SCALE NOT KEPT
The Lake Pepin Nutrient TMDL has been completed and is currently out for public comment. The review period ends June 19, 2020. The draft had previously been out for informal review and comment in August-September 2019. The documents can be found at [https://www.pca.state.mn.us/water/tmdl/lake-pepin-watershed-excess-nutrients-tmdl-project](https://www.pca.state.mn.us/water/tmdl/lake-pepin-watershed-excess-nutrients-tmdl-project).

The TMDL does call for TP load reductions from runoff discharged into the Mississippi River, and establishes a concentration standard for each of the reaches from the Crow River to Lake Pepin. For communities with a Municipal Separate Storm Sewer System (MS4), the goal is to reduce phosphorus in their stormwater discharges to **0.35 lb/acre/year**. This approach does not call for a flat percentage reduction from all MS4 permits. Instead, municipalities may consider work already completed toward reducing phosphorus discharges.

Table 1 shows the annualized flow and TP load at SC-0. While there is annual variation, in each year the loading rate was much lower than the 0.35 lb/acre/year goal. There is a part of the watershed that discharges into the creek downstream of SC-0, most notably areas of Minneapolis that are collected in storm sewers that discharge into the creek in Webber Park (see Figure 1). Some of that tributary area is treated by a regional pond on the north side of Crystal Lake Cemetery. The balance of the tributary area may have some treatment in the form of sump manholes, rain gardens, etc. The flow and load contributed by this area is small compared to the load contributed by the watershed above SC-0.

We do not have data at this time to do a similar analysis for West Mississippi, but would expect it to be similar or less, given that quite a bit of the watershed developed under treatment rules.
Table 1. Annual flow and TP load at SC-0.

<table>
<thead>
<tr>
<th>Year</th>
<th>Flow (ac-ft)</th>
<th>Load (lbs)</th>
<th>Conc (ug/L)</th>
<th>(lbs/acre)</th>
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<td>8,612</td>
<td>3,748</td>
<td>160</td>
<td>0.13</td>
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<td>2005</td>
<td>15,367</td>
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<td>13,255</td>
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<td>2007</td>
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<td>2008</td>
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<td>2009</td>
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<td>8,630</td>
<td>2,187</td>
<td>113</td>
<td>0.08</td>
</tr>
<tr>
<td>2016</td>
<td>17,007</td>
<td>4,241</td>
<td>148</td>
<td>0.15</td>
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<tr>
<td>2017</td>
<td>16,149</td>
<td>3,601</td>
<td>88</td>
<td>0.13</td>
</tr>
<tr>
<td>2018</td>
<td>9,886</td>
<td>2,850</td>
<td>114</td>
<td>0.10</td>
</tr>
<tr>
<td>2019</td>
<td>24,763</td>
<td>7,001</td>
<td>112</td>
<td>0.24</td>
</tr>
</tbody>
</table>
This figure from the Minneapolis Subwatershed Assessment shows the modeled TP loading rates. The area in the blue rectangle is approximately the area being treated by a regional pond in Crystal Lake cemetery. The area outlined with a black dash is the approximate area that discharges downstream of SC-0, mostly with minimal treatment.

Figure 1. Minneapolis modeled TP loading rate.
Lake Pepin and upstream Mississippi River from the Crow River to the St. Croix River

What are the issues?

Algae blooms, some leading to fish kills, once plagued Lake Pepin, a naturally occurring lake on the Mississippi River in southeast Minnesota. The Minnesota Pollution Control Agency (MPCA) placed Lake Pepin on its impaired waters list in 2002 because nutrient levels were too high to meet state water quality standards. The MPCA started a study in 2006 on reducing those nutrient levels. The study now includes the Mississippi River upstream, from the Crow River near Dayton, Minn., to the St. Croix River near Hastings, Minn.

The study references phosphorus reductions in several upstream rivers, which are addressed in separate studies.

Sediment is also an important issue for Lake Pepin. The Mississippi River carries high loads of sediment - the majority from the Minnesota River upstream - with much of it settling out in Lake Pepin. The sediment levels are so high that the upper part of the lake is already filling in. Some phosphorus attaches to sediment, meaning reductions in sediment could reduce phosphorus and minimize algae blooms. A healthier Lake Pepin means addressing both phosphorus and sediment, and addressing them upstream.

How does the study address the issues?

A Total Maximum Daily Load (TMDL) is a study to determine how much of a pollutant a water body can receive and still meet water quality standards. TMDL studies are part of federal and state efforts to monitor water bodies, identify impaired waters, and plan for their restoration.

In the case of Lake Pepin, the TMDL study addresses the level of phosphorus that Lake Pepin and upstream waters can carry and still meet water quality standards.

The Lake Pepin TMDL study was an immense undertaking, due to the size of the watershed, scope of the project, and science developed for it:

- **Size:** Nearly 50,000 square miles – roughly half of Minnesota plus parts of three neighboring states – drain to Lake Pepin through the Upper Mississippi, St. Croix, and Minnesota rivers. No other TMDL project in Minnesota has covered such a large watershed.

- **Scope:** The TMDL addresses phosphorus impairments in the lake and two sections of the Mississippi River upstream. It proposes reductions in phosphorus from many sources.

- **Science:** The MPCA and its partners developed site-specific standards for Lake Pepin and upstream rivers, developed a computer model to help determine pollutant reductions, and examined the link between phosphorus and sediment.

Pepin: Lake or river?

Lake Pepin has characteristics of both a lake and river. Pepin is one of the widest parts of the Mississippi River, bordered by Minnesota on the west and Wisconsin on the east. It is located about 60 miles downstream of St. Paul, Minn., just south of the confluence of the St. Croix and Minnesota rivers with the Mississippi. The lake is 21 miles long, averages 1.7 miles wide and covers 29,295 acres. It has a maximum depth of 60 feet and an average depth of 18 feet.
How were nutrient reductions determined?

The MPCA initially addressed the sediment levels in the Mississippi River and nutrient levels in Lake Pepin in one TMDL study. The agency and partners developed a computer model that examined both sediment and nutrient levels for the Upper Mississippi River from Lock and Dam No. 1 at St. Paul through Lock and Dam No. 4 below Lake Pepin. The model supported TMDLs for both sediment and nutrient impairments in Pools 2, 3, and 4 of the Upper Mississippi River.

Based on recommendations in 2008 from the study’s Stakeholder Advisory Committee and Science Advisory Panel, the MPCA decided to separate the issues of sediment and nutrients by developing separate TMDLs:

- The TMDL addressing sediment for the South Metro Mississippi from St. Paul through Lake Pepin, which was approved by the U.S. Environmental Protection Agency (EPA) in 2016.
- The TMDL for nutrients for Lake Pepin, now open for public comment in spring 2020.

Because Lake Pepin is unique in many ways, the Science Advisory Panel recommended a site-specific standard, a more customized water quality standard, for the lake. One reason is that Lake Pepin has characteristics of both a lake and a river. The MPCA Citizens Board adopted the standard in 2014.

The MPCA and partners then used the computer model to predict the impact of different scenarios on nutrient levels in the lake. The model showed that nutrient reductions in upstream rivers would be needed for Lake Pepin to meet the standard and to continue to do so as population increases and other changes occur. About two-thirds of the algae in Lake Pepin are produced upstream. Thus, the TMDL includes two upstream sections that must meet Minnesota river eutrophication standards:

- Mississippi River from the Crow River to Upper St. Anthony Falls
- Mississippi River from Upper St. Anthony Falls to the St. Croix River

While Lake Pepin is close to meeting its standard, the Upper Mississippi sections need further reductions to meet their water quality standards, as outlined in the table below.

<table>
<thead>
<tr>
<th>Mississippi River water quality</th>
<th>Standard to meet</th>
<th>Average level 2006-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crow River to Upper St. Anthony Falls</td>
<td>Total phosphorus</td>
<td>100 micrograms per liter</td>
</tr>
<tr>
<td></td>
<td>Chlorophyll-a (green pigment in algae)</td>
<td>18 micrograms per liter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mississippi River water quality</th>
<th>Standard to meet</th>
<th>Average level 2004-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper St. Anthony Falls to the St. Croix River</td>
<td>Total phosphorus</td>
<td>125 micrograms per liter</td>
</tr>
<tr>
<td></td>
<td>Chlorophyll-a (green pigment in algae)</td>
<td>35 micrograms per liter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lake Pepin water quality</th>
<th>Standard to meet</th>
<th>Average level 2009-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total phosphorus</td>
<td>100 micrograms per liter</td>
<td>134 micrograms per liter</td>
</tr>
<tr>
<td>Chlorophyll-a (green pigment in algae)</td>
<td>28 micrograms per liter</td>
<td>27 micrograms per liter</td>
</tr>
</tbody>
</table>
What reductions are needed to meet standards?

