RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

April 2019
Board Packet

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Agenda

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RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

Regular Board Meeting Agenda

Wednesday, April 3, 2019
6:30 P.M.
District Office Board Room
2665 Noel Drive, Little Canada, MN

1. Call to Order – 6:30 PM
2. **Approval of Agenda**
3. **Consent Agenda**
    A. Approval of Minutes March 6, 2019
4. **Treasurer's Report and Bill List**
5. Visitor Presentations
6. **Public Hearing for 2019 RWMWD Proposed Rule Revision**
7. Permit Program
    A. Applications
        i. **19-10 Radio Drive Trails, Woodbury**
        ii. **19-11 Xcel Energy East County Line, Maplewood, Oakdale, NSP**
        iii. **19-12 Xcel Energy County Road B, Maplewood & North St. Paul**
        iv. **19-13 FHR Storage Facility, St. Paul**
        v. **19-14 Shoreview 2019 Street Improvement Project, Shoreview**
        vi. **19-15 Spooner Park Improvements, Little Canada**
        vii. **19-16 Q3 Contracting, Little Canada**
        viii. **19-17 Woodbury 2019 Street Improvement Project, Woodbury**
    B. Enforcement Action Report
8. Stewardship Grant Program
    A. Applications
        i. **19-07 CS Laes, rain garden**
    B. Budget Adjustment Request
        i. **18-21 CS McGuire**
    C. Budget Status Update
9. Action Items
    A. None

10. Administrator's Report
    A. Meetings Attended
    B. Upcoming Meetings and Dates
    C. Spring Flooding Actions and Updates
    D. Board Discussion on Legislative Matters
    E. West Vadnais Lake - Drinking Water Sampling Report
    F. Watershed Partners and East Metro Water Resource Education Program Reports
11. Project and Program Status Reports
    A. Presentation: Beltline Resiliency Study, Phase 2 – Brandon Barnes, Barr Engineering
    B. Ongoing Project and Program Updates
        i. Flood Risk Response Planning
        ii. Owasso Park Stormwater Master Plan
        iii. Beltline Resiliency Study
        iv. District Parking Lot Retrofit
        v. Twin Lake Public Meetings
        vi. FEMA Flood Mapping
        vii. West Vadnais Lake Outlet Permitting
        viii. 500-Year Atlas 14 Modeling
        ix. Wetland Restoration Site Search
        x. Auto Lake Monitoring Systems
        xi. Maplewood Mall Monitoring
        xii. Spent Lime Pond Application Research Project
        xiii. Iron Aggregate Pond Application Research Project
        xiv. Wakefield Park/Frost Avenue Project
        xv. Targeted Retrofit Projects
        xvi. Roseville High School Campus Project
        xvii. Willow Pond CMAC
        xviii. Cottage Place Wetland Restoration
        xix. Markham Pond Aeration
        xx. Aldrich Arena Site Design
        xxi. CIP Maintenance and Repair 2019 Project
        xxii. New Technology Review – Preserver Pretreatment
        xxiii. Natural Resources Program
            1. Presentation: Glyphosate Use – Simba Blood, Natural Resources Technician
        xxiv. Education Program
12. Informational Items
13. Report of Managers
14. **Adjourn**

Items in **bold signify that an action needs to be taken by the Board.*

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Consent Agenda

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Ramsey-Washington Metro Watershed District
Minutes of Regular Board Meeting
March 6, 2019

The Regular Meeting of March 6, 2019, was held at the District Office Board Room, 2665 Noel Drive, Little Canada, Minnesota, at 6:30 p.m.

PRESENT:
Cliff Aichinger, Vice President
Dianne Ward, Treasurer
Lawrence Swope, Manager

ABSENT:
Marj Ebensteiner, President
Pam Skinner, Secretary

ALSO PRESENT:
Tina Carstens, District Administrator
Tracey Galowitz, Attorney for District
Bill Bartodziej, Natural Resource Specialist
Chris O'Brien, Communications Coordinator
Bruce Copely, Crestview Addition Resident
Paige Ahlborg, Project Manager
Nicole Soderholm, Permit Inspector
Dave Vlasin, Water Quality Technician
Erin Anderson Wenz, Barr Engineering

1. CALL TO ORDER
The meeting was called to order by Vice President Aichinger at 6:30 p.m.

2. APPROVAL OF AGENDA
Motion: Lawrence Swope moved, Dianne Ward seconded, to approve the agenda as presented. Motion carried 3-0 (Ebensteiner and Skinner absent).

3. CONSENT AGENDA
A. Approval of Minutes from February 6, 2019
Dianne Ward requested on page four, under the District parking lot options, that they be listed in more detail.

Vice President Aichinger asked staff to review the agreement with Simon Properties regarding the Maplewood Mall to see if any updates are needed to the agreement.

Motion: Dianne Ward moved, Lawrence Swope seconded, to approve the consent agenda as amended. Motion carried 3-0 (Ebensteiner and Skinner absent).

4. TREASURER'S REPORT AND BILL LIST
Motion: Lawrence Swope moved, Dianne Ward seconded, to approve the March 6, 2019, bill list as submitted. Motion carried 3-0 (Ebensteiner and Skinner absent).

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5. VISITOR PRESENTATIONS

Bruce Copely stated that he has received a lot of questions and concerns from his neighbors regarding the high flood potential for spring. He stated that Tina Carstens responded to his concerns earlier today via email. He noted that, because of the high groundwater levels in his area, there is not a lot of room for additional water when the snow melts. He stated that the current conditions are setting up for a wet spring, which could cause problems. He reviewed the information for Crestview shown on the previous modeling. He stated that when things happen, they often happen quickly, and he wanted to ensure that the proper steps would be taken to prevent Crestview from flooding. He stated that Tina has assured him that flooding is a high priority item for the District. He asked if the modeling takes into account snowpack and frozen ground conditions. He stated that he is very interested in the options that will help to prevent future problems. Tina stated that Barr Engineering has been working on modeling with snowpack and that information is being used along with current water levels and frost levels.

Erin Anderson Wenz stated that her staff is looking at various levels of snowmelt in terms of water content. She explained that in this scenario they look at a ten-day snowmelt event and her staff will continue to run models regularly. She explained that model looks at no infiltration, frozen ground conditions, and all the snow melting within ten days. She stated that they will continue to be in communication with the cities and counties to ensure they are properly prepared.

Mr. Copely stated that he also reached out to someone at the city and county but did not receive a response as quickly as Tina replied. Tina noted that, based on the modeling information, the District would then communicate that information with the cities so that, if necessary, the city could then implement an emergency response plan. Erin stated that they continue to watch the weather and that there are additional CIP elements that are planned for construction this winter.

Vice President Aichinger stated that there will be updated information from the Corps of Engineers regarding river flooding, which does not relate to Snail Lake. Erin stated that flooding potentials also depend on how the snow melts. She explained that if the snow melts all at once, it can cause issues. Whereas if it melts in a few bursts, it does not have the same impact.

6. PERMIT PROGRAM

A. Applications

Permit #19-06: Launch Properties Tamarack – Woodbury

Nicole Soderholm noted that the Board previously approved a standalone wetland replacement plan for this property, which met the District requirements, and that is why that element is not included in this request. Vice President Aichinger asked for information on how the escrow and WCA surety prices were determined. Nicole explained that the WCA surety is based on the price of wetland bank credits in this region and the escrow is set at $5,000 per acre of disturbance.

Motion: Dianne Ward moved, Lawrence Swope seconded, to approve Permit #19-06. Motion carried 3-0 (Ebensteiner and Skinner absent).

Permit #19-07: Phalen Parking Lot Improvement – St. Paul

Nicole Soderholm stated that St. Paul is making improvements to parking lots around Lake Phalen. She noted that there is an existing rain garden on the site that was not used for previous project credit and therefore that will be expanded and used for this project. She was unsure of the timing of the project but noted that she would follow up to ensure that the project would not impact WaterFest. Lawrence Swope asked if there is a possibility for rain gardens at the other three parking lot sites. Nicole stated that the District did not look at treatment options above and beyond the required treatment. Vice President Aichinger noted that the topography around some of the other parking lots would not work well for rain gardens.

Motion: Lawrence Swope moved, Dianne Ward seconded, to approve Permit #19-07. Motion carried 3-0 (Ebensteiner and Skinner absent).

Permit #19-08: Cornerstone Medical Expansion – Woodbury

Nicole Soderholm explained that this full site plan was brought before the Board in 2006, with open space left for future development. She stated that the treatment was designed to meet the full build out, but was designed prior to the Atlas 14 figures. She stated that when the expansion plans were presented the applicant recognized that their stormwater treatment would need to be expanded to meet the current requirements.

Motion: Dianne Ward moved, Lawrence Swope seconded, to approve Permit #19-08. Motion carried 3-0 (Ebensteiner and Skinner absent).

Permit #19-10: Gladstone Phase 3 – Maplewood

Nicole Soderholm stated that this is a unique partnership between the District and the City of Maplewood that created a living streets approach with BMPs and more narrow streets. She stated that this will reduce impervious surface of almost an acre and will provide a significant contribution to meeting the TMDL through the BMPs that will be completed.

Motion: Lawrence Swope moved, Cliff Aichinger seconded, to approve Permit #19-10. Motion carried 3-0 (Ebensteiner and Skinner absent).

B. Monthly Enforcement Report

During February zero notices were sent.

C. 2019 Rule Revision Update and 45 Day Comment Board Action

Manager Swope commended staff for the thorough job they did reviewing and amending the rules.

Motion: Dianne Ward moved, Lawrence Swope seconded, to authorize distribution of the enclosed revised rules for 45-day review and comment period.

Tina noted that the Board should also set the public hearing date for the next board meeting in the motion. The motion was amended as follows:

Motion: Dianne Ward moved, Lawrence Swope seconded, to authorize distribution of the enclosed revised rules for 45-day review and comment period and call for a public hearing on April 3, 2019. Motion carried 3-0 (Ebensteiner and Skinner absent).

D. Inspection and Enforcement Charges Increase

Nicole Soderholm explained the calculation that she used to determine a more accurate charge for inspection and enforcement charges. Vice President Aichinger agreed that amount seems to be a better fit. Nicole noted that if approved, the new fee would be in place prior to the spring construction season.

Motion: Lawrence Swope moved, Cliff Aichinger seconded, to authorize an increase in permit inspection and enforcement changes to $155 per inspection, for applicable inspections going forward. Motion carried 3-0 (Ebensteiner and Skinner absent).

7. STEWARDSHIP GRANT PROGRAM

A. Applications

Permit #19-04 CS: Shepherd of the Hills Lutheran Church Phase 2

Paige Ahlborg stated that this is a smaller habitat restoration project. She stated that the church previously did two small rain garden projects the previous year and are excited to move forward with this project.

Motion: Cliff Aichinger moved, Dianne Ward seconded, to approve Permit #19-04 CS. Motion carried 3-0 (Ebensteiner and Skinner absent).

Permit #19-05 CS: Maplewood Community Center

Vice President Aichinger asked if this project meets the District's cost per pound requirement. Paige Ahlborg confirmed that this is on the higher end of the scale, but is the only option available for that site and is still comparable to other projects. Vice President Aichinger asked if there would be signage to give the District credit. Tina Carstens agreed that a larger interpretive site-specific sign would be appropriate for this site.

Motion: Dianne Ward moved, Lawrence Swope seconded, to approve Permit #19-05 CS. Motion carried 3-0 (Ebensteiner and Skinner absent).

B. Budget Status Update

Manager Ward noted that a public art line item was added. Paige Ahlborg confirmed that item was added for informational tracking purposes.

8. ACTION ITEMS

A. Snail Lake Shoreline Restoration Bid Review and Award

Paige Ahlborg provided an update of the pre-bid meeting that occurred with contractors to provide information on the project and District expectations, noting that all three contractors submitted bids. She reported that Applied Ecological Services was the low bidder. Bill Bartodziej stated that the contractor has a sound reputation and well qualified for this type of project.

Motion: Lawrence Swope moved, Dianne Ward seconded, to accept the bids and award the Snail Lake Shoreline Restoration Project to Applied Ecological Services and direct staff to prepare and mail the notice of award, prepare the draft agreements and review the required submittals. Motion carried 3-0 (Ebensteiner and Skinner absent).

B. 2019-2020 BMP Maintenance Program Contractor Selection

Tina Carsten stated that the three contractors and the projects to assign to each of them are shown in the amended request for board action that was passed out at the meeting. Paige Ahlborg noted that one of the contractors is a new contractor for the District and staff is excited to work with them. She noted that the District has worked with the other two contractors previously.

Motion: Dianne Ward moved, Lawrence Swope seconded, to award the 2019-2020 BMP Maintenance contract to Minnesota Native Landscapes, Outdoor Lab, and Sandstrom Land Management and direct staff to prepare the necessary documents and work with the selected contractor. Motion carried 3-0 (Ebensteiner and Skinner absent).

9. ADMINISTRATOR'S REPORT

A. Meetings Attended

Vice President Aichinger asked for an update on a recent meeting with Saint Paul Urban Tennis Center.

B. Upcoming Meetings and Dates No comments.

C. Staff Updates

Tina Carstens stated that staff is conducting interviews and offering positions for summer positions and interns. Vice President Aichinger asked how the turnout was for the Maplewood job fair. Chris O'Brien commented that it was a good event, with about 200 kids. He stated that they had some good conversations, noting that most of the kids they spoke with were seniors in high school. He explained that, while the intent of the District was not to directly recruit, they were able to educate the kids on what the District does. Vice President Aichinger asked if there was an interest from high school seniors in natural resources. Chris confirmed that the younger generation has interest in conservation and natural resources.

D. Twin Lake Public Meeting No comments.

E. CAC Update

Manager Swope asked about the District using Nextdoor. Chris O'Brien stated that the District is not able to be a member of Nextdoor, but has utilized members of the CAC to post about District events. Manager Swope stated that the City of Shoreview seems to have found a way around that because they send out official announcements. Chris stated that watershed districts are not allowed, most likely because they cover multiple cities, whereas the application is more neighborhood directed, which is why cities are allowed to post. He stated that there are workarounds, where CAC members could share information from the District. Manager Swope stated that he would be glad to share District information through his own Nextdoor account. Manager Ward stated that she would lean towards having an official account if possible.

F. Upcoming Board Information and Education Efforts No comments.

G. MAWD Legislation Updates

Tina Carstens stated that she received a new update that she will forward to the Board.

Chris O'Brien provided an update on the salt limited liability legislation.

10. PROJECT AND PROGRAM STATUS REPORTS

A. New Project Memo: Cottage Place Wetland Restoration

Vice President Aichinger stated that it seems that this would be a large investment for one wetland. He asked if there is an easier way to determine if something could be feasibly done that would provide a cost benefit improvement. Erin Anderson Wenz stated that this project does drain downstream to an area where a regional water quality improvement project could be completed. She stated that this site is unique in that it is a wetland area that has been degraded and is located on public land, so there is an opportunity for restoration. She stated that the water quality benefit could be quantified through modeling. She stated that the true benefit of the project would be habitat restoration and wetland restoration. She stated that part of the first task could be a visioning session to identify the goal. She stated that this is a different kind of project because it is located upstream in the watershed. She stated that if not for water quality would there then be a purpose for the District to complete a wetland restoration on this site to informally offset other impacted wetlands within the District. She reviewed the different tasks in the study and noted that, after each step, the question could be posed as to whether the Board would like to continue on in the study. Tina Carstens stated that this is an opportunity for the district to do a wetland restoration project and have public partners to do it with. Erin stated that this is a project that is very early in the process and therefore it would be reasonable to step into this. She noted that the full budget listed would include the full process through plans and specifications and advised that the Board could choose to step out at any time during the process.

Paige Ahlborg stated that this site arose through the targeting of a church in the area and then staff saw this wetland area that would create a large opportunity. Vice President Aichinger stated that perhaps wetland mitigation credits could be created through this project that could be used for future projects. Erin noted that this site is not large enough to provide actual bank credits. She stated that staff will continue to work on this and will check back in with the Board at regular intervals.

B. New Project Memo: Wetland Restoration Site Search

Tina Carstens stated that the hope would be to identify a number of sites and then prioritize. Vice President Aichinger stated that the District did a lot of wetland inventory when it completed the MnRAM previously.

C. Ongoing Project and Program Updates

i. Owasso Park Stormwater Master Plan

Manager Swope asked if Shoreview approved the plan. Paige Ahlborg stated that the city was considering it earlier that week and had not heard it wasn't approved.

ii. Beltline Resiliency Study
iii. Lake Owasso Emergency Response Plan

Erin Anderson Wenz stated that the Owasso plan includes locations of low homes where sandbags could be placed. She stated that this is a good opportunity to review how snowmelt could impact.

iv. Twin Lake Public Meetings
v. FEMA Flood Mapping
vi. West Vadnais Lake Outlet Permitting

Manager Swope asked for additional details on the project and asked why West Vadnais Lake is not included in the District's boundary. Erin stated that VLAWMO will ultimately decide if an EAW would need to be done and that organization wants to take the lead. Tina noted that the lowering of West Vadnais Lake is a long process as it would take years to lower to the desired level and therefore this would not be a solution for2019 potential spring flooding. Tina stated that the board should consider this a long term resiliency project and not one that will address immediate needs. Erin stated that she would want to ensure that all the stakeholders are onboard with the decision to lower West Vadnais and ensure that something is not missed along the way that could cause other impacts.

vii. 500-Year Atlas 14 Modeling
viii. Auto Lake Monitoring Systems
ix. Maplewood Mall Monitoring
x. Kohlman Basin Test Weirs
xi. Wakefield Park/Frost Avenue Project
xii. Targeted Retrofit Projects
xiii. Roseville High School Campus Project
xiv. BMP Design Assistance
xv. Markham Pond Aeration

Tina Carstens stated that determinations were made last year on whether to go forward with the aeration. She stated that staff will submit the DNR permit application. Bill Bartodziej confirmed that monitoring was done last year and while there were some panfish that survived, the bigger game fish died, and the aeration will help to avoid the winter kill. He confirmed that he would work with the DNR to attempt to stock additional fish.

xvi. Aldrich Arena Site Design

Tina Carstens stated that this is a partnership project between the County and the District and the joint powers agreement states that the County will construct the project, but the District has the authority to approve or disapprove of bid prices. She noted that a maximum not to exceed number was included. Paige Ahlborg explained how the cost estimate was developed. Erin Anderson Wenz stated that the cost is consistent with what was discussed the previous month. She reviewed the total estimate with contingency and replanting of the slope. She stated that entrance figures or public art could be pursued as a future phase to prevent delaying action on the project.

Manager Swope asked the PR benefit that would be provided through this project and how that would be measured. Chris O'Brien stated that the social media reach could be measured and interaction with website postings could be monitored. He stated that they could also interview local representatives to gauge input from residents. Paige stated that this is a very busy site, with the different events that occur at the site, and therefore there is a large audience that visits the site. Vice President Aichinger stated that you could also measure the reaction of people to the aesthetic of the site when visiting. Tina stated that there are good numbers on the number of people that visit the site. She stated that signage could be used, but perhaps there are additional opportunities to post information inside the arena.

xvii. CIP Maintenance and Repair 2019 Project
xviii. Natural Resources Program

Bill Bartodziej provided an update on a carp project. Manager Swope noted that Bill Bartodziej will be making a presentation on March 20th in Shoreview.

xix. Education Program

Chris O'Brien provided an update on the recent Phalen Freeze Fest event. He also provided an update on a public art installation process.

Vice President Aichinger asked if the Adopt a Drain program would be District wide or whether that would be only for targeted areas. Chris O'Brien stated that the intent would be to roll out the program metro wide, but if the homeowner is not in a sponsored area, they would simply receive an email with information. He stated that staff has asked if the District could receive requests and the District could then send out the sign, even if the property is not in a sponsored area.

Manager Ward suggested stenciling the drain to identify that it is adopted. Chris stated that the District could work with Hamline to see if there would be interest as that would be a good way to promote the Adopt a Drain program. Vice President Aichinger stated that the person that adopts the drain could stencil the drain themselves.

xx. Communications Program

11. INFORMATIONAL ITEMS No comments.

12. REPORTS OF MANAGERS

Manager Ward stated that she attended a seminar about diversity and learned about a resource through the YMCA. Tina Carstens noted that there is a speaker series at the Science Museum on equity and diversity. Manager Swope asked the process for IT issues such a receiving spam or phishing emails. Tina stated that once staff is alerted, they notify IT. She stated that there was a training that staff and managers just completed that included some tips on identifying these attempts.

Vice President Aichinger commented that the environmental forum that was very well done.

13. ADJOURN

Motion: Dianne Ward moved, Lawrence Swope seconded, to adjourn the meeting at 8:55 p.m. Motion carried 3-0 (Ebensteiner and Skinner absent).

Respectfully submitted,

Dr. Pam Skinner, Secretary

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Bill List

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RWMWD BUDGET STATUS REPORT
Administrative & Program Budget
Fiscal Year 2019
3/31/2019

Budget Category	Budget Item	Account Number	Original Budget	Budget Transfers	Current Month Expenses	Year-to-Date Expenses	Current Budget Balance	Percent of Budget
Manager	Per diems	4355	$6,500.00	-	750.00	1,440.00	$5,060.00	22.15%
	Manager expenses	4360	3,500.00	-	-	-	3,500.00	0.00%
Committees	Committee/Bd Mtg. Exp.	4365	3,500.00	-	250.00	957.75	2,542.25	27.36%
Employees	Staff salary/taxes/benefits	4010	1,385,000.00	-	100,638.12	293,221.97	1,091,778.03	21.17%
	Employee expenses	4020	10,000.00	-	531.16	922.38	9,077.62	9.22%
	District training & education	4350	25,000.00	-	1,617.23	4,188.54	20,811.46	16.75%
Administration/	GIS system maint. & equip.	4170	15,000.00	-	700.00	1,772.02	13,227.98	11.81%
Office	Data Base/GIS Maintenance	4171	5,000.00	-	-	-	5,000.00	0.00%
	Equipment maintenance	4305	3,000.00	-	-	-	3,000.00	0.00%
	Telephone	4310	8,000.00	-	359.40	1,077.02	6,922.98	13.46%
	Office supplies	4320	5,000.00	-	517.52	812.68	4,187.32	16.25%
	IT/Internet/Web Site/Software Lic.	4325	45,000.00	-	3,927.87	10,044.78	34,955.22	22.32%
	Postage	4330	10,000.00	-	142.47	142.47	9,857.53	1.42%
	Printing/copying	4335	8,000.00	-	285.67	1,339.35	6,660.65	16.74%
	Dues & publications	4338	11,000.00	-	0.00	7,675.00	3,325.00	69.77%
	Janitorial/Trash Service	4341	17,000.00	-	3,017.18	5,102.18	11,897.82	30.01%
	Utilities/Bldg.Contracts	4342	20,000.00	-	1,624.21	6,038.68	13,961.32	30.19%
	Bldg/Site Maintenance	4343	300,000.00	-	7,717.85	11,119.33	288,880.67	3.71%
	Miscellaneous	4390	5,000.00	-	-	-	5,000.00	0.00%
	Insurance	4480	35,000.00	-	30,384.00	30,384.00	4,616.00	86.81%
	Office equipment	4703	40,000.00	-	25,829.07	25,829.07	14,170.93	64.57%
	Vehicle lease, maintenance	4810-40	43,000.00	-	206.20	414.94	42,585.06	0.96%
Consultants/	Auditor/Accounting	4110	55,000.00	-	4,223.42	8,010.31	46,989.69	14.56%
Outside Services	Engineering-administration	4121	93,000.00	-	5,423.50	17,104.16	75,895.84	18.39%
	Engineering-permit I&E	4122	10,000.00	-	-	63.00	9,937.00	0.63%
	Engineering-eng. review	4123	55,000.00	-	8,586.00	14,226.50	40,773.50	25.87%
	Engineering-permit review	4124	55,000.00	-	4,901.00	7,234.00	47,766.00	13.15%
	Project Feasibility Studies	4129	790,000.00	-	19,172.00	62,878.00	727,122.00	7.96%
	Attorney-permits	4130	10,000.00	-	-	-	10,000.00	0.00%
	Attorney-general	4131	40,000.00	-	1,357.50	6,784.00	33,216.00	16.96%
	Outside Consulting Services	4160	40,000.00	-	-	-	40,000.00	0.00%
Programs	Educational programming	4370	60,000.00	-	3,191.09	3,486.89	56,513.11	5.81%
	Communications & Marketing	4371	25,000.00		2,121.55	3,018.80	21,981.20	12.08%
	Events	4372	50,000.00	-	5,763.97	6,302.28	43,697.72	12.60%
	Water QM-Engineering	4520-30	300,000.00	-	3,480.14	10,833.69	289,166.31	3.61%
	Project operations	4650	160,000.00	-	757.67	2,626.68	157,373.32	1.64%
	SLMP/TMDL Studies	4661	68,000.00	-	281.00	281.00	67,719.00	0.41%
	Natural Resources/Keller Creek	4670-72	115,000.00	-	4,042.30	24,855.43	90,144.57	21.61%
	Outside Prog.Support/Weed Mgmt.	4683-84	67,000.00	-	10,644.29	28,356.76	38,643.24	42.32%
	Research Projects	4695	115,000.00	-	458.08	6,155.58	108,844.42	5.35%
	Health and Safety Program	4697	3,000.00	-	-	0.00	3,000.00	0.00%
	NPDES Phase II	4698	10,000.00	-	-	-	10,000.00	0.00%
GENERAL FUND TOTAL			**$4,124,500.00**	**$0.00**	**$252,901.46**	**$604,699.24**	**$3,519,800.76**	14.66%
CIP's	CIP Project Repair & Maintenance	516	1,120,000.00	-	81,935.48	411,102.93	708,897.07	36.71%
	Targeted Retrofit Projects	518	978,760.00	-	20,587.26	56,233.46	922,526.54	5.75%
	District Office Building Solar Energy Retrofit	519	-	-	-	-	-	---
	Flood Damage Reduction Fund	520	2,500,000.00	-	-	6,250.00	2,493,750.00	0.25%
	Debt Services-96-97 Beltline/MM/Battle Creek	526	399,113.00	-	-	274,856.15	124,256.85	68.87%
	Stewardship Grant Program Fund	528-529	1,250,000.00	-	25,447.50	40,623.50	1,209,376.50	3.25%
	Impervious Surface Volume Reduction Opportunity	531	1,500,000.00	-	-	-	1,500,000.00	0.00%
	Beltline & Battle Creek Tunnel Repair	549	-	-	-	-	-	---
	Frost/Kennard Enhanced WQ BMP	550	-	-	-	-	-	---
	Markham Pond Dredging & Aeration	551	65,000.00	-	160.00	320.00	64,680.00	0.49%
	Wakefield Park Project	553	1,100,000.00	-	10,973.00	35,733.00	1,064,267.00	3.25%
	Willow Pond CMAC	554	300,000.00		259.90	1,762.06	298,237.94	0.59%
	District Office Bond Payment	585	194,885.00	-	-	193,453.76	1,431.24	99.27%
CIP BUDGET TOTAL			**$9,407,758.00**	**-**	**$139,363.14**	**$1,020,334.86**	**$8,387,423.14**	10.85%
TOTAL BUDGET			**$13,532,258.00**	**$0.00**	**$392,264.60**	**$1,625,034.10**	**$11,907,223.90**	**12.01%**

Current Fund Balances:

Fund:	Unaudited Beginning Fund Balance @ 12/31/18	Fund Transfers	Year to date Revenue	Current Month Expenses	Year to Date Expense	Unaudited Fund Balance @ 03/31/19
101 - General Fund	$4,550,541.27	-	94,467.48	252,901.46	604,699.24	4,040,309.51
516 - CIP Project Repair & Maintenance	923,619.41	-	-	81,935.48	411,102.93	512,516.48
518 - Targeted Retrofit Projects	974,596.54	-	-	20,587.26	56,233.46	918,363.08
519 - District Office Building Solar Energy Retrofit	32,805.00	-	-	-	-	32,805.00
520 - Flood Damage Reduction Fund	1,884,578.15	-	16,017.20	-	6,250.00	1,894,345.35
526 - Debt Services-96-97 Beltline/MM/Beltline-Battle Creek Tunnel Repair	381,542.55	-	-	-	274,856.15	106,686.40
528/529 - Stewardship Grant Program Fund	383,854.69	-	-	25,447.50	40,623.50	343,231.19
531 - Impervious Surface Volume Reduction Opportunity	1,484,215.00	-	-	-	-	1,484,215.00
549 - Beltline & Battle Creek Tunnel Repair	697,527.67	-	-	-	-	697,527.67
550 - Frost/Kennard Enhanced WQ BMP	(154,661.36)	-	-	-	-	(154,661.36)
551 - Markham Pond Dredging & Aeration	110,379.00	-	-	160.00	320.00	110,059.00
553 - Wakefield Park Project	1,112,709.01	-	-	10,973.00	35,733.00	1,076,976.01
554 - Willow Pond CMAC	(29,932.08)	-	-	259.90	1,762.06	(31,694.14)
580 - Contingency Fund	476,100.94	-	-	-	-	476,100.94
585 - Certificates of Participation	131,513.82	-	-	-	193,453.76	(61,939.94)
Total District Fund Balance	**$12,959,389.61**	**-**	**$ 110,484.68**	**$ 392,264.60**	**$1,625,034.10**	**$11,444,840.19**

Ramsey Washington Metro Watershed Dist.
Check Register
For the Period From Mar 1, 2019 to Mar 31, 2019

Check #	Date	Payee ID	Payee	Description	Amount
EFT	03/01/19	met008	MetLife-Group Benefits	Employee Benefits	$1,206.52
EFT	03/12/19	hea002	HealthPartners	Employee Benefits	11,761.32
70596	03/12/19	ada002	Adam's Pest Control, Inc.	Utilities/Building Contracts	79.00
70597	03/12/19	aws001	AWS Service Center	Janitorial/Trash Service	197.18
70598	03/12/19	bls001	B & L Supply	Bldg/Site Maintenance	105.04
70599	03/12/19	geo002	George's Contracted Services, Inc.	Janitorial/Trash Service	2,270.00
70600	03/12/19	isd004	ISD 625	Educational Program	730.88
70601	03/12/19	ncp001	NCPERS Group Life Ins.	Employee Benefits	16.00
70602	03/12/19	pit001	Pitney Bowes Global Financial Serv LLC	Postage	142.47
70603	03/12/19	pre003	Premium Waters, Inc.	Utilities/Building Contracts	22.00
70604	03/27/19	ada002	Adam's Pest Control, Inc.	Utilities/Building Contracts	79.00
70605	03/27/19	ahl001	Paige Ahlborg	Employee Reimbursement	285.22
70606	03/27/19	all004	allstream	Water QM Staff	64.96
70607	03/27/19	att002	AT & T Mobility - ROC	IT/Website/Software	43.22
70608	03/27/19	bar001	Barr Engineering	February/March Engineering	86,727.32
70609	03/27/19	bar004	Deborah Barnes	Employee Reimbursement	48.07
70610	03/27/19	bfg001	BFG Supply Co.	Educational Program	55.88
70611	03/27/19	blo001	Simba Blood	Employee Reimbursement	607.56
70612	03/27/19	bre003	Bremer Bank	Employee Benefits	7,437.50
70613	03/27/19	bre003	Bremer Bank	Employee Benefits	437.50
70614	03/27/19	cit011	City of Roseville	Telephone/IT/Website/Software	4,093.00
70615	03/27/19	con005	Contree Sprayer & Equip. Co., LLC	Natural Resources Project	3,399.00
70616	03/27/19	del001	Dell Marketing, L.P.	Office Equipment	820.00
70617	03/27/19	don001	Matthew Doneux	Employee Reimbursement	54.26
70618	03/27/19	esr002	Environmental Systems Research Institute	GIS System Maintenance	700.00
70619	03/27/19	fit001	Fitzgerald Excavating & Trucking, Inc.	Progress Pay #3	71,915.00
70620	03/27/19	fle001	Flemings Auto Service	Vehicle Maintenance	64.40
70621	03/27/19	gal001	Galowitz Olson, PLLC	March Legal Expense	1,357.50
70622	03/27/19	gil001	Gilbert Mechanical Contractors, Inc.	Bldg/Site Maintenance	6,450.00
70623	03/27/19	ham002	Hamline University	Outside Program Support	10,000.00
70624	03/27/19	hea003	Heartquest Trainers, LLC	Office Equipment	6,520.32
70625	03/27/19	hew001	HP, Inc.	Office Equipment	1,888.10
70626	03/27/19	inn002	Innovative Office Solutions LLC	Office Supplies	185.47
70627	03/27/19	int001	Office of MN, IT Services	Telephone Expense	55.40
70628	03/27/19	lea001	League of MN Cities Ins. Trust WC	Insurance Expense	30,384.00
70629	03/27/19	mbc001	MBC Consulting	Events	4,625.00
70630	03/27/19	mel001	Michelle L. Melser	Employee Reimbursement	186.32
70631	03/27/19	ncp001	NCPERS Group Life Ins.	Employee Benefits	16.00
70632	03/27/19	nsp001	Xcel Energy	Construction Imp.-Willow Pond	12.16
70633	03/27/19	nsp001	Xcel Energy	Project Operations/Utilities	2,052.27
70634	03/27/19	pac001	Pace Analytical Services, Inc.	Water QM Staff	500.00
70635	03/27/19	pas002	Sage Passi	Employee Reimbursement	556.23
70636	03/27/19	pro003	Lyndsey R. Provos	Employee Reimbursement	381.84
70637	03/27/19	qwe001	CenturyLink	Project Operations	228.61
70638	03/27/19	ram002	Ramsey County	Stewardship Grant	19,368.00
70639	03/27/19	red002	Redpath & Company, Ltd	February Accounting	4,223.42
70640	03/27/19	red003	Red Wing Business Advantage Account	Employee Benefits	178.49
70641	03/27/19	sel001	Tim Melser	Bldg/Site Maintenance	875.00
70642	03/27/19	shi001	SHI International Corp.	Office Equipment	16,549.00
70643	03/27/19	sod001	Nicole Soderholm	Employee Reimbursement	45.80

Ramsey Washington Metro Watershed Dist.
Check Register
For the Period From Mar 1, 2019 to Mar 31, 2019

Check #	Date	Payee ID	Payee	Description	Amount
70644	03/27/19	stu001	Studio Lola	Events/Office Supplies	778.25
70645	03/27/19	tes001	The Tessman Company	Natural Resources Project	136.00
70646	03/27/19	tim002	Timesaver Off-Site Secretarial, Inc.	Committee/Board Meeting Exp.	250.00
70647	03/27/19	tro002	Cathy Troendle	Educational Program	831.96
70648	03/27/19	usb002	U.S. Bank	Monthly Credit Card Expense	4,495.18
70649	03/27/19	usb005	US Bank Equipment Finance	Printing Expense	285.67
70650	03/27/19	van001	Vanguard Cleaning Systems of Minnesota	Janitorial/Trash Service	550.00
70651	03/27/19	voy001	US Bank Voyager Fleet Sys.	Vehicle Fuel	141.80
70652	03/27/19	was002	Washington Conservation District	Stewardship Grant	2,160.00
70653	03/27/19	wil002	Wilderness Inquiry	Educational Program	1,500.00
70654	03/27/19	win002	Windmill Design Incorporated	Communications & Marketing	525.00
70655	03/27/19	ysi001	YSI, Inc.	Water QM Staff	580.08
Total					**$312,235.17**

Ramsey Washington Metro Watershed Dist.
Cash Disbursements Journal
For the Period From Mar 1, 2019 - Mar 31, 2019

Date	Check #	Vendor ID	Name	Account ID	Account Description	Amount	Check Detail
03/01/19	EFT	met003	MetLife			1,206.52	
				4040-101-000	Employee Benefits-General		988.14
				2015-101-000	Employee Health-General		218.38
03/11/19	EFT	hea002	HealthPartners			11,761.32	
				4040-101-000	Employee Benefits-General		10,141.24
				2015-101-000	Employee Health-General		1,620.08
03/12/19	70596	ada002	Adam's Pest Control, Inc.	4342-101-000	Utilities/Building Contracts	79.00	
03/12/19	70597	aws001	AWS Service Center	4341-101-000	Janitorial/Trash Service	197.18	
03/12/19	70598	bls001	B & L Supply	4343-101-000	Bldg./Site Maintenance	105.04	
03/12/19	70599	geo002	George-s Contracted Services, Inc.	4341-101-000	Janitorial/Trash Service	2,270.00	
03/12/19	70600	isd004	ISD 625	4370-101-000	Educational Program-General	730.88	
03/12/19	70601	ncp001	NCPERS Group Life Ins.c	2015-000-000	Employee Health-General	16.00	
03/12/19	70602	pit001	Pitney Bowes Global Financial Services, LLC	4330-101-000	Postage-General	142.47	
03/12/19	70603	pre003	Premimum Waters, Inc.	4342-101-000	Utilities/Building Contracts	22.00	
03/27/19	70604	ada002	Adam's Pest Control, Inc.	4342-101-000	Utilities/Building Contracts	79.00	
03/27/19	70605	ahl001	Paige Ahlborg			285.22	
				4040-101-000	Employee Benefits-General		245.20
				4020-101-000	Employee Expenses-General		40.02
03/27/19	70606	all004	allstream	4530-101-000	Water QM Staff-General	64.96	
03/27/19	70607	att001	AT&T Mobility	4325-101-000	IT/Website/Software	43.22	
03/27/19	70608	bar001	Barr Engineering			86,727.32	
				4121-101-000	Engineering Admin-General Fund		5,423.50
				4129-101-000	Project Feasability-General		4,158.50
				4123-101-000	Engineering-Review		8,586.00
				4129-101-000	Project Feasability-General		542.50
				4129-101-000	Project Feasability-General		4,822.50
				4129-101-000	Project Feasability-General		324.00
				4129-101-000	Project Feasability-General		4,930.50
				4129-101-000	Project Feasability-General		171.00
				4129-101-000	Project Feasability-General		421.50
				4129-101-000	Project Feasability-General		3,221.50
				4520-101-000	Water QM-Engineering		170.00
				4520-101-000	Water QM-Engineering		375.00
				4520-101-000	Water QM-Engineering		1,605.50
				4124-101-000	Engineering-Permit Review		4,901.00
				4661-101-000	SLMP/TMDL Studies		281.00
				4129-101-000	Project Feasability-General		580.00
				4695-101-000	Research Projects-General		179.50
				4695-101-000	Research Projects-General		278.58
				4128-553-000	Engineering-Wakefield		10,973.00
				4128-518-000	Engineering-School/Commer Retrofit		961.50
				4128-518-000	Engineering-School/Commer Retrofit		5,193.50

Ramsey Washington Metro Watershed Dist.
Cash Disbursements Journal
For the Period From Mar 1, 2019 - Mar 31, 2019

Date	Check #	Vendor ID	Name	Account ID	Account Description	Amount	Check Detail
				4128-518-000	Engineering-School/Commer Retrofit		4,459.00
				4128-518-000	Engineering-School/Commer Retrofit		3,166.26
				4682-559-000	Stewardship Grant Program		3,919.50
				4128-518-000	Engineering-School/Commer Retrofit		2,830.50
				4128-551-000	Engineering-Markham		160.00
				4128-518-000	Engineering-School/Commer Retrofit		3,976.50
				4128-554-000	Engineering-Willow Pond		95.00
				4128-516-000	Engineering-Maint. & Repair		3,406.50
				4128-516-000	Engineering-Maint. & Repair		6,613.98
03/27/19	70609	bar004	Deborah Barnes			48.07	
				4040-101-000	Employee Benefits-General		37.05
				4020-101-000	Employee Expenses-General		11.02
03/27/19	70610	bfg001	BFG Supply Co.	4370-101-000	Educational Program-General	55.88	
03/27/19	70611	blo001	Simba Blood			607.56	
				4370-101-000	Natural Resources Project-General		497.08
				4320-101-000	Office Supplies-General		18.22
				4040-101-000	Employee Benefits-General		92.26
03/27/19	70612	bre003	Bremer Bank	4040-101-000	Employee Benefits-General	7,437.50	
03/27/19	70613	bre003	Bremer Bank	4040-101-000	Employee Benefits-General	437.50	
03/27/19	70614	cit011	City of Roseville			4,093.00	
				4325-101-000	IT/Website/Software		3,789.00
				4310-101-000	Telephone-General		304.00
03/27/19	70615	con005	Contree Sprayer & Equip. Co., LLC	4670-101-000	Natural Resources Project-General	3,399.00	
03/27/19	70616	del001	Dell Marketing, L.P.	4703-101-000	Office Equipment-General	820.00	
03/27/19	70617	don001	Matthew Doneux			54.26	
				4040-101-000	Employee Benefits-General		5.76
				4020-101-000	Employee Expenses-General		38.28
				4670-101-000	Natural Resources Project-General		10.22
03/27/19	70618	esr002	Environmental Systems Research Institute	4170-101-000	GIS System Maint. & Equipment	700.00	
03/27/19	70619	fit001	Fitzgerald Excavating & Trucking, Inc.	4630-516-000	Construction Imp.-Maint. & Repair	71,915.00	
03/27/19	70620	fle001	Flemings Auto Service	4820-101-000	Vehicle Maintenance-General	64.40	
03/27/19	70621	gal001	Galowitz Olson, PLLC	4131-101-000	Atty General-General Fund	1,357.50	
03/27/19	70622	gil001	Gilbert Mechanical Contractors, Inc.	4343-101-000	Bldg./Site Maintenance	6,450.00	
03/27/19	70623	ham002	Hamline University	4683-101-000	Outside Program Support	10,000.00	
03/27/19	70624	hea003	Heartquest Trainers, LLC	4703-101-000	Office Equipment-General	6,520.32	
03/27/19	70625	hew001	HP, Inc.	4703-101-000	Office Equipment-General	1,888.10	
03/27/19	70626	inn002	Innovative Office Solutions, LLC	4320-101-000	Office Supplies-General	185.47	
03/27/19	70627	int001	Office of MN, IT Services	4310-101-000	Telephone-General	55.40	
03/27/19	70628	lea001	League of MN Cities Ins. Trust WC	4480-101-000	Insurance-General	30,384.00	
03/27/19	70629	mbc001	MBC Consulting	4372-101-000	Events	4,625.00	
03/27/19	70630	mel001	Michelle Melser			186.32	
				4040-101-000	Employee Benefits-General		106.40
				4020-101-000	Employee Expenses-General		79.92
03/27/19	70631	ncp001	NCPERS Group Life Ins.c	2015-000-000	Employee Health-General	16.00	
03/27/19	70632	nsp001	Xcel Energy	4630-554-000	Construction Imp.-Willow Pond	12.16	

Ramsey Washington Metro Watershed Dist.
Cash Disbursements Journal
For the Period From Mar 1, 2019 - Mar 31, 2019

Date	Check #	Vendor ID	Name	Account ID	Account Description	Amount	Check Detail
03/27/19	70633	nsp001	Xcel Energy			2,052.27	
				4342-101-000	Utilities/Building Contracts		1,523.21
				4650-101-000	Project Operations-General		529.06
03/27/19	70634	pac001	Pace Analytical Services, Inc.	4630-101-000	Water QM Staff-General	500.00	
03/27/19	70635	pas002	Sage Passi			556.23	
				4040-101-000	Employee Benefits-General		138.00
				4020-101-000	Employee Expenses-General		259.26
				4372-101-000	Events		86.60
				4370-101-000	Educational Program-General		72.37
03/27/19	70636	pro003	Lyndsey Provos			381.84	
				4040-101-000	Employee Benefits-General		284.98
				4020-101-000	Employee Expenses-General		96.86
03/27/19	70637	qwe001	CenturyLink	4650-101-000	Project Operations-General	228.61	
03/27/19	70638	ram002	Ramsey County	4682-529-000	Stewardship Grant Program	19,368.00	
03/27/19	70639	red002	Redpath & Company, Ltd.	4110-101-000	Accounting & Auditing	4,223.42	
03/27/19	70640	red003	Red Wing Business Advantage Account	4040-101-000	Employee Benefits-General	178.49	
03/27/19	70641	sel001	Tim Melser	4343-101-000	Bldg./Site Maintenance	875.00	
03/27/19	70642	shi001	SHI International Corp.	4703-101-000	Office Equipment-General	16,549.00	
03/27/19	70643	sod001	Nichole Soderholm			45.80	
				4040-101-000	Employee Benefits-General		40.00
				4020-101-000	Employee Expenses-General		5.80
03/27/19	70644	stu001	Studio Lola			778.25	
				4372-101-000	Events		731.25
				4320-101-000	Office Supplies-General		47.00
03/27/19	70645	tes001	The Tessman Company	4670-101-000	Natural Resources Project-General	136.00	
03/27/19	70646	tim002	Timesaver Off-Site Secretarial, Inc.	4365-101-000	Committee/Board Meeting Expense	250.00	
03/27/19	70647	tro002	Cathy Troendle	4370-101-000	Educational Program-General	831.96	
03/27/19	70648	usb002	U.S. Bancorp			4,495.18	
				4343-101-000	Bldg./Site Maintenance		83.62
				4372-101-000	Events		8.00
				4630-554-000	Construction Imp.-Willow Pond		152.74
				4343-101-000	Bldg./Site Maintenance		9.31
				4343-101-000	Bldg./Site Maintenance		107.29
				4372-101-000	Events		19.30
				4343-101-000	Bldg./Site Maintenance		8.59
				4325-101-000	IT/Website/Software		95.65
				4320-101-000	Office Supplies-General		21.40
				4530-101-000	Water QM Staff-General		26.41
				4703-101-000	Office Equipment-General		51.65
				4320-101-000	Office Supplies-General		16.99
				4320-101-000	Office Supplies-General		17.99
				4372-101-000	Events		6.43
				4372-101-000	Events		158.46
				4350-101-000	Training & Education-General		29.10
				4372-101-000	Events		128.93

Ramsey Washington Metro Watershed Dist.
Cash Disbursements Journal
For the Period From Mar 1, 2019 - Mar 31, 2019

Date	Check #	Vendor ID	Name	Account ID	Account Description	Amount	Check Detail
				4530-101-000	Water QM Staff-General		147.50
				4320-101-000	Office Supplies-General		40.00
				4530-101-000	Water QM Staff-General		10.69
				4350-101-000	Training & Education-General		97.93
				4320-101-000	Office Supplies-General		24.34
				4371-101-000	Events		(14.35)
				4350-101-000	Training & Education-General		300.00
				4350-101-000	Training & Education-General		23.00
				4350-101-000	Training & Education-General		26.00
				4350-101-000	Training & Education-General		320.60
				4350-101-000	Training & Education-General		370.60
				4320-101-000	Office Supplies-General		146.11
				4371-101-000	Events		1,161.91
				4371-101-000	Events		159.99
				4350-101-000	Training & Education-General		215.00
				4350-101-000	Training & Education-General		160.00
				4371-101-000	Events		80.00
				4350-101-000	Training & Education-General		75.00
				4371-101-000	Events		209.00
03/27/19	70649	usb005	US Bank Equipment Finance	4335-101-000	Printing-General	285.67	
03/27/19	70650	van001	Vanguard Cleaning Systems of Minnesota	4341-101-000	Janitorial/Trash Service	550.00	
03/27/19	70651	voy001	US Bank Voyager Fleet Sys.	4830-101-000	Vehicle Expense-Fuel	141.80	
03/27/19	70652	was002	Washington Conservation District	4682-529-000	Stewardship Grant Program	2,160.00	
03/27/19	70653	wil002	Wilderness Inquiry	4370-101-000	Educational Program-General	1,500.00	
03/27/19	70654	win002	Windmill Design Incorporated	4371-101-000	Communications & Marketing	525.00	
03/27/19	70655	ysi001	YSI, Inc.	4530-101-000	Water QM Staff-General	580.08	
						$312,235.17	

Summary of Professional Engineering Services During the Period
February 16, 2019 through March 15, 2019

Engineering Administration	Total Engineering Budget (2019)	Total Fees to Date (2019)	Budget Balance (2019)	Fees During Period	District Accounting Code	Plan Implementation Task Number
General Engineering Administration	$76,000.00	$17,104.16	$58,895.84	$5,423.50	**4121-101**	DW-13
RWMWD Health and Safety/ERTK Program	$2,000.00	$0.00	$2,000.00		**4697-101**	DW-13
Educational Program/Educational Forum Assistance	$20,000.00	$8,170.00	$11,830.00	$4,158.50	**4129-101**	DW-11
Engineering Review						
Engineering Review	$55,000.00	$14,226.50	$40,773.50	$8,586.00	**4123-101**	DW-13
Project Feasibility Studies						
Owasso County Park Stormwater Master Plan and Detailed Design: Phase 1 and Phase 2	$50,000.00	$651.00	$49,349.00	$542.50	**4129-101**	DW-6
Beltline Resiliency and Phalen Chain Water Level Management Study	$217,000.00	$16,701.00	$200,299.00	$4,822.50	**4129-101**	BELT-3
Interim emergency response plan funds for top priority District flooding areas (such as Owasso Basin, Willow Creek, PCU Pond, etc)	$50,000.00	$324.00	$49,676.00	$324.00	**4129-101**	DW-19
FEMA Flood Mapping Update	$90,000.00	$21,315.50	$68,684.50	$4,930.50	**4129-101**	DW-9
Snail, Grass, and West Vadnais outlet permitting with the MnDNR	$100,000.00	$1,421.00	$98,579.00	$171.00	**4129-101**	DW-9
Modeling of 500-year event Atlas 14 District-wide (Climate Change Scenario) and Generation of Flood Maps for Future Outreach Efforts	$70,000.00	$729.00	$69,271.00	$421.50	**4129-101**	DW-9
Climate Adaption Workshops with Member Cities	$100,000.00	$85.00	$99,915.00		**4129-101**	DW-9
Hillcrest Golf Course (multi-use)	$25,000.00	$0.00	$25,000.00		**4129-101**	DW-6
Wetland Restoration site search. BWSR criteria needed to help guide this idea.	$25,000.00	$4,526.50	$20,473.50	$3,221.50	**4129-101**	DW-1, DW-8
Gold BRT planning	$20,000.00	$0.00	$20,000.00		**4129-101**	DW-6
Priority Pond Assessment (WQ Monitor/Dredge/Treat/Leave As-Is)	$20,000.00	$0.00	$20,000.00		**4129-101**	DW-5
Contingency*	$20,000.00	$3,233.00	$16,767.00		**4129-101**	
GIS Maintenance						
GIS Maintenance	$5,000.00	$85.00	$4,915.00		**4170-101**	DW-13
Monitoring Water Quality/Project Monitoring						
Lake Water Quality Monitoring (Misc QA/QC)	$10,000.00	$170.00	$9,830.00	$170.00	**4520-101**	DW-2
Auto lake monitoring system for Grass Lake	$20,000.00	$0.00	$20,000.00		**4520-101**	DW-18
Auto lake monitoring system for Owasso Lake	$20,000.00	$812.50	$19,187.50	$375.00	**4520-101**	DW-18
Auto lake monitoring system for Phalen Lake	$20,000.00	$4,799.50	$15,200.50		**4520-101**	DW-18
Auto lake monitoring system for Snail Lake	$20,000.00	$0.00	$20,000.00		**4520-101**	DW-18
Auto lake monitoring system for Wabasso Lake	$20,000.00	$1,605.50	$18,394.50	$1,605.50	**4520-101**	DW-18
Special Project BMP Monitoring (Maplewood Mall, Frost Kennard Spent Lime Filter, Willow Pond CMAC)	$25,000.00	$0.00	$25,000.00		**4520-101**	DW-12
Permit Processing, Inspection and Enforcement						
Permit Application Inspection and Enforcement	$10,000.00	$63.00	$9,937.00		**4122-101**	DW-7
Permit Application Review	$55,000.00	$7,234.00	$47,766.00	$4,901.00	**4124-101**	DW-7
Lake Studies/WRPPs/TMDL Reports						
2019 Grant Applications	$30,000.00	$0.00	$30,000.00		**4661-101**	--
Tanners Flood Response Tool Model Update	$3,000.00	$281.00	$2,719.00	$281.00	**4661-101**	TaL-1
Internal Load Management Discussions	$10,000.00	$0.00	$10,000.00		**4661-101**	KL-2, GC-2, WL-3, BL-3, BCL-2, LE-4, BeL-3, LO-5
Twin Lake Public Meeting	$8,000.00	$5,722.00	$2,278.00	$580.00	**4129-101**	DW-19
Contingency for Lake Studies	$17,000.00	$0.00	$17,000.00		**4661-101**	
Research Projects						
New Technology Mini Case Studies (average 6 per year)	$12,000.00	$1,769.00	$10,231.00	$179.50	**4695-101**	DW-12
Kohlman Permeable Weir Test System - Implement Monitoring Plan	$15,000.00	$4,386.58	$10,613.42	$278.58	**4695-101**	DW-12
Iron aggregate pond application research project	$20,000.00	$0.00	$20,000.00		**4695-101**	DW-12
Project Operations						
2018 Tanners Alum Facility Monitoring	$15,000.00	$216.00	$14,784.00		**4650-101**	TaL-3
Capital Improvements						
Wakefield Park/Frost Avenue Stormwater Project	$175,000.00	$35,733.00	$139,267.00	$10,973.00	**4128-553**	WL-1
Commercial Sites Retrofit Projects 2018 (Targeted Retrofits)	$55,000.00	$2,996.20	$52,003.80	$961.50	**4128-518**	DW-6
School Sites Retrofit Projects 2018 (Targeted Retrofits)	$55,000.00	$9,814.50	$45,185.50	$5,193.50	**4128-518**	DW-6
Church Sites Retrofit Projects 2018 (Targeted Retrofit)	$55,000.00	$5,861.00	$49,139.00	$4,459.00	**4128-518**	DW-6
Roseville High School Campus Stormwater Retrofit (Bennett Lake Subwatershed)	$125,000.00	$13,239.26	$111,760.74	$3,166.26	**4128-518**	BeL-4
BMP Incentive Fund: Gen'l BMP Design Assistance and Review (cases where Dist is approached by landowner, or landowner is not commercial, school, church).	$50,000.00	$10,213.50	$39,786.50	$3,919.50	**4682-529**	DW-6
Lowering West Vadnais Lake Outlet	$50,000.00	$0.00	$50,000.00		**4128-520**	DW-9
Cottage Place Wetland Restoration	$100,000.00	$9,241.00	$90,759.00	$2,830.50	**4128-518**	DW-1, DW-8
Markham Pond Aeration Project and Grant Reporting	$1,000.00	$320.00	$680.00	$160.00	**4128-551**	KC-1
Aldrich Arena Plans and Specifications	$125,000.00	$21,229.50	$103,770.50	$3,976.50	**4128-518**	DW-6
Willow Pond CMAC Implementation	$100,000.00	$127,799.61	-$27,799.61	$95.00	**4128-554**	BeL-4
CIP Project Repair & Maintenance						
Kohlman Lake Macrophyte Mgmt	$5,000.00	$0.00	$5,000.00		**4128-516**	KL-3
Routine CIP Inspection and Unplanned Maintenance Identification	$75,000.00	$22,193.20	$52,806.80	$3,406.50	**4128-516**	DW-5
2019 CIP Maintenance and Repairs	$150,000.00	$25,596.78	$124,403.22	$6,613.98	**4128-516**	DW-5
2020 CIP Maintenance and Repairs	$150,000.00	$0.00	$150,000.00		**4128-516**	DW-5

*Final edits to Beaver, Owasso and Battle Creek Lakes Subwatershed Feasibility Studies per Board comments at the 1/2/19 meeting.

Subtotal $86,727.32

TOTAL PAYABLE FOR PERIOD 02/16/2019 - 03/15/2019 **$86,727.32**

Barr declares under the penalties of Law that this Account, Claim, or Demand is just and that no part has been paid.

Capital Improvement Project Maintenance/Repairs 2019
Progress Payment Number 3

1.0	Total Completed Through This Period:	$373,481.00		
2.0	Total Completed Previously Completed:		$297,781.00	
3.0	Total Completed This Period:			$75,700.00
4.0	Amount Previously Retained:		$14,889.05	
5.0	Amount Retained This Period (See Note 1):			$3,785.00
6.0	Total Amount Retained (See Note 2):		$18,674.05	
7.0	Retainage Released Through This Period:			$0.00
8.0	Total Retainage Remaining:		$18,674.05	
9.0	Amounts Previously Paid:	$282,891.95		
10.0	Amount Due This Estimate:			$71,915.00

Note 1: Retainage shall be 5 percent of the value of the Work completed.

SUBMITTED BY:

Name: Jason Fitzgerald Date: 3/26/19

Title: President

Contractor: Fitzgerald Excavating & Trucking, Inc.

Signature:

RECOMMENDED BY:

Name: Brad Lindaman Date: 3/26/2019

Title: District Engineer

Engineer: Barr Engineering Company

Signature:

APPROVED BY:

Name: Marj Ebensteiner Date:

Title: President

Owner: Ramsey-Washington Metro Watershed District

Signature:

Capital Improvement Project Maintenance/Repairs 2019
Ramsey-Washington Metro Watershed District
Summary of Work Completed Through March 19, 2019 for Progress Payment Number 3

						(1) Total Completed Through This Period		(2) Total Completed Previous Period		(3) Total Completed This Period	
1.04 Item	**Description**	**Unit**	**Estimated Quantity**	**Unit Price**	**Extension**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
General											
1.04.A	Mobilization/Demobilization	L.S.	1	15,000.00	15,000.00	0.80	$12,000.00	0.50	$7,500.00	0.30	$4,500.00
1.04.B	Control of Water	L.S.	1	10,000.00	10,000.00	0.80	$8,000.00	0.50	$5,000.00	0.30	$3,000.00
1.04.AB	Traffic Control	L.S.	1	2,000.00	2,000.00	0.80	$1,600.00	0.50	$1,000.00	0.30	$600.00
Site 1 – Tamarack Swamp, Woodbury											
1.04.F	Sediment Log (6-Inch Diameter)	L.F.	60	5.00	300.00	0	$0.00	0	$0.00	0	$0.00
1.04.C	Sediment/Muck Cleanout (55 C.Y.)	L.S.	1	1,500.00	1,500.00	0	$0.00	0	$0.00	0	$0.00
1.04.D	Disposal of Sediment/Muck Cleanout (Level 3 Material)	TON	85	50.00	4,250.00	0	$0.00	0	$0.00	0	$0.00
1.04.G	Paver Sweeping (1,400 S.Y.)	S.Y.	1,400	2.00	2,800.00	0	$0.00	0	$0.00	0	$0.00
1.04.H	Removal, Disposal, and Replacement of Existing 1 ½" to 2" Clear Washed Filter Rock	C.Y.	3	50.00	150.00	0	$0.00	0	$0.00	0	$0.00
1.04.E	Site Restoration (Seeding and Erosion Control Blanket)	S.Y.	100	1.50	150.00	0	$0.00	0	$0.00	0	$0.00
Site 2 – 5th Street Wetland, Oakdale											
1.04.I	Permeable Well Maintenance (Reopening Drainage Slots and Remove all Brush and Debris)	L.F.	65	25.00	1,625.00	65	$1,625.00	65	$1,625.00	0	$0.00
1.04.K	Silt Fence	L.F.	35	1.50	52.50	~~0~~	$0.00	0	$0.00	0	$0.00
1.04.E	Site Restoration (Seeding and Erosion Control Blanket)	S.Y.	210	2.00	420.00	0	$0.00	0	$0.00	0	$0.00
Site 3 – Tanners Wetland, Oakdale											
1.04.I	Permeable Well Maintenance (Reopening Drainage Slots and Remove all Brush and Debris)	L.F.	580	7.00	4,060.00	580	$4,060.00	580	$4,060.00	0	$0.00
1.04.E	Site Restoration (Seeding and Erosion Control Blanket)	S.Y.	600	1.50	900.00	0	$0.00	0	$0.00	0	$0.00
Site 4 – Gervais Mill Park, Little Canada											
1.04.J	Install Flotation Silt Curtain	L.F.	55	15.00	825.00	55	$825.00	55	$825.00	0	$0.00
1.04.H	Removal, Disposal, and Replacement of Existing 1 ½" to 2" Clear Was	C.Y.	16	50.00	800.00	16	$800.00	16	$800.00	0	$0.00
1.04.N	Remove and Replace Plastic Netting (Tensar Tri Ax Geogrid or approv	S.Y.	24	13.00	312.00	24	$312.00	24	$312.00	0	$0.00
1.04.E	Site Restoration (Seeding and Erosion Control Blanket)	S.Y.	400	1.50	600.00	0	$0.00	0	$0.00	0	$0.00
Site 5 – PCU Pond, North St. Paul											
1.04.L	Construction Entrance	EACH	1	500.00	500.00	0	$0.00	0	$0.00	0	$0.00
1.04.J	Flotation Silt Curtain or	L.F.	540	3.00	1,620.00	340	$1,020.00	340	$1,020.00	0	$0.00
1.04.K	Silt Fence	L.F.	540	3.00	1,620.00	0	$0.00	0	$0.00	0	$0.00
1.04.C	Sediment/Muck Cleanout (1,500 C.Y.)	L.S.	1	50,000.00	50,000.00	1	$50,000.00	1	$50,000.00	0	$0.00
1.04.D	Disposal of Sediment/Muck Cleanout (Level 2 & 3 Material)	TON	2,325	30.00	69,750.00	2,996	$89,880.00	2996	$89,880.00	0	$0.00
1.04.E	Site Restoration (Seeding and Erosion Control Blanket)	S.Y.	30	2.00	60.00	222	$444.00	222	$444.00	0	$0.00
Site 6 – Hayward Avenue Ponds, Oakdale											
1.04.L	Construction Entrance	EACH	1	500.00	500.00	~~0~~	$0.00	0	$0.00	0	$0.00
1.04.M	Inlet Protection	EACH	1	100.00	100.00	2	$200.00	2	$200.00	0	$0.00
1.04.J	Flotation Silt Curtain or	L.F.	60	3.00	180.00	27	$81.00	27	$81.00	0	$0.00
1.04.K	Silt Fence	L.F.	60	3.00	180.00	~~0~~	$0.00	0	$0.00	0	$0.00
1.04.O	Removal of Trees, Brush, and Debris (Disposal Off Site)	L.S.	1	5,000.00	5,000.00	1	$3,000.00	1	$3,000.00	0	$0.00
1.04.P	Clean Out Catch Basin	EACH	1	1,500.00	1,500.00	0	$0.00	0	$0.00	0	$0.00
1.04.Q	Cleanout Sediment from Flared End Section and Pipe to Structure	L.S.	1	700.00	700.00	0	$0.00	0	$0.00	0	$0.00
1.04.C	Sediment/Muck Cleanout (450 C.Y.)	L.S.	1	13,000.00	13,000.00	1	$13,000.00	1	$13,000.00	0	$0.00
1.04.D	Disposal of Sediment/Muck Cleanout (Levels 2 & 3 Material)	TON	698	40.00	27,920.00	885	$35,400.00	885	$35,400.00	0	$0.00
1.04.R	MN/DOT Class III Riprap with Type IV Geotextile Filter Fabric	TON	10	45.00	450.00	0	$0.00	0	$0.00	0	$0.00
1.04.E	Site and Access Restoration (Seeding and Erosion Control Blanket)	S.Y.	667	2.00	1,334.00	0	$0.00	0	$0.00	0	$0.00

Capital Improvement Project Maintenance/Repairs 2019
Ramsey-Washington Metro Watershed District
Summary of Work Completed Through March 19, 2019 for Progress Payment Number 3

						(1) Total Completed Through This Period		(2) Total Completed Previous Period		(3) Total Completed This Period	
1.04 Item	**Description**	**Unit**	**Estimated Quantity**	**Unit Price**	**Extension**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
Site 7 – McKnight Basin, St. Paul											
1.04.L	Construction Entrance	EACH	1	500.00	500.00	0	$0.00	0	$0.00	0	$0.00
1.04.J	Flotation Silt Curtain	L.F.	580	15.00	8,700.00	0	$0.00	0	$0.00	0	$0.00
1.04.N	Removal of Trees, Brush, and Debris (Disposal Off Site)	L.S.	1	500.00	500.00	1	$500.00	0	$0.00	1	$500.00
1.04.C	Sediment/Muck Cleanout (700 C.Y.)	L.S.	1	28,000.00	28,000.00	1	$28,000.00	0	$0.00	1	$28,000.00
1.04.D	Disposal of Sediment/Muck Cleanout (Levels 2 & 3 Material)	TON	1,085	35.00	37,975.00	0	$0.00	0	$0.00	0	$0.00
1.04.E	Site and Access Restoration (Seeding and Erosion Control Blanket)	S.Y.	167	2.00	334.00	135	$270.00	0	$0.00	135	$270.00
Site 8 – Fish Creek Tributary Detention Pond, Maplewood											
1.04.L	Construction Entrance	EACH	1	500.00	500.00	0	$0.00	0	$0.00	0	$0.00
1.04.J	Flotation Silt Curtain or	L.F.	130	3.00	390.00	0	$0.00	0	$0.00	0	$0.00
1.04.K	Silt Fence	L.F.	130	3.00	390.00	0	$0.00	0	$0.00	0	$0.00
1.04.C	Sediment/Muck Cleanout (130 C.Y.)	L.S.	1	4,550.00	4,550.00	1	$4,550.00	1	$4,550.00	0	$0.00
1.04.D	Disposal of Sediment/Muck Cleanout (Level2 & 3 Material)	TON	202	35.00	7,070.00	312	$10,920.00	312	$10,920.00	0	$0.00
1.04.R	MN/DOT Class III Riprap with Type IV Geotextile Filter Fabric	TON	10	45.00	450.00	0	$0.00	0	$0.00	0	$0.00
1.04.R	MN/DOT Class V Riprap with Type VII Geotextile Filter Fabric	TON	10	45.00	450.00	0	$0.00	0	$0.00	0	$0.00
1.04.S	Mill Bituminous Surface (2”)	S.Y.	460	11.50	5,290.00	0	$0.00	0	$0.00	0	$0.00
1.04.T	Type SPWEA330F Wearing Course Mixture (3”)	TON	78	150.00	11,700.00	0	$0.00	0	$0.00	0	$0.00
1.04.E	Site Access Restoration (Seeding and Erosion Control Blanket)	S.Y.	200	2.00	400.00	222	$444.00	222	$444.00	0	$0.00
Site 9 – Suburban Pond, St. Paul											
1.04.L	Construction Entrance	EACH	2	500.00	1,000.00	0	$0.00	0	$0.00	0	$0.00
1.04.J	Flotation Silt Curtain or	L.F.	200	3.00	600.00	50	$150.00	0	$0.00	50	$150.00
1.04.K	Silt Fence	L.F.	200	3.00	600.00	0	$0.00	0	$0.00	0	$0.00
1.04.M	Inlet Protection	EACH	10	100.00	1,000.00	0	$0.00	0	$0.00	0	$0.00
1.04.N	Removal of Trees, Brush, and Debris (Disposal Off Site)	L.S.	1	5,000.00	5,000.00	0.5	$2,500.00	0	$0.00	0.5	$2,500.00
1,04.X	Investigative Excavation Crew	HOUR	12	150.00	1,800.00	6	$900.00	0	$0.00	6	$900.00
1.04.C	Sediment/Muck Cleanout (1,180 C.Y.)	L.S.	1	40,000.00	40,000.00	1	$40,000.00	0.5	$20,000.00	0.50	$20,000.00
1.04.D	Disposal of Sediment/Muck Cleanout (Level 3 Material)	TON	1,829	40.00	73,160.00	1,525	$61,000.00	1193	$47,720.00	332	$13,280.00
1.04.R	MN/DOT Class III Riprap with Type IV Geotextile Filter Fabric	TON	92	45.00	4,140.00	0	$0.00	0	$0.00	0	$0.00
1.04.E	Site Access Restoration (Seeding and Erosion Control Blanket)	S.Y.	2,444	2.00	4,888.00	1,000	$2,000.00	0	$0.00	1000	$2,000.00