While Lake Pepin is the focus of this TMDL, the work needs to happen upstream. Both point and non-point sources — regulated and unregulated sources — need to reduce the phosphorus they send downstream. If upstream watersheds meet their phosphorus and sediment goals, then local rivers will be healthier and so will Lake Pepin at the end of the system.

Flow is a big factor for the lake:
- During high flows, when runoff is high, sediment is the concern. Several other studies address the sediment issues, including the South Metro Mississippi TMDL and Minnesota River TMDL.
- During low flows, wastewater discharges are more of a concern because they make up more of the flow and their phosphorus has potential to grow algae. The Lake Pepin TMDL and several upstream studies regulate these discharges through permits for wastewater and municipal stormwater. The majority of the cities and industries in the Lake Pepin watershed have done their part in reducing total phosphorus loads over the past 20 years.

The model used to simulate pollutant reductions recommended the following phosphorus reductions on an average yearly basis:
- 70% reduction from wastewater treatment facilities (goal nearly achieved as of 2020)
- 50% reduction from non-point sources in the Minnesota River and Cannon River
- 50% reduction in resuspension of phosphorus from bottom sediment of the Mississippi River from St. Paul to Hastings
- 20% reduction from non-point sources in the Mississippi River at Lock & Dam 1, St. Croix River and other tributaries

These reductions would protect aquatic recreational uses for Lake Pepin and the downstream pools and should be applicable over the range of high and low water flows.

What do these reductions mean for regulated and non-regulated parties?

Water quality data and modeling confirm that both point and non-point source reductions - regulated and non-regulated - are required to meet the water quality standards. Due to the variability in weather and stream flows, the entire load reduction needed across all years could not be borne by either point or non-point sources alone.

Regulated sources

For regulated parties, mainly wastewater and stormwater systems that need a state permit, reducing algae in Lake Pepin means reducing phosphorus in their discharges to the environment.

Wastewater: Over the past two decades, most of the cities and industries in the Lake Pepin Basin have done their part to reduce total phosphorus loads. Phosphorus in wastewater from municipal and industrial facilities decreased by 80% from 2000-2019.

The MPCA has assigned a waste load allocation — a percentage of the overall phosphorus reduction needed — to 397 permitted wastewater dischargers, based on their size and treatment type. Many of these facilities are already meeting their targets for local resources and Lake Pepin. However, several facilities in upstream watersheds may need to meet more restrictive phosphorus limits to meet eutrophication standards for their rivers.
To guide implementation for the Lake Pepin TMDL study, the MPCA is using the Minnesota Nutrient Reduction Strategy (www.pca.state.mn.us/water/nutrient-reduction-strategy), developed to reduce nutrient loads across the state and Minnesota’s contribution to the dead zone in the Gulf of Mexico.

The Nutrient Reduction Strategy calls for a 45% reduction in phosphorus in the Mississippi River, compared to a 1980 - 1996 baseline, by 2025. The strategy provides a detailed discussion of phosphorus sources, transport mechanisms, reduction strategies, and example BMP combinations that can attain reduction goals.

The MPCA and other partners have already completed several other TMDLs that address phosphorus and/or sediment in the Lake Pepin watershed, including those for Lake St. Croix, Byllesby Reservoir and the Minnesota River.

Minnesota has made progress in reducing phosphorus and sediment loads to lakes and streams by way of wastewater treatment and soil conservation. Additionally, the buffer initiative and the Conservation Reserve Enhancement (CREP) are expected to improve water quality, but those changes will need many years to take effect and show pollutant reductions.

Much of the work to reduce phosphorus going to the Mississippi River and Lake Pepin needs to be done on agricultural land (non-point sources). Public and private entity solutions will be important, both in terms of creating markets for perennial plants to reduce soil erosion and providing services to support conservation practices. Examples of such work include:

- University of Minnesota’s Forever Green program (www.forevergreen.umn.edu)
- General Mills’ commitment to use perennial plants in food production
- Land O’Lakes Sustain program (www.landolakessustain.com)

The science shows that work upstream will reduce phosphorus and algae in Lake Pepin and the Upper Mississippi as well as lead to dramatic improvements in several other rivers. Now it’s up to cities, landowners, private companies, government programs and other stakeholders to make it happen.

How will the reductions be implemented?

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MEMORANDUM

To: Shingle Creek and West Mississippi TAC Committees

From: Troy Gilchrist

Re: Maintenance Levy

Date: April 28, 2020

The Commissions have been discussing whether it can establish and communicate to the County a levy to maintain its CIP projects. A maintenance levy is specifically provided for in Minn. Stat. § 103B.251, subd. 9, but it refers to the commission imposing the levy itself in the same manner as a watershed district under Minn. Stat. §§ 103D.915 and 103D.921. The statute also makes it clear the county must approve the levy.

I sent the attached message to the county attorney’s office to see if they would agree to the Commissions sending the county a maintenance levy along with its usual levy request. I thought I had sent the message out earlier in the month, but I found it in my draft messages and so it was not sent until April 24th. I have not yet received a response from the county.

If the TAC recommends, and the Commissions agree, to proceed with a maintenance levy request, I recommend the Commissions act at the next meeting to set an amount for the maintenance levy conditioned on the county agreeing to it. I would then work with Diane to add language regarding the maintenance levy to the regular communication to the county regarding the levy request.

If the county does not agree with the request, whether because it believes it is not authorized under the statute or for some other reason, the only consequence should be the county telling the Commissions no. As such, I see no particular harm in making the request if that is what the Commissions would like to do.
From: Gilchrist, Troy J. <TGilchrist@Kennedy-Graven.com>
Sent: Friday, April 24, 2020 12:32 PM
To: 'Chuck.Salter@hennepin.us' <Chuck.Salter@hennepin.us>
Cc: Diane Spector (dspector@wenck.com) <dspector@wenck.com>; Judie Anderson <Judie@jass.biz>
Subject: Levy for Maintenance (SH220-1)

Hello Chuck,

You and I communicated last summer about Shingle Creek and West Mississippi WMOs including street sweepers in its CIP funding. As you know, after a fair amount of discussion and analysis, the WMOs were able to adopt a policy to address that issue. Since then, another issue has come up that I would like to run by you to get your thoughts on it. Specifically, the WMOs are exploring the possibility of including in its levy request a maintenance levy for maintaining CIP projects. The WMOs have engaged in many successful CIP projects, but providing for their on-going maintenance so they can continue to provide the water quality benefits is becoming an increasing challenge.

In reviewing the statutes, I noticed Minn. Stat. 103B.251, subd. 9 contemplates a maintenance levy:

Subd. 9. Maintenance levy. For the purpose of creating a maintenance fund to be used for normal and routine maintenance of a work of improvement constructed in whole or part with money provided by the county pursuant to subdivision 6, the board of managers of a watershed district, with the approval of the county, may impose an ad valorem levy on all property located within the territory of the watershed district or subwatershed unit. The levy shall be certified, levied, collected, and distributed as provided in sections 103D.915 and 103D.921, and shall be in addition to any other money levied and distributed to the district. The proceeds of the levy shall be deposited in a separate maintenance and repair account to be used only for the purpose for which the levy was made.

If the county approves, it appears a WMO may establish a maintenance fund for maintenance activities associated with a funded CIP project and levy to support that fund. The statute indicates the funds are to be levied under 103D, but at this point the WMOs are asking if it is possible to certify a maintenance levy to the county along with its usual levy request. I do not know if any other WMOs in the county are levying for maintenance, but I have not previously been asked to look into it on behalf the WMOs I represent and so I was wondering if you have any experience, thoughts, or comments on this option and whether the county would accept such a levy request.