Capital Improvement Project Maintenance/Repairs 2019
Ramsey-Washington Metro Watershed District
Summary of Work Completed Through March 19, 2019 for Progress Payment Number 3

						(1) Total Completed Through This Period		(2) Total Completed Previous Period		(3) Total Completed This Period	
1.04 Item	**Description**	**Unit**	**Estimated Quantity**	**Unit Price**	**Extension**	**Quantity**	**Amount**	**Quantity**	**Amount**	**Quantity**	**Amount**
Site 10 – Grass Lake, Shoreview											
Alternate A											
1.04.A	Mobilization/Demobilization	L.S.	1	2,000.00	2,000.00	0	$0.00	0	$0.00	0	$0.00
1.04.O	Removal of Trees, Brush, and Debris (Disposal Off Site)	L.S.	1	2,000.00	2,000.00	0	$0.00	0	$0.00	0	$0.00
1.04.L	Construction Entrance	EACH	1	500.00	500.00	0	$0.00	0	$0.00	0	$0.00
1.04.K	Silt Fence	L.F.	280	1.00	280.00	0	$0.00	0	$0.00	0	$0.00
1.04.AA	Remove and Replace Bituminous Pavement	S.Y.	80	3.00	240.00	0	$0.00	0	$0.00	0	$0.00
1.04.AC	Common Excavation (P)	C.Y.	100	10.00	1,000.00	0	$0.00	0	$0.00	0	$0.00
1.04.U	MN/DOT Common Borrow (P)	C.Y.	145	18.00	2,610.00	0	$0.00	0	$0.00	0	$0.00
1.04.V	Topsoil Borrow (P)	C.Y.	85	18.00	1,530.00	0	$0.00	0	$0.00	0	$0.00
1.04.E	Site Access Restoration (Seeding and Erosion Control Blanket)	S.Y.	510	3.00	1,530.00	0	$0.00	0	$0.00	0	$0.00
Alternate B											
1.04.A	Mobilization/Demobilization	L.S.	1	1,000.00	1,000.00	0	$0.00	0	$0.00	0	$0.00
1.04.W	Furnish and Install Aluminum Stop Log System (by Whipps, Inc. local [illegible]	L.S.	1	3,250.00	3,250.00	0	$0.00	0	$0.00	0	$0.00
1.04.E	Site Access Restoration (Seeding and Erosion Control Blanket)	S.Y.	80	3.00	240.00	0	$0.00	0	$0.00	0	$0.00
Alternate D											
1.04.A	Mobilization/Demobilization	L.S.	1	1,000.00	1,000.00	0	$0.00	0	$0.00	0	$0.00
1.04.O	Removal of Trees, Brush, and Debris (Disposal Off Site)	L.S.	1	2,000.00	2,000.00	0	$0.00	0	$0.00	0	$0.00
1.04.K	Silt Fence	L.F.	195	2.00	390.00	0	$0.00	0	$0.00	0	$0.00
1.04.U	MN/DOT Common Borrow (P)	C.Y.	80	14.00	1,120.00	0	$0.00	0	$0.00	0	$0.00
1.04.V	Top Soil Borrow (P)	C.Y.	85	18.00	1,530.00	0	$0.00	0	$0.00	0	$0.00
1.04.E	Site Access Restoration (Seeding and Erosion Control Blanket)	S.Y.	500	3.00	1,500.00	0	$0.00	0	$0.00	0	$0.00
				Total of Extensions =	**$ 483,265.50**		**$373,481.00**		**$297,781.00**		**$75,700.00**
Change Orders											
C.O.1A					0.00	0	$0.00	0	$0.00	0	$0.00
					GRAND TOTALS		**$373,481.00**		**$297,781.00**		**$75,700.00**

Galowitz Olson, PLLC
10390 39th Street North
Lake Elmo, Minnesota 55042
Office: (651) 777-6960
Fax: (651) 777-8937

March 20, 2019
File No: 9M

Ramsey-Washington Metro Watershed District
C/O Tina Carstens
2665 Noel Drive
Little Canada MN 55117

	Balance
General Account	$1,357.50

****

Permit Program

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Permit Application Coversheet

Date April 03, 2019

Project Name Radio Drive Trails **Project Number** 19-10

Applicant Name Morgan Abbott, Washington County

Type of Development Trail

Property Description

This project is located on both sides of Radio Drive from Afton Road to Valley Creek Road in the City of Woodbury. The applicant is proposing to construct a bituminous multi-use trail. The total site area is 3 acres. A portion of the project is located in South Washington Watershed District (SWWD), but the majority of the site drains to RWMWD. SWWD has deferred permitting authority for the project. A filtration basin will be constructed to meet stormwater treatment requirements. Filtration is being proposed due to poor soils. Wetland areas were delineated in 2018 along the existing Radio Drive right-of-way, but they are considered incidental due to drainage from the road (#18-22 WCA).

Watershed District Policies or Standards Involved:

- ☑ ***Wetlands***
- ☑ ***Erosion and Sediment Control***
- ☑ ***Stormwater Management***
- ☐ ***Floodplain***

Water Quantity Considerations

The proposed stormwater management plan is sufficient to handle the runoff from the site.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

The proposed stormwater management plan is sufficient to protect the long term quality of downstream water resources.

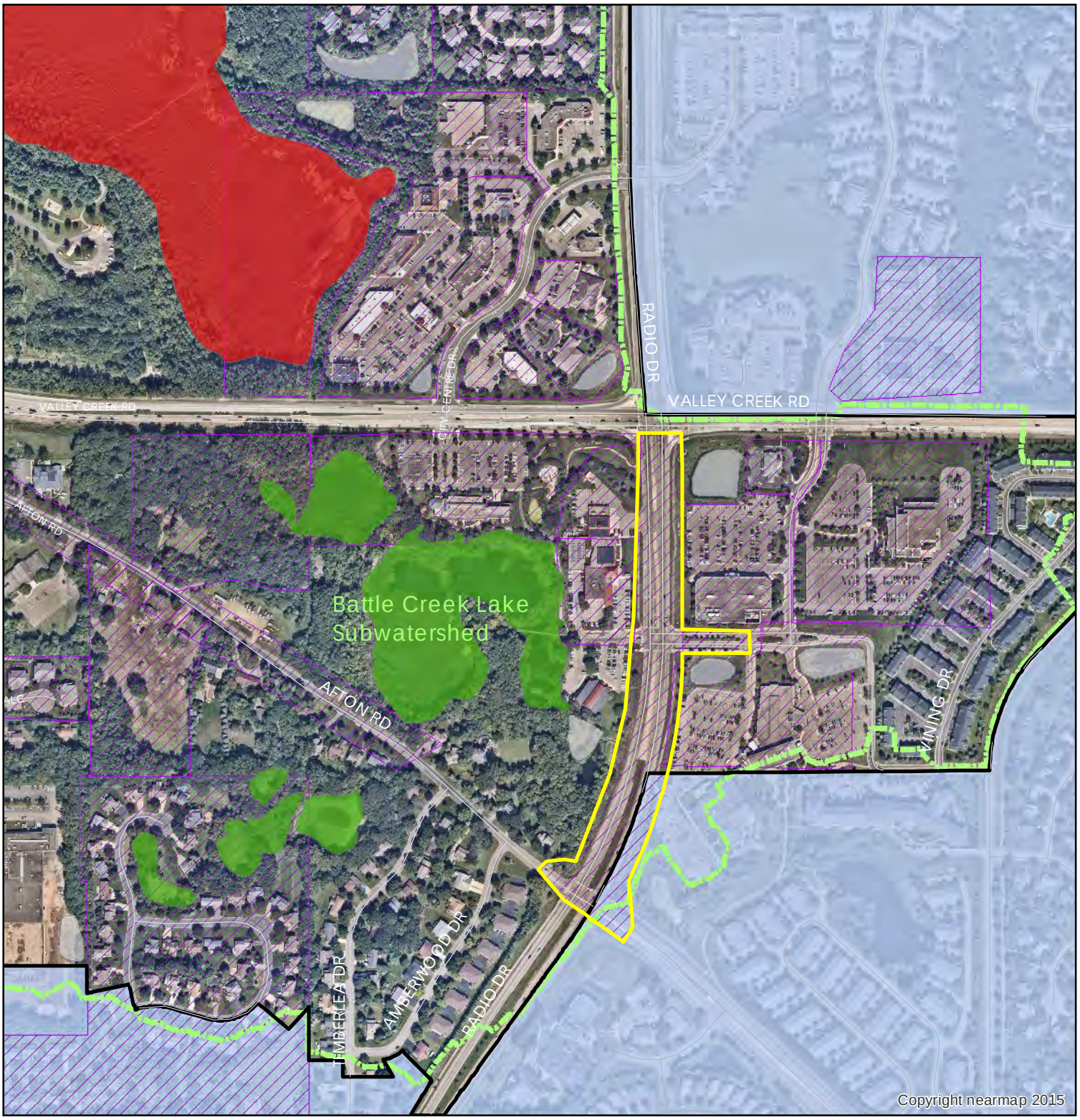
Staff Recommendation

Staff recommends approval of this permit with the special provisions.

Attachments:

- ☑ **Project Location Map**
- ☐ **Project Grading Plan**

#19-10 Radio Drive Trails



Note: Shaded area is outside RWMWD

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

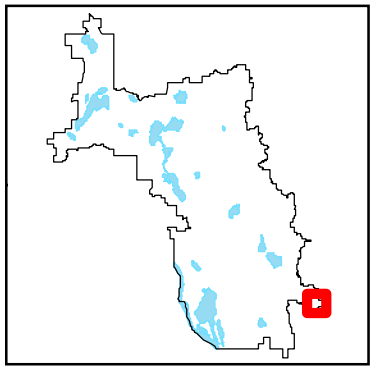
- RWMWD Boundary
- Subwatersheds
- Creeks
- Permits

Highlighted Areas Represent Active Permit

0 400 800
Feet

0 0.075 0.15
Miles

N



19-10

Special Provisions

1. The applicant shall submit a revised memorandum that removes the label "disturbed' from the first two lines of impervious area under "Proposed Conditions."

2. The applicant shall submit soil borings completed for the project.

3. The applicant shall provide contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

4. The applicant shall label and define "BR" and "MS" in erosion control legend.

5. The applicant shall submit a final, signed copy of the construction plans.

6. The applicant shall submit the approved Minnesota Pollution Control Agency's NPDES Construction Permit for the project.

Permit Application Coversheet

Date April 03, 2019

Project Name Xcel Energy East County Line **Project Number** 19-11

Applicant Name Ben Hach, Northern States Power Company

Type of Development Utility Maintenance

Property Description

This project is located along an existing Xcel Energy gas line at Century Avenue from approximately South Avenue East to Larpenteur Avenue in the cities of Maplewood, Oakdale, and North St. Paul. The applicant is proposing to replace 1.4 miles of existing gas line through a combination of open trench excavation and directional drilling. The total site area is 4 acres. This type of utility maintenance is exempt from permanent stormwater treatment requirements. Impervious area will not increase as a result of this project. The applicant has submitted a variance request for temporary disturbance in wetland buffers. Buffer areas that are disturbed will have redundant perimeter control while soil is exposed and will be restored to pre-construction conditions.

Watershed District Policies or Standards Involved:

- ☑ ***Wetlands***
- ☑ ***Erosion and Sediment Control***
- ☐ ***Stormwater Management***
- ☐ ***Floodplain***

Water Quantity Considerations

There are no water quantity considerations.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

There are no long term water quality considerations.

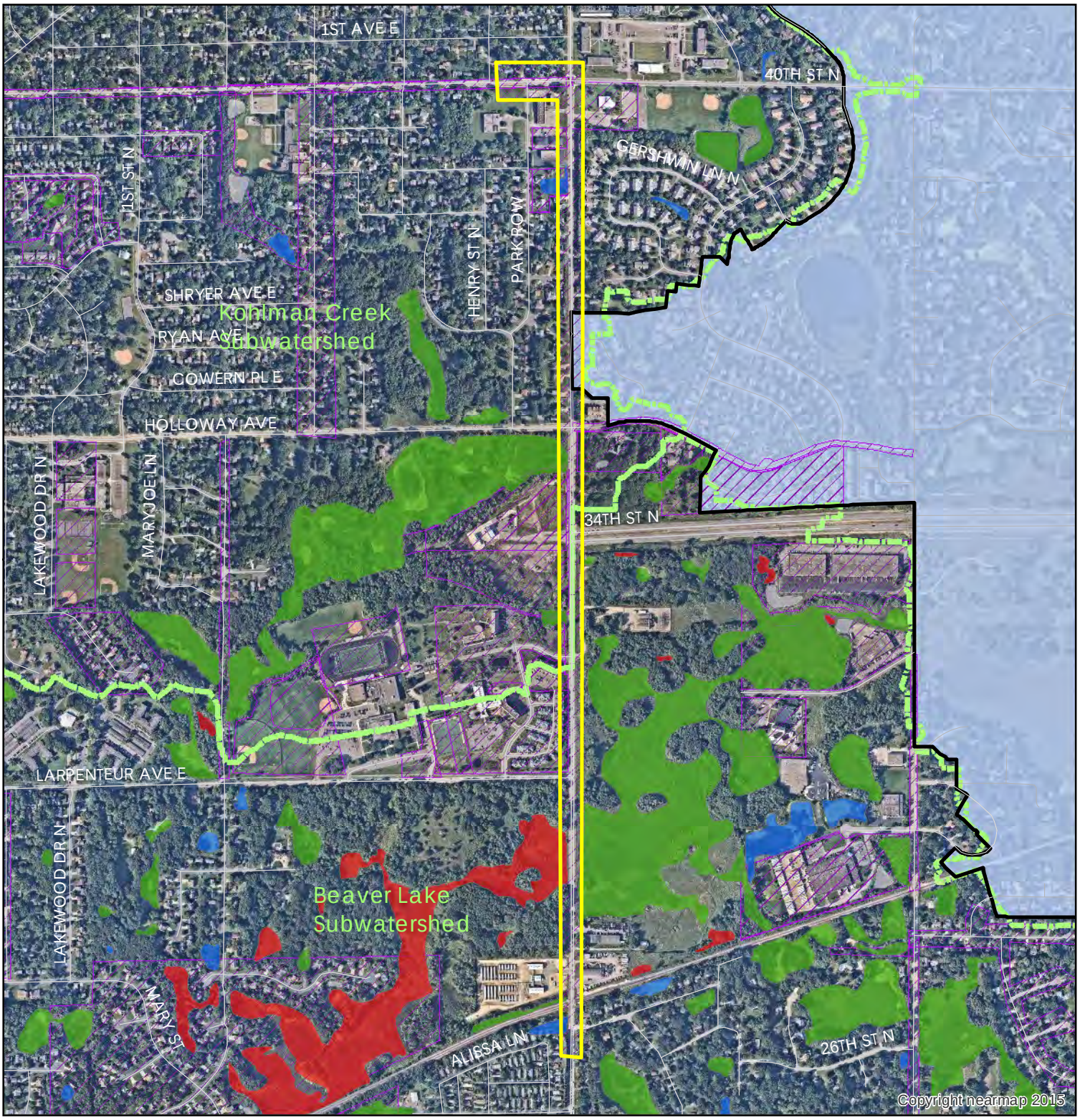
Staff Recommendation

Staff recommends approval of this permit with the special provisions and variance request.

Attachments:

- ☑ **Project Location Map**
- ☐ **Project Grading Plan**

#19-11 Xcel Energy East County Line



Note: Shaded area is outside RWMWD

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

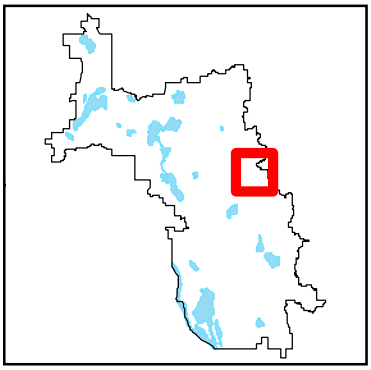
- RWMWD Boundary
- Subwatersheds
- Creeks
- Permits

Highlighted Areas Represent Active Permit

0 750 1,500
Feet

0 0.15 0.3
Miles

N



19-11

Special Provisions

1. The applicant shall submit the final, signed construction plans including erosion control sheets.

2. The applicant shall submit contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

3. The applicant shall add a note to the plans that the specified erosion and sediment control practices are the minimum. Additional practices may be required during the course of construction.

4. The applicant shall add a note to the plans to notify Nicole Soderholm, Ramsey-Washington Metro Watershed District, at 651-792-7976 prior to beginning any construction activity in order to schedule an initial SWPPP inspection.

5. The applicant shall submit a copy of the approved Minnesota Pollution Control Agency's NPDES Construction Permit for the project.

Westwood

3701 12th St. N, Suite 206
St. Cloud, MN 56303

Main (320) 253-9495
Fax (320) 358-2001

westwoodps.com
(800) 270-9495

MEMORANDUM

Date: February 18, 2019

Re: East County Line Variance Request
File 0021667.00

To: Ramsey-Washington Metro Watershed District

From: Westwood Professional Services

Introduction

The proposed East County Line project is located between Ramsey and Washington Counties and the cities of North St. Paul, Maplewood, and Oakdale. The project is linear in nature, running north-south along State Highway 120 from South Avenue East on the north end to a location approximately ¼ mile past Larpenteur Avenue on the south end.

Section	Township	Range
12, 13, 24	T29N	R22W
18, 19	T29N	R21W
Latitude and Longitude Points (Decimal)		
Latitude	44.99786	
Longitude	-92.98476	

This project will consist of the replacement of 1.4 miles of existing 30-inch gas pipe with standardized 20-ince gas pipe. The old piping will be removed and the new piping installed using open trench and horizontal directional drilling (HDD) boring techniques. Any disturbed impervious will be replaced and no additional impervious is proposed.

Variance Request

A variance is requested for the East County Line Project pertaining to wetlands as described below.

It is required by the watershed that buffer zones around the existing wetlands, lakes, and streams be preserved during construction. With the nature of the project, this is not always feasible because of the available space for construction. In locations where buffer zones cannot be feasibly preserved, redundant sediment controls will be impletmented.

In areas where wetlands are disturbed temporarily, they will be restored to their pre-construction conditions and stabilized.

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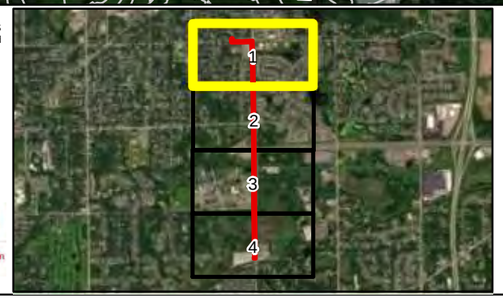
VARIANCE LOCATION
REDUNDANT SEDIMENT CONTROL PROPOSED



Data Source(s): Westwood (2019); ESRI WMS World Streets Basemap Imagery (Accessed 2019).

Legend

- Project Boundary
- Gas Line
- County Boundary
- HUC 12 Boundary
- NWI Wetlands
- NHD Flowline
- Logs/Sediment Control
- Redundant Sediment Control
- 2 ft Contour

± 0 250 Feet

East County Line Project

Ramsey County, Minnesota

Variance Request Locations

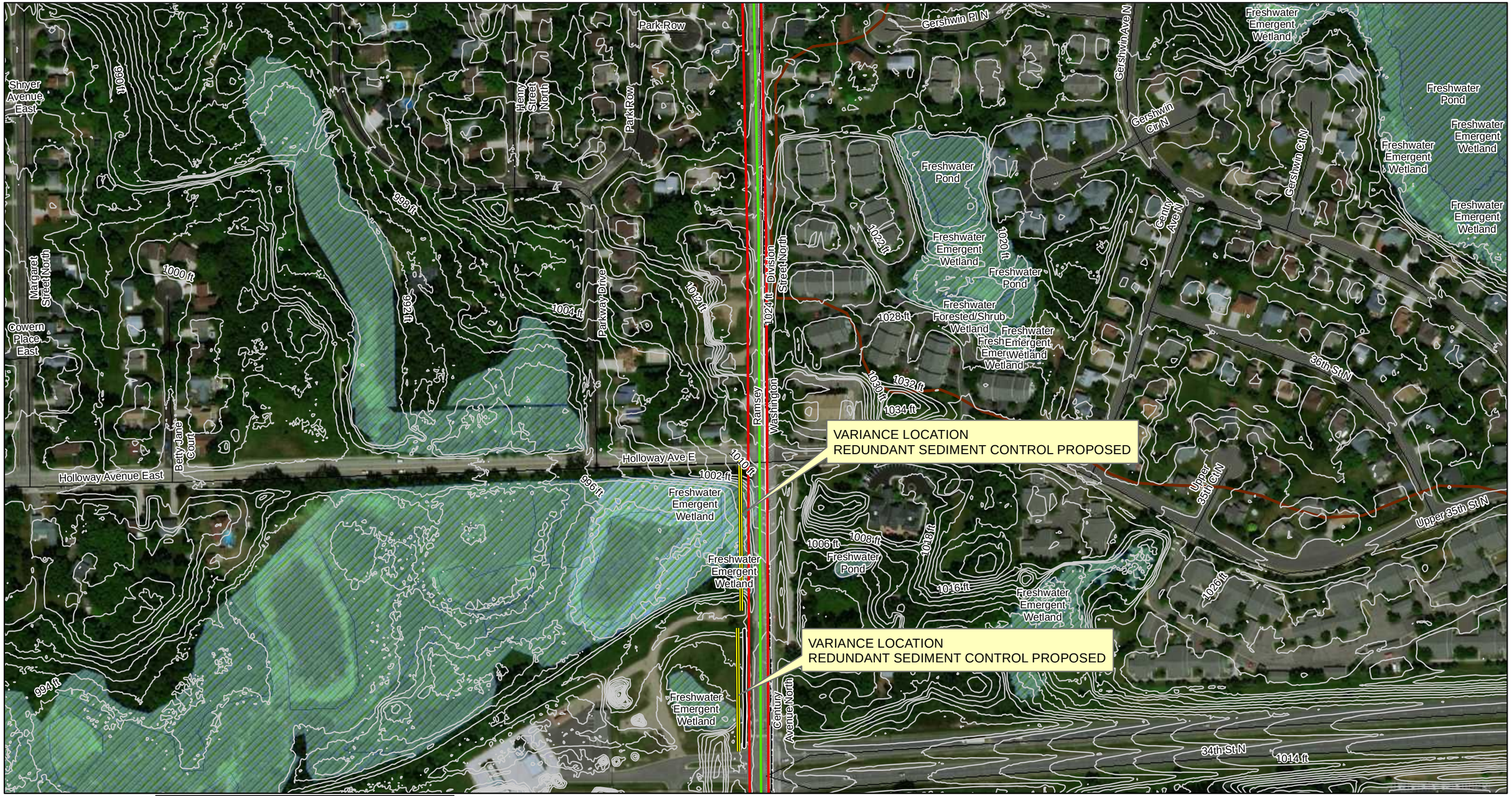
Exhibit 1 of 4

February 18, 2019

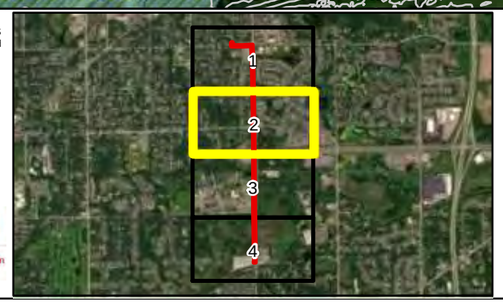
Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

Map Document: \\westwoodps.local\GFS\Global Projects\0021667.00\GIS\SWPPP Maps\East County Line\2019-02-18_EastCountyLine_Variance Exhibit.mxd mednoogsma 2/18/2019 10:30:16 AM

© 2019 Westwood Professional Services, Inc.



Data Source(s): Westwood (2019); ESRI WMS World Streets Basemap Imagery (Accessed 2019).



Westwood
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Legend

- Project Boundary
- Gas Line
- County Boundary
- HUC 12 Boundary
- NWI Wetlands
- NHD Flowline
- Logs/Sediment Control
- Redundant Sediment Control
- 2 ft Contour

0 250 Feet

East County Line Project

Ramsey County, Minnesota

Variance Request Locations

Exhibit 2 of 4

February 18, 2019

Map Document: \\westwoodps.local\GFS\Global Projects\0021667.00\GIS\SWPPP Maps\East County Line\2019-02-18_EastCountyLine_Variance Exhibit.mxd medroogsma 2/18/2019 10:30:24 AM

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VARIANCE LOCATION
REDUNDANT SEDIMENT CONTROL PROPOSED

VARIANCE LOCATION
REDUNDANT SEDIMENT CONTROL PROPOSED

VARIANCE LOCATION
REDUNDANT SEDIMENT CONTROL PROPOSED

Freshwater Emergent Wetland
Freshwater Emergent Wetland
Freshwater Emergent Wetland
Freshwater Pond
Freshwater Pond
Freshwater Pond
Freshwater Pond
Freshwater Pond
Freshwater Emergent Wetland
Freshwater Emergent Wetland
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Forested/Shrub Wetland
Freshwater Emergent Wetland
Freshwater Pond
Freshwater Pond

34th St N
32nd St N
Benet Road
Benet Rd
Maple Avenue
Rustic Court
Woodland Lane
Monastery Way
Larpenteur Avenue East
Ramsey
Washington
Century Avenue North

1000 ft
1002 ft
1004 ft
1006 ft
1008 ft
1010 ft
1012 ft
1014 ft
1016 ft
1018 ft
1020 ft
1022 ft
1024 ft
1026 ft
1028 ft
1030 ft
1032 ft
1034 ft
1036 ft
1038 ft
990 ft
992 ft
994 ft
996 ft
998 ft

Data Source(s): Westwood (2019); ESRI WMS World Streets Basemap Imagery (Accessed 2019).

Legend

- Project Boundary
- Gas Line
- County Boundary
- HUC 12 Boundary
- NWI Wetlands
- NHD Flowline
- Logs/Sediment Control
- Redundant Sediment Control
- 2 ft Contour

0 250 Feet

East County Line Project

Ramsey County, Minnesota

Variance Request Locations

Exhibit 3 of 4

February 18, 2019

Westwood
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Westwood Professional Services, Inc.

Map Document: \\westwoodps.local\GFS\Global Projects\0021667.00\GIS\SWPPP Maps\East County Line\2019-02-18_EastCountyLine_Variance Exhibit.mxd mednoogsma 2/18/2019 10:30:33 AM

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VARIANCE LOCATION
REDUNDANT SEDIMENT CONTROL PROPOSED

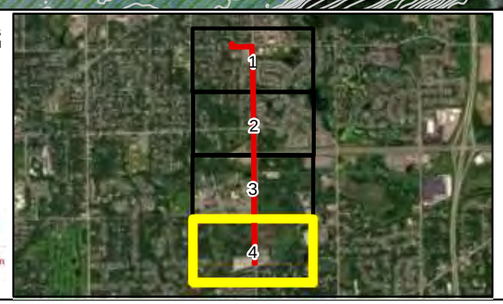
VARIANCE LOCATION
REDUNDANT SEDIMENT CONTROL PROPOSED

984 ft
982 ft
980 ft
986 ft
988 ft
978 ft
976 ft
974 ft
994 ft
992 ft
990 ft
996 ft
998 ft
1000 ft
1002 ft
1004 ft
1006 ft
1008 ft
1010 ft
1012 ft
1013 ft
1014 ft
1016 ft
1020 ft
1022 ft
1024 ft
1026 ft
1028 ft
1030 ft
1032 ft
1034 ft

Freshwater Forested/Shrub Wetland
Freshwater Emergent Wetland
Freshwater Pond

Montana Avenue East
Century Avenue North
Ramsey Washington
27th St N
26th St N
Cerstwin Ave N
Glenbrook Ave N
Goodview Ave N
Alissa Lane
Pearson Drive

Data Source(s): Westwood (2019); ESRI WMS World Streets Basemap Imagery (Accessed 2019).



Legend

- Project Boundary
- Gas Line
- County Boundary
- HUC 12 Boundary
- NWI Wetlands
- NHD Flowline
- Logs/Sediment Control
- Redundant Sediment Control
- 2 ft Contour

0 250 Feet

East County Line Project

Ramsey County, Minnesota

Variance Request Locations

Exhibit 4 of 4

February 18, 2019

Westwood
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Westwood Professional Services, Inc.

Map Document: \\westwoodps.local\GFS\Global Projects\0021667.00\GIS\SWPPP Maps\East County Line\2019-02-18_EastCountyLine_Variance Exhibit.mxd medroogsma 2/18/2019 10:30:41 AM

Permit Application Coversheet

Date April 03, 2019

Project Name Xcel Energy County Road B **Project Number** 19-12

Applicant Name David Butler, Northern States Power Company

Type of Development Utility Maintenance

Property Description

This project is located along an existing Xcel Energy gas line at County Road B from approximately Rice Street to Century Avenue in the cities of Maplewood and North St. Paul. The applicant is proposing to replace 6.5 miles of existing gas line through a combination of open trench excavation and directional drilling. The total site area is 18.6 acres. This type of utility maintenance is exempt from permanent stormwater treatment requirements. Impervious area will not increase as a result of this project. The applicant has submitted a variance request for temporary disturbance in wetland buffers. Buffer areas that are disturbed will have redundant perimeter control while soil is exposed and will be restored to pre-construction conditions. A portion of the project is located in Capitol Region Watershed District (CRWD). A separate permit application has been submitted to CRWD.

Watershed District Policies or Standards Involved:

- ☑ ***Wetlands***
- ☑ ***Erosion and Sediment Control***
- ☐ ***Stormwater Management***
- ☐ ***Floodplain***

Water Quantity Considerations

There are no water quantity considerations.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

There are no long term water quality considerations.

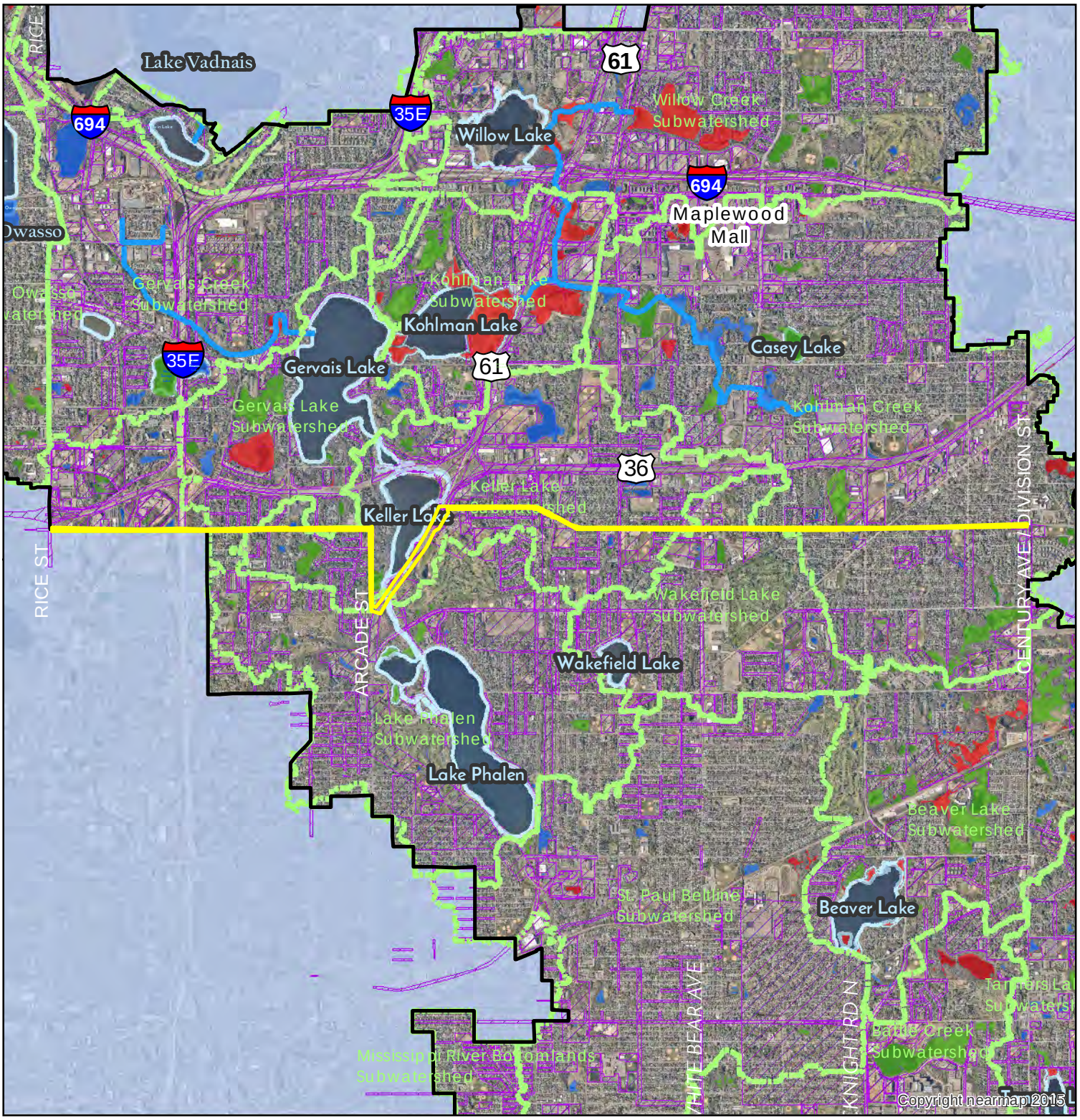
Staff Recommendation

Staff recommends approval of this permit with the special provisions and variance request.

Attachments:

- ☑ **Project Location Map**
- ☐ **Project Grading Plan**

#19-12 Xcel Energy County Road B



Note: Shaded area is outside RWMWD

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

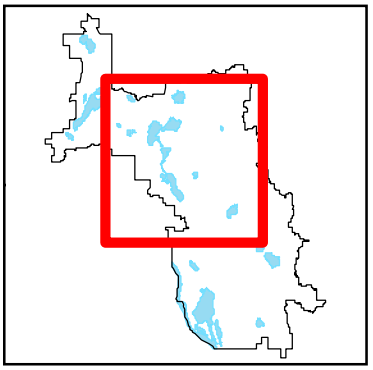
- RWMWD Boundary
- Subwatersheds
- Creeks
- Permits

Highlighted Areas Represent Active Permit

0 3,000 6,000
Feet

0 0.5 1
Miles

N



19-12

Special Provisions

1. The applicant shall submit the final, signed construction plans.

2. The applicant shall submit erosion control construction details including perimeter control, inlet protection, and stabilized construction exits.

3. The applicant shall submit contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

4. The applicant shall submit the escrow fee of $37,200.

5. The applicant shall submit a copy of the approved Minnesota Pollution Control Agency's NPDES Construction Permit for the project.

Westwood

3701 12th St. N, Suite 206
St. Cloud, MN 56303

Main (320) 253-9495
Fax (320) 358-2001

westwoodps.com
(800) 270-9495

MEMORANDUM

Date: February 20, 2019

Re: County Road B Project Variance Request
File 0021667.00

To: Board of Managers, Ramsey-Washington Metro Watershed

From: Westwood Professional Services

Introduction

The proposed County Road B project is located in Ramsey County, Minnesota, in the cities of Maplewood and North St. Paul. The project is linear in nature, running east to west along County Road B, from Rice Street in Maplewood on the west end to Henry Street N in North St. Paul on the east end.

Section	Township	Range
9, 10, 11, 13, 14, 16, 17, 18	T29N	R22W
Latitude and Longitude Points (Decimal)		
Latitude	45.00646	
Longitude	-93.05786	

This project will consist of the replacement of 6.5 miles of existing 20- to 30-inch gas pipe with standardized 20-ince gas pipe. The old piping will be removed and the new piping installed using open trench and horizontal directional drilling (HDD) boring techniques. Any disturbed impervious will be replaced and no additional impervious is proposed.

Variance Request

A variance is requested for the County Road B Project pertaining to wetlands as described below.

It is required by the watershed that buffer zones around the existing wetlands, lakes, and streams be preserved during construction. With the nature of the project, this is not always feasible because of the available space for construction. In locations where buffer zones cannot be feasibly preserved, redundant sediment controls will be impletmented.

In areas where wetlands are disturbed temporarily, they will be restored to their pre-construction conditions and stabilized.

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Data Source(s): Westwood (2019); ESRI WMS World Streets Basemap Imagery (Accessed 2019).

Westwood
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Legend

- Project Boundary
- Gas Line
- County Boundary
- HUC 12 Boundary
- NWI Wetlands
- NHD Flowline
- Logs/Sediment Control
- Redundant Sediment Control
- 2 ft Contour
- Watershed Boundary

N

0 250 Feet

County Road B Project

Ramsey County, Minnesota

Variance Request Locations

Exhibit 5 of 10

February 20, 2019

Map Document: N:\0021867.00\GIS\SWPPP Maps\County Road B\2019-02-18_CountyRoadB_Variance Exhibit.mxd mednogima 2/20/2019 1:30:24 PM

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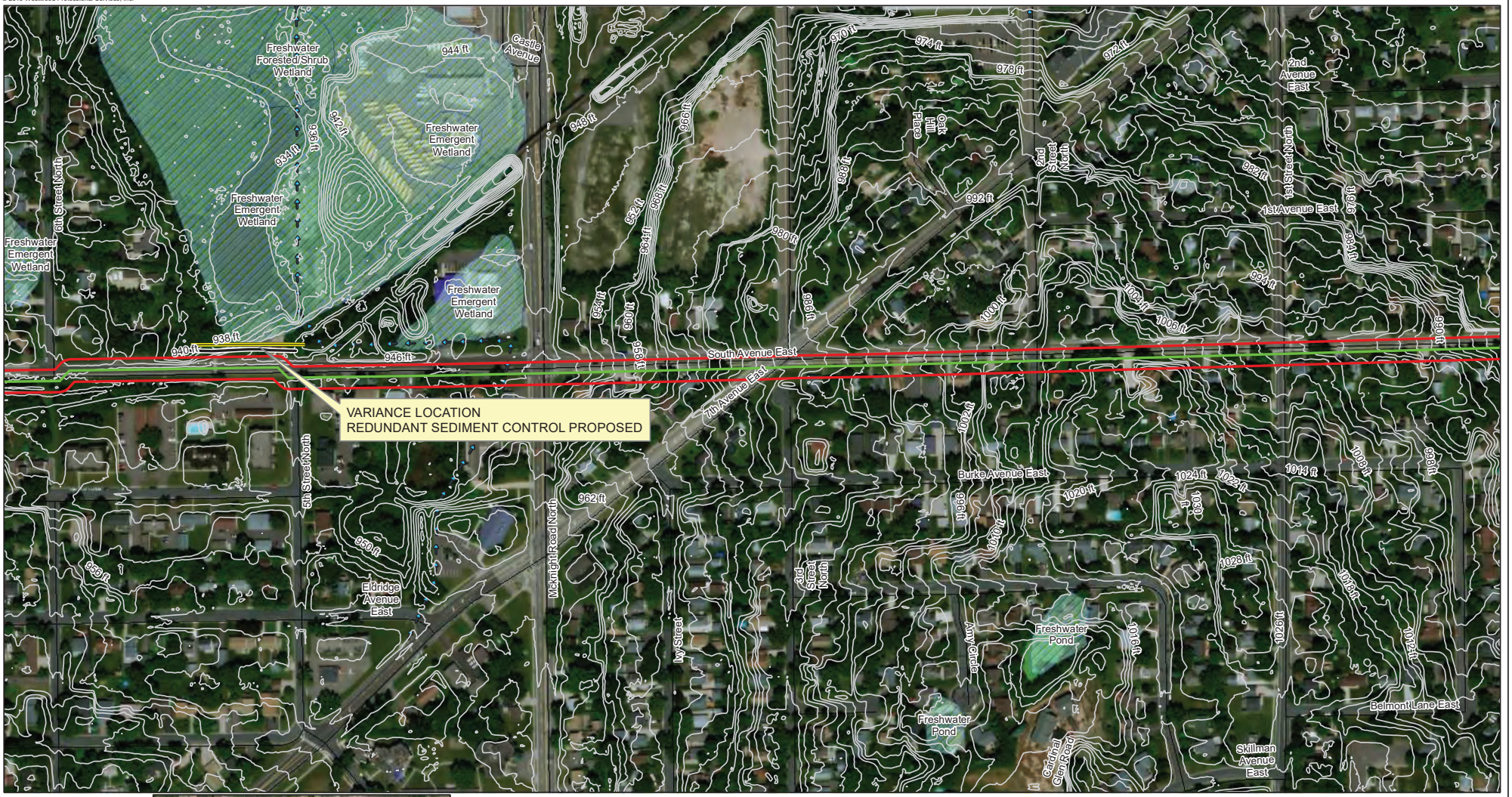


Data Source(s): Westwood (2019); ESRI WMS World Streets Basemap Imagery (Accessed 2019).

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

Legend

- Project Boundary
- Gas Line
- County Boundary
- HUC 12 Boundary
- NWI Wetlands
- NHD Flowline
- Logs/Sediment Control
- Redundant Sediment Control
- 2 ft Contour
- Watershed Boundary

N

0 250 Feet

County Road B Project

Ramsey County, Minnesota

Variance Request Locations

Exhibit 9 of 10

February 20, 2019

Map Document: N:\0021867.00\GIS\SWPPP Maps\County Road B\2019-02-18_CountyRoadB_Variance Exhibit.mxd mednogima 2/20/2019 1:30:56 PM

Permit Application Coversheet

Date April 03, 2019

Project Name FHR Storage Facility **Project Number** 19-13

Applicant Name Jeremy Birkeland, Flint Hills Resources Pine Bend, LLC

Type of Development Industrial

Property Description

This project is located at Flint Hills Resources at 2209 Childs Road in the City of St. Paul. The applicant is proposing to grade in the Mississippi River floodplain in order to construct a 1,200 square foot concrete foundation for a storage facility. This activity triggers District Rule D. The applicant has submitted documentation that there will be no net fill in the floodplain. An erosion and sediment control plan has been prepared for the project. The total site area is 0.04 acre.

Watershed District Policies or Standards Involved:

- ☐ ***Wetlands***
- ☑ ***Erosion and Sediment Control***
- ☐ ***Stormwater Management***
- ☑ ***Floodplain***

Water Quantity Considerations

There are no water quantity considerations.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

There are no long term water quality considerations.

Staff Recommendation

Staff recommends approval of this permit with the special provision.

Attachments:

- ☑ **Project Location Map**
- ☑ **Project Grading Plan**

#19-13 FHR Storage Facility

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

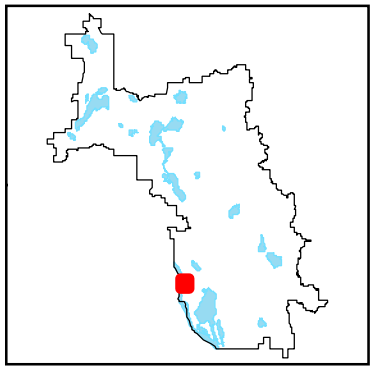
- RWMWD Boundary
- Subwatersheds
- Creeks
- Permits
- Ramsey Co Parcels

Highlighted Areas Represent Active Permit

0 200 400
Feet

0 0.0425 0.085
Miles

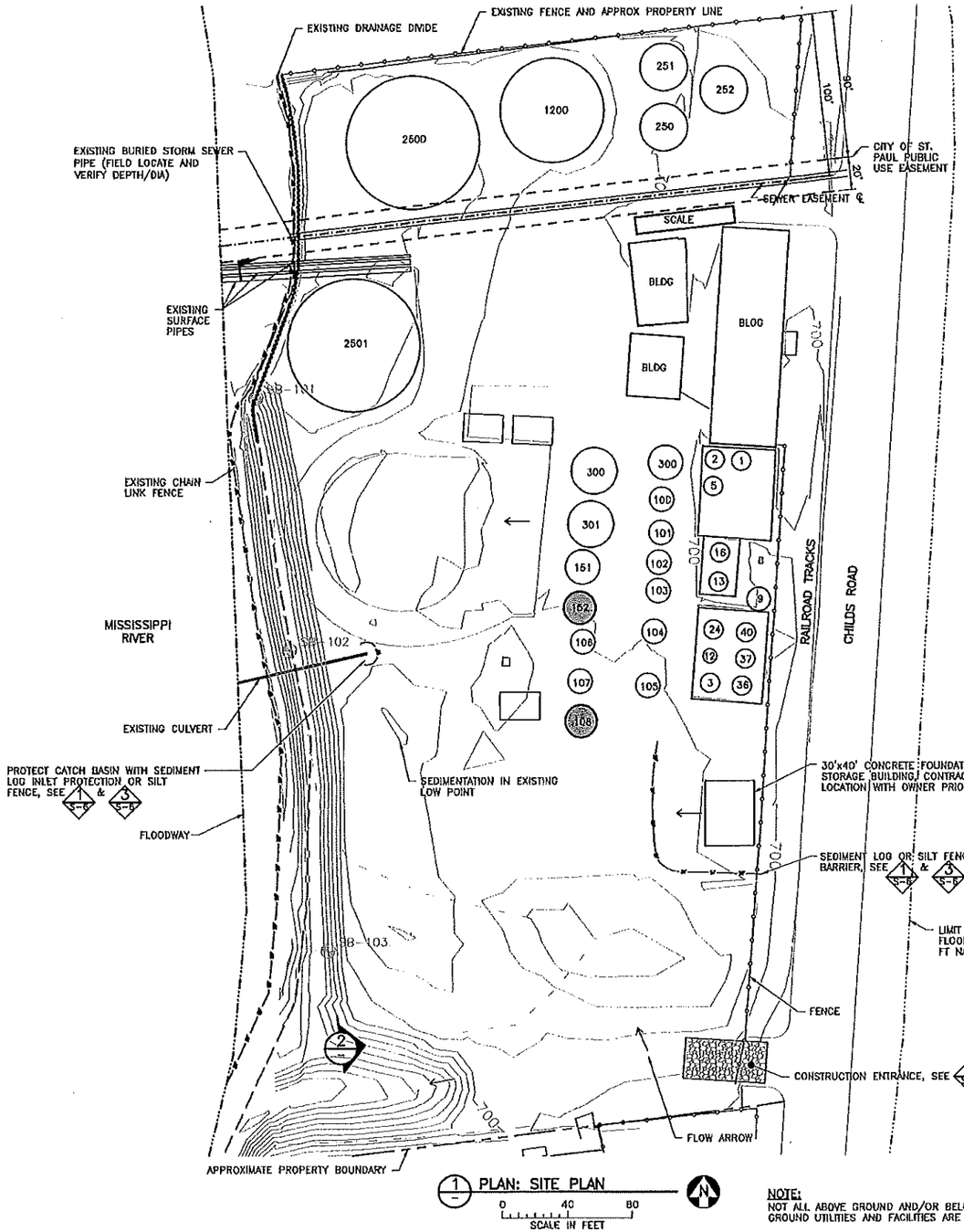
N



19-13

Special Provisions

1. The applicant shall submit a final, signed copy of the construction plans.



1 PLAN: SITE PLAN

0 40 80

SCALE IN FEET

NOTE:
NOT ALL ABOVE GROUND AND/OR BELOW GROUND UTILITIES AND FACILITIES ARE SHOWN.

EROSION CONTROL LEGEND

- SEDIMENT LOG OR SILT FENCE
- FLOW ARROW
- CONSTRUCTION ENTRANCE

PRELIMINARY DRAFT
NOT FOR CONSTRUCTION

NO.	BY	CHK	APP	DATE	REVISION DESCRIPTION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINTED NAME
SIGNATURE
DATE LICENSE #

	10/26	11/9					
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

BARR
Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Corporate Headquarters: Minneapolis, Minnesota
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	10/11/2017
Drawn	JMW
Checked	AAL2
Designed	AAL2
Approved	WWK

FLINT HILLS RESOURCES
ST. PAUL TERMINAL
ST. PAUL, MINNESOTA

PEMB STORAGE FOUNDATION
ST. PAUL, MINNESOTA

STRUCTURAL FOUNDATION
SITE PLAN

BARR PROJECT NO. 23621262.00
CLIENT PROJECT NO.
DWG NO. S-2
REV NO. B

CADD USER: Steven W. Ohlund FILE: S:\Projects\2362\126\2\Design\Civil\Drawings\Plan\S-2.dwg PLOT DATE: 1/9/2019 3:01 PM

Permit Application Coversheet

Date April 03, 2019

Project Name Shoreview 2019 SIP **Project Number** 19-14

Applicant Name Tom Wesolowski, City of Shoreview

Type of Development Linear

Property Description

This project is located in a residential neighborhood just east of Lake Wabasso in the City of Shoreview. The applicant is proposing to reconstruct the road and add concrete curb and gutter. Sections of the roadways will be narrowed, and an 8' bituminous trail will be added parallel to Lake Wabasso. The project will result in a 0.3 acre decrease in impervious area. Volume reduction and rate control will be achieved through sections of permeable pavers with subsurface rock storage layers. The total site area is 1.5 acres.

Watershed District Policies or Standards Involved:

- ☐ ***Wetlands***
- ☑ ***Erosion and Sediment Control***
- ☑ ***Stormwater Management***
- ☐ ***Floodplain***

Water Quantity Considerations

The proposed stormwater management plan is sufficient to handle the runoff from the site.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

The proposed stormwater management plan is sufficient to protect the long term quality of downstream water resources.

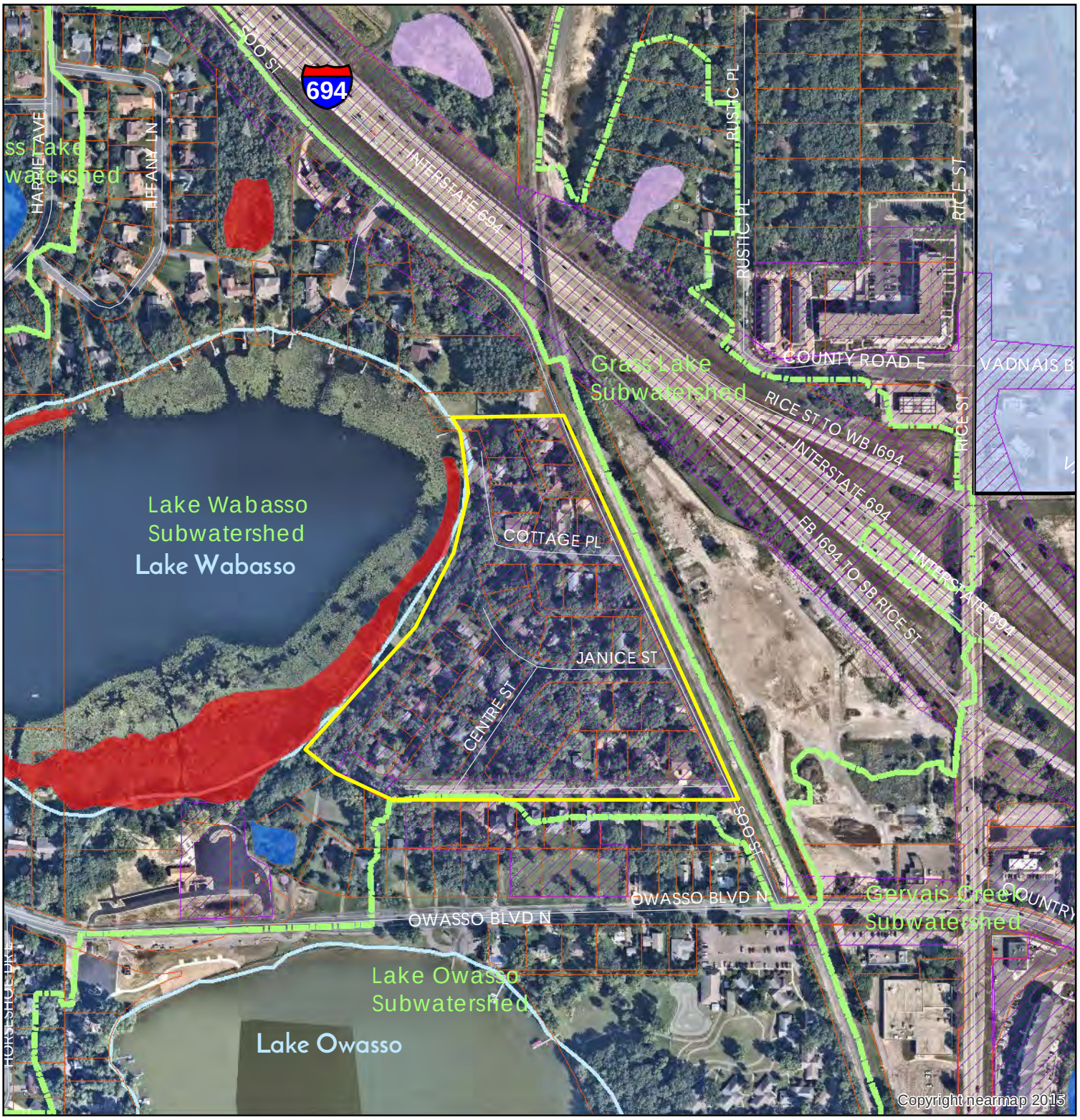
Staff Recommendation

Staff recommends approval of this permit with the special provisions.

Attachments:

- ☑ **Project Location Map**
- ☐ **Project Grading Plan**

#19-14 Shoreview 2019 SIP



Note: Shaded area is outside RWMWD

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

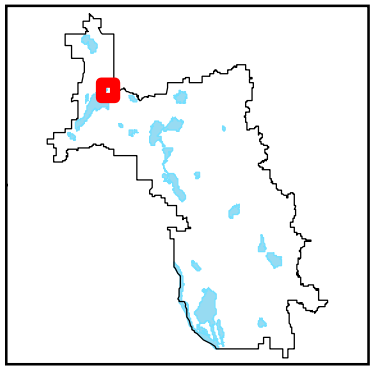
- RWMWD Boundary
- Subwatersheds
- Creeks
- Permits
- Ramsey Co Parcels

Highlighted Areas Represent Active Permit

0 295 590
Feet

0 0.05 0.1
Miles

N



19-14

Special Provisions

1. The applicant shall submit a signed Stormwater Pollution Prevention Plan (SWPPP).

2. The applicant shall submit contact information for the trained erosion control coordinator responsible for implementing the SWPPP.

3. The applicant shall add a note to the plans that the specified erosion and sediment control practices are the minimum. Additional practices may be required during the course of construction.

4. The applicant shall submit a copy of the approved Minnesota Pollution Control Agency's NPDES Construction Permit for the project.

5. The applicant shall submit an erosion control plan that includes a legend and construction details for perimeter control, inlet protection, and stabilized construction exits.

6. The applicant shall submit a copy of the final, signed construction plans.

Permit Application Coversheet

Date April 03, 2019

Project Name Spooner Park Improvements **Project Number** 19-15

Applicant Name Bill Dircks, City of Little Canada

Type of Development Park/Green Space

Property Description

This project is located at Spooner Park in the City of Little Canada. The applicant is proposing to replace the existing playground area including the trail, shelter, and ADA updates. Volume reduction and rate control will be achieved through construction of a filtration basin. Pretreatment will include a vegetated slope. The total site area is 1.2 acres.

Watershed District Policies or Standards Involved:

- ☐ ***Wetlands***
- ☑ ***Erosion and Sediment Control***
- ☑ ***Stormwater Management***
- ☐ ***Floodplain***

Water Quantity Considerations

The proposed stormwater management plan is sufficient to handle the runoff from the site.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

The proposed stormwater management plan is sufficient to protect the long term quality of downstream water resources.

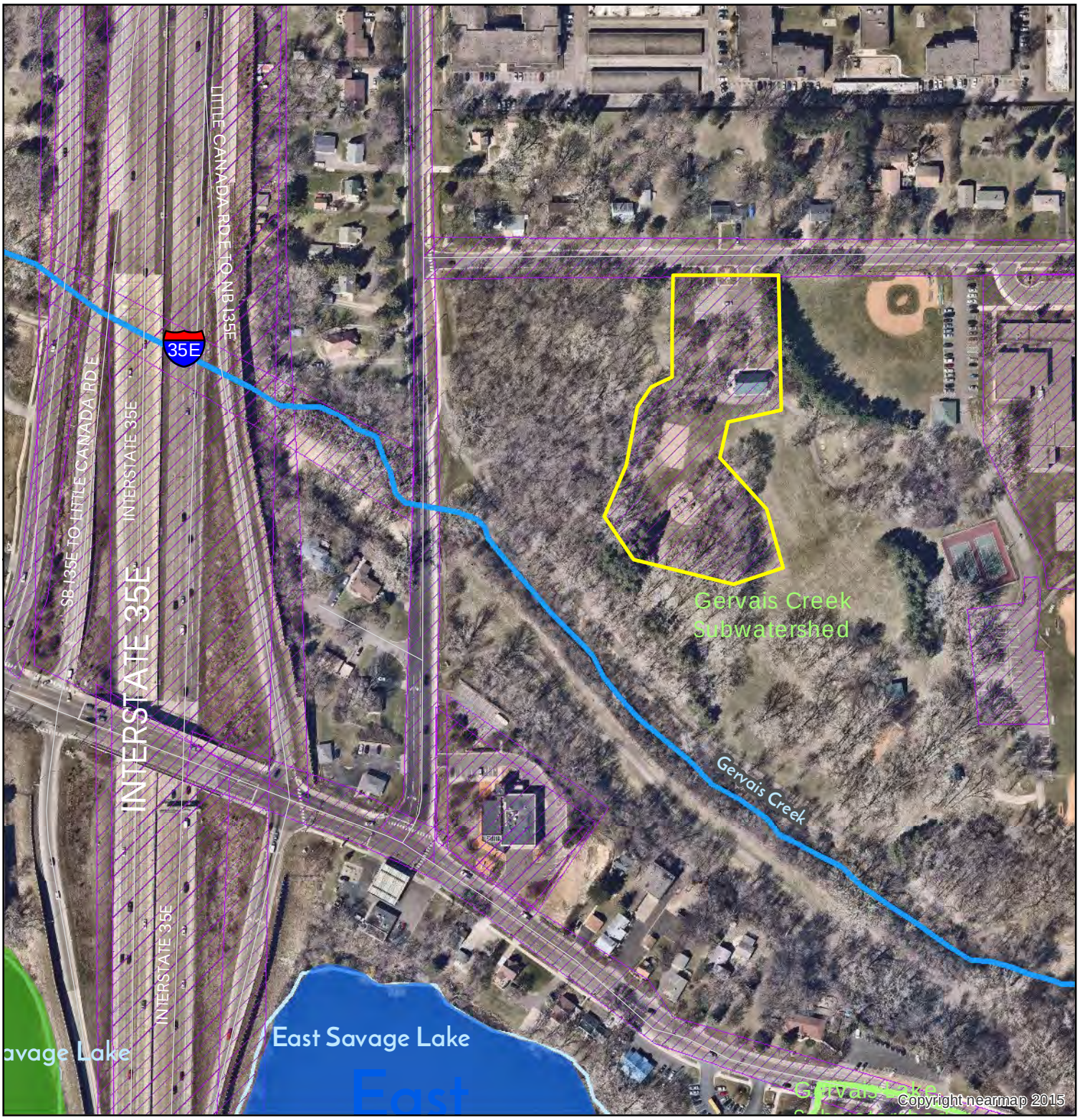
Staff Recommendation

Staff recommends approval of this permit with the special provisions.

Attachments:

- ☑ **Project Location Map**
- ☑ **Project Grading Plan**

#19-15 Spooner Park Improvements



Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

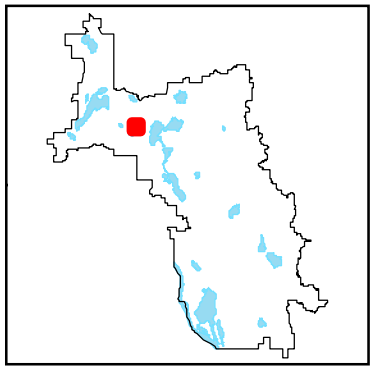
- RWMWD Boundary
- Subwatersheds
- Creeks
- Permits

Highlighted Areas Represent Active Permit

0 185 370
Feet

0 0.0375 0.075
Miles

N



19-15

Special Provisions

1. The applicant shall submit soil borings for the project.

2. The applicant shall add a note to the plans to notify Nicole Soderholm, Ramsey-Washington Metro Watershed District, at 651-792-7976 at least 48 hours prior to construction of the filtration basin.

3. The applicant shall label the 100-year High Water Level of the filtration basin on Sheet C2.

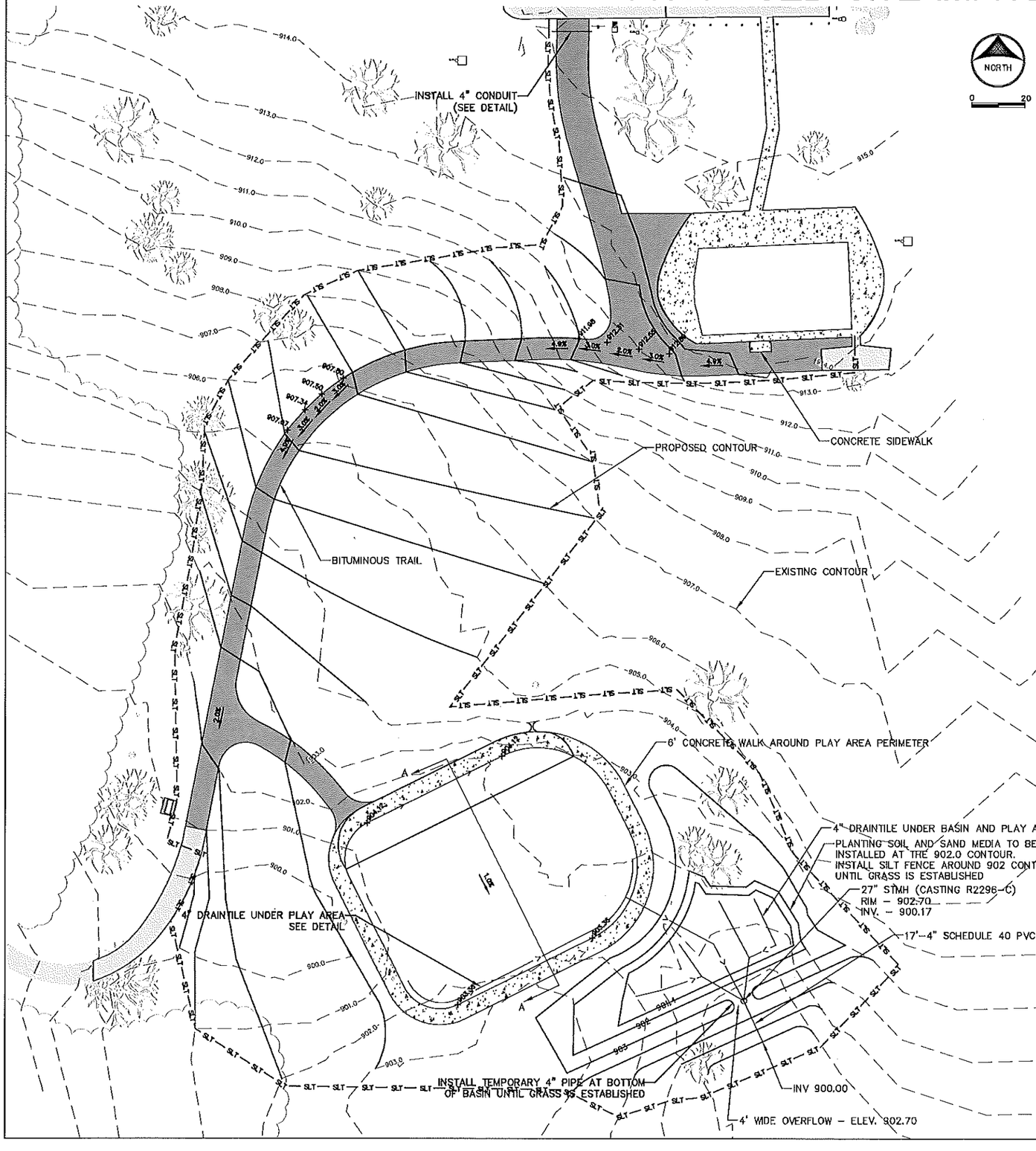
4. The applicant shall add a legend to the erosion control plan and denote location(s) of stabilized construction exit(s).

5. The applicant shall submit a copy of the final, signed construction plans.

6. The applicant shall submit contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

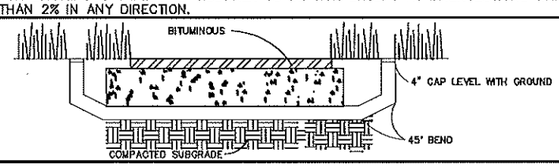
7. The applicant shall submit a copy of the approved Minnesota Pollution Control Agency's NPDES Construction Permit for the project.