Thanks for your input and feel free to let me know if have any questions.

Troy J. Gilchrist | Attorney at Law
Kennedy & Graven, Chartered
Direct: 612.337.9214
tgilchrist@kennedy-graven.com
To: Shingle Creek/West Mississippi WMC TAC

From: Ed Matthiesen, P.E.
      Diane Spector

Date: April 30, 2020

Subject: Potential Maintenance Levy

Staff met to discuss potential actions that might be considered for funding from a maintenance levy. These actions were limited to the costs associated with maintaining a capital improvement or the benefits of a capital improvement.

Upper Twin Lake ongoing CLP treatment: $5,000-7,000 per year, including the cost of delineation and permitting

Twin Lake ongoing carp management: $10,000-30,000 per year depending on effort, disposal costs, etc. (Note that this is about how much Ramsey-Washington budgets per year for Lake Owasso.)

Bass/Pomerleau Lakes ongoing CLP treatment: $10,000 per year, including the cost of delineation and permitting. So far no treatment has been required on Pomerleau. The project budget covers years 1-5, should additional treatment or Pomerleau treatment be necessary maintenance levy would be required

Crystal Lake: CLP management for years 1-3 is built into budget, but if additional treatment is required would need maintenance levy.

Meadow: Future drawdowns would likely be done as capital projects.

Iron and Biochar-enhanced sand filters: At some point these will need to be refreshed - $5,000-8,000 per site.

In summary, $30,000 - $50,000 per year.

Z:\Shingle Creek\CIPs\2020\M-maint levy.docx
To: Shingle Creek WMO TAC

From: Ed Matthiesen, P.E.
Diane Spector
Judie Anderson

Date: April 30, 2020

Subject: Initial Discussion of 2021 Proposed Operating Budget

Recommended Commission Action

This report presents a proposed 2021 budget for TAC discussion and comment. Based on these discussions, we will prepare a final budget for consideration at the May 14, 2020 Commission meeting. The budget must be finalized prior to July 1.

The Joint Powers Agreement (JPA) governing operations of the Shingle Creek Watershed Management Commission requires a budget and the resulting proposed city assessments for the coming year to be reported to the member cities by July 1. This memo is the first step in the 2021 budget process.

The budget is separated into an operating budget and a project budget. The annual operating budget revenue source is primarily city assessments and funds the Commission’s core activities. Projects and studies are funded through a variety of grant and other sources, most of which do not proceed on an annual fiscal year basis. Tracking budgets separately provides more clarity as to the activities the cities are funding directly from their annual budgets.

Assessment Cap. The assessment cap in the JPA limits the annual city assessment increase to the June-to-June increase in the Consumer Price Index-Urban (CPI-U), using the assessment in 2004 as a base. As Table 1 shows below, the “SC Allowed” is the amount of assessment that could have been made based on accumulated CPI-U change compared to the “SC Actual,” which is the amount actually assessed. While the current estimate of annual inflation is 0.8%, the allowable increase is based on the accumulated inflation rate since 2003. This preliminary recommended draft 2021 budget assumes an assessment of $369,190, which is a 1.5% increase.

<table>
<thead>
<tr>
<th>Year</th>
<th>June CPI-U</th>
<th>Annual CPI % Change</th>
<th>Cumul. CPI % Change</th>
<th>SC Allowed</th>
<th>SC Actual</th>
</tr>
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<td>2003</td>
<td>183.7</td>
<td></td>
<td></td>
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<tr>
<td>2004</td>
<td>189.7</td>
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<td>$262,750</td>
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<td>Year</td>
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<td>Cumul. CPI % Change</td>
<td>SC Allowed</td>
<td>SC Actual</td>
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<td>------------</td>
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<td>---------------------</td>
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<td>2021</td>
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<td>0.8%**</td>
<td>40.5%**</td>
<td>369,190</td>
<td>369,190</td>
</tr>
</tbody>
</table>

*March 2020 is the latest available. **June 2019 to March 2020

**Proposed Budget.** With a few exceptions the proposed budget shown in Table 2 generally continues the same activities at the same level of effort as 2020. Each line item is explained in the 2021 Budget Explanation below. Figure 1 shows the proposed 2021 expenditures by category. A few lines require more explanation:

*Interest (line 4):* The Commission currently has about $1 million in the bank, most of which is restricted funds dedicated to grant and levy projects. That balance is earning considerable interest, which staff recommends letting accrue to the cash reserves (line 45) rather than spend.

*West Metro Water Alliance (WMWA) Programs (lines 5-6 and 33-40):* Shingle Creek acts as the fiscal agent for WMWA. The Commission’s budget shows revenues received from our WMO partners for general WMWA programming (line 5). The partners’ share of WMWA expenses is shown on lines 34, 36, and 40, the sum of which equals the revenues shown on line 5. Shingle Creek’s contributions to WMWA programs are shown on lines 33, 35, and 39. The rain garden workshops are handled in a different way. They are funded directly by cities (line 6) and invoiced through Shingle Creek as a convenience, and the Commission contributes funds (line 37) to subsidize this cost for workshops hosted in the watershed.

*Subwatershed BMP Assessment (line 42).* The SWA account had a balance of $34,152 at the end of 2018. The 2019 budget allocated $20,000 budgeted for subwatershed assessments and $5,000 for contribution to the 4th generation plan to provide cost share to the HUC-8 flood mapping update. At the end of 2019 the Commission contributed $19,690 to the City of Maple Grove’s Pike Lake SWA. The 2020 budget includes a $20,000 annual contribution to the Subwatershed Assessment account. No requests for SWAs have been submitted yet in 2020, so the account has a pre-audit balance of $34,500. Staff recommends reducing the 2021 contribution to $10,000.

*Contribution to 4th Generation Plan (line 44).* The Commission has been contributing annually to a restricted account to finance the upcoming 4th Generation Plan. At the end of 2019 that balance is an estimated $62,000. We believe that with West Mississippi’s contribution this will be sufficient to provide an update to the management plan, especially given the management plan implementation work that has been ongoing: the TMDL 5-year reviews, HUC-8 modeling, robust monitoring program and annual water quality report.
2021 Budget Explanation

**Income (see Table 2)**

<table>
<thead>
<tr>
<th>Line</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The application fee structure is intended to recover the cost of completing current project reviews. While the fees do not fully fund that activity, they are set and periodically reviewed and adjusted so as to recover a majority of the cost. It is difficult to predict and budget for project review revenues and fees because it varies based on the economy.</td>
</tr>
<tr>
<td>2</td>
<td>The proposed assessment of $369,190 is a 1.5% increase over the 2020 assessment. There was no increase from 2015 to 2016 and a 0.1% increase between 2016 and 2017.</td>
</tr>
<tr>
<td>3</td>
<td>The Blue Line Extension project will be built through the watershed, and there will be a number of wetland and floodplain impacts and stream crossings. The Metropolitan Council will reimburse the Commission’s cost for the Watershed Engineer’s participation in planning meetings, which recently have been on hold.</td>
</tr>
<tr>
<td>4</td>
<td>The Commission uses the 4M fund to manage its funds, as do many of the member cities. Interest rates are low and likely to remain so, however, the commission is maintaining a high balance of funds encumbered for capital projects, so the amount of interest earned is rising.</td>
</tr>
<tr>
<td>5-6</td>
<td>The Commission is the fiscal agent for WMWA activities, and West Mississippi, Elm Creek, and Bassett Creek reimburse the Commission for those services. Participating cities reimburse the Commission for Metro Blooms workshops.</td>
</tr>
</tbody>
</table>