PROPOSED SITE IMPROVEMENTS

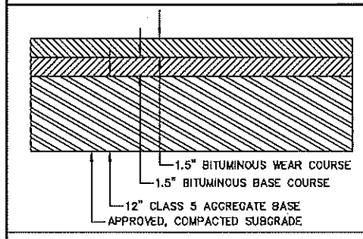


CONSTRUCTION NOTES

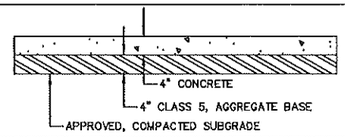
1. THE EXISTING UTILITIES SHOWN ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ANY EXISTING UTILITIES BEFORE COMMENCING WORK.
2. BLACK DIRT TO BE STRIPPED, SALVAGED, AND STOCKPILED FROM ALL AREAS TO BE DISTURBED PRIOR TO ANY GRADING.
3. THE VOLLEYBALL COURT POLES, PLAY AREA EQUIPMENT, AND BENCHES SHALL BE REMOVED BY OTHERS. CONTRACTOR TO REMOVE ALL OTHER EXISTING IMPROVEMENTS TO ALLOW FOR NEW CONSTRUCTION AND GRADING.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF TRAIL AREAS DAMAGED OUTSIDE THE MARKED AREAS OF REMOVAL AT NO COST TO THE OWNER.
5. CROSS SLOPE ON BITUMINOUS TRAIL AND SIDEWALK TO BE 1.5% EXCEPT AT INTERSECTIONS WHICH WILL SLOPE NO GREATER THAN 2% IN ANY DIRECTION.



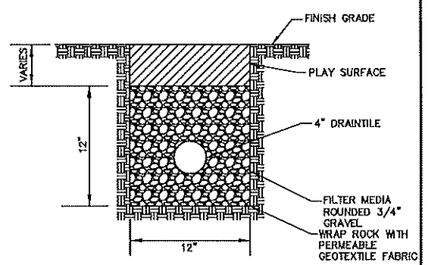
CONDUIT DETAIL



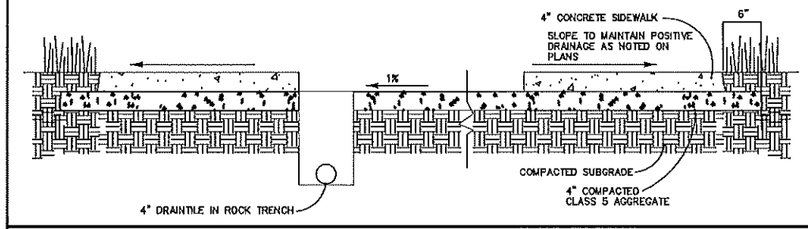
PAVEMENT SECTION (BITUMINOUS LIGHT DUTY)



SIDEWALK SECTION (CONCRETE)



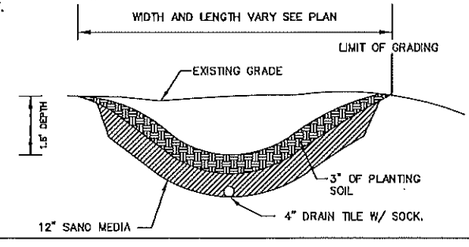
DRAINTILE IN PLAY AREA



PLAY AREA DETAIL – TYPICAL A--A

FILTRATION BASIN GRADING NOTES:

- NO EXCAVATION/GRADING EQUIPMENT SHALL TRAVEL WITHIN ANY OF THE FILTRATION BASIN AREA AT ANY POINT DURING SITE CONSTRUCTION
- EXCAVATOR SHALL USE A TOOTHED BUCKET (NO SMOOTH EDGE BUCKET) WHEN EXCAVATING AND GRADING INFILTRATION BASINS TO REDUCE SOIL SMEARING
- EXCAVATION OF FILTRATION BASIN SHALL ONLY OCCUR IN DRY SOIL CONDITIONS TO PREVENT UNNECESSARY COMPACTION IMPACTS
- SAND SHALL MEET THE REQUIREMENTS OF SPECIFICATION SECTION 312300 INCLUDING SAND SHOULD HAVE LESS THAN 40% OF THE PARTICLES BY WEIGHT PASSING A NUMBER 40 SIEVE AND LESS THAN 5% OF THE PARTICLES BY WEIGHT PASSING A NUMBER 200 SIEVE. IRON FILLINGS SHOULD BE ADDED AT THE RATE NOTED IN THE SPECIFICATIONS.
- BASIN INLETS AND ALL SIDE SLOPES SHALL BE STABILIZED WITHIN 24--HOURS OF FINAL GRADING OF THE BASIN
- COMPOST/SAND MATERIAL IN BASINS SHALL CONSIST OF 1 PART SAND (2") WITH 1 PART COMPOST GRADE 2 (2") UNIFORMLY MIXED PRIOR TO PLACEMENT. IT HAS BEEN ASSUMED THAT MIXING 2" OF SAND WITH 2" OF COMPOST WILL RESULT IN A DEPTH AFTER PLACEMENT OF 3" DUE TO COMPRESSION OF THE COMPOST.



ELFERING & ASSOCIATES
10662 FLANDERS CT NE
BLAINE, MN 55449
PH: 763-780-0450

NO.	DATE	BY	REVISION DESCRIPTION
1	03/24/19	KE	Pond Change

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE _____ DATE 3/24/19

PRINTED NAME LEE W. ELFERING LIC.NO. 41613

SPOONER PARK
CITY OF LITTLE CANADA
PROPOSED IMPROVEMENTS

DESIGNED BY: K/E
DRAWN BY: AWH
APPROVED BY: K/E
JOB NUMBER: 120221E
CAD DATE: 1/18/19
CAD FILE: EXISTING.DWG

SHEET
C.2

Permit Application Coversheet

Date April 03, 2019

Project Name Q3 Contracting **Project Number** 19-16

Applicant Name Trevor Zimmerman, Q3 Contracting, Inc.

Type of Development Office

Property Description

This project is located at 53 & 167 South Owasso Boulevard in the City of Little Canada. The applicant is proposing to construct a new office and training facility with associated parking lot and utility improvements. Volume reduction and rate control will be achieved through construction of a filtration basin. Filtration is being proposed due to the site's location in a Drinking Water Supply Management Area (DWSMA) and soil contamination. Pretreatment will include sumped manholes and a sediment forebay. The total site area is 5 acres.

Watershed District Policies or Standards Involved:

- ☐ ***Wetlands***
- ☑ ***Erosion and Sediment Control***
- ☑ ***Stormwater Management***
- ☐ ***Floodplain***

Water Quantity Considerations

The proposed stormwater management plan is sufficient to handle the runoff from the site.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

The proposed stormwater management plan is sufficient to protect the long term quality of downstream water resources.

Staff Recommendation

Staff recommends approval of this permit with the special provisions.

Attachments:

- ☑ **Project Location Map**
- ☑ **Project Grading Plan**

#19-16 Q3 Contracting

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

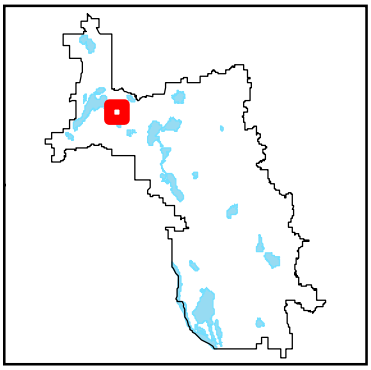
- RWMWD Boundary
- Subwatersheds
- Creeks
- Permits

Highlighted Areas Represent Active Permit

0 310 620
Feet

0 0.05 0.1
Miles

N



19-16

Special Provisions

1. The applicant shall submit contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

2. The applicant shall submit a copy of the approved Minnesota Pollution Control Agency's NPDES Construction Permit for the project.

3. The applicant shall submit the escrow fee of $25,000.

4. The applicant shall submit a copy of the final, signed construction plans.

5. The applicant shall submit an executed stormwater maintenance agreement.

6. The applicant shall submit a draft BMP Operations & Maintenance Plan.

GENERAL NOTES

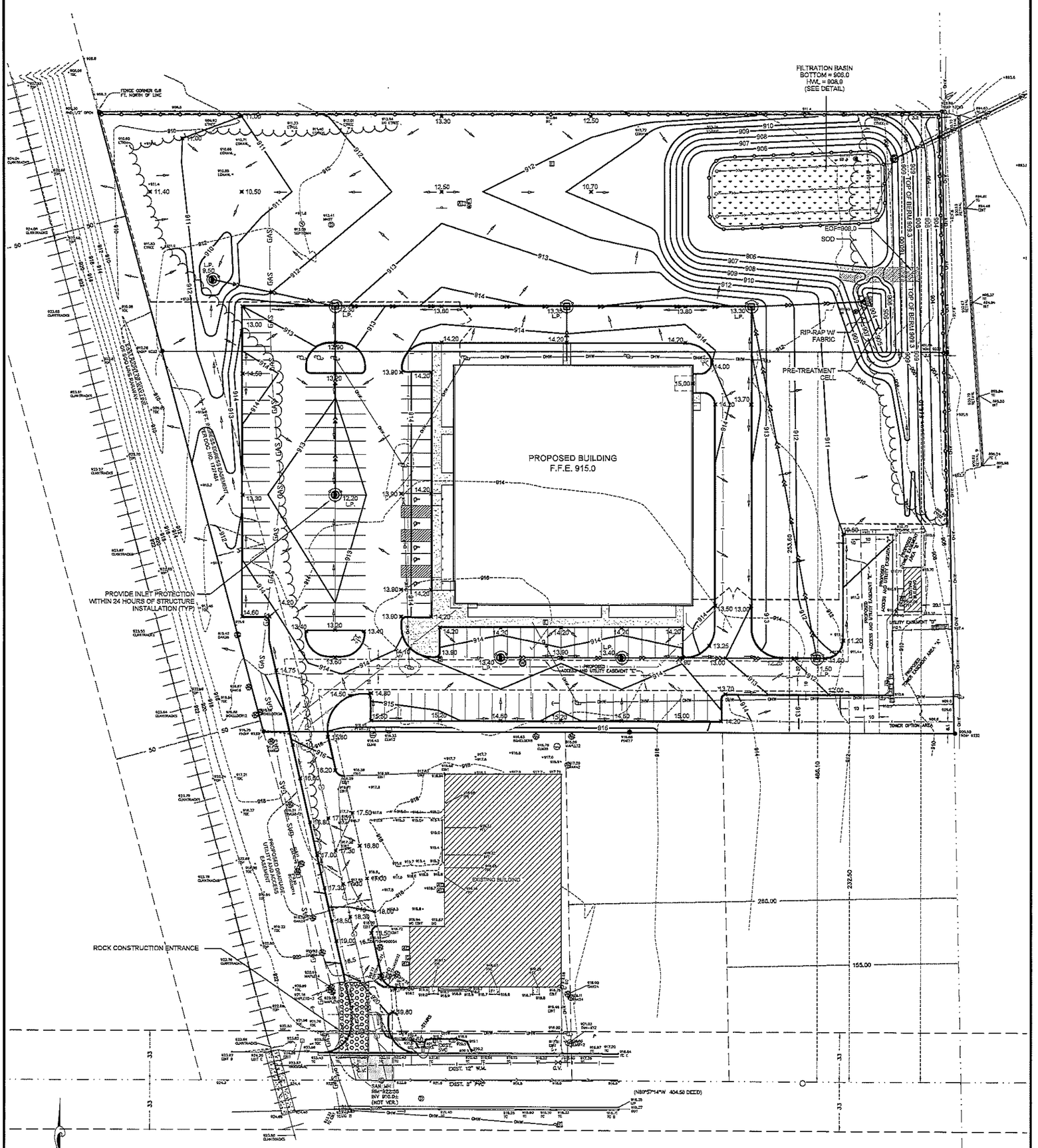
1. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF EXISTING UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATION AS TO TYPE AND LOCATION OF UTILITIES AS NECESSARY TO AVOID DAMAGE TO THESE UTILITIES.
2. CALL "811" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS FOR EXISTING UTILITIES LOCATIONS.
3. THE CONTRACTOR SHALL FIELD VERIFY SIZE, ELEVATION, AND LOCATION OF EXISTING UTILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO THE START OF INSTALLATIONS.
4. INSTALLATIONS SHALL CONFORM TO THE CITY STANDARD SPECIFICATIONS AND DETAIL PLATES.
5. STORAGE OF MATERIALS OR EQUIPMENT SHALL NOT BE ALLOWED ON PUBLIC STREETS OR WITHIN PUBLIC RIGHT-OF-WAY.
6. NOTIFY CITY A MINIMUM OF 48 HOURS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
7. ALL ELECTRIC, TELEPHONE, AND GAS EXTENSIONS INCLUDING SERVICE LINES SHALL BE CONSTRUCTED TO THE APPROPRIATE UTILITY COMPANY SPECIFICATIONS. ALL UTILITY DISCONNECTIONS SHALL BE COORDINATED WITH THE APPROPRIATE UTILITY COMPANY.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING, MAINTAINING TRAFFIC CONTROL, SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGMEN AND LIGHTS, AS NECESSARY TO CONTROL THE MOVEMENT OF TRAFFIC.

GENERAL GRADING NOTES

1. PRIOR TO ANY LAND-DISTURBING ACTIVITY, THE CONTRACTOR SHALL INSTALL ROCK CONSTRUCTION ENTRANCE AND SILT FENCE AS SHOWN ON PLAN. ADDITIONAL SILT FENCE MAY BE NECESSARY IF LOCAL CONDITIONS REQUIRE. SILT FENCE SHALL REMAIN IN-PLACE UNTIL THE FINAL STABILIZATION HAS BEEN ESTABLISHED.
2. CONTACT NICOLE GODERHOLM, RAMSEY WASHINGTON METRO WATERSHED DISTRICT, AT 651-792-7976 PRIOR TO BEGINNING ANY AND ALL CONSTRUCTION ACTIVITY FOR AN INITIALLY SWPPP INSPECTION.
3. SPECIFIED EROSION & SEDIMENT CONTROL MEASURES ARE MINIMUM. ADDITIONAL PRACTICES MAY BE REQUIRED DURING THE COURSE OF CONSTRUCTION.
4. PROVIDE INLET SEDIMENT CONTROL FOR ALL PROPOSED STORM SEWER INLETS WITHIN 24 HOURS OF INSTALLATION - LEAVE IN-PLACE UNTIL SITE HAS BEEN STABILIZED (TYP).
5. INSTALL RIP-RAP W/ GEOTEXTILE FILTER FABRIC AT ALL PIPE OUTLETS WITHIN 24 HOURS OF APRON INSTALLATION (TYP).
6. NOTIFY NICOLE SODERHOLM, RAMSEY WASHINGTON METRO WATERSHED DISTRICT (RWMWD) AT (651)-792-7976 AT LEAST 48 HOURS PRIOR TO THE CONSTRUCTION OF PERMANENT STORM WATER BMPS

LEGEND

- SANITARY SEWER MANHOLE
- HYDRANT
- GATE VALVE
- STORM SEWER APRON
- POWER POLE
- EXISTING SPOT ELEVATION
- SIGN
- FIBER OPTIC BOX
- ELECTRICAL BOX
- LIGHT POLE
- SOIL BORING LOCATIONS (HALLGO GEOTECH)
- WELL
- FENCE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATER MAIN
- UNDERGROUND FIBER OPTIC
- OVERHEAD WIRE
- EXISTING CONTOURS
- TREE LINE
- CONCRETE SURFACE
- BITUMINOUS SURFACE
- GRAVEL SURFACE
- PROPOSED WATER PIPE
- PROPOSED SANITARY SEWER PIPE
- PROPOSED STORM SEWER PIPE
- PROPOSED STORM MANHOLE
- PROPOSED CATCH BASIN
- PROPOSED FLARED-END SECTION
- PROPOSED GATE VALVE
- PROPOSED HYDRANT
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION (GUTTERLINE, BITUMINOUS SURFACE, OR GROUND SURFACE UNLESS OTHERWISE INDICATED)
- PROPOSED SILT FENCE
- PROPOSED DIRECTION OF DRAINAGE
- PROPOSED INLET PROTECTION
- PROPOSED RIP-RAP



NORTH

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 INCH = 30 FT

PLOWE ENGINEERING, INC.
6776 LAKE DRIVE
SUITE 110
LINO LAKES, MN 55014
SITE PLANNING & ENGINEERING
PHONE: (651) 361-8210
FAX: (651) 361-8701

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

ADAM GINKEL
Date: 03 xx 2019 License No. 43983

DRAWN BY: AG	CHECK BY: AG	JOB NO: 18-1793	DATE: 03.13.2019
1	3-13-19	RWMWD COMMENTS	
2	3-xx-19	RWMWD COMMENTS	
3			
4			
5			
6			

NO.	DATE	DESCRIPTION

Q3 CONTRACTING
CITY OF LITTLE CANADA, MINNESOTA

PRELIMINARY GRADING PLAN

PREPARED FOR: RJ RYAN CONSTRUCTION

SHEET
C1.02

18-1793

Permit Application Coversheet

Date April 03, 2019

Project Name Woodbury 2019 SIP **Project Number** 19-17

Applicant Name Tony Kutzke, City of Woodbury

Type of Development Linear

Property Description

This project is located along Upper Afton Road between Century Avenue and Weir Drive in the City of Woodbury. The applicant is proposing to reconstruct Upper Afton Road including widening a section of the road to accommodate a left turn lane and expansion of an existing bituminous walking trail. A mill and overlay of the Meadowood neighborhood is also included in the project. A stormwater outlet will be installed south of Poplar Drive for a future flood improvement project. Additional permitting may be needed for the flood improvements, so the outlet will remain offline until that process is complete. There are no proposed wetland or buffer impacts associated with the project. Due to site constraints, the applicant is requesting to pay into the Stormwater Impact Fund in the amount of $231,300 with the linear cost cap. As part of the alternative compliance sequencing, the applicant has submitted a list of onsite and offsite BMP locations considered. Each location was deemed infeasible due to space limitations, poor soils, and private property ownership. The proposed storm sewer design will reduce peak discharge rates within the corridor.

Watershed District Policies or Standards Involved:

- ☐ ***Wetlands***
- ☑ ***Erosion and Sediment Control***
- ☑ ***Stormwater Management***
- ☐ ***Floodplain***

Water Quantity Considerations

The proposed stormwater management is sufficient to handle the runoff from the site.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

The applicant will pay into the Stormwater Impact Fund to mitigate any long term water quality considerations.

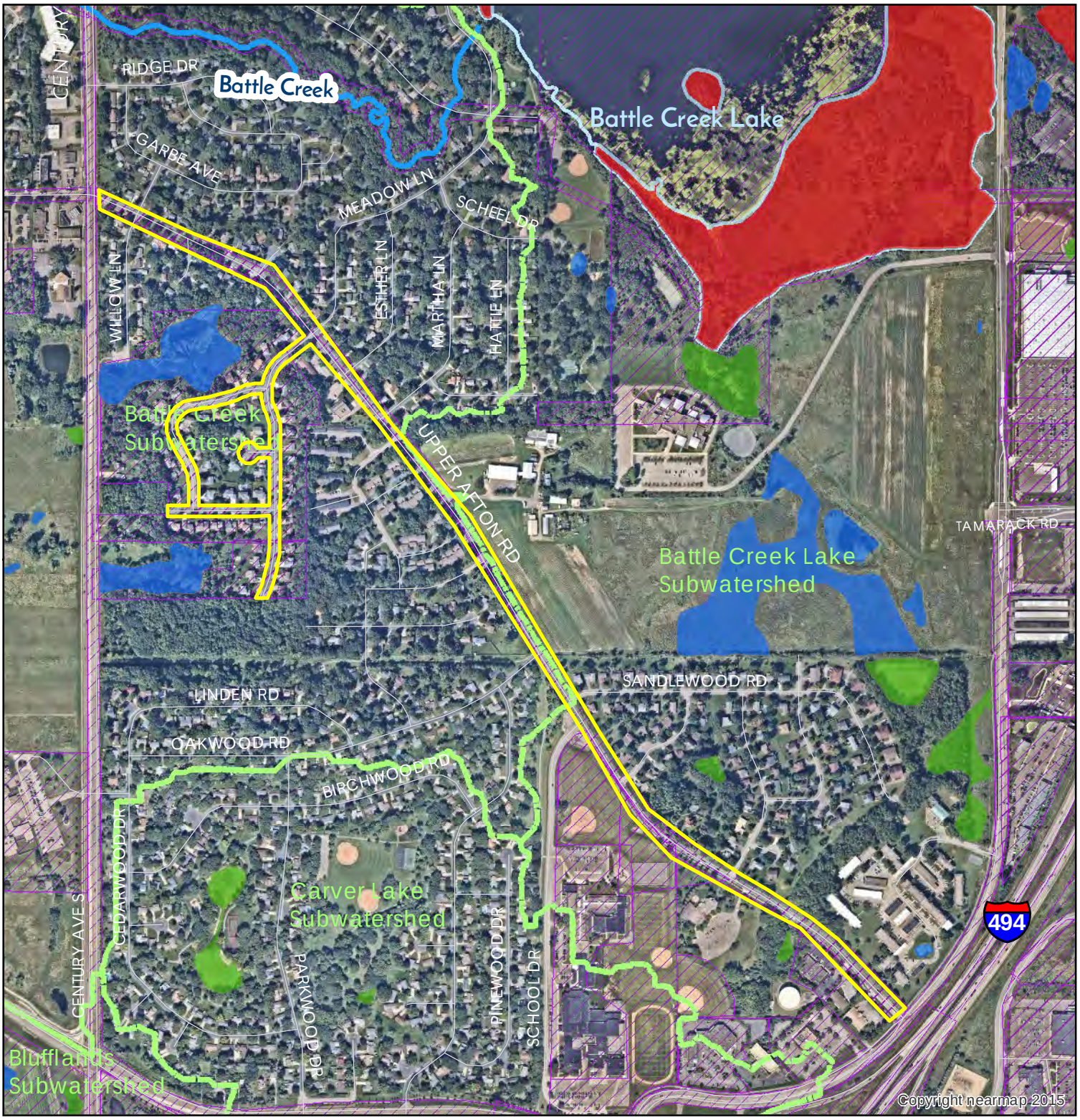
Staff Recommendation

Staff recommends approval of this permit with the special provisions.

Attachments:

- ☑ **Project Location Map**
- ☐ **Project Grading Plan**

#19-17 Woodbury 2019 SIP



Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

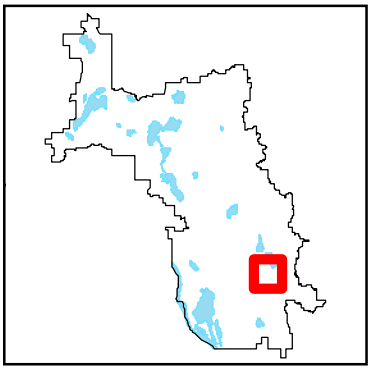
- RWMWD Boundary
- Subwatersheds
- Creeks
- Permits

Highlighted Areas Represent Active Permit

0 550 1,100
Feet

0 0.125 0.25
Miles

N



19-17

Special Provisions

1. The applicant shall provide contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

2. The applicant shall add a note to the plans to notify Nicole Soderholm, Ramsey-Washington Metro Watershed District, at 651-792-7976 prior to beginning any and all construction activity in order to schedule an initial SWPPP inspection.

3. The applicant shall add a note to the plans that the specified erosion and sediment control practices are the minimum. Additional practices may be required during the course of construction.

4. The applicant shall submit a copy of the approved Minnesota Pollution Control Agency's NPDES Construction Permit for the project.

5. The applicant shall submit revised erosion control plan sheets:
   A. Add perimeter control detail and locations at Poplar Drive outlet install location.
   B. Add perimeter control detail(s) for the Upper Afton corridor.
   C. Add redundant perimeter control parallel to wetland edges where a 50' native buffer cannot be maintained.

6. The applicant shall submit a copy of the final, signed construction plans.

7. The applicant shall submit a payment into the Stormwater Impact Fund in the amount of $231,300.

RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

MEMORANDUM

Date: April 3, 2019

To: Board of Managers and Staff

From: Nicole Soderholm, Permit Coordinator

Subject: March Enforcement Action Report

During March 2019:

Number of Violations: **0**

Activities:

Permitting assistance to private developers and public entities, permit review with Barr Engineering, miscellaneous inquiries, intern interviews, H.B. Fuller Environmental Forum, March training meeting planning, flood risk meeting, site inspections and reporting, WCA administration/procedures, MS4 annual report, Metro Watershed Regulatory Staff meeting

Project Updates:

Permit #17-24 Artis Senior Living, Woodbury

Construction activity continues despite muddy site conditions at the Artis Senior Living facility in Woodbury. An inspection was completed with the contractor on March 21st. Soil conditions are very wet. A temporary sediment basin is collecting turbid water on the south side of the site and appears to be functioning well. A dewatering plan will be submitted and reviewed by the District prior to pumping out the basin. Maintenance activities like temporary soil stabilization and the rock construction exits were noted on the inspection. The soil was too wet at the time of the inspection for immediate corrective action, but the contractor will continue to implement general pollution prevention practices like street sweeping.

Permit #15-15 Little Canada 2015 SIP

Road reconstruction for the 2015 street improvement project wrapped up in 2017, but the filtration basin constructed for the project in Pioneer Park continues to hold water longer than the maximum allowed 48 hours. The contractor has been in contact with the city to get

the basin fixed, but time ran out during the field season last year. District staff will continue to check on the timeline for repair, and the permit will remain open until the required work is complete.

Permit #14-20 Roseville Garden Station

The townhome development off Dale Street and Hwy 36 was completed last fall. Concerns remain that the rain gardens installed during Phase 2 of the project are holding water longer than the maximum allowed 48 hours. A site visit was completed on March 21st, but the ground was still frozen at the time. The contractor was notified that they will need to monitor drawdown as the ground thaws this spring. If the basins are not functioning as designed, they will need to be repaired. Until then, the District will withhold the escrow and keep the permit open.

Permit #18-24 Roseville Luxury Apartments

Tree clearing on the future apartment site at Lexington Ave and County Rd C began in March. An initial erosion control inspection with the contractor and city staff was completed on March 21st. Temporary soil stabilization was requested. Prior to grading, stabilized construction exits, additional perimeter control, and inlet protection are required.

Permits Closed in March 2019:

14-17 Little Canada Public Works Facility, Little Canada
15-01 Gladstone Area Phase 2 Improvements, Maplewood
15-10 County Road B Trail Improvements, Maplewood

****

Stewardship Grant Program

****

RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

(651) 792-7950
rwmwd.org

2665 Noel Drive
Little Canada, MN 55117

April 3, 2019

To: Board of Managers
From: Paige Ahlborg, Watershed Project Manager

Re: Budget Adjustment - McGuire 18-21 CS

Kara McGuire applied for the Best Management Practices Cost Share Program and was approved on 10/10/2018. The application funded the installation of a rain garden and habitat restoration area. RWMWD staff requested several changes to improve the plan which caused the cost to increase. Kara McGuire is requesting a budget increase of $3,359 to the cost share application. This will bring her total award to $12,200. This project is eligible for a maximum coverage of $15,000.

Stewardship Grant Application Summary

Project Name: Laes **Application Number:** 19-07 CS

Board Meeting Date: 4/3/2019

Applicant Name: Laura Laes

Residential ☑ **Commercial/Government** ☐

Project Overview:

This project is located in the City of St. Paul just east of Lake Phalen. The applicant is proposing to install a curb cut rain garden to collect runoff from the street as well as their driveway. They are interested in the benefits rain gardens provide for clean water as well as habitat for pollinators.

The homeowner is part of the Master Water Steward program so the project is eligible for 100% coverage up to $15,000.

BMP type(s):

Rain Garden(1)

Grant Request:

$7,500.00

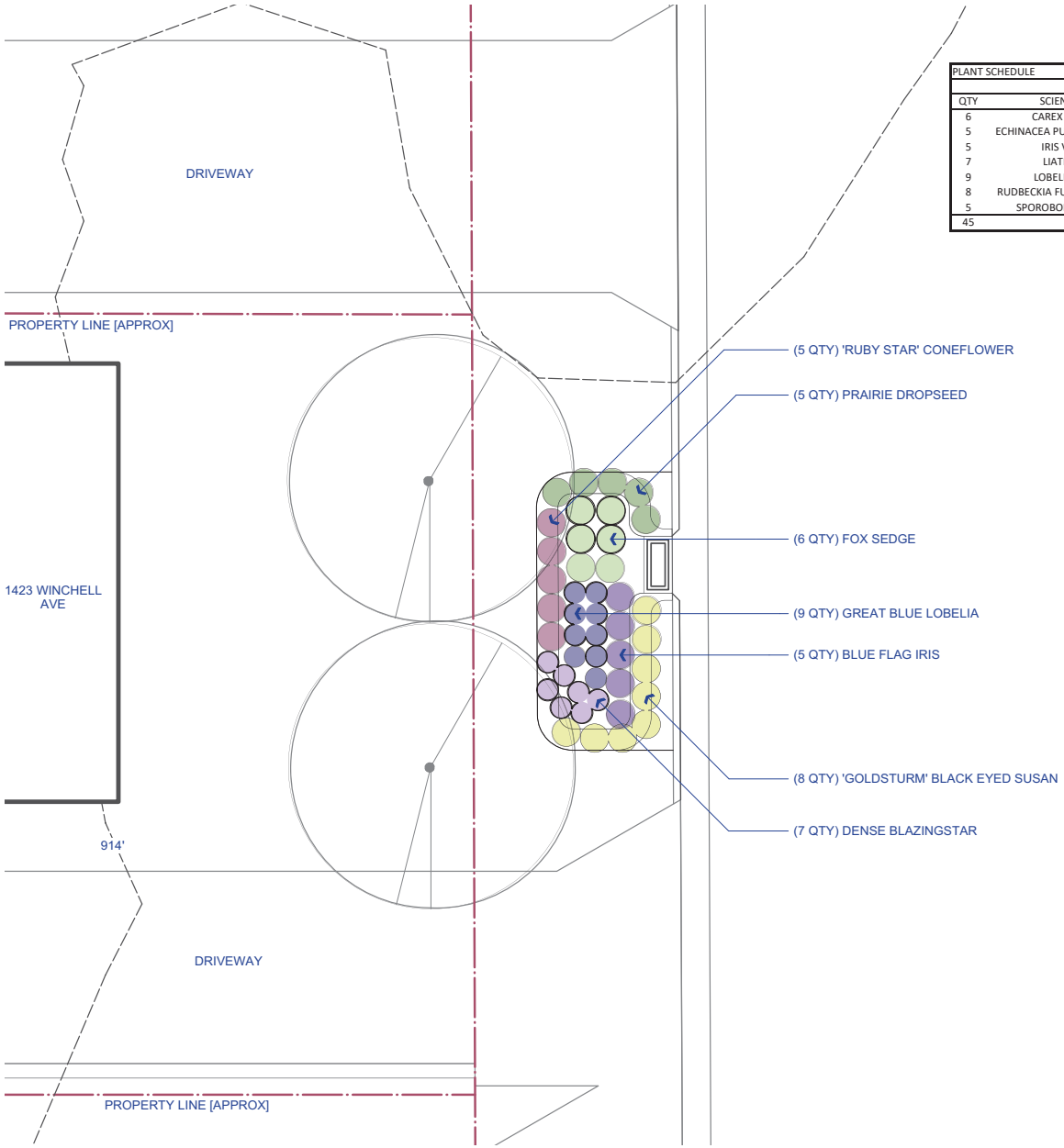
Recommendation:

Staff recommends approval of this application.