**Expenditures (see Table 2)**

<table>
<thead>
<tr>
<th>Line</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-11</td>
<td>These line items are to provide administrative support (scheduling, minutes, etc.) for regular Commission and TAC meetings and any special meetings that require support, as well as general administrative duties such as notices, mailings, and correspondence. The Watershed Engineer continues to request the administrator to take on tasks that she can perform more cost effectively.</td>
</tr>
<tr>
<td>Line</td>
<td>Explanation</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>12</td>
<td>This line item includes general engineering support, including preparation for and attendance at Commission and TAC meetings, general technical and engineering assistance, minor special projects, etc. There has been an increasing amount of work including more frequent TAC meetings, technical assistance to the member cities, CIP and grants, etc., so this line item is proposed for increase.</td>
</tr>
<tr>
<td>13</td>
<td>The Commission continues to be successful in obtaining grant funds. This line item funds both the development of grant applications and the work necessary to get them under contract, such as developing work plans, budgets, and schedules. Where possible grant administration is rolled into the grant project costs and is an eligible grant activity.</td>
</tr>
<tr>
<td>14-15</td>
<td>These line items are for project reviews, review of Local Water Management Plans and Comprehensive Plan amendments and updates, environmental assessments, and general inquiries about past and upcoming projects, and large projects. This activity has noticeably increased in the past few years, as there have been more planning and pre-submittal meetings and reviews. It is difficult to predict what the expense for a coming year will be, as it is based on the number of project reviews, inquiries, etc. received. In 2019 the Commission reviewed nine local water management plans.</td>
</tr>
<tr>
<td>16</td>
<td>In the lake and stream TMDLs, the Commission took on completing reviews of progress every five years on a rotating schedule. The Shingle and Bass Creeks Biota and DO TMDL review will be completed in 2020-2021, after which the first cycle will be complete.</td>
</tr>
<tr>
<td>17-21</td>
<td>Legal and administrative costs necessary to operate the Commission and hold meetings.</td>
</tr>
<tr>
<td>22-23</td>
<td>The Commission’s routine stream monitoring program. Flow and water quality are monitored at two sites—SC-0 at Webber Park in Minneapolis and SC-3 at Brooklyn Boulevard in Brooklyn Park, and one site on Bass Creek – BC-1 in Bass Creek Park in Brooklyn Park. This also includes the Commission’s share of operating the USGS real-time monitoring site at Queen Avenue in Minneapolis.</td>
</tr>
<tr>
<td>24</td>
<td>No monitoring equipment is proposed for replacement in 2021.</td>
</tr>
<tr>
<td>26</td>
<td>This line item is the routine lake water quality monitoring and aquatic vegetation surveys as set forth in the Third Generation Monitoring Program and in the lake TMDLs. In 2021 lakes monitored for water quality and aquatic vegetation will be Success and Cedar Island Lakes.</td>
</tr>
<tr>
<td>27-29</td>
<td>Volunteer lake, macroinvertebrate, and wetland monitoring. The lake monitoring is through the Met Council’s Citizen Assisted Monitoring Program (CAMP), and the stream macroinvertebrate and wetland monitoring is coordinated by Hennepin County Environmental Services. In 2021 the CAMP lakes will be Eagle, Pike, Schmidt, and Magda. Two wetlands yet to be determined will be monitored in 2021.</td>
</tr>
<tr>
<td>30</td>
<td>This line item is the annual water quality report, which provides a record of all the monitoring results for the year as well as analysis of water quality trends and an overview of progress toward the TMDLs. West Mississippi also budgets funds for this report. Now that the Commissions has accumulated a long enough data record, more trend analysis is possible.</td>
</tr>
<tr>
<td>31-32</td>
<td>The cost of the Education program is split 50/50 between Shingle Creek and West Mississippi. The education grants are targeted to educators and other parties desiring to enhance education and outreach around water. Some past examples are: transportation to the annual Children’s Water Fest; materials for a schoolyard rain garden; and interpretive signage at volunteer restoration sites.</td>
</tr>
<tr>
<td>33-40</td>
<td>Shingle Creek is the fiscal agent for the West Metro Water Alliance (WMWA). These lines show the Commission’s share as well as the partners’ share.</td>
</tr>
<tr>
<td>41</td>
<td>The Commission reviews its Capital Improvement Program (CIP) annually, and periodically formally revises the CIP through major and minor plan amendments. No amendment is anticipated in 2021.</td>
</tr>
<tr>
<td>42</td>
<td>Completion of subwatershed BMP assessments systematically in the areas of the watershed that could benefit from additional treatment as recommended in the Third Generation Plan.</td>
</tr>
<tr>
<td>43</td>
<td>A 2019 special project to update flood modeling and mapping that was last updated decades ago. The 2019 budget included funding to supplement the $50,000 contributed by the DNR. The project will be complete in 2020.</td>
</tr>
<tr>
<td>44-45</td>
<td>Contributions to dedicated accounts: a reserve for the 4th Generation Management Plan; and a grant match reserve. The 4th Generation Plan Account will have a balance of $62,000 at the end of 2019. No contribution is proposed to either the 4th Gen Plan or the grant match fund in 2021.</td>
</tr>
</tbody>
</table>
## Table 2. Proposed Shingle Creek WMC 2021 operating budget.

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>Pre-Audit Actual 2019</th>
<th>Approved 2020 Budget</th>
<th>Proposed 2021 Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REVENUE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Application Fees</td>
<td>$22,000</td>
<td>$18,200</td>
<td>$23,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>2 Member Assessments</td>
<td>356,900</td>
<td>356,900</td>
<td>363,590</td>
<td>369,190</td>
</tr>
<tr>
<td>3 Blue Line Extension</td>
<td>0</td>
<td>0</td>
<td>1,000</td>
<td>0</td>
</tr>
<tr>
<td>4 Interest</td>
<td>3,000</td>
<td>21,260</td>
<td>15,000</td>
<td>20,000</td>
</tr>
<tr>
<td>5 WMWA Education Reimbursement</td>
<td>33,000</td>
<td>23,382</td>
<td>33,000</td>
<td>33,000</td>
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<tr>
<td>6 WMWA Rain Garden Workshops</td>
<td>6,000</td>
<td>6,250</td>
<td>8,000</td>
<td>8,000</td>
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<tr>
<td>7 Miscellaneous Income</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td><strong>TOTAL REVENUE</strong></td>
<td><strong>$420,900</strong></td>
<td><strong>$425,992</strong></td>
<td><strong>$443,590</strong></td>
<td><strong>$450,190</strong></td>
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<td><strong>EXPENSES</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>ADMINISTRATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Administrative Services</td>
<td>$71,000</td>
<td>$71,268</td>
<td>$71,000</td>
<td>$71,000</td>
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<tr>
<td>9 Engineering Support</td>
<td>17,000</td>
<td>15,875</td>
<td>17,000</td>
<td>17,000</td>
</tr>
<tr>
<td>10 Project Reviews/WCA</td>
<td>1,700</td>
<td>1,516</td>
<td>1,500</td>
<td>1,500</td>
</tr>
<tr>
<td>11 Blue Line Extension</td>
<td>0</td>
<td>500</td>
<td></td>
<td></td>
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<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$89,700</strong></td>
<td><strong>$88,659</strong></td>
<td><strong>$90,000</strong></td>
<td><strong>$89,500</strong></td>
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<tr>
<td><strong>ENGINEERING</strong></td>
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<tr>
<td>12 Engineering Services</td>
<td>62,000</td>
<td>95,158</td>
<td>62,000</td>
<td>80,000</td>
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<tr>
<td>13 Grant Application Writing</td>
<td>10,000</td>
<td>10,109</td>
<td>11,500</td>
<td>11,000</td>
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<tr>
<td>14 Project Reviews/WCA</td>
<td>37,000</td>
<td>43,480</td>
<td>45,000</td>
<td>44,000</td>
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<tr>
<td>Local Plan Reviews</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15 Blue Line Extension</td>
<td>0</td>
<td>500</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>16 TMDL 5 Year Reviews</td>
<td>12,000</td>
<td>12,008</td>
<td>12,000</td>
<td>10,000</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td><strong>$161,115</strong></td>
<td><strong>$131,000</strong></td>
<td><strong>$145,000</strong></td>
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<tr>
<td><strong>LEGAL</strong></td>
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<tr>
<td>17 Legal Services</td>
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<td>5,390</td>
<td>6,000</td>
<td><strong>$5,500</strong></td>
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<tr>
<td><strong>MISCELLANEOUS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Bookkeeping</td>
<td>7,000</td>
<td>7,005</td>
<td>7,000</td>
<td>7,000</td>
</tr>
<tr>
<td>19 Audit</td>
<td>6,000</td>
<td>6,000</td>
<td>6,500</td>
<td>6,500</td>
</tr>
<tr>
<td>20 Insurance &amp; Bonding</td>
<td>3,100</td>
<td>2,441</td>
<td>3,100</td>
<td>3,100</td>
</tr>
<tr>
<td>21 Meeting Expense</td>
<td>4,700</td>
<td>4,010</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$20,800</strong></td>
<td><strong>$19,456</strong></td>
<td><strong>$21,600</strong></td>
<td><strong>$21,600</strong></td>
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<tr>
<td><strong>PROGRAMS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 Stream Monitoring</td>
<td>33,000</td>
<td>36,047</td>
<td>35,000</td>
<td>36,000</td>
</tr>
<tr>
<td>23 Stream Monitoring-USGS</td>
<td>4,100</td>
<td>3,800</td>
<td>4,500</td>
<td>4,200</td>
</tr>
<tr>
<td>24 Monitoring Equipment</td>
<td>3,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25 Stream Biomonitoring</td>
<td>0</td>
<td>(incl above)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>26 Commission Lake Monitoring</td>
<td>22,500</td>
<td>22,491</td>
<td>24,000</td>
<td>24,000</td>
</tr>
<tr>
<td>27 Citizen Assisted Lake Monitoring</td>
<td>3,800</td>
<td>1,903</td>
<td>3,800</td>
<td>3,800</td>
</tr>
<tr>
<td>28 Vol Wetland Monitoring</td>
<td>2,000</td>
<td>0</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>29 Vol Stream Monitoring</td>
<td>2,000</td>
<td>2,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>30 Annual Monitoring Report</td>
<td>14,000</td>
<td>13,999</td>
<td>16,000</td>
<td>16,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$84,400</strong></td>
<td><strong>$80,240</strong></td>
<td><strong>$86,300</strong></td>
<td><strong>$87,000</strong></td>
</tr>
<tr>
<td><strong>Water Quality Education</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 Education Program</td>
<td>15,000</td>
<td>18,424</td>
<td>15,000</td>
<td>15,000</td>
</tr>
<tr>
<td>32 Education Grants</td>
<td>500</td>
<td>0</td>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>
### Budget Background

**INCOME**
- Assessments: annual assessments to the member cities to pay the operating expenses of the Commission. Assessments are apportioned 50 percent based on land area within the watershed and 50 percent based on tax capacity of land within the watershed.
- Blue Line Extension: The Met Council reimburses the Commission for work the Engineer and WCA administrators undertake as part of planning for the Blue Line Extension.
- WMWA Education and Rain Garden Workshops: Shingle Creek serves as the fiscal agent for the West Metro Water Alliance. As that fiscal agent, Shingle Creek invoices the other three watersheds for general WMWA work and also works with individual cities or groups of cities who wish to contract with Metro Blooms for raingarden workshops.

**EXPENSES**

**OPERATIONS:** All activities **mandated** by statute or state administrative rule except where noted.

**Administration**
- Administrative Services: clerical and office support duties on behalf of the Commission, such as preparing for and attending meetings, preparing minutes and agendas, correspondence, mailings, official records, official publications, annual reporting, preparing budget.
- TAC/Engineering Support: correspondence, official publications, attendance and minutes at TAC and other special meetings, and other support regarding engineering activities.
- Project Reviews/WCA: correspondence and other support regarding project reviews and Wetland Conservation Act actions.

**Engineering**
- Engineering Services: technical and administrative duties on behalf of the Commission, such as: investigation and resolution of drainage, flood control, bank stabilization, erosion and water quality problems; research; preparing for and attending meetings; correspondence; responding to inquiries; annual reporting; preparing budget.
- Grant Application Writing: researching and writing grant applications to supplement Commission funds, preparing work plans and contracts for awarded grants. The Commission started funding grant applications in 2003 and has received grants totaling just over $4.3 million from various sources. **Not mandated.**
- Project Reviews/WCA: reviewing projects and wetland replacement plans for conformance with Commission and WCA requirements; reviewing local plans and comprehensive plan amendments; consultation on upcoming projects; reviewing environmental assessments.
- TMDL 5 Year Reviews/CIP Engineering: technical assistance to the Commission and cities in the ongoing implementation of TMDLs and projects and completion of TMDL Five Year Reviews. Each Five Year Review is published as a stand-alone report. **Not mandated.**

**Legal**
- Legal Services: general counsel, preparing for and attending meetings, drafting policies and variances, drafting and reviewing contracts and agreements.

**Miscellaneous**
- Miscellaneous: annual audit, bookkeeping services, insurance and bonding, and meeting expenses.

**MONITORING AND INFORMATION GATHERING:** State administrative rules mandate monitoring programs that are “…capable of producing accurate data to the extent necessary to determine whether water quantity and quality goals are being achieved” but do not specify what those programs should entail. The Commission lake, stream, and biomonitoring are in accordance with the ongoing monitoring committed to by the Commission in the lake and stream TMDLs Implementation Plans.

- **Commission Stream Monitoring:** Field data collection, equipment maintenance, sample lab analysis, and data analysis for flow monitoring and water quality sampling at three sites (SC-0 Webber Park, SC-3 Brooklyn Boulevard, and BCP Bass Creek Park).
- **Stream Monitoring-USGS:** The Commission’s share of the cost of operating the USGS site at Queen Avenue (SC-1). Real-time data can be found at waterdata.usgs.gov/mn/nwis/uv?05288705.
- **Commission Stream Biomonitoring:** The Commission periodically performs fish and macroinvertebrate sampling at the water quality monitoring stations.
- **Commission Lake Monitoring:** Bimonthly water column water quality monitoring, aquatic vegetation surveys, and sediment core sampling (where necessary) to obtain a more robust assessment of lake water quality and biotic health.
- **Citizen Assisted Lake Monitoring Program (CAMP):** In partnership with the Metropolitan Council, volunteers are trained to take lake water samples and make observations. Met Council provides sample analyses and data compilation. The Commission provides equipment, training, and sample collection. Lakes are monitored on a rotating schedule set forth in the Third Gen Plan.
▪ **Volunteer Wetland Monitoring**: In partnership with Hennepin County Environment and Energy. Adults are trained to monitor and sample wetlands for plants and macroinvertebrates and to classify the sampled organisms and plants as an indicator of wetland health. Two to three sites are monitored each year.

▪ **Volunteer Stream Monitoring**: In partnership with Hennepin County Environment and Energy, high school and college students are trained to sample streambeds for macroinvertebrates and to classify the sampled organisms as an indicator of stream health. Various sites on Shingle Creek.

▪ **Annual Monitoring Report**: Information gathered through the various monitoring programs is presented and interpreted in an Annual Water Quality Report. This report also includes an analysis of water quality trends.

**EDUCATION AND PUBLIC OUTREACH**: A public information program is mandated by state administrative rules. The Commission also provides at the member cities’ request NPDES Phase II education and public outreach programs mandated by the federal and state governments.

▪ **Education**: General public information and NPDES education program: target one or two messages per year; coordinate messages with cities; prepare materials for distribution by member cities; work with lake associations; Great Shingle Creek Watershed Cleanup; work with Watershed Partners; coordinate Education and Public Outreach Committee (EPOC); coordinate with West Metro Water Alliance (WMWA) (with West Mississippi, Bassett, and Elm Creek WMOs); work with area schools; maintain Web site.

▪ **Education Grants**: Financial assistance for activities such as classes or programs to improve water quality education; curriculum and educational materials for use in the classroom; expenses for field trips or fieldwork related to water quality education; implementation projects that include an education component.

**MANAGEMENT PLANS**: The Commission is mandated by state statute and administrative rule to pursue an Implementation Program that consists of nonstructural, structural, and programmatic solutions to problems, issues, and management goals.

▪ **3rd Gen Plan/Plan Amendments**: Management Plans have been completed for water resources in the watershed, including approved TMDLs for each Impaired Water. Each year the Commission reviews the Capital Improvement program (CIP), and if necessary modifies it through a major or minor plan amendment.

▪ **Subwatershed BMP Assessments**: These analyses evaluate and model smaller subwatersheds for possible small Best Management Practice implementation, including rain gardens, biofiltration and filtration basins, pond expansions and iron-enhanced filter retrofits, pervious pavement, tree trenches, capture and reuse, and other practices. Such assessments have been completed in several areas within the watershed.