Subwatershed:

Lake Phalen

Location Maps:



PLANT SCHEDULE

QTY	SCIENTIFIC NAME	COMMON NAME	SPACING	SIZE
6	CAREX VULPINOIDEA	FOX SEDGE	24" O.C.	#1 CONT.
5	ECHINACEA PURPUREA 'RUBY STAR'	RUBY STAR CONEFLOWER	24" O.C.	#1 CONT.
5	IRIS VERSICOLOR	BLUE FLAG IRIS	24" O.C.	#1 CONT.
7	LIATRIS SPICATA	DENSE BLAZINGSTAR	18" O.C.	#1 CONT.
9	LOBELIA SIPHILITICA	GREAT BLUE LOBELIA	18" O.C.	#1 CONT.
8	RUDBECKIA FULGIDA 'GOLDSTURM'	GOLDSTURM BLACK EYED SUSAN	24" O.C.	#1 CONT.
5	SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED	24" O.C.	#1 CONT.
45	TOTAL			

RAMSEY COUNTY

RAMSEY COUNTY SWCD
1425 PAUL KIRKWOLD DR
ARDEN HILLS, MN 55112
651-266-7274
www.ramseycounty.us

PROJECT: LAES RESIDENCE
LOCATION:
1423 WINCHELL AVE
SAINT PAUL, MN 55106

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: MPS
DATE: 10/08/2018
REVISION: 02/19/2019
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
SUBSTITUTIONS TO PLANT SPECIES AND QUANTITIES MUST BE APPROVED PRIOR TO INSTALL

ORIGINAL SHEET SIZE: 11" x 17" SIZE

SCALE: 1/8"=1'0"

PLANTING PLAN

N

L300

Stewardship Grant Program Budget Status Update

April 3, 2019

Homeowner	Coverage	Number of Projects	Funds Allocated
Habitat Restoration and rain garden w/o hard surface drainage	50% Cost Share $15,000 Max	0	$0
Rain garden w/hard surface drainage, pervious pavement, green roof	75% Cost Share $15,000 Max	0	$0
Shoreland Restoration (below 100-year flood elevation w/actively eroding banks)	100% Cost Share $15,000 Max	1	$12,000

Commercial, School, Government, Church, Associations, etc.	Coverage	Number of Projects	Funds Allocated
Habitat Restoration	50% Cost Share $15,000 Max	2	$8,700
Shoreland Restoration (below 100-year flood elevation w/actively eroding banks)	100% Cost Share $100,000 Max	1	$200,000
Priority Area Projects	100% Cost Share $100,000 Max	2	$280,000
Non-Priority Area Projects	75% Cost Share $50,000 Max	0	$0
Public Art	50% Cost Share	1	$6,000
Aquatic Veg Harvest	50% Cost Share $15,000 Max	0	$0
Maintenance	50% Cost Share $5,000 Max for 5 Years	12	$11,000
Consultant Fees			$69,200
Total Allocated			**$586,900**

2019 Stewardship Grant Program Budget	
Budget	$1,250,000
Total Funds Allocated	$586,900
Total Available Funds	**$663,100**

****

Action Items

****

****

Administrator's Report

****

MEMO

TO: Board of Managers and Staff

FROM: Tina Carstens, Administrator

SUBJECT: April Administrator's Report

DATE: March 28, 2019

A. Meetings Attended

Monday, March 4	10:00 AM	Staff discussion on photo storage
	2:00 PM	Wet Pond Maintenance TAP
	7:00 PM	Environmental Forum
Tuesday, March 5	9:00 AM	Professional Coaching
	1:30 PM	TMDL Toolkit TAC
Wednesday, March 6	6:30 PM	Board Meeting
Thursday, March 7	9:00 AM	Watershed Board Discussion w/ Ramsey Co.
Monday, March 11	9:00 AM	Spent Lime Pond Research Kick Off
	12:00 PM	Staff Training Meeting
Tuesday, March 12	9:00 AM	Audit Meeting
	12:30 PM	Meet with Barr re: Flood Risk Planning
	6:00 PM	Twin Lake Public Meeting
Wednesday, March 13	7:30 AM	Equity Series – What is Equity?
	10:30 AM	Flood Risk Planning Meeting
Thursday, March 14	8:00 AM	Water Resources Conference Planning
Thursday, March 21	9:30 AM	O&M Conference Planning
	12:30 PM	Meet with Barr for 2019 Planning
Friday, March 22	12:00 PM	Meet with Jay Riggs re: WCD Coordination

B. Upcoming Meetings and Dates

Metro MAWD Meeting	Tuesday, April 9, 2019
CAC Meeting	Tuesday, April 23, 2019
May Board Meeting	Wednesday, May 1, 2019
2019 Water Summit	Thursday, May 9, 2019
WaterFest	Saturday, June 1, 2019

C. Spring Flooding Actions and Updates

The month of March started with a large amount of snow pack and the threat of a quick spring melt. As such, District staff worked with Barr Engineering and our city and county partners to prepare for regional flooding issues as they relate to our district resources. I pulled together a meeting of our cities and counties on March 13th. Over 40 people were in attendance including nine of our cities, both counties, and state agencies like the DNR. We had city engineers, public works directors, emergency managers, and communications directors attend. District and Barr staff talked through our models and the resource we are to look at the potential risk of flooding of roads and structures based on the modeling information. Erin wrote up a good summary in the Project Status Report of the work Barr has been doing these past two weeks. They have had all hands on deck and been a great resource for the district and our cities and counties.

District staff has continued to monitor water levels that are used to update the models and have the most accurate information. Staff have also been monitoring our major trash track system to ensure things are flowing as they should at the places we would be most concerns of backups. We have also been working with our CIP maintenance contractor to implement some temporary controls until the permanent work can be done in the Grass Lake area. In places where the district has provided emergency response plans, we worked with our city representatives to make sure they had the most up to date information. We also fielded some resident phone calls regarding concern about the flood risk. These calls were mostly related to basement flooding from snow build up around the foundations of homes. Chris also worked with some of the partner communications staff to develop response procedures and talk through the communications chain. He invited them to our partner meeting on March 13th and many of them attended. Chris outlined a plan for crisis communications should the situation warrant that.

Fortunately, the melt happened in such a way that our cities didn't have to implement the emergency response plan actions. This of course is a separate issue from the media reports you are seeing regarding the Mississippi River flooding in St. Paul. In that case, I have included some articles in the informational items section of the packet that refer to the history of the Mississippi River flooding as well as the actions Met Council is taking regarding the Wastewater Treatment Plant that is located in our district. We are continuing to monitor lake levels and clean trash racks and providing information to our partners. With the current situation, surface waters are starting high this spring. We will keep an eye on forecasted rain events as the spring and summer progresses. We will continue to model various rain events and inform our partners on potential flood risks in their jurisdictions.

D. Board Discussion on Legislative Matters

Over the last couple of months, you have discussed legislative matters and whether or not the board should individually (as a board) support bills that are proposed in the state house and senate.

As a reminder, RWMWD is a member of MAWD which holds a yearly legislative agenda with resolutions they support. This process starts with the watershed's submitting resolutions of policy that they would like MAWD to support. Those resolutions go through a committee process at MAWD and ultimately get discussed and approved (or not) at the MAWD annual meeting. MAWD has a hired lobbyist that works on that approved legislative agenda throughout the session and reports to the MAWD members on a regular basis. MAWD also follows along with bills that are introduced or supported/not supported by others and keeps the watersheds informed throughout the session. In some cases, MAWD may request members to testify on legislation that relates to the agenda.

I reached out to a small set of District administrators to ask if they have board policy on this matter or any feedback on how their boards address this. There was a wide range of responses. A couple of watersheds follow along with the MAWD process for resolutions and support those that they feel should move forward through that process. If a request was made or a board member wanted more discussion and was looking for board approval during the session, they would look at the policies alignment with the goals and actions in the watershed management plan. Watersheds should support or oppose legislation that directly affects or work but it needs to be clear why a district is individually speaking out or supporting.

Another watershed said they use the MAWD legislative agenda and updates to hold a board workshop to discuss what, if anything, the individual board would be comfortable supporting. Those items would be brought to a board meeting for approval. They use that agenda to refer to when a request is made of a board to support something. If an individual board member is interested in the board supporting something, that information would be given to the staff to review and provide advice to the full board for discussion and a decision.

Lastly, one metro area watershed establishes its own legislative agenda and produces documentation on background and position. They start that process in the fall before the session begins. If new items pop up, they discuss at the board level and decide on a position and add it to their legislative agenda. This particular watershed also hires its own lobbyist to work on issues specific to them.

My recommendation is that RWMWD use the MAWD legislative agenda to review and determine with policies/bills would impact the district or its partners/residents as it relates to our goals laid out in our watershed management plan. This would give us a handful of opportunities to individually provide support as a board and also give staff direction on which policies to engage with at a legislative level if requested. If something else comes up, staff will review and research and provide guidance to the board for their consideration.

E. West Vadnais Lake – Drinking Water Sampling Report

As part of the study to determine if West Vadnais Lake (WVL) water could be moved to East Vadnais Lake (EVL) in an effort to provide more storage capacity in the Grass Lake system, St. Paul Regional Water Services requested that we do sampling on WVL. The sampling protocol required to evaluate the feasibility consisted not of typical surface water quality monitoring but instead, drinking water quality considerations since the water from EVL ultimately is used for the St. Paul area drinking water supply. The results area attached and below is some information from Bryan Oakley, from Barr Engineering, regarding the results.

- Iron is commonly found in ground and surface waters. The EPA secondary standard for drinking water is 0.3 mg/L..
- Sodium is the positive ion in table salt. It is commonly found in all waters. The EPA does not have a drinking water standard for sodium. The Canadian Drinking Water Guideline for sodium is 200 mg/L which is much higher than tested.
- The measured turbidity is likely due to algae growth. It is still lower than the Minnesota water quality standard for cool/warm water fishery and recreational use (25 NTU standard)
- E.coli and Total Coliforms likely restrict the lake for swimming. If there is an ongoing source of coliforms feeding the lake (septic system, large goose population, other contaminated surface water runoff), they will persist. Fish Creek in RWMWD is also impaired by elevated E. Coli concentrations.
- Arsenic is lower than the EPA primary drinking water standard of 10 ug/L
- Hexavalent chrome is lower than the EPA primary drinking water standard of 100 ug/L
- Manganese is higher than the EPA secondary drinking water standard of 50 ug/L. This is an aesthetic standard and does not have negative health effects.
- Strontium is not currently regulated in drinking water. The EPA has a health reference level of 1,500 ug/L which is much higher than tested.
- Blue-green algae is relatively high. This is an indication of excessive nutrient loading to the lake and will tend to be worse during hot dry conditions. This link provides more information: https://www.pca.state.mn.us/water/blue-green-algae-and-harmful-algal-blooms. In recent years, other RWMWD water bodies have also had occasional blue green algal blooms (Casey Lake and Gervais Lake)
- Microcystins are produced by blue-green algae and can have health impacts if present in drinking water above 0.3 ug/L for pre-school age children or above 1.6 ug/L for other children and adults.
- PFHpA and PFOA are specific types of PFAS. The EPA has established a health advisory of 70 ng/L for all PFAS which is much higher than tested.

Attachment C. Water Quality Results for West Vadnais Lake

West Vadnais Lake Water Quality Analysis – Sample Collection Date 10/9/2018			
Parameter	Total or Dissolved	Units	Quantity
General Parameters			
Cyanide	NA	mg/l	< 0.02
Fluoride	NA	mg/l	< 0.1
Iron	NA	mg/l	**0.26**
Nitrogen, nitrate + nitrite, as N	NA	mg/l	< 0.1
Sodium	NA	mg/l	**36**
Turbidity	NA	NTU	**16**
Microbiological			
Bacteria, E. coli	NA	per 100ml	Present
Bacteria, total coliforms	NA	per 100ml	Present
Cryptosporidium	NA	oocysts/100l	< 43.290
Giardia	NA	cysts/100l	< 43.290
Algae Speciation			
Dolichospermum sp. (Cyanophyta blue-green algae)	NA	cells/ml	17,750 (moderate exposure risk)
Aphanizomenon sp. (Cyanophyta blue-green algae)	NA	cells/ml	13,500
Microcystis sp. (Cyanophyta blue-green algae)	NA	cells/ml	9,900
Aulacoseira sp. (Bacillariophyta blue-green algae)	NA	cells/ml	8,600
Planktolyngbya sp. (Cyanophyta blue-green algae)	NA	cells/ml	6,000
Coelastrum	NA	cells/ml	< 40
Crucigenia	NA	cells/ml	< 40
Elakatothrix	NA	cells/ml	< 40
Oocystis	NA	cells/ml	< 40
Pediastrum	NA	cells/ml	< 40
Scenedesmus	NA	cells/ml	< 40
Schroederia (Chlorophyta)	NA	cells/ml	< 40
Cyclotella	NA	cells/ml	< 40
Synedra (Bacillariophyta)	NA	cells/ml	< 40
Closterium (Streptophyta)	NA	cells/ml	< 40
Euglena (Euglenophyta)	NA	cells/ml	< 40
Mallamonas (Synurophyceae)	NA	cells/ml	< 40
Aphanocapsa	NA	cells/ml	< 40
Cuspidothrix	NA	cells/ml	< 40
Gomphosphaeria	NA	cells/ml	< 40
Pseudanabaena (Cyanophyta)	NA	cells/ml	< 40
Metals			
Antimony	Total	ug/l	< 1.0
Arsenic	Total	ug/l	**1.0**
Beryllium	Total	ug/l	< 0.3
Chromium	Total	ug/l	< 0.9
Chromium, hexavalent	NA	ug/l	**0.04**
Cobalt	Total	ug/l	< 2.0
Cyanide	Total	mg/l	< 0.02
Iron	Total	mg/l	**0.26**
Lead	Total	ug/l	< 1.0
Manganese	Total	ug/l	**94**
Mercury	Total	ug/l	< 0.1
Molybdenum	Total	ug/l	< 2.0
Nickel	Total	ug/l	< 1.0
Sodium	Total	mg/l	**36**
Strontium	Total	ug/l	**75**

Thallium	Total	ug/l	< 0.3
Vanadium	Total	ug/l	< 2.0
Semivolatile Organic Compounds			
1,4-Dioxane	NA	ug/l	< 0.07
2,4,6-Trichlorophenol	NA	ug/l	< 1.0
2,4-Dichlorophenol	NA	ug/l	< 1.0
2,4-Dinitrophenol	NA	ug/l	< 1.0
2-Methylphenol (o-cresol)	NA	ug/l	< 1.0
3-Hydroxycarbofuran	NA	ug/l	< 0.5
4-Nitrophenol	NA	ug/l	< 1.0
Acetochlor	NA	ug/l	< 0.1
Alachlor	NA	ug/l	< 0.1
Aldicarb	NA	ug/l	< 0.5
Aldicarb sulfone	NA	ug/l	< 0.7
Aldicarb sulfoxide	NA	ug/l	< 0.5
Aldrin	NA	ug/l	< 0.1
Anatoxin-a	NA	ug/l	< 0.03
Atrazine	NA	ug/l	< 0.1
Benzo(a)pyrene	NA	ug/l	< 0.02
Bis(2-ethylhexyl)phthalate	NA	ug/l	< 0.6
Butachlor (machette)	NA	ug/l	< 0.1
Carbaryl	NA	ug/l	< 0.5
Chlordane, cis (alpha)	NA	ug/l	< 0.1
Chlordane, trans (gamma)	NA	ug/l	< 0.1
Cyanazine (bladex)	NA	ug/l	< 0.1
Cylindrospermopsin	NA	ug/l	< 0.09
DCPA acid (dacthal)	NA	ug/l	< 0.1
Di(2-ethylhexyl)adipate	NA	ug/l	< 0.6
Diazinon	NA	ug/l	< 0.1
Dieldrin	NA	ug/l	< 0.1
Dimethoate	NA	ug/l	< 0.5
Disulfoton	NA	ug/l	< 0.1
Endrin	NA	ug/l	< 0.01
Fonofos (dyphonate)	NA	ug/l	< 0.1
g-BHC (Lindane)	NA	ug/l	< 0.02
Glyphosate	NA	ug/l	< 6.0
Heptachlor	NA	ug/l	< 0.04
Heptachlor epoxide	NA	ug/l	< 0.02
Hexachlorobenzene	NA	ug/l	< 0.1
Hexachlorocyclopentadiene	NA	ug/l	< 0.1
Methomyl	NA	ug/l	< 0.5
Methoxychlor	NA	ug/l	< 0.1
Metolachlor	NA	ug/l	< 0.1
Metribuzin	NA	ug/l	< 0.1
Microcystin-LA	NA	ug/l	< 0.008
Microcystin-LF	NA	ug/l	< 0.006
Microcystin-LR	NA	ug/l	**0.374**
Microcystin-LY	NA	ug/l	< 0.009
Microcystin-RR	NA	ug/l	**0.396**
Microcystin-YR	NA	ug/l	**0.033**
Naphthalene	NA	ug/l	< 0.1
n-Nitrosodimethylamine	NA	ng/l	< 2.0
Nodularin	NA	ug/l	< 0.005
Nonachlor, trans	NA	ug/l	< 0.1
Prometon	NA	ug/l	< 1.0
Propachlor	NA	ug/l	< 0.1
Simazine	NA	ug/l	< 0.07
Terbufos	NA	ug/l	< 0.5
Volatile Organic Compounds			

1,2-Dibromo-3-chloropropane (DBCP)	NA	ug/l	< 0.01
1,2-Dibromoethane (EDB)	NA	ug/l	< 0.01
Pesticides			
2,2',4,4',5,5'-Hexabromobiphenyl (245-HBB)	NA	ug/l	< 0.7 *
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE-153)	NA	ug/l	< 0.8 *
2,2',4,4',5,-Pentabromodiphenyl ether (BDE-99)	NA	ug/l	< 0.9 *
2,2',4,4',6-Pentabromodiphenyl ether (BDE-100)	NA	ug/l	< 0.5 *
2,2',4,4'-Tetrabromodiphenyl ether (BDE-47)	NA	ug/l	< 0.3 *
Carbofuran	NA	ug/l	< 0.5
Diuron	NA	ug/l	< 0.5
Linuron	NA	ug/l	< 0.5
Oxamyl (vydate)	NA	ug/l	< 0.5
Terbufos sulfone	NA	ug/l	< 0.4
Polychlorinated Biphenyls			
Toxaphene	NA	ug/l	< 1.0
Herbicides			
2,4,5-TP (Silvex)	NA	ug/l	< 0.1
2,4,5-Trichlorophenoxyacetic acid	NA	ug/l	< 0.5
2,4-D	NA	ug/l	< 0.1
2,4-DB	NA	ug/l	< 2.0
Acifluorfen	NA	ug/l	< 1.0 *
Bentazone	NA	ug/l	< 0.5
Chloramben	NA	ug/l	< 2.0
Dalapon	NA	ug/l	< 1.0
Dicamba	NA	ug/l	< 0.1
Dichloroprop	NA	ug/l	< 2.0
Dinoseb (DNBP)	NA	ug/l	< 0.1 *
MCPA	NA	ug/l	< 0.5
Mecoprop	NA	ug/l	< 0.5
Pentachlorophenol	NA	ug/l	< 0.04 *
Picloram	NA	ug/l	< 0.1
Radiochemical Parameters			
Radon	NA	pCi/l	<7.9
Pharmaceutical and Personal Care Products			
Estradiol	NA	ng/l	< 0.5
Estriol	NA	ng/l	< 0.5
Estrone	NA	ng/l	< 0.5
Ethinyl estradiol	NA	ng/l	< 0.5
Testosterone, cis	NA	ng/l	< 0.1
Testosterone, trans	NA	ng/l	< 0.1
Per- and Polyfluoroalkyl Substances			
Perfluorobutane sulfonate (PFBS)	NA	ng/l	< 2.0
Perfluoroheptanoic acid (PFHpA)	NA	ng/l	**2.0**
Perfluorohexane sulfonate (PFHxS)	NA	ng/l	< 2.0
Perfluorononanoic acid (PFNA)	NA	ng/l	< 2.0
Perfluorooctanesulfonate (PFOS)	NA	ng/l	< 2.0
Perfluorooctanoic acid (PFOA)	NA	ng/l	**5.3**

F. Watershed Partners and East Metro Water Resource Education Program Reports

It had been requested that the board see the annual reports for organizations that we support through our outside program support budget. Attached are the 2018 annual reports for both the East Metro Water Resource Education Program (EMWREP) and Watershed Partners. As a reminder, we give $10,000 to Watershed Partners and $13,000 to EMWREP annually. Staff continues to believe the services and support we receive from these two organizations makes our education, outreach, and communications programs more efficient and strong. We are happy to answer any questions you might have about this.

East-Metro
Water Resource Education Program

2018 Annual Report

Above: (Clockwise from upper left) Washington County Fair; Planting trees with Bobby and Belinda Jensen at Lake Middle School; Storm drain stenciling in Forest Lake; Workshop for local leaders on the St. Croix River.

Members of the East Metro Water Resource Education Program:

Brown's Creek Watershed • Carnelian-Marine-St. Croix Watershed •
Comfort Lake-Forest Lake Watershed • Cottage Grove • Dellwood • Forest Lake
Grant • Hugo • Lake Elmo • Middle St. Croix Watershed • Newport • Oak Park Heights • Oakdale
Ramsey-Washington Metro Watershed • Rice Creek Watershed • South Washington Watershed
Stillwater • St. Paul Park • Valley Branch Watershed • Willernie • West Lakeland
Woodbury • Washington Conservation District • Washington County

East Metro Water Resource Education Program
2018 Annual Report

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About the East Metro Water Resource Education Program

Background: The East Metro Water Resource Education Program (EMWREP) is a partnership formed in 2006 to implement a comprehensive water education and outreach program for the east metro area of St. Paul, MN. Current EMWREP partners include:

- Washington Conservation District (host)
- Washington County
- Watershed management organizations: Brown's Creek, Carnelian-Marine-St. Croix, Comfort-Lake Forest Lake, Rice Creek, Ramsey-Washington Metro, South Washington, and Valley Branch Watershed Districts, and the Middle St. Croix Watershed Management Organization
- Cities and townships: Cottage Grove, Dellwood, Forest Lake, Grant, Hugo, Lake Elmo, Newport, Oakdale, Oak Park Heights, Stillwater, St. Paul Park, Willernie, and Woodbury, West Lakeland Township

Purpose: The purpose of the shared education program is to educate community residents, businesses, staff and decision-makers about issues affecting local lakes, rivers, streams, wetlands and groundwater resources and to engage people in projects that will help to protect and improve the health of these water resources.

Partnership Structure: EMWREP is guided by a steering committee comprised of representatives from each of the 24 partner organizations. The committee generally meets twice a year to provide recommendations on the program budget and activities. The EMWREP coordinator communicates regularly with partner staff, council members and board members; prepares an annual report on program activities; provides outreach data and statistics for partners' MS4 Permit reports; and communicates one-on-one with individual partners on projects throughout the year. All EMWREP reports, plans, and education updates are available on-line at www.mnwcd.org/emwrep.

Staff: Angie Hong is the EMWREP program coordinator. Additional education support in 2018 was provided by Lauren Haydon and Cameron Blake.

Coordination with Other Regional Education Efforts: The EMWREP partnership helps to strengthen relationships between Washington Conservation District, Washington County and the eight watershed management organizations and 14 cities that constitute the partnership. This translates into better coordination and less overlap in the management of local water resources.

EMWREP staff provide leadership for Watershed Partners (a collaborative of more than 60 non-profit and public entities in the Twin Cities metro area), participate in the Blue Thumb partnership and Master Water Stewards programs, and work actively with organizations in the St. Croix Basin, including partners in the Lower St. Croix "One Watershed" Plan.

Accolades: EMWREP was the 2012 MAWD Watershed Program of the Year.

2018 EXECUTIVE SUMMARY

PUBLIC EDUCATION AND ENGAGEMENT

EMWREP continues to lead water education efforts in the East Metro area through outreach, community engagement, public education, and media communications.

Highlights from 2018 include:

1. **Public education**:
    1. Engaging lake associations and lakeshore residents: Two (2) workshops and a semi-monthly e-newsletter delivered to 150 lake association leaders
    2. Landscaping workshops: Five (5) workshops focusing on prairie maintenance and invasive species management
    3. Dozens of presentations, community events, and educational activities
    4. Weekly articles in local newspapers: www.eastmetrowater.org
2. **Volunteer engagement**:
    1. Master Water Stewards:
        - Seven stewards completed their capstone projects and were certified in November 2018.
        - Three new stewards are in training to become certified in 2019.
        - Volunteers get 50-hours of on-line and in-person training, complete a capstone project, and volunteer 25-50 hours per year after they are certified.
    2. AIS Detectors:
        - One new AIS Detector was trained in 2018 (25hrs of on-line and in-person classes)
        - The nine AIS Detectors that were trained in 2017 provided 163 hours of volunteer support in 2018.
    3. Adopt-a-Raingarden:
        - EMWREP launched a pilot "Adopt-a-Raingarden" program in Stillwater
        - 40 residents volunteered to adopt raingardens
        - 50+ volunteers participated in raingarden clean-up and weeding events in May and June of 2018
3. **Youth education**:
    1. School programming:
        - Groundwater lessons for 4th grade classes at Royal Oaks Elementary (Woodbury) and River Grove Elementary (May Twp.)
        - Outdoor field programs with students from Royal Oaks, Grey Cloud (Cottage Grove), and Middleton (Woodbury) Elementary Schools
        - Groundwater lessons for 4th graders at the Children's Water Festival
    2. Teacher training: Trained 10 local teachers to use Project WET curriculum and watershed lessons in the classroom
    3. Campus Greening: Helped students at Lake and Middleton schools to plant 200 trees as part of their Campus Greening project

OUTREACH SUPPORT FOR PROJECTS AND PROGRAMS

EMWREP promotes watershed landowner incentive programs (BMP cost-share) and conducts outreach for special programs and projects.

1. **BMP program outreach:** EMWREP promotes partner BMP cost-share programs through workshops, presentations, and media communications. Last year's outreach helped to support:
    - 208 landowner site visits with Washington Conservation District staff
    - 41 projects installed through watershed BMP programs
    - 190 lbs/yr of phosphorus kept out of surface waters
2. **Outreach for Lower St. Croix "One Watershed, One Plan"**: Local government partners in the Lower St. Croix, many of whom are also EMWREP partners, are working together to create a shared watershed plan. Angie Hong has coordinated outreach and stakeholder engagement for this project. Activities in 2018 included:
    - Three (3) workshops in Hudson, Taylors Falls, and North Branch
    - Public survey (86 responses)
    - Articles in local newspapers and partner newsletters
    - Interviews with farmers in the Lower St. Croix watershed (12) and a survey to rural and agricultural landowners in Chisago and Washington County (61 responses)

PROFESSIONAL TRAININGS FOR BUSINESS AND LOCAL GOVERNMENT

EMWREP provides professional training for businesses and local government through Stormwater U, NEMO, and partnerships with MN Extension, U of MN Erosion and Stormwater Management Program, MN Erosion Control Association (MECA), Fortin Consulting, St. Croix River Association, and MN Department of Natural Resources (DNR).

Highlights from 2018 included:

1. Watershed workshops for local leaders: for city councils and commissions; county commissioners; watershed boards and CACs; stormwater professionals; and community leaders
    - St. Croix River Workshop on the Water – July 11 (155 attendees)
    - Forest Lake stormwater workshop and tour – Sept 11 (40 attendees)
2. Winter salt trainings for parking lot and road maintenance crews: EMWREP partners sponsored local workshops in Blaine, Shoreview, Hugo, and Woodbury
3. Two (2) workshops for realtors:
    - Training topics included: groundwater and wells; septic systems; shoreline and riverway rules; watershed district programs
    - 60 attendees total

NEW MATERIALS AND RESOURCES

In 2018, EMWREP received $50,000 in funding to update the 2009 MS4 Toolkit and create new stormwater education materials. The project will be complete in 2019.

Staff also created new materials to support the Adopt-a-Raingarden program.

Public Education and Engagement

Minimum Control Measure Addressed

☑ Public education & outreach	☐ Construction site runoff controls
☑ Public participation & involvement	☐ Post-construction storm water management
☑ Illicit discharge detection and elimination	☐ Municipal pollution prevention & good housekeeping

Audience: General Public, Urban and Rural Landowners, Youth

Program Goals:

1. Educate the public about nonpoint source water pollution, groundwater conservation, and basic watershed ecology and management.
2. Build partnerships with state and local government, non-profit organizations, and community groups.
3. Engage citizen volunteers to help conduct education and outreach.
4. Motivate urban and rural landowners to practice behaviors that protect water resources.
5. Train and assist urban and rural residents to complete projects on their land that reduce runoff pollution, conserve groundwater, and increase infiltration.

Educational Objectives:

Citizens will learn:

1. That nonpoint source water pollution comes from a variety of land uses - residential, commercial, and agricultural.
2. That common pollutants impacting surface and groundwater resources in the east metro area include phosphorus, sediment, nitrates, *E. coli*, chloride, and mercury.
3. That a watershed includes all of the land draining to a lake, stream or river, and that Watershed Districts and Watershed Management Organizations are special-purpose local units of government charged with managing the resources of a given watershed to prevent flooding and protect water quality.
4. That surface and groundwater resources interact.
5. That area residents can help to prevent nonpoint source water pollution through a variety of behaviors, including raking leaves and grass clippings out of the street, using less fertilizers and chemicals on lawns and gardens, covering bare soil during landscaping and construction, picking up pet poop, replacing failing septic systems, using less salt for winter maintenance and water softening, disposing of household waste properly, and using less electricity.
6. That landowners can help to reduce runoff pollution, conserve groundwater, and increase infiltration by installing best management practices such as habitat plantings, raingardens, and shoreline plantings; repairing erosion; and managing drainage around homes, farms, and commercial buildings.

PUBLIC EDUCATION AND ENGAGEMENT ACTIVITIES IN 2018

1) Public Education

Engaging lake associations and lakeshore residents

- May 17 workshop in Forest Lake (25 attendees)
  - Don Pereira, MN DNR State Fisheries Chief, talked about fisheries management
- June 26 workshop in White Bear Lake (6 attendees)
  - Staff from Ramsey and Washington Conservation Districts showed people how to identify aquatic invasive species (AIS) and common native "look-alikes"
- A semi-monthly e-newsletter was sent to 150 lake association leaders with information about programs, AIS research, and upcoming events

Landscaping Workshops

- (2) Prairie maintenance workshops
  - Scandia – Feb. 13
  - Afton – Feb. 21
- (3) Buckthorn and bittersweet workshops
  - Cottage Grove – June 24
  - May Twp. – Sept. 18
  - Lake Elmo – Sept. 22
- (4) Brown's Creek Open Yards events - hosted by members of the BCWD citizen advisory committee
  - June 18 – Stillwater (raingardens)
  - June 27 – Stillwater (suburban yard)
  - July 18 – Stillwater (urban bee-keeping)
  - Aug 7 – Grant (prairies)

Presentations

- March 28 - Lily Lake meeting, Stillwater
- May 10 - Sentence to Serve training
- May 22 - Bone Lake meeting, Scandia

Family nature events: hands-on, outdoor events to teach children and adults about lake and river health

- June 13 – Cottage Grove, Highlands Park
- June 19 - Woodbury, Battle Creek Lake
- June 26 - Forest Lake (Arts in the Park)
- July 17 – Cottage Grove, Mooers Park

Community events: EMWREP partnered with other organizations to plan, promote, provide educational materials, and conduct educational programming at these events.

- Feb. 13 - Mahtomedi Garden Club
- Feb. 17 - Phalen Freeze Fest
- Feb. 27 - Lift Bridge event, Stillwater
- March 14 - Smart irrigation pick-up, Woodbury
- April 24 - St. Croix Summit
- April 28-29 – WCD Tree sale, Lake Elmo

- May 5 - Stillwater raingarden clean-up
- May 12 - Bike and Boat to Bayport
- May 20 - Millstream Day
- May 30 - Woodbury pollinator planting
- June 2 - RWMWD WaterFest
- June 3 - Master Gardener plant sale
- June 7 - Raingarden weeding
- June 9 - Landscape Revival, Oakdale
- June 18 - Tanners Lake HOA picnic
- June 28 - Forest Lake "Arts in the Park"
- Aug. 1-5 - Washington County Fair
- Aug. 23 - Sept. 3 - MN State Fair
- Sept. 16 – Brown's Creek 20th Anniversary Event (Stillwater)

2) Volunteer engagement:

Master Water Stewards: In 2018, EMWREP received an $81,000 Clean Water grant to train 20 Master Water Stewards and install up to 10 stormwater management capstone projects.

- Program details: Volunteers participate in 50-hours of in-person and on-line training, then complete a capstone project to become certified. Once certified, stewards volunteer 50-hours during their first year of service and 25-hours per year afterwards to remain in the program.
- 2018 Updates: During 2018, the first seven stewards who began training in 2017 completed their capstone projects and became certified in November. In October, three new stewards began training to become certified in 2019.
- Capstone projects: Capstone projects completed by stewards in 2018 will reduce phosphorus loading to receiving waters by 1.2lb/yr. Our total project goal for the grant is 2lb of phosphorus. Projects included:
    1. Sally Arneson (MSCWMO) – Upland native planting on St. Croix River bluff in Lakeland,
        - 3500 sq ft, estimated to capture 0.50lb/yr of phosphorus
    2. Tom Furey (CLFLWD) – Upland native planting on Bone Lake in Scandia
        - 6280 sq ft, estimated to capture 0.14lb/yr of phosphorus
    3. Nathan Zerbe (SWWD) – Woodland invasive species removal and restoration in Marsh Creek Preserve, Woodbury
        - 1.5 acres, estimated to capture 0.05lb/yr of phosphorus
    4. Cole Williams (SWWD) – river shoreline planting on Mississippi River in Cottage Grove
        - 5,750 sq ft, estimated to capture 0.5lb of phosphorus
    5. Susan Goebel & Joan Nichols (SWWD) – designing native plantings, interpretive signs and lesson plans for outdoor classrooms at Lake and Middleton Schools in Woodbury

6. John Goodfellow (CMSCWD) – developing a plan for a county-wide weed cooperative to help landowners with management of invasive species such as buckthorn

AIS Detectors: Using Washington County aquatic invasive species (AIS) funds we have helped ten (10) local residents to become AIS Detectors through a partnership with the University of Minnesota.