**CONSTRUCTION/MATCHING GRANT FUND**: A capital contribution towards a fund to be used to match grants or for high-priority projects as designated by the Commission. **Not mandated**

**CONTRIBUTION TO 4TH GENERATION MANAGEMENT PLAN**: The Commissions are required by statute to update their plans at least every ten years. The commissions are accumulating funds in a dedicated account to pay for this plan, expected in 2021-2022. **Not mandated**
To: West Mississippi WMO TAC

From: Ed Matthiesen, P.E.
Diane Spector
Jude Anderson

Date: April 30, 2020

Subject: Initial Discussion of Proposed 2020 Operating Budget

This report presents a proposed 2021 budget for TAC discussion and comment. Based on these discussions, we will prepare a final budget for consideration at the May 14, 2020 Commission meeting. The budget must be finalized prior to July 1.

The Joint Powers Agreement governing operations of the West Mississippi Watershed Management Commission requires a budget and the resulting proposed city assessments for the coming year to be reported to the member cities by July 1. This memo is the first step in the 2021 budget process.

The assessment cap in the Joint Powers Agreement limits the annual city assessment increase to the increase in the Consumer Price Index (CPI-U), using the assessment in 2004 as a base. As Table 1 shows, the Commission could under that cap increase member city assessments for 2021 to $167,840. The draft 2021 budget assumes an assessment of $157,000, an increase of 2.2% over 2020. In past years the Commission supplemented the assessments with a contribution from the cash reserves to draw down what was a substantial balance. The proposed 2021 budget assumes no contribution from the cash reserves. The unrestricted fund balance at the end of 2019 was estimated to be about $86,000, and staff recommends that assessments continue to be increased if necessary by steps over a few years to fully fund the operating budget without that supplement.

Table 1. Calculation of allowable member city assessments according to the JPA assessment cap.

<table>
<thead>
<tr>
<th></th>
<th>June CPI-U</th>
<th>Annual CPI % Change</th>
<th>Cumul. CPI % Change</th>
<th>WM Allowed</th>
<th>WM Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>183.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>189.7</td>
<td>3.3%</td>
<td>3.3%</td>
<td>$119,450</td>
<td>$76,200</td>
</tr>
<tr>
<td>2005</td>
<td>194.5</td>
<td>2.5%</td>
<td>5.9%</td>
<td>123,350</td>
<td>77,950</td>
</tr>
<tr>
<td>2006</td>
<td>202.9</td>
<td>2.5%</td>
<td>5.9%</td>
<td>126,470</td>
<td>80,350</td>
</tr>
<tr>
<td>2007</td>
<td>208.352</td>
<td>4.3%</td>
<td>10.5%</td>
<td>131,930</td>
<td>125,600</td>
</tr>
<tr>
<td>2008</td>
<td>218.815</td>
<td>2.7%</td>
<td>13.4%</td>
<td>135,480</td>
<td>125,600</td>
</tr>
<tr>
<td>2009</td>
<td>215.693</td>
<td>5.0%</td>
<td>19.1%</td>
<td>142,280</td>
<td>136,620</td>
</tr>
<tr>
<td>2010</td>
<td>217.965</td>
<td>-1.4%</td>
<td>17.4%</td>
<td>140,250</td>
<td>128,000</td>
</tr>
<tr>
<td>2011</td>
<td>225.722</td>
<td>1.1%</td>
<td>18.7%</td>
<td>141,730</td>
<td>128,000</td>
</tr>
<tr>
<td>2012</td>
<td>229.478</td>
<td>3.6%</td>
<td>22.9%</td>
<td>146,770</td>
<td>128,000</td>
</tr>
<tr>
<td>2013</td>
<td>233.504</td>
<td>1.7%</td>
<td>24.9%</td>
<td>149,220</td>
<td>135,700</td>
</tr>
<tr>
<td>2014</td>
<td>238.343</td>
<td>1.8%</td>
<td>27.7%</td>
<td>151,830</td>
<td>135,700</td>
</tr>
</tbody>
</table>
### June CPI

<table>
<thead>
<tr>
<th></th>
<th>Annual CPI % Change</th>
<th>Cumul. CPI % Change</th>
<th>WM Allowed</th>
<th>WM Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>238.638</td>
<td>2.1%</td>
<td>29.7%</td>
<td>154,980</td>
</tr>
<tr>
<td>2016</td>
<td>241.018</td>
<td>0.1%</td>
<td>29.9%</td>
<td>155,170</td>
</tr>
<tr>
<td>2017</td>
<td>243.801</td>
<td>1.0%</td>
<td>31.2%</td>
<td>156,720</td>
</tr>
<tr>
<td>2018</td>
<td>251.989</td>
<td>1.6%</td>
<td>33.3%</td>
<td>159,280</td>
</tr>
<tr>
<td>2019</td>
<td>254.202</td>
<td>1.9%</td>
<td>37.2%</td>
<td>163,850</td>
</tr>
<tr>
<td>2020</td>
<td>258.115*</td>
<td>0.9%</td>
<td>39.4%</td>
<td>165,290</td>
</tr>
<tr>
<td>2021</td>
<td>0.8%**</td>
<td>40.5%**</td>
<td>167,840</td>
<td>157,000</td>
</tr>
</tbody>
</table>

*March 2020 CPI-U is the latest available  **June 2016 to March 2020

### Subwatershed Assessments (line 28)

The Commission has set aside $10,000-20,000 per year to complete subwatershed assessments, including one in Champlin in the vicinity of TH 169 and West River Road, and one in Brooklyn Center, in its Evergreen Park Neighborhood. No applications have been made for the past two years, so it is recommended that no funds be budgeted specifically for this. At the end of 2019 the estimated balance of that account was $40,000. Should a member city request one in 2021, the Commission may consider amending the budget for that purpose.

### Contribution to Construction/Grant Match Fund (line 29)

The commission has set aside $5,000 each year in a restricted fund for construction projects or to match grants. Aside from one project in Brooklyn Center, the funds have not been used and the audited balance at the end of 2018 was $84,310. It is recommended that no funds be budgeted specifically for this.

### Contribution to 4th Generation Plan (line 30)

When the member cities agreed to an “above the cap” assessment for the Third Generation Plan, they advised the Commission to begin setting aside funds every year in a reserve to pay for the Fourth Generation Plan, which expires in 2022. Shingle Creek sets aside $10,000 per year for this purpose and has accumulated $65,000. Because of the significant balance in the cash reserves, the Commission had previously declined to specifically set aside funds. **Staff recommends that the Commission again consider segregating an amount in the reserves specifically for the Fourth Generation Plan, and staff recommends that amount be $25,000, and that no contribution from the annual budget be made.**

### Updated Floodplain Mapping (line 31)

Commission staff are currently working with the DNR to undertake updated floodplain modeling in Shingle Creek. While the DNR is not prioritizing updating flood modeling and mapping in West Mississippi, the existing delineations are quite old and were prepared when the watershed was much less developed. Staff has recommended updating the modeling and mapping at the same time as Shingle Creek for economies of scale. The DNR has no funding available to underwrite this work in West Mississippi. Staff estimates that the cost of this work would be about $25,000. The 2019 budget allocated $25,000 from reserves for West Mississippi work, however, it was not a priority as the Shingle Creek work is still under way and was not completed. Should the Commission choose to go forward in 2021 the budget may be amended.

With the above exceptions the proposed budget shown in Table 2 generally continues the same activities at the same level of effort as 2020. Each line item is explained in the 2021 Budget Explanation below. Figure 1 shows the proposed 2021 expenditures by category.
2021 West Mississippi proposed 2021 budget by category.

**Figure 1. West Mississippi proposed 2021 budget by category.**

**2021 Budget Explanation**

**Income (see Table 2)**

<table>
<thead>
<tr>
<th>Line</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The application fee structure is intended to recover the cost of completing current project reviews. While the fees do not fully fund that activity, they are set and periodically reviewed and adjusted so as to recover a majority of the cost. It is difficult to predict and budget for project review revenues and fees because it varies based on the economy.</td>
</tr>
<tr>
<td>3</td>
<td>Following no increases for two years, the 2021 assessment is a 2.2% increase over 2020. This continues to phase out the use of cash reserves to subsidize the budget.</td>
</tr>
<tr>
<td>4</td>
<td>The Blue Line Extension project will be built through the watershed, and there will be a number of wetland and floodplain impacts and stream crossings. While currently on hold, the Metropolitan Council will reimburse the Commission for the cost of the Watershed Engineer’s participation in planning meetings.</td>
</tr>
<tr>
<td>5</td>
<td>The Commission has in the past maintained a very healthy cash reserve. In previous years, those reserves were used to subsidize the assessments. As the reserves have been drawn down, the assessments are now funding most of the operating expenses. In 2019, funds from the cash reserves were set aside to update flood modeling and mapping.</td>
</tr>
</tbody>
</table>

**Expenditures (see Table 2)**

<table>
<thead>
<tr>
<th>Line</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-9</td>
<td>These line items are to provide administrative support (scheduling, minutes, etc.) for regular Commission and TAC meetings and any Commission, TAC, or other meetings that require support, as well as general administrative duties such as notices, mailings, and correspondence. The Watershed Engineer continues to request the administrator to take on tasks that she can perform more cost effectively.</td>
</tr>
<tr>
<td>10-11</td>
<td>This line item includes general engineering support, including preparation for and attendance at Commission and TAC meetings, general technical and engineering assistance, minor special projects, writing and administering grants, etc. There has been an increasing amount of work including more frequent TAC meetings, more technical assistance to the member cities, managing the CIP process, etc., so this line item is proposed for increase.</td>
</tr>
<tr>
<td>12-13</td>
<td>These line items are for project reviews, review of Local Water Management Plans and Comprehensive Plan amendments and updates, environmental assessments, large projects such as the Blue Line Extension and general inquiries about past and upcoming projects. This activity has noticeably increased in the past few years, as there have been more planning and pre-submittal meetings and reviews. It is difficult to predict what the expense for a coming year will be, as it is based on the number of project reviews, inquiries, etc. received.</td>
</tr>
<tr>
<td>Line</td>
<td>Explanation</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>14-18</td>
<td>Legal and administrative costs necessary to operate the Commission and hold meetings.</td>
</tr>
<tr>
<td>19-20</td>
<td>At this time we are not recommending changes to the volunteer stream or wetland monitoring budgets. One stream site is monitored (Mattson Brook) through the RiverWatch program when volunteers are available, and two wetlands through the Wetland Health Evaluation Program, both volunteer programs managed by Hennepin County.</td>
</tr>
<tr>
<td>21</td>
<td>Routine flow and water quality monitoring at two stream and/or outfall sites each year on a rotating basis.</td>
</tr>
<tr>
<td>22</td>
<td>This line is the Commission’s contribution to the Annual Shingle Creek and West Mississippi Water Quality Report.</td>
</tr>
<tr>
<td>23,26</td>
<td>The cost of the Education program is split 50/50 between Shingle Creek and West Mississippi.</td>
</tr>
<tr>
<td>24-25</td>
<td>The Commission participates in the West Metro Water Alliance (WMWA), contributes to funds to support rain garden workshops, classroom activities, and special projects on a regional basis.</td>
</tr>
<tr>
<td>27</td>
<td>The Commission reviews its Capital Improvement Program (CIP) annually, and periodically formally revises the CIP through major and minor plan amendments. No amendments are anticipated for 2021.</td>
</tr>
<tr>
<td>28</td>
<td>Completion of subwatershed BMP assessments systematically in the areas of the watershed that could benefit from additional treatment as recommended in the Third Generation Plan. No assessments have been requested for 2021, thus no funds are budgeted.</td>
</tr>
<tr>
<td>29</td>
<td>In the past the commission periodically has set aside funds in a segregated account to provide grant match, but as that account has not been used and carried a balance, no funds are budgeted for 2020.</td>
</tr>
<tr>
<td>30</td>
<td>The Commission could but does not at this time make regular contributions to a dedicated 4th Generation Watershed Management Plan account.</td>
</tr>
<tr>
<td>31</td>
<td>A 2019 special project to update flood modeling and mapping that was last updated decades ago. Work was put on hold until similar modeling is completed in Shingle Creek.</td>
</tr>
<tr>
<td>32</td>
<td>When expenses are less than collected revenues, the balance is transferred to the cash reserves.</td>
</tr>
</tbody>
</table>
Table 2. Proposed West Mississippi Watershed Management Commission 2021 budget.

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>2019 Actual (pre-audit)</th>
<th>2020 Budget</th>
<th>Proposed 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INCOME</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Application fees</td>
<td>$20,000</td>
<td>$18,800</td>
<td>$18,000</td>
<td>$18,000</td>
</tr>
<tr>
<td>2 Interest income</td>
<td>2,000</td>
<td>10,807</td>
<td>5,000</td>
<td>7,000</td>
</tr>
<tr>
<td>3 Assessment</td>
<td>153,600</td>
<td>153,600</td>
<td>153,600</td>
<td>157,000</td>
</tr>
<tr>
<td>4 Blue Line Extension</td>
<td>0</td>
<td>0</td>
<td>500</td>
<td>0</td>
</tr>
<tr>
<td>5 Reserve - General</td>
<td>25,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL INCOME</strong></td>
<td>$200,600</td>
<td>$183,207</td>
<td>$177,100</td>
<td>$182,000</td>
</tr>
<tr>
<td><strong>EXPENSES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Administrative services</td>
<td>$31,000</td>
<td>$27,948</td>
<td>$31,000</td>
<td>$30,000</td>
</tr>
<tr>
<td>7 TAC/engineering support</td>
<td>4,500</td>
<td>4,849</td>
<td>4,500</td>
<td>5,000</td>
</tr>
<tr>
<td>8 Project reviews/WCA</td>
<td>1,500</td>
<td>1,169</td>
<td>1,500</td>
<td>1,500</td>
</tr>
<tr>
<td>9 Blue Line Extension</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$37,000</td>
<td>$33,966</td>
<td>$37,500</td>
<td>$36,500</td>
</tr>
<tr>
<td>Engineering:</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>10 Engineering services</td>
<td>30,000</td>
<td>$29,244</td>
<td>31,000</td>
<td>32,000</td>
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<tr>
<td>11 Grant writing</td>
<td>1,500</td>
<td>414</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>12 Project reviews/WCA</td>
<td>27,000</td>
<td>34,984</td>
<td>27,600</td>
<td>32,500</td>
</tr>
<tr>
<td>13 Blue Line Extension</td>
<td>0</td>
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<td>500</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$58,500</td>
<td>$64,642</td>
<td>$60,100</td>
<td>$65,500</td>
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<tr>
<td>Legal:</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>14 Legal services</td>
<td>5,000</td>
<td>$3,736</td>
<td>5,000</td>
<td>4,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$5,000</td>
<td>$3,736</td>
<td>$5,000</td>
<td>$4,000</td>
</tr>
<tr>
<td>Miscellaneous:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>15 Accounting</td>
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<td>$2,374</td>
<td>3,000</td>
<td>3,000</td>
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<td>16 Audit</td>
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<td>4,500</td>
<td>5,500</td>
<td>5,500</td>
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<tr>
<td>17 Insurance &amp; bonding</td>
<td>2,800</td>
<td>2,343</td>
<td>2,800</td>
<td>2,800</td>
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<tr>
<td>18 Meeting expense</td>
<td>2,500</td>
<td>1,719</td>
<td>2,700</td>
<td>2,700</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>$13,100</td>
<td>$10,936</td>
<td>$14,000</td>
<td>$14,000</td>
</tr>
<tr>
<td>Monitoring:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 Vol stream monitoring</td>
<td>1,000</td>
<td>$0</td>
<td>1,000</td>
<td>0</td>
</tr>
<tr>
<td>20 Vol wetland monitoring</td>
<td>2,000</td>
<td>0</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>21 Outfall &amp; stream monitoring</td>
<td>18,000</td>
<td>18,183</td>
<td>20,000</td>
<td>23,000</td>
</tr>
<tr>
<td>22 Annual monitoring report</td>
<td>6,000</td>
<td>6,000</td>
<td>8,000</td>
<td>8,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$27,000</td>
<td>$24,183</td>
<td>$31,000</td>
<td>$33,000</td>
</tr>
<tr>
<td>Education:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23 Education program</td>
<td>15,000</td>
<td>$18,523</td>
<td>15,000</td>
<td>15,000</td>
</tr>
<tr>
<td>24 Rain garden workshops</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>25 WMWA implementation activities</td>
<td>11,500</td>
<td>7,000</td>
<td>11,500</td>
<td>11,500</td>
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<tr>
<td>26 Education grants</td>
<td>500</td>
<td>0</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$29,000</td>
<td>$27,523</td>
<td>$29,000</td>
<td>$29,000</td>
</tr>
<tr>
<td>Management Plans:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 3rd Gen Plan/plan amendments</td>
<td>1,000</td>
<td>1,581</td>
<td>1,000</td>
<td>0</td>
</tr>
<tr>
<td>28 Subwatershed BMP assessment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>$1,000</td>
<td>$1,581</td>
<td>$1,000</td>
<td>$0</td>
</tr>
<tr>
<td>Miscellaneous:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 Contrib to constr/grant match</td>
<td>5,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30 Contribution to 4th Gen Plan</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>31 Flood modeling and mapping</td>
<td>25,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>32 To (from) reserves</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16,640</td>
</tr>
<tr>
<td><strong>TOTAL OPERATING EXPENSE</strong></td>
<td>$200,600</td>
<td>$183,207</td>
<td>$177,100</td>
<td>$182,000</td>
</tr>
</tbody>
</table>
Budget Background