- Program details: Participants complete 6-8 hours of on-line training and attend one full-day, in-person workshop. They learn how to identify invasive species including: Eurasian watermilfoil, hydrilla, starry stonewort, spiny waterflea, rusty crayfish, zebra mussels, quagga mussels, bighead carp, silver carp, round goby, and ruffe. Volunteers received a certificate upon completion of training and are asked to volunteer 25 hours per year.
- 2017 AIS Detectors:
    - John Bower - Big Carnelian (CMSCWD)
    - Jeff Dahlberg - Big Marine (CMSCWD)
    - Tony Vavoulis - Big Marine (CMSCWD)
    - Sam Hathaway – Bone (CLFLWD)
    - Gary Lee – Clear (RCWD)
    - Link Lavey - Demontreville/Olson (VBWD)
    - Dale Dorschner – Elmo (VBWD)
    - Del Peterson – Lily (MSCMWO)
    - Mike Ziegelski – Sand (CMSCWD)
- 2018 updates: We training one new AIS Detector in 2018
    - Karen Lien - Lake Demontreville (VBWD)
- 2018 volunteer projects: In 2018, AIS Detectors provided 163 hours of volunteer support. Activities included:
    - Conducting AIS surveys on area lakes
    - Welding rakes to create 150 aquatic plant sampling rakes for the Starry Trek event held each year
    - Volunteering at the AIS Summit, MAISRC research and Management showcase, and Upper Midwest Invasive Species Conference
    - Piloting new training and providing useful feedback for new AIS educational programs at the University of MN
    - Other AIS education/outreach, including staffing booths at the State Fair and community events and creating newsletter articles

Adopt-a-Raingarden: Last year, EMWREP launched a pilot "Adopt-a-Raingarden" program in Stillwater. The program can be expanded into other communities in Washington County as interest arises.

- Program details: The goal of the program is to recruit community residents and volunteers to help care for some of the 100+ raingardens in Stillwater. Volunteers weed, thin plants, pick up litter, and remove built-up sediment in inlets.
- Partners and funding: Partners for the program and clean-up events in 2018 included Middle St. Croix WMO, City of Stillwater, Lily Lake Association, Sustainable Stillwater

MN, and Washington County Master Gardeners. The Stillwater Area Foundation provided $4200 in grant support to develop the program.

- Results:
  - 40 residents have volunteered to adopt raingardens
  - 50+ volunteers participated in raingarden clean-up and weeding events in May and June of 2018
  - Guidance materials are online at www.mnwcd.org/adoptaraingarden

Engaging existing volunteer networks: EMWREP continues to work in partnership with Washington County Master Gardeners and to provide support for education initiatives led by St. Croix Watershed Stewards.

3) Youth education:

School programming: EMWREP staff conduct groundwater education for schools in Washington County in addition to helping with special planting projects.

- Groundwater education: Taught lessons to five 4th grade classes at Royal Oaks Elementary (Woodbury) and River Grove Elementary (May Twp.) with classroom and field tour components.
- Outdoor field programs: Led outdoor programs at Minnesota Valley Wildlife Refuge for students from Royal Oaks and Grey Cloud (Cottage Grove) and Middleton (Woodbury) Elementary Schools.
- Children's Water Festival: 1700 4th grader students from 23 schools attend the event each year. Lessons focus on water conservation, water quality, stormwater and runoff, groundwater and wells, native plant benefits to water, aquatic species (fish, macro-invertebrates and invasive species), mercury, and more. EMWREP staff talked about groundwater using the interactive model and displays.
- Campus Greening: Helped students at Lake and Middleton schools in Woodbury to plant 200 trees as part of their Campus Greening project.

Teacher training:

- Hosted a one-day training for 10 local teachers to share Project WET curriculum and other watershed lessons for the classroom.
- Helped to recruit teachers for Mississippi and St. Croix River workshops led by Hamline University and St. Croix River Association.

Informal youth education:

- May 3 - Woodbury Elementary garden maintenance event
- May 8 - Forest Lake stormdrain stenciling with Daisy troop
- May 21 – Invasive species presentation: Stillwater Middle School
- June 27 - Cottage Grove Safety Camp

4) Media and communications:

Newspaper articles: Angie Hong continues to write articles about water and conservation for local newspapers. Read them on-line at www.eastmetrowater.areavoices.com. Tailored versions are sent to local community papers, including:

- **Chisago Press** (Circulation - 3963)
- **Forest Lake Lowdown** (Circulation – 13,997)
- **Forest Lake Times (**Circulation - 13,029) – *Hong column featured monthly*
- **Hugo Citizen** (Circulation – 14,500)
- **Oakdale-Lake Elmo Review** (Circulation – 11,066)
- **Ramsey Review** (Circulation – 24,326)
- **Scandia Country Messenger** (Circulation - 1075)
- **South Washington County Bulletin** (Circulation - 8616)
- **St. Croix 360** (On-line: 25,647 followers)
- **St. Croix Lowdown (**Circulation – 5000)
- **Valley Life / Stillwater Gazette** (Circulation - 17,479) – *Hong column featured weekly*
- **White Bear Press (**Circulation – 19,331)
- **Woodbury Bulletin** (Circulation - 7811)

Newsletters: EMWREP also provides content for city, watershed and WCD newsletters.

- Afton (pop. 2800) - newsletters
  - April – Compost Bin/Rain Barrel Sale
  - Oct – Bee Kind
- Bayport (pop. 3200)
  - Spring –Cost Share Promotion (MSCWMO)
  - Summer – Smart Outdoor Water Use
- Birchwood (pop. 875) - newsletter
  - Summer – Illicit Discharge
- Browns Creek Watershed District – content for annual newsletter
- Carnelian-Marine-St. Croix Watershed District – content for annual newsletter
- Cottage Grove (pop. 34,000) - newsletter
  - April – Arbor Day event
  - May – Blue and Green Environmental Challenge (water conservation)
  - June – SMART Irrigation Controller Program
  - July – No Grass Clippings in the Street
  - Sept – Master Water Stewards
- Forest Lake
  - Summer mailer (city-wide) – included an insert with information about stormwater and recent watershed projects in the city
  - Fall utility mailer – included an insert with information about raking leaves and composting
- Lakeland (pop. 1830) - newsletter
- Mahtomedi (pop. 8000) - newsletter
  - Jan/Feb – Halt the Salt
  - March – Illicit Discharge
  - May – Compost Bin/Rain Barrel Sale

- Oakdale (pop. 27,726) – newsletter
    - Spring – Clean Spring Runoff
    - Summer – Only Rain in the Drain
- Oak Park Heights (pop. 4724) - newsletter
    - March – Prairie Restoration at City Hall
    - Sep – MSCWMO cost share promotion
- Stillwater (pop. 18,000) - newsletter
    - Fall – Leaves + Streets = Scummy Lakes and Wetlands
- Stillwater Twp. (pop. 3000) - newsletter
- St. Paul Park
    - Spring – Illicit Discharge
    - Fall – SMART Salting; Leaves + Streets = Scummy Lakes and Wetlands; No Grass Clippings in the Street
- Washington Conservation District – content for bi-annual newsletters
- White Bear Lake (pop. 24,555) - newsletter
    - Illicit Discharge
    - Rain barrels available for purchase
- Woodbury
    - Feb – SMART Irrigation Controller program
    - Jun – Water Efficiency programs
    - Sept – SMART Irrigation Controller program
- Wyoming
    - Spring - Spring Reminders and Cleaning Tips

Minnesota Water – Let's Keep it Clean: Through our participation in Watershed Partners, EMWREP partners get access to additional stormwater education resources, including a blog-style website with monthly articles about local water heroes (www.cleanwatermn.org), photography and print materials, professional trainings and networking meetings, and a large exhibit space at the Minnesota State Fair, Eco Experience.

EMWREP and its partners provide funding support for the Minnesota Water – Let's Keep it Clean campaign and Angie Hong serves on the partnership's steering committee.

Articles for 2018 included:

- Jan. – Road Salt – Less is More
- Feb. – Monarch Mile: Pollinators Plant Seeds of Change
- March – EcoFaith Network puts Creation Care into Action
- April – Middle School Students Solve for Runoff
- May – Minneapolis Couple Tackles Litter One Day at a Time
- June – Residents and Rangers Protect the St. Croix River
- July – A New Generation of Water Stewards Adopts Storm Drains
- Aug. – Roots Return Farm Turns Rainwater into Pollinator Paradise
- Sept. – Maintaining Raingardens Through the Changing Seasons
- Oct. – Community Gardens Plant Seeds of Peace in Rondo
- Nov. – Artful Environmental Education at Highpoint Center for Printmaking

Websites and Social Media: EMWREP uses the following websites and social media accounts to share information and promote programs and events.

Websites:

- East Metro Water: https://eastmetrowater.org
- Washington Conservation District: www.mnwcd.org
- Blue Thumb – Planting for Clean Water: www.bluethumb.org
- Clean Water Minnesota: www.cleanwatermn.org

Social Media:

- Twitter
  - @angiehongwater
  - @EMWREP
- Facebook
  - @mnwcd
  - @BlueThumbMN
  - @ brownscreekwatersheddistrict
  - @cmscwd
  - @CLFLWD
  - @ricecreekwd
  - @RWMWD
  - @SoWashWD
- Instagram:
  - @wcd_mn

Outreach Support for Project Implementation

Minimum Control Measure Addressed

☑ Public education & outreach	☐ Construction site runoff controls
☑ Public participation & involvement	☑ Post-construction storm water management
☐ Illicit discharge detection and elimination	☐ Municipal pollution prevention & good housekeeping

Program Goals:

1. Publicize EMWREP partner programs and projects.
2. Promote BMP (Best Management Practices) and cost-share incentive programs.
3. Engage community members and other stakeholders to help meet water quality goals identified through local water plans, TMDL (Total Maximum Daily Load) studies, WRAP (Water Restoration and Protection) strategies, and other regulatory programs.
4. Engage public and private land owners to complete activities funded through state and federal grants.

Educational Objectives:

1. Citizens will be aware of water-quality improvement projects and programs happening in their communities and understand the benefits of these activities.
2. Citizens will be aware of and utilize BMP and cost-share incentive programs to complete water protection projects on their land.
3. EMWREP will help partners to identify, reach out to, and engage public and private landowners and managers in targeted locations in order to complete water resource improvement and protection projects.

OUTREACH AND PROJECT SUPPORT IN 2018

1) Promotion of watershed BMP and cost-share incentive programs

BMP program outreach: EMWREP promotes partner BMP cost-share programs through workshops, presentations, and media communications. Last year's outreach helped to support:

- 208 landowner site visits with Washington Conservation District staff
- 41 projects installed through watershed BMP programs
- 190 lbs/yr of phosphorus kept out of surface waters

2) Special grants

Outreach for Lower St. Croix "One Watershed, One Plan": Local government partners in the Lower St. Croix, many of whom are also EMWREP partners, are working together to create a shared watershed plan. Angie Hong has coordinated outreach and stakeholder engagement for this project. Activities in 2018 included:

- Three (3) workshops in Hudson, Taylors Falls, and North Branch
- Public survey (86 responses)
- Articles in local newspapers and partner newsletters
- Interviews with farmers in the Lower St. Croix watershed (12) and a survey to rural and agricultural landowners in Chisago and Washington County (61 responses)

Professional Trainings for Business and Local Government

Minimum Control Measure Addressed

☐ Public education & outreach	☑ Construction site runoff controls
☐ Public participation & involvement	☑ Post-construction storm water management
☑ Illicit discharge detection and elimination	☑ Municipal pollution prevention & good housekeeping

Audience: Water resource professionals, municipal staff, consultants and contractors, local elected and appointed officials, business owners, realtors, lawn care providers, winter maintenance providers

Program Goals:

1. Provide technical training to help EMWREP partners meet MS4 Permit requirements and reduce stormwater pollution.
2. Work in partnership with University of Minnesota to provide high-quality professional education at a local level.
3. Provide local decision makers (city councils, planning commissions, watershed boards, county commissioners, etc.) with information and training needed to implement policies, programs, and practices that protect and restore water resources.
4. Offer professional trainings for area business owners, realtors, lawn care providers, and winter maintenance contractors to share information about local water issues and encourage business practices that protect surface and groundwater resources.

Educational Objectives:

1. Municipal employees will understand that stormwater runoff, erosion, and illicit discharge contaminate surface and groundwater resources and, also, that there are best management practices to reduce these causes of water pollution.
2. Local decision makers will understand that land use impacts water quality and that there are a variety of policies, programs and practices cities, counties, and watershed management organizations can implement to protect their water resources.
3. Area business owners, realtors, lawn care providers, and winter maintenance contractors will learn how to conserve groundwater resources and reduce surface and groundwater pollution through a variety of practices, including:
    a. Completing water efficiency audits;
    b. Talking with home buyers and sellers about shoreline landscaping, remodeling, and septic system maintenance;
    c. Mowing higher and using fewer lawn chemicals; and
    d. Reducing road salt application by using new technology, calibrating equipment, and adjusting anti-icing and deicing methods based on weather forecasts.

PROFESSIONAL TRAININGS FOR BUSINESS AND LOCAL GOVERNMENT IN 2018

1) Training for local government staff and consultants

EMWREP helps to conduct professional trainings for businesses and local government, as well as connect partners with other training opportunities. Training partners include: U of MN Extension, U of MN Erosion and Stormwater Management Program, MN Erosion Control Association (MECA), Fortin Consulting, St. Croix River Association, and MN Department of Natural Resources (DNR).

Winter salt workshop for public works staff and winter maintenance contractors

- March 29 - Blaine
- April 11 - Shoreview
- Sept. 25 - Hugo
- Oct. 11 – Woodbury

Certified contractors listed at: www.pca.state.mn.us/water/salt-application-training
Find a model contract here: https://www.edinamn.gov/422/Pollution-Prevention

Turf maintenance workshop for parks staff and lawn care contractors

- Sept. 25 – Vadnais Heights

Highlights from 2018 included:

- Two (2) workshops for realtors:
  - Training topics included: groundwater and wells; septic systems; shoreline and riverway rules; watershed district programs
  - 60 attendees total

2) Training for local decision makers

St. Croix River Workshop on the Water

- July 11 – 115 participants
- Topics:
  - Collaborating across jurisdictional boundaries: Understanding “One Watershed, One Plan” and moving toward implementation in the Lower St. Croix watershed
  - Educate for action! Putting new stormwater education programs and tools to work
  - Into the wild - A View from the River: Celebrating the 50th Anniversary of the Wild and Scenic Rivers Act
- Partners: Metro Watershed Partners, MN Department of Natural Resources, St. Croix River Association, University of Minnesota Extension, Minnesota Sea Grant

Forest Lake Stormwater Tour and Workshop

- Sept 11 - 40 participants
- Topics:
  - Forest Lake enhanced street sweeping program to prevent and minimize water pollution
  - Innovative stormwater harvest and reuse systems at the Forest Lake Area High School and Forest Hills Golf Club
- Partners: University of Minnesota Extension, Minnesota Sea Grant

3) Training and outreach to local businesses

Shoreline realtor workshops – offered in partnership with MN DNR, St. Croix River Association, Washington County, and University of MNRealtors received CEUs for attending.

- April 5 – Stillwater (30 attendees)
  - Topics: Shoreland and riverway rules; Best practices for shoreline landscaping
- Nov. 28 – Forest Lake (30 attendees)
  - Topics: Groundwater and wells; Septic Systems; Healthy Homes; Shoreland landscaping and rules

4) Professional partnerships, meetings, and conferences

Watershed Partners – EMWREP and its partners contribute financial and staff support to Metro Watershed Partners, a partnership of 60+ public and non-profit organizations in the Twin Cities area. In addition to the public education campaign, Watershed Partners provides learning opportunities for water resource professionals through its monthly meetings. Presentation topics in 2018 included:

- Jan – Smart salting
- Feb. – Legislative update
- March –Strategic framing for climate change communication
- April – Working with niche audiences
- May – Equity and environmental justice in outreach and education
- Aug. - Tour: Water reuse at the Walker Art Center
- Sept – Clean Streets, Clean Water: Key findings & recommendations from a focus group-based evaluation of the Neighborhood Cleanup Toolkit
- Oct. – MS4 Toolkit; MS4 General Permit
- Nov. – Watershed Partners future planning
- Dec. – Adopt-a-Drain

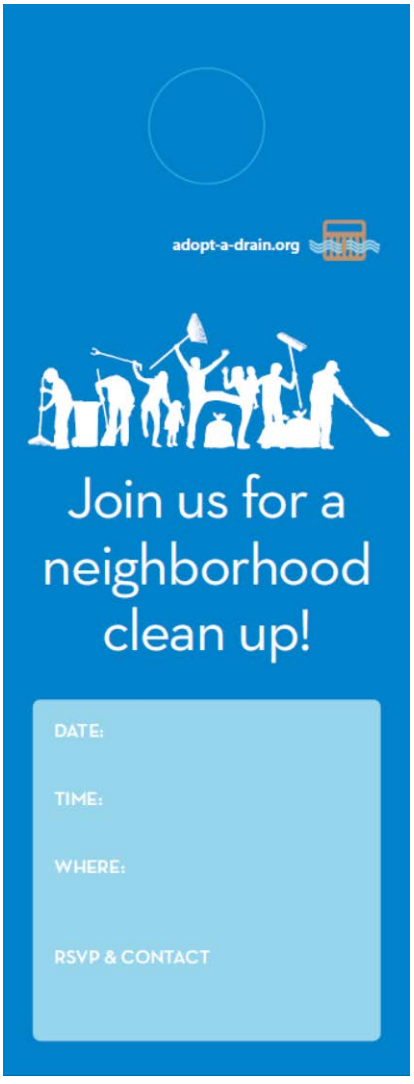
Water Consortium – EMWREP staff help to plan topics and presenters for Washington County water consortium meetings.

St. Croix Summit – EMWREP staff helped to plan the annual conference in River Falls on April 24.

- **Neighborhood Clean-up Engagement Kit**

  This kit, developed in partnership with Metro Watershed Partners includes doorhangers, sign-up forms, step-by-step instructions and other materials to help local residents and community groups organize neighborhood “storm drain” clean-up events.

  Contact Angie Hong to access materials for an event in your area.



- **Yard Signs**

  "This yard is part of the solution" - These signs come in four different colors and feature designs by local artist Vera Wong. Signs cost $3 each or two for $5.

- **Raingarden maintenance**

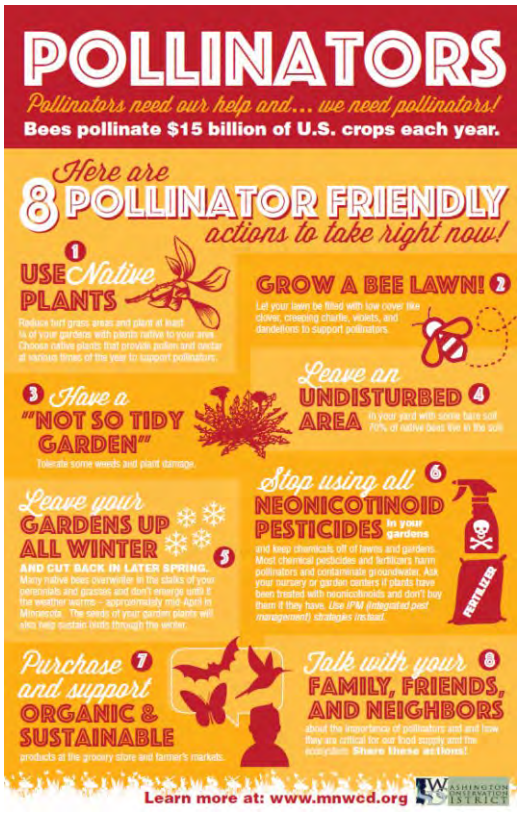
Raingarden maintenance guidance materials include:

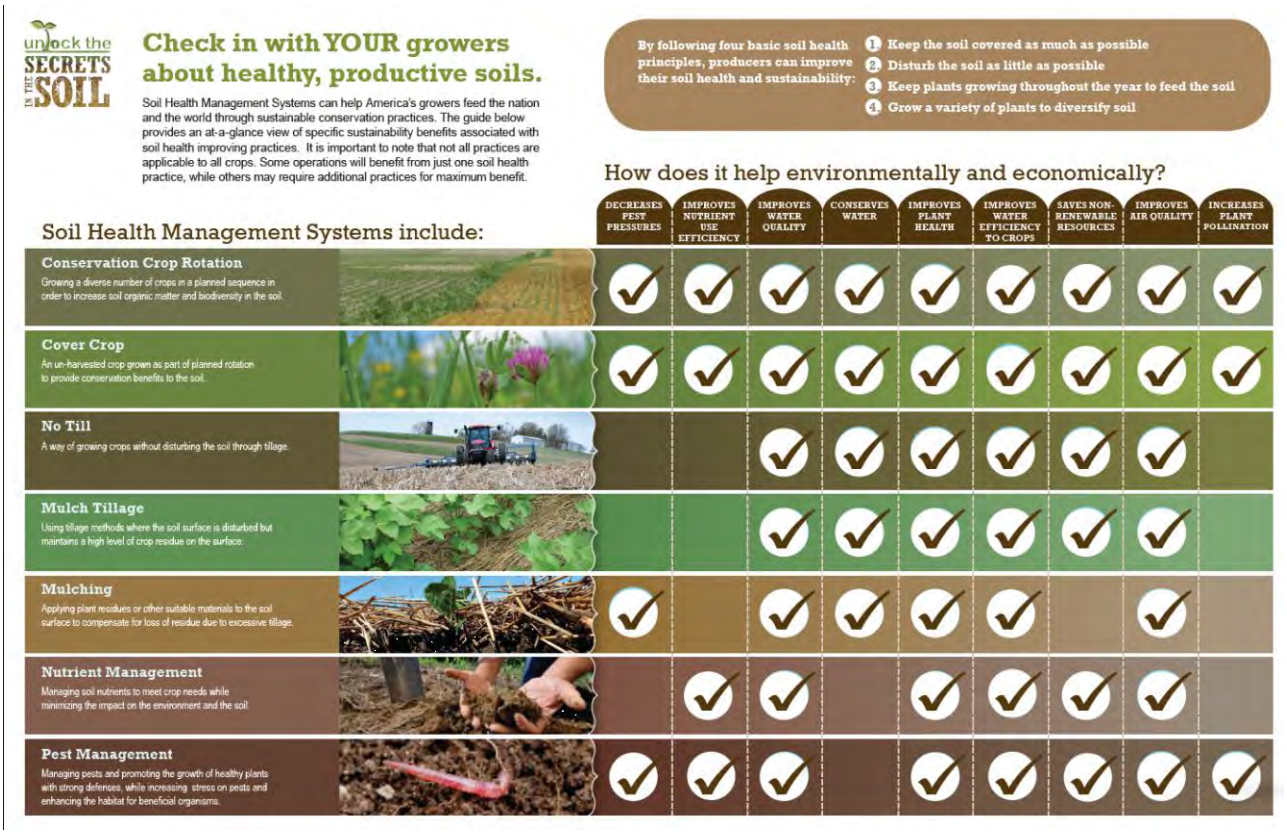
- Raingarden maintenance check-list
- Maintenance guide book - detailed
- Raingarden maintenance brochure
- Most common raingarden weeds

We also have a variety of planning and promotional materials available for the Adopt-a-Raingarden program. Contact Angie Hong to access these resources.

Table-top banners

EMWREP has table-top pop-up banners available for partners to borrow: AIS, Pollinators, Lawn Care, and Ag Practices for Soil Health. The banners are light-weight and retract to fit in small carrying bags.





- **<u>Interactive groundwater displays</u>**: Two groundwater displays are available for partners to borrow. Contact Angie Hong to reserve.

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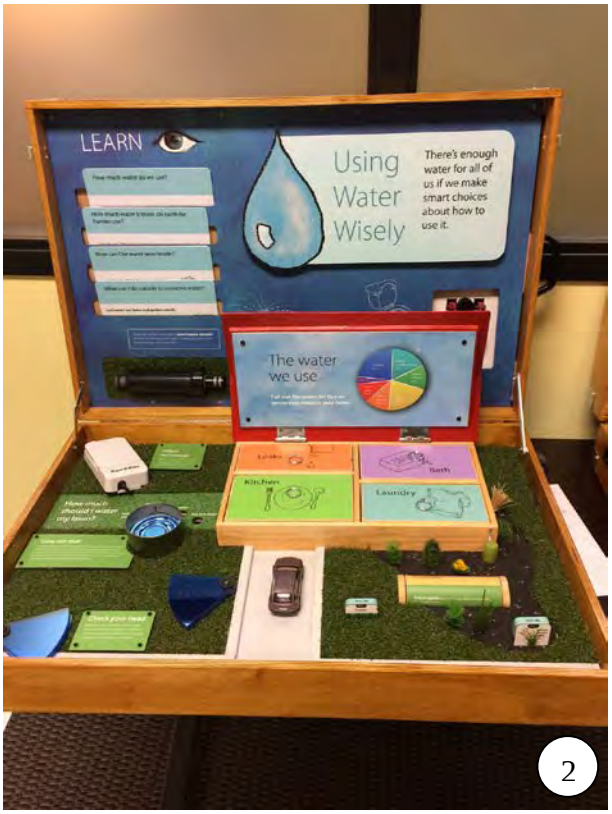

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APPENDIX A: EDUCATION PROGRAM BUDGET FOR 2018

Staff Support and Overhead Expenses (1.5 FTE)	Materials	Total
$136,800	$10,000	**$146,800**

PARTNER	Annual Contribution
SWWD	$24,000
VBWD	$18,500
BCWD	$18,500
CLFLWD	$18,500
CMSCWD	$12,250
RWMWD	$12,250
RCWD	$2,500
Washington County	$12,250
MSCWMO	$6,000
Cottage Grove	$2,500
Forest Lake	$2,500
Lake Elmo	$2,500
Hugo	$2,500
Oakdale	$2,500
Stillwater	$2,500
Woodbury	$2,500
Dellwood	$650
Grant	$650
Newport	$650
Oak Park Heights	$650
St. Paul Park	$650
West Lakeland	$650
Willernie	$650
TOTAL	**$146,800**

Metro Watershed Partners

2018 Annual Program Report

Metro Watershed Partners is a coalition of more than seventy public, private and non-profit organizations in the Twin Cities metro area. Through collaborative education and outreach, the Metro Watershed Partners promote a public understanding that inspires people to act to protect water in their watershed. Since 1996, partners have cooperated through educational projects, networking, and resource sharing.

MINNESOTA WATER
LET'S KEEP IT CLEAN

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Metro Watershed Partners 2018 Report

Introduction

Metro Watershed Partners is a coalition of more than seventy public, private and non-profit organizations in the Twin Cities metro area. Through collaborative education and outreach, the Metro Watershed Partners promote a public understanding that inspires people to act to protect water in their watershed. Since 1996, partners have cooperated through educational projects, networking, and resource sharing.

The mission of the Metro Watershed Partners is two-fold:

- to provide and promote collaborative watershed education programs with consistent messages to the general public, local government staff and elected officials, and
- to provide WSP members a place and means to share information, generate ideas, and coordinate and support collaborative watershed education programs.

In 2018 members contributed $30,762 to support monthly meetings, exhibit checkout, administrative functions, and state fair outreach to hundreds of thousands of people. Members contributed $90,287 to support the Clean Water Minnesota outreach campaign.

Leadership

The work of **Metro Watershed Partners** is guided by a steering committee that includes stormwater education professionals from watershed organizations, non-profits and government agencies. In 2018, our steering committee members were:

Alisa Reckinger, Hennepin County Environment and Energy
Angie Hong, Washington Conservation District (*convenor)*
Deirdre Coleman, Freshwater Society
Jen Dullum, Vermillion River Watershed JPO
Jessica Bromelkamp, Capitol Region Watershed District
Lyndon Torstenson, National Park Service, Mississippi National River & Recreation Area
Mike Trojan, Minnesota Pollution Control Agency
Telly Mamayek, Minnehaha Creek Watershed District
Tracy Fredin, Center for Global Environmental Education, Hamline University

Clean Water MN

2018 Outreach Projects Report

MINNESOTA WATER
LET'S KEEP IT CLEAN

Clean Water MN is the collaborative outreach project of the Metro Watershed Partners. Working together, we provide resources, training, and support to partners as they work to inspire homeowners in the Twin Cities metro area to keep water clean and healthy.

The steering committee of the Metro Watershed Partners oversees the work of Clean Water MN. Jana Larson from Hamline University manages campaign fundraising and the creation and implementation of communication and outreach programs. As part of this work, we regularly ask stakeholders to tell us how to best serve the needs of MS4s.

Cleanwatermn.org features seasonally appropriate stories about metro area residents taking action at home and in their lives to keep Minnesota water clean and healthy. The stories are designed for partners to use in their own communications—via websites, Facebook, Twitter, newsletters, and such.

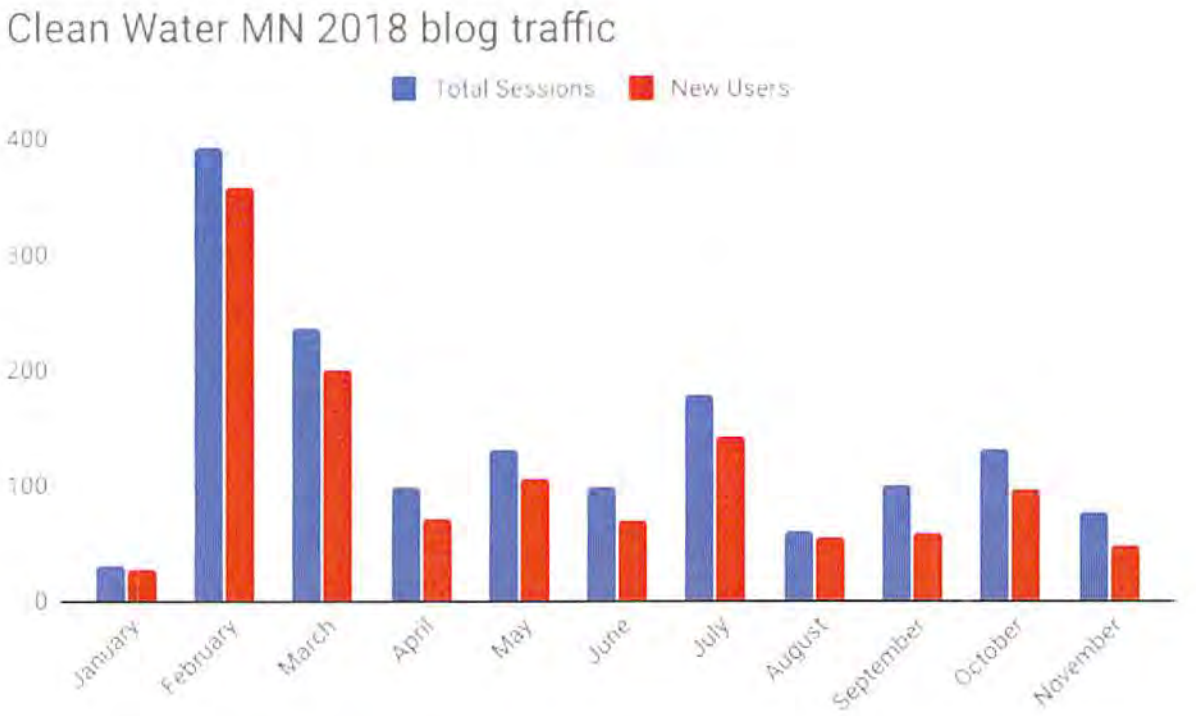
Along with each story we create a suite of professional photographs, accessible to partners online for use in their own stories and publications. Additionally, each story links to informational resources on our own site and other websites. In 2018 we published 12 new stories.

The cleanwatermn.org website also features informational pages, calls to action, a "Find My Watershed" map, information about the partnership, educational resources, and a list of our partners. We will continue to develop and add content to the site in 2019 and beyond.

Campaign Analytics

In order to provide some measure of the impact of our work, we have created a system of unique, trackable links for our partners to use when they publish a story from Clean Water MN. This allows us to measure click-through rates to CleanWaterMN.org for each partner individually. Below you will find a summary of these analytics, which paint a general picture of engagement with each story. These numbers do not reflect, however, the total number of readers for any given story, since trackable links are not always used, and some readers may not click on the link to read the full story. Analytics reports with a breakdown for each partner can be found at: http://bit.ly/2rxvGE6

Month	Blog Title	Total sessions	New users	Pages per visit	Average duration
January	Water and Soil Conservation Practices Sustain Dairy Farm	31	27	1.38	0:00:59
February	Road Salt: Less is More	393	359	1.13	0:00:25
March	Monarch Mile: Pollinators Plant Seeds of Change	236	200	1.34	0:00:57
April	EcoFaith Network Puts Creation Care in Action	99	72	1.23	0:00:34
May	Middle School Students Solve for Runoff	131	105	1.30	0:00:39
June	Minneapolis Couple Tackles Litter One Day at a Time	99	69	1.27	
July	Residents and Rangers Protect the Saint Croix River for Future Generations	178	142	1.17	
August	A New Generation of Water Stewards Adopts Storm Drains	61	54	1.43	
September	Roots Return Farm Turns Rainwater into Pollinator Paradise	101	59	1.48	0:00:23
October	Maintaining Rain Gardens through the Changing Seasons	132	96	1.33	0:00:44
November	Community Gardens Plant Seeds of Peace in Rondo	76	48	1.24	0:01:26
December	Artful Environmental Education at Highpoint Center for Printmaking	90	77	2.38	0:02:23
Total click-throughs to CWMN site		1627	1308		



The blog posts that received the most traffic through social media were:

- *Road Salt: Less is More* (February)
- *Monarch Mile: Pollinators Plant Seeds of Change* (March)
- *Residents and Rangers Protect the Saint Croix River for Future Generations* (July)

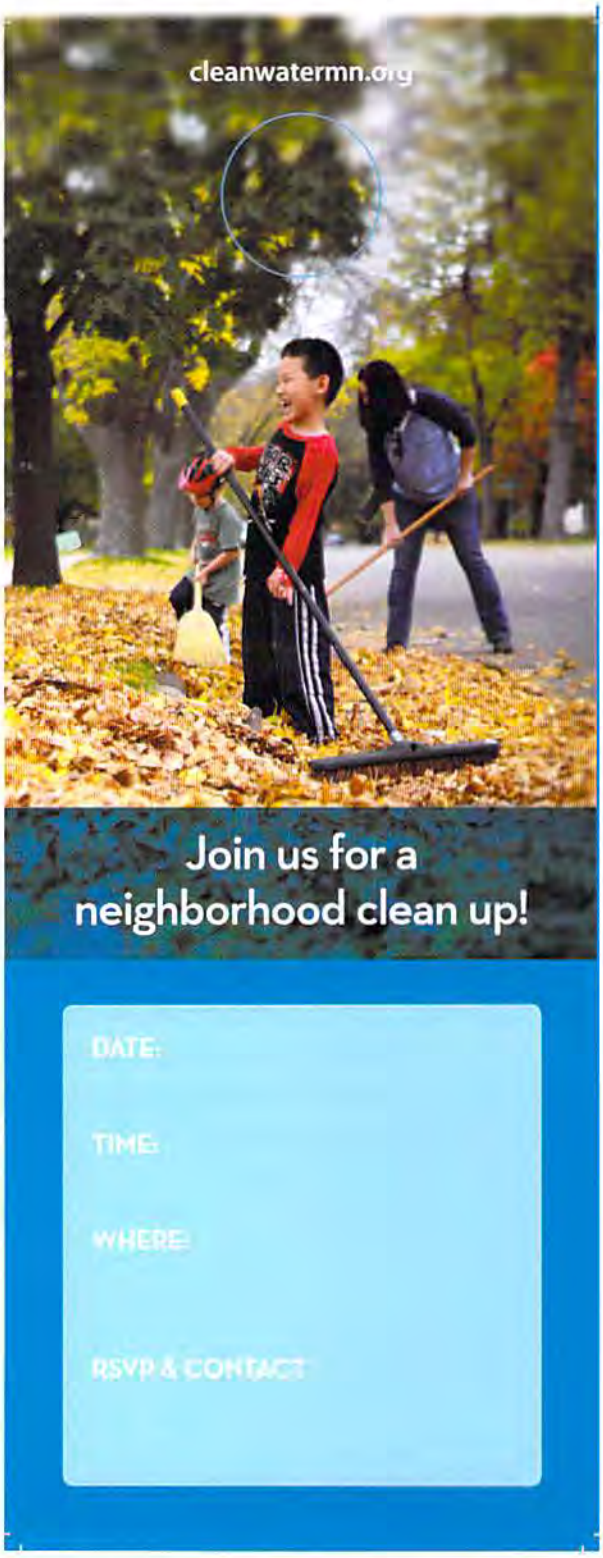
Clean Water MN activities in 2018

2018 was a year of focus groups, listening sessions, pilots, evaluations, surveys, and findings.

In March, we created an online survey to evaluate the strengths and weaknesses of the **Clean Water MN website and blog**. Responses from 26 partners helped us to modify blog posts, photographs, informational PDFs, and the website to better serve partner communications needs. This included creating new **PDF resources on a variety of subjects including lawn care, salt, and rain garden maintenance.**

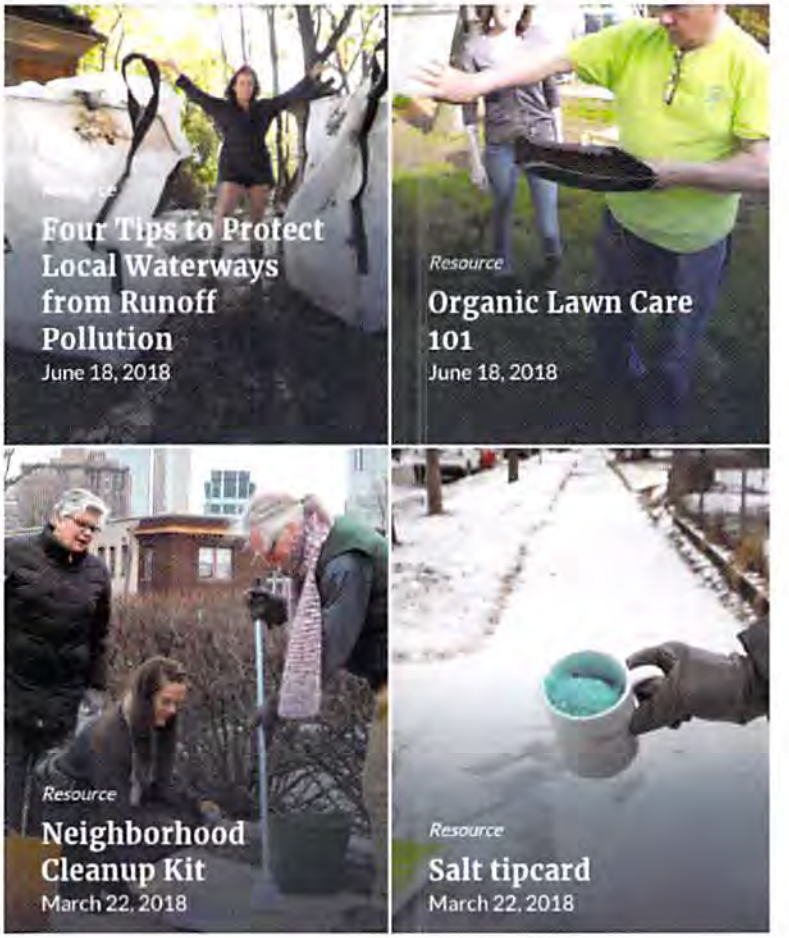
In spring, an **online survey of Minneapolis Adopt-a-Drain participants** gave us additional insights into barriers, motivations, and demographics of program participants.

Researchers from the University of Minnesota began an in-depth baseline study of Adopt-a-Drain in Minneapolis focused on understanding how to promote and implement Adopt-a-Drain so that it resonates with underserved communities. This research will also inform the development of a pilot program aimed at including businesses and community organizations in Adopt-a-Drain. This multi-faceted evaluation project, funded by the City of Minneapolis, will continue through 2020.



In April, we hired Karen DeYoung to lead a **listening session with 50 partners aimed at understanding how to structure the Adopt-a-Drain program** to best serve the partnership. Her report helped us adapt our existing program to provide multiple levels of partner engagement and recognition for the 2019 rollout of Adopt-a-Drain. Partner feedback and suggestions from this session also helped us to design a more dynamic user interface for the new Adopt-a-Drain website.

In spring, we piloted the ***Clean Streets, Clean Water Neighborhood Cleanup Kit*** in neighborhoods across the metro area. We gave printed outreach materials for free to groups who participated in the pilot and, in exchange, event leaders participated in one of two follow-up **focus groups led by Lune LLC** to give feedback on what worked well and how to improve the kit. Lune LLC also workshopped the kit with partners at our September meeting and collected feedback. We are using the findings from these sessions to modify and update materials. These will be available online for the March launch of Adopt-a-Drain.



In November, the roundtable event was a **listening session, facilitated by Lune, llc, focused on planning the next three years of work for the partnership.** We found that partners are particularly fired up about the Adopt-a-Drain program, and about using the coming years to understand how to reach underserved audiences with our messages and programs. The findings from the roundtable were presented at the December meeting, and the 35 partners who were present used a dot-voting activity to help rank the items in terms of priorities for the partnership.

Adopt-a-Drain—metro wide launch in March, 2019!

Adopt-a-Drain is a pilot program created in 2014 by Hamline University with support from the City of Saint Paul and Capitol Region Watershed District. Adopt-a-Drain allows residents to claim responsibility for a storm drain near their home and keep it clear of trash and organic debris in order to reduce water pollution.

Since launching the program in Saint Paul, Hamline has expanded implementation, adding new neighborhoods and cities. There are currently more than 2,000 residents in five cities participating in the program, who have together diverted tens of thousands of pounds of trash and organic debris from local waterways.

In August 2018, we opened registration for the Adopt-a-Drain program to all metro area residents during the State Fair. The response was fantastic; 700 Minnesota residents signed up to adopt a drain over the twelve days of the fair.

Work on a new Adopt-a-Drain site began in 2018; the new website will launch in March, 2019. This new site will include the GIS data of all 280,000 storm drains in the seven-county metro area, and supporting members of the Metro Watershed Partners will have an administrative interface to view program data for their service area.

With your continued support, in addition to launching the metro-wide Adopt-a-Drain program, we will continue to update and improve cleanwatermn.org, publishing monthly blog stories, with new photographs, and informational PDFs.

Please find the proposed budget for 2019 on page 17 of this report. The invoice for 2019 membership can be returned with payment to to: Hamline University, CGEE, 1536 Hewitt Ave. MS-A1760, Saint Paul, MN 55104

2018 Accomplishments of the Metro Watershed Partners

Networking and Sharing Resources

The Watershed Partners hold monthly meetings that provide members a way to gather, share information, generate ideas, and form partnerships that support watershed education in the state of Minnesota. These meetings keep our members up to date on new developments in the field of water resources and water education by featuring presentations by experts in fields such as watershed management, education, marketing, legislation and outreach.

In 2018, the Watershed Partners held 11 meetings. Meeting attendance totaled 386; attendance varied from 15 to 115 but on average 35 partners attended each meeting. We're pleased to see that partners continue to value our meetings, and demonstrate energy for collaboration and information sharing; we plan to continue offering workshops and events our partners will find useful in 2018 and beyond.

2018 PARTNER MEETINGS — TOPICS AND PRESENTERS

January	Smart Salting	Brooke Asleson, MPCA
February	Legislative Update	Trevor Russell, FMR
March	Climate Change Communication: Introduction to Strategic Framing	Abby Moore, MWMO
April	Working with niche audiences: Engaging Homeowners' Associations to implement Clean Water projects; Engaging Faith-based Communities; Getting Seniors Outdoors	Angie Hong, EMWREP Randy Thoreson, NPS
May	The Quest for Equity and Environmental Justice: Outreach and Education WITH vulnerable communities and traditionally underserved watershed stakeholders.	Kimberly Carpenter, Metro Blooms
July	Our St. Croix: Preserving a Natural, Recreational, and Economic Amenity	
August	Walker Art Center: Tour of the water reuse features of the sculpture garden	Marcy Bean, MWMO Jacqueline Stahlmann, Walker Art Center Abby Moore, MWMO
September	Clean Streets, Clean Water: Key findings & recommendations from a focus group-based evaluation of the Neighborhood Cleanup Toolkit	Emma Ramsbottom, LUNE, llc
October	The Remand Rule and New Concepts for the Draft MS4 General Permit	Cole Landgraf, MPCA
November	Watershed Partners roundtable: Scripting the future of the partnership and your role in achieving outcomes.	Jana Larson, Hamline University, Amanda Meyers, U of M, Vanessa Perry, LUNE, llc
December	Potluck, Year-in-Review, Adopt-a-Drain model partnerships	Erica Sniegoski, Nine Mile Creek Watershed District

The internal website for the Metro Watershed Partners

is hosted by Hamline University at: www.hamline.edu/cgee/watershed.

The site contains:

- information about our monthly meetings
- an archive of minutes, agendas and presentations from past meetings
- the most recent annual report
- information on becoming a member and contributing membership funds to support our partnership and outreach activities
- a directory of partners
- information on borrowing exhibits
- information about outreach activities at the Minnesota State Fair
- general information and a brief history of the partnership

Please contact Jana Larson if you have questions or need help finding the information you are looking for: jlarson25@hamline.edu.

Watershed Partners listserv

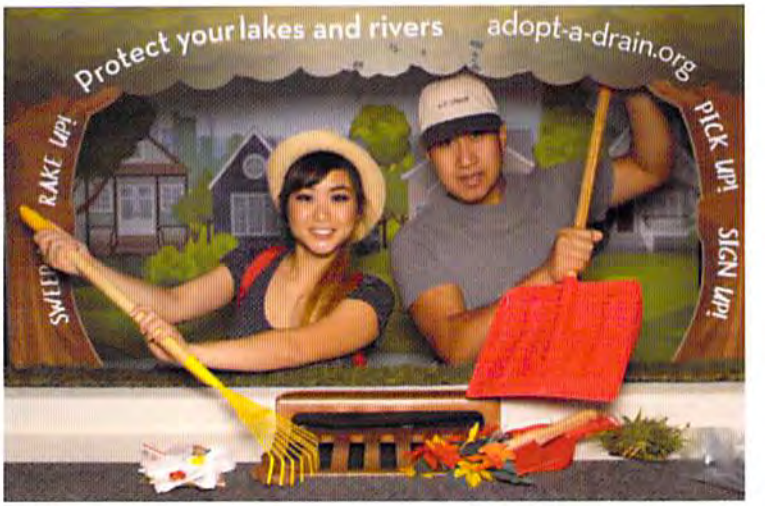
The Metro Watershed Partners listserv is a forum for watershed educators, legislators and industry professionals throughout the state to share information and resources.

In 2018, the Metro Watershed Partners listserv continued to provide more than two hundred user-members with an effective tool to promote educational programs, share information about professional programs, and exchange information with other watershed educators, legislators and businesses. The email address for the listserv is: watershedpartners@listserv.hamline.edu. If you would like to send and receive listserv emails, send a request to Jana Larson: jlarson25@hamline.edu.

Education and Outreach at the Minnesota State Fair

2018 was another record year for the state fair, with total attendance breaking 2 million visitors. The Watershed Partners hosted an exhibit in the Eco-experience where approximately 250,000 people were exposed to our message about taking action to protect Minnesota's lakes and rivers.

The Metro Watershed Partners partnered with Hamline University to host the Adopt-a-Drain photo booth and exhibit at Eco Experience. The exhibit features: an Adopt-a-Drain photo booth (re-designed in 2018), air hockey, foosball, an Adopt-a-Drain sign-up station, a video table with in-depth interactive information about the Mississippi River, and three portable tabletop exhibits focused on the science of Eutrophication, taking action to reduce run-off, and the urban water cycle. Together, these exhibits raise awareness about the importance of protecting water in Minnesota and ask people to commit to take action at home to prevent run-off pollution. For the first time this year, the exhibit provided a chance for visitors to formalize their commitment by signing up to adopt a drain.



There were more than 250,000 visitors to the Eco-experience in 2018. Approximately 8,000 of them took a photo in the Adopt-a-Drain photo booth. (We took and printed 3,441 photos during the fair, with an average of 2.5 people per photo.) 50% of photos were shared via email or text.

Over the twelve days of the fair, 700 Minnesota residents from 73 cities signed up to adopt a storm drain. Those who adopted a drain were able to take home an informational packet and a small yard sign that reads "We Protect Minnesota Lakes, Rivers and Wetlands."

There was a Watershed Partner or Master Water Steward present during 60 of the 144 hours of the fair, to interact with the public, answer questions, and promote water-friendly behaviors.

Thank you for all your help making the exhibit a success!

Education and Outreach at Community Events:

Throughout the year, the Metro Watershed Partners make our tabletop exhibits available free of charge to organizations doing education and outreach on non-point source pollution and preservation of clean water. If you are interested in checking out one of our kiosks or table-top exhibits (see below) for an event in your community, you can find more information and a check-out form at: http://www.hamline.edu/education/environmental/cgee/watershed/exhibit/index.html

Exhibit-in-a-Box on Eutrophication.

2018 Financial Report

In response to our fundraising requests, 48 supporting members contributed: $30,762 to the Watershed Partners in support of meetings, state fair outreach, administration, exhibit maintenance, development and checkout; and $90,287 to support the Clean Water MN website and public outreach campaign.

Supporting Members of the Metro Watershed Partners and the Clean Water MN Media Campaign In 2018

Andover
Apple Valley
Bassett Creek WMC
Blaine
Bloomington
Brown's Creek WD
Canon River WP
Capitol Region Watershed District
Carver County
Chisago Lakes Improvement District
Columbia Heights
East Metro Water Resources
Eden Prairie
Edina
Elm Creek WMC
Excelsior
Faribault
Farmington
Hennepin County
Hilltop
Lauderdale
Lower Mississippi River WMO
Minneapolis
Minnehaha Creek WD
Minnetonka
Minnetrista
MNRRA
Mound
New Brighton
Nine Mile Creek WD
Pioneer-Sarah Creek WC
Prior Lake
Rice Creek WD
Riley-Purgatory Bluff Creek WD
Rochester
Roseville
Ramsey-Washington Metro WD
Saint Louis Park
Saint Paul
Shingle Creek WMC
Shoreview
South Washington WD
Vadnais Lake Area WMO
Vermillion River Watershed JPO
Washington County
Wayzata
West Mississippi WMC
Woodbury

Clean Water MN/Watershed Partners 2018 Financial Report

	IN-KIND	CASH	TOTAL
REVENUE			
CWMN funds rollover		$15,284.66	$15,284.66
Watershed Partners coordination	$53,800.00	$22,770.00	$76,570.00
Watershed Partners exhibit	$22,000.00	$7,992.00	$29,992.00
Media campaign	$5,500.00	$90,287.00	$95,787.00
Meeting registration fees			
Total revenue	**$81,300.00**	**$136,333.66**	**$217,633.66**
EXPENSE			
1. Watershed Partners Coordination			
Principle Investigator	$2,500.00	$5,488.61	$7,988.61
Program Coordinator	$12,000.00	$12,000.00	$24,000.00
Steering Committee	$32,400.00		$32,400.00
Meeting room rental fees	$4,500.00	$600.00	$5,100.00
Technology maintenance	$2,400.00		$2,400.00
Meeting expenses		$1,858.00	$1,858.00
Postage and printing		$200.00	$200.00
Accounting/indirect fees		$2,625.00	$2,625.00
Subtotal	**$53,800.00**	**$22,771.61**	**$76,571.61**
2. Watershed Exhibit Implementation			
Exhibit coordination	$4,500.00	$5,500.00	$10,000.00
State fair expenses	$15,000.00	$9,463.13	$24,463.13
Storage and check-out	$2,500.00		$2,500.00
Subtotal	**$22,000.00**	**$14,963.13**	**$36,963.13**
3. Clean Water MN			
Campaign coordination	$5,500.00	$45,000.00	$50,500.00
Printing and postage		$431.30	$431.30
Blog writing and photography		$14,675.00	$14,675.00
Web hosting and maintenance		$2,500.00	$2,500.00
Graphic design		$5,820.00	$5,820.00
Web design and programming		$0.00	$0.00
Focus group research		$5,027.00	$5,027.00
Adopt-a-Drain program support		$15,000.00	$15,000.00
Meeting expenses		$431.00	$431.00
Accounting/indirect fees		$7,477.94	$7,477.94
Subtotal	**$5,500.00**	**$96,362.24**	**$101,862.24**
TOTAL	**$81,300.00**	**$134,096.98**	**$215,396.98**
ROLLOVER TO 2019		$2,236.68	$2,236.68

Clean Water MN/Watershed Partners 2019 Budget

	IN-KIND	CASH	TOTAL
REVENUE			
CWMN funds rollover		$2,236.68	$2,236.68
Watershed Partners coordination	$53,800.00	$23,400.00	$77,200.00
Watershed Partners exhibit	$9,500.00	$20,500.00	$30,000.00
Clean Water MN	$5,500.00	$46,900.00	$52,400.00
Adopt-a-Drain		$80,000.00	$80,000.00
Total revenue	**$68,800.00**	**$173,036.68**	**$241,836.68**
EXPENSE			
1. Watershed Partners Coordination			
Principle Investigator	$2,500.00	$4,500.00	$7,000.00
Program Coordinator	$12,000.00	$12,000.00	$24,000.00
Steering Committee	$32,400.00		$32,400.00
Meeting room rental fees	$4,500.00	$1,200.00	$5,700.00
Technology maintenance	$2,400.00		$2,400.00
Meeting expenses		$3,000	$3,000
Postage and printing		$200	$200
Accounting and indirect fees		$2,500.00	$2,500.00
Subtotal	**$53,800.00**	**$23,400.00**	**$74,700.00**
2. Watershed Exhibit Implementation			
Exhibit coordination	$4,500.00	$5,500.00	$10,000.00
State fair expenses		$15,000.00	$15,000.00
Storage and check-out	$5,000.00		$5,000.00
Subtotal	**$9,500.00**	**$20,500.00**	**$30,000.00**
3. Clean Water MN			
Campaign coordination	$5,500.00	$20,000.00	$25,500.00
Printing and postage		$400	$400
Blog writing and photography		$15,000.00	$15,000.00
Web hosting and maintenance		$2,500.00	$2,500.00
Graphic design		$2,000.00	$2,000.00
Focus group research		$500.00	$500.00
Meeting expenses		$2,000.00	$2,000.00
Cleanup kit resources		$500.00	$500.00
Accounting and indirect fees		$4,000.00	$4,000.00
Subtotal	**$5,500.00**	**$46,900.00**	**$52,400.00**
4. Adopt-a-Drain			
Site license		$30,000.00	$30,000.00
Program coordination		$20,000.00	$20,000.00
Program implementaion		$15,000.00	$15,000.00
Social media, photography and media production		$7,000.00	$7,000.00
Program evaluation		$5,000.00	$1,000.00
Accounting and indirect fees		$5,000.00	
Subtotal	**$0.00**	**$82,000.00**	**$73,000.00**
TOTAL	**$68,800.00**	**$172,800.00**	**$241,600.00**

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Project and Program Status Reports

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RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

resourceful. naturally. engineering and environmental consultants BARR

Memorandum

To:	Board of Managers and Staff
From:	Tina Carstens and Brad Lindaman
Subject:	Project and Program Status Report – April 2019
Date:	March 28, 2019

Engineering review/educational forum assistance

Flood-risk response planning communications: (Barr project managers: Brad Lindaman and Erin Anderson Wenz; RWMWD project manager: Tina Carstens)

The RWMWD anticipated the impacts of the snowmelt event that began on March 9, which was exacerbated by rain and continued melting through the date of this memorandum. The purpose of this effort was to provide lake monitoring data to provide to the RWMWD's member cities to help them plan emergency actions that protect structures and to alert the public about potential road closures.

This period, staff anticipated that regional flooding could result from the rapid snowmelt and rainfall event experienced throughout RWMWD starting on March 9. We used the existing computer models to run a series of snowmelt event scenarios, with snowmelt and rainfall depths ranging from 3 inches (the minimum anticipated runoff depth) up to 7.2 inches (the 100-year, 10-day snowmelt event). We then used the model results to create a suite of charts for the RWMWD water bodies known to be susceptible to flooding in these types of events (Lake Owasso, Snail Lake, Grass Lake, West Vadnais Lake, Gervais Lake, Owasso Basin, Battle Creek Lake, McKnight Basin, and Tanners Lake). Low elevations of structures and roadways (Rice Street, Gramsie Road, Weir Drive) were noted on the relevant chats to help city staff members plan for response actions.

This information was presented to the RWMWD's member cities at a March 13 meeting to help them plan accordingly. The meeting was well attended by almost all of the RWMWD's member cities, including staff from municipal public works, communications, and emergency management, as well as RWMWD. During the week after the meeting, the RWMWD continued to monitor water levels in areas perceived to be at the greatest risk (Lake Owasso, Grass Lake, Lake Owasso, Tanners Lake, Gervais Lake, and Battle Creek Lake) and compared the changing water surface elevations of these water bodies to the modeling results. On March 22, updated charts showing the actual monitored water levels of each water body were sent to the member cities to show how these areas were faring during the snowmelt event. Fortunately, the snowmelt event lasted longer than the estimated 10 days, and no additional rainfall occurred during the week of March 17. As a result, monitored levels in these water bodies have been lower than initially anticipated, keeping structures and roadways above lake levels. Gramsie Road did experience flooding but it was due to catch basin and adjacent pond capacity, not because Grass Lake overflowed onto the roadway.

While many water bodies have already passed their peak elevations from the snowmelt event, we do expect Grass Lake and West Vadnais Lake to continue to rise over the coming weeks. Barr and district staff will continue to monitor these areas as well as the weather forecast, and will run more XP-SWMM computer models as appropriate when more rain is anticipated. (At the time of this memorandum, there is no significant rainfall forecast through April 3.)

The modeling Barr completed suggested that Grass Lake will likely overflow through its new emergency overflow spillway in the coming weeks. Therefore, as outlined in the flood response plan, we directed Fitzgerald Contracting to sandbag the pedestrian tunnel to block the passage of water from Grass Lake to North Gramsie Pond. Ultimately, a permanent stop-log structure is planned for this area; however, some of the parts necessary to build the stop log structure will not arrive for a few weeks. As discussed in the past, blocking the tunnel will push overflows from Grass Lake to the east to the newly installed pipe through Gramsie Road. The primary purpose of these actions is to help protect homes around Suzanne Pond in the Crestview Addition. Flows utilizing the pipe will move to wetland areas that includes wetland A if levels are high enough. Ramsey County Parks is aware of the situation. Barr and district staff will monitor levels and communicate with the cities and parks.

Project feasibility studies

Owasso County Park stormwater master plan and detailed design: phases I and II (Barr project manager: Matt Metzger; RWMWD project manager: Paige Ahlborg)

The purpose of this study is to assist City of Shoreview Public Works and Ramsey County Parks with creating a holistic "living streets" retrofit design for North Owasso Road and best management practice (BMP) design for new parking lots in Owasso County Park.

The City of Shoreview submitted the roadway project feasibility study to the city council and started 100-percent design this month. Utility construction will likely begin this year, with the majority of roadway and stormwater-management feature construction occurring in 2020. Barr and district staff will be engaged in the construction portion of the project to verify that the stormwater design implementation meets RWMWD standards and expectations. The City of Shoreview requested that Barr review the stormwater detailed design developed by the city's consultant to check for consistency with the RWMWD's Owasso County Park stormwater master plan, developed by Barr.

System-wide evaluation of flood control options/Beltline resiliency study (Barr project manager: Brandon Barnes; RWMWD project manager: Tina Carstens)

The purpose of this study is to evaluate system-level flood-damage-reduction options, including real-time mechanical alteration of Lake Phalen and Keller Lake channel outlet structures, as well as other critical system infrastructure, to actively manage stormwater runoff from flood-prone areas tributary to the Beltline storm sewer in an effort to reduce flood levels that would otherwise impact homes. The evaluation will use the RWMWD stormwater model to simulate system-level modifications to evaluate how adjustments to outlet structures during a flood event may be able to optimize the existing system performance to reduce flooding impacts to homes adjacent to RWMWD-managed water bodies.

Recently, Barr finalized the geographic information system (GIS) story map for modifications for the second phase of the analysis, which includes Willow Creek and Kohlman Creek subwatersheds. The story map will be used to present phase 2 results at the April board meeting.

The third phase of the study was started this month. As a part of this next phase, Barr continued evaluating permanent and "real-time" modifications to the outlet control structures on Keller Creek and Lake Phalen in an effort to identify a feasible operation plan to reduce upstream flood risk to structures in flood-prone areas. We are also evaluating system modifications in the Beltline watershed, east of Lake Phalen, to reduce peak flows into the Beltline interceptor and overland runoff that reaches Ames Lake. The concurrent evaluation is being conducted because the Beltline is already over capacity, and initial simulations indicate that other modifications in addition to operation of the outlet structure may be required to reduce flood risk for existing structures.

In addition, Barr is evaluating the potential to divert flow from Lake Owasso directly into Gervais Creek, bypassing Lake Wabasso, Grass Lake, and West Vadnais Lake with flood flows. Modifications to the Lake Owasso outlet structure are being evaluated to reduce flood risk for structures on Lake Owasso. After determining the needed volume of stormwater to be diverted, the RWMWD stormwater model will be used to identify impacts within the Gervais Creek subwatershed, Phalen Chain of Lakes, and Beltline interceptor to evaluate whether a diversion from Lake Owasso is feasible.

The study is phased so that flood-prone areas in the upstream portion of the watershed are addressed first, working downstream. If the study can show improvements to and operations of the system can reduce flood impacts to structures, recommendations for actual field modifications will be offered for future capital improvement programming.

District office permeable asphalt parking-lot retrofit (Barr project manager: Matt Kumka; RWMWD project managers: Tina Carstens and Paige Ahlborg)

The purpose of this project is to assess the performance of the permeable asphalt parking lot at the watershed district office and create a range of retrofit options for the board and staff to consider.

The option that includes drilling numerous 2- to 4-inch-wide holes through the clogged porous asphalt in key locations through the parking lot and backfilling those holes with stone is planned to be implemented this spring. Barr will work with the RWMWD to implement this option when conditions allow.

Twin Lake public meetings (Barr project manager: Brandon Barnes; RWMWD project manager: Tina Carstens)

The purpose of this project is to provide technical assistance for the City of Little Canada to respond to resident questions regarding the high water levels in Twin Lake.

In October 2018, Barr and the RWMWD attended a neighborhood meeting facilitated by the City of Little Canada in response to several residents reporting higher-than-normal water levels in Twin Lake. Barr provided background on the drainage patterns of the Twin Lake watershed, recent survey information

for storm sewer pipes, historic rainfall records, general groundwater characteristics, water quality measurements, and lake levels.

On March 12, 2019, Barr and the RWMWD attended a follow-up meeting, also facilitated by the City of Little Canada. Barr presented information to address residents' questions from the first public meeting, including how or if the "Unweave the Weave" project affected drainage patterns and historic water levels for East Vadnais Lake and Twin Lake. Following the October meeting, residents provided photographs of lake levels dating back to the mid-1990s, which were used to estimate historic lake levels. Barr used the RWMWD's stormwater model to demonstrate that the recent rise in lake levels was a result of wetter-than-normal years. During the meeting, several questions related to water quality and future lake levels were raised; the RWMWD informed residents that it would continue to monitor both water quality and lake levels. Several residents were also interested in discussing shoreline restoration with the RWMWD, as well as available watershed grants.

Federal Emergency Management Agency (FEMA) flood mapping updates (Barr project manager: Brandon Barnes; RWMWD project manager: Tina Carstens)

The purpose of this project is to apply Minnesota Department of Natural Resources (DNR) grant funding to use the RWMWD's updated stormwater model to develop information required to update the FEMA floodplain maps.

The RWMWD stormwater models were submitted to the Interagency Hydrology Review Committee (IAHRC) for review. The IAHRC reviews hydrologic models prior to them being used to update FEMA floodplain maps. As part of the review, the IAHRC will provide comments on the methodology used to calculate runoff from the subwatershed and review hydrologic input parameters and simulation results. The model was submitted with a memorandum summarizing the methodology used to calculate hydrologic parameters, updates to the model based on DNR information, and results of the model validation completed last year. We anticipate receiving comments from the IAHRC later this month, which will be incorporated into the model this spring. In June, we plan to submit a draft of the hydraulic calculations for DNR the next level of review.

Concurrent to IAHRC review, Barr is evaluating flood levels in Twin Lake and Snail Lake. These are land-locked lakes, so runoff volume has a significant impact on the 100-year floodplain elevation. Barr is reviewing historic lake-level measurements and using the RWMWD stormwater model to run several years of rainfall. The measured elevations and historic simulations will then be reviewed to estimate the floodplain elevation for these water bodies.

Also in April, Barr will continue developing preliminary floodplain maps and completing floodway analyses for the outlet of Lake Wabasso and channel upstream of PCU Pond, where the FEMA maps delineate a floodway. We will continue to communicate with the DNR regarding additional information to incorporate into the RWMWD's model, including comments from the IAHRC review. The process for updating the FEMA floodplain maps is expected to continue through April 2020.

West Vadnais lakes outlet permitting with the DNR (Barr project manager: Erin Anderson Wenz; RWMWD project manager: Tina Carstens)

The purpose of this project is to coordinate permitting efforts for the proposed Snail, Grass, and West Vadnais lakes outlets with the DNR.

Now that lakes are thawing, district staff is in contact with Stephanie McNamara, the Vadnais Lake Area Water Management Organization's (VLAWMO) administrator, to confirm VLAWMO's next steps and RWMWD's potential role in evaluating bathymetry on the north end of West Vadnais Lake as well as conducting a MnRAM (Minnesota Routine Assessment Methodology) assessment of the area's wetlands that could be impacted by lowering West Vadnais Lake's outlet. In the meantime, we will submit the information that has already been gathered, as well as a historical desktop evaluation of the wetlands' history and potential for restoration in the context of lowering the lake, to DNR hydrologist, Jen Sorenson, for feedback.

Modeling of 500-year Atlas 14 district-wide (climate change scenario): flood map generation for future outreach efforts (Barr project manager: Brandon Barnes; RWMWD project manager: Tina Carstens)

The purpose of this project is to use measured water-surface elevations to verify and fine-tune water surface elevations calculated by the RWMWD stormwater model. Following validation, the model will be used to simulate larger rainfall events, including the 500-year rainfall depth. The confidence limit (or uncertainty) associated with the 500-year flood elevation will be used to develop inundation maps that will allow for evaluation of how future climate