INCOME

▪ Assessments: annual assessments to the member cities to pay the operating expenses of the Commission. Assessments are apportioned 50 percent based on land area within the watershed and 50 percent based on tax capacity of land within the watershed.

EXPENSES

OPERATIONS: All activities **mandated** by statute or state administrative rule except where noted.

Administration

▪ Administrative Services: clerical and office support duties on behalf of the Commission, such as preparing for and attending meetings, preparing minutes and agendas, correspondence, mailings, official records, official publications, annual reporting, preparing budget.
▪ Engineering Support: correspondence, official publications, attendance and minutes at TAC and other special meetings, and other support regarding engineering activities.
▪ Project Reviews/WCA: correspondence and other support regarding project reviews and Wetland Conservation Act actions.

Engineering

▪ Administration: technical and administrative duties on behalf of the Commission, such as: investigation and resolution of drainage, flood control, bank stabilization, erosion and water quality problems; research; preparing for and attending meetings; correspondence; responding to inquiries; annual reporting; preparing budget
▪ Grant Application Writing: researching and writing grant applications to supplement Commission funds. **Not mandated.**
▪ Project Reviews/WCA: reviewing projects and wetland replacement plans for conformance with Commission and WCA requirements; reviewing local plans and comprehensive plan amendments; consultation on upcoming projects; reviewing environmental assessments.

Legal

▪ Legal Services: general counsel, preparing for and attending meetings, drafting policies and variances, reviewing contracts and agreements.

Miscellaneous

▪ Miscellaneous: annual audit, bookkeeping services, insurance and bonding, and meeting expenses.

MONITORING AND INFORMATION GATHERING: State administrative rules **mandate** water quantity and quality monitoring programs that are “…capable of producing accurate data to the extent necessary to determine whether water quantity and quality goals are being achieved” but **do not specify** what those programs should entail.

▪ Volunteer Stream Monitoring: Macroinvertebrate monitoring: in partnership with Hennepin County Environmental Services, students are trained to sample streambeds for macroinvertebrates and to classify the sampled organisms as an indicator of stream health. Monitoring is done on Mattson Brook when volunteers are available.
Volunteer Wetland Monitoring: Macroinvertebrate and vegetation monitoring: in partnership with Hennepin County Environmental Services, adults are trained to monitor and sample wetlands for plants and macroinvertebrates and to classify the sampled organisms and plants as an indicator of wetland health. Two to three sites are monitored each year.

Commission Stream and Outfall Monitoring: Field data collection, equipment maintenance, sample lab analysis, and data analysis for flow monitoring and water quality sampling at two sites which rotate among Mattson Brook, the outlet of the Brooklyn Park Environmental Preserve, and various Mississippi River storm sewer outfalls.

Water Quality Monitoring Report: An annual report that presents data gathered in the previous year and evaluates whether water quantity and quality goals are being achieved.

EDUCATION AND PUBLIC OUTREACH: A public information program is mandated by state administrative rules. The Commission also provides at the member cities’ request NPDES Phase II education and public outreach programs mandated by the federal and state governments; the NPDES specifies the types of education and outreach that should be provided.

Education
- General public information and NPDES education program: target one or two messages per year; coordinate messages with cities; prepare materials for distribution by member cities; work with lake associations; Great Shingle Creek Watershed Cleanup; work with Watershed Partners; coordinate Education and Public Outreach Committee (EPOC); coordinate with the West Metro Water Alliance (WMWA) (with Shingle, Bassett, and Elm WMOs); work with area schools; maintain Web site.

Education Grants:
- Financial assistance for activities such as classes or programs to improve water quality education; curriculum and educational materials for use in the classroom; expenses for field trips or fieldwork related to water quality education; implementation projects that include an education component.

MANAGEMENT PLANS: The Commission is mandated by state statute and administrative rule to pursue an Implementation Program that consists of nonstructural, structural, and programmatic solutions to problems, issues, and management goals, although it does not specify what must be included.

3rd Gen Plan/Management Plans: Each year the Commission reviews the Capital Improvement program (CIP), and if necessary, modifies it through a major or minor plan amendment.

Subwatershed BMP Assessments: Using a method developed by the Metro Conservation District and the Center for Watershed Protection, these analyses evaluate and model smaller subwatersheds for possible small Best Management practice implementation, including rain gardens, bioinfiltration and filtration basins, pond expansions and iron-enhanced filter retrofits, pervious pavement, tree trenches, capture and reuse, and other practices. Such an assessment has been completed in Champlin, in select direct drainage areas to the Mississippi River, and in Brooklyn Center, in the Evergreen Park area.

CONSTRUCTION/MATCHING GRANT FUND: Not mandated
An annual capital contribution towards a fund to be used to match grants or for high-priority projects as designated by the Commission.
CONTRIBUTION TO 4TH GENERATION MANAGEMENT PLAN

The Commissions are required by statute to update their plans at least every ten years. The Shingle Creek Commission is accumulating funds in a dedicated account to pay for this plan, expected in 2021-2022. The West Mississippi Commission at this time expects to pay its share from fund balance.

PROJECTS: The Commission is mandated by state statute and administrative rule to pursue an Implementation Program that consists of nonstructural, structural, and programmatic solutions to problems, issues, and management goals. The Commission maintains an updated Capital Improvement Program (CIP) identifying potential projects, and has a policy of participating in 25 percent of the cost of qualifying capital projects. The Commission does not have the authority to construct capital projects; all projects are completed by the member cities who fund the balance of the cost.
To: Shingle Creek WMO Commissioners
From: Ed Matthiesen, P.E.  
Diane Spector
Date: October 5, 2019
Subject: Connections II Project Accounting

<table>
<thead>
<tr>
<th>Recommended Commission Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorize the creation of a Connections II Feasibility Study project to be funded by the Closed Project Account, and authorize the reallocation of $9,392.44 expended from the General Engineering budget line item to the new Feasibility Study project.</td>
</tr>
</tbody>
</table>

Earlier this year we worked with the cities of Brooklyn Park and Brooklyn Center to conceptualize and prepare 30% plans and a cost estimate for the Shingle Creek Connections II. The feasibility study and findings were used to prepare a Clean Water Fund grant application that was submitted to BWSR last month. This is similar to what was done for the Meadow Lake Feasibility Study.

The Meadow Lake work was funded from the Closed Projects Account. That was not the case for the Connections II work, which was funded from the General Engineering budget.

We recommend that the Commission establish a project called the Connections II Feasibility Report project, funded from the Closed Projects Account. We further recommend that the Commission authorize the reallocation of $9,392.44 of expense charged to General Engineering to that project. In 2020, when the project is ordered, the expense of the feasibility report will be included in the overall project cost, and will be included in the levy certified for the overall project, thus “reimbursing” the Closed Projects Account for this cost.

As of 12/31/18, the Closed Projects Account had a balance of just under $80,000. $5,000 of that was expended on the preparation of the Meadow Lake Feasibility Study.

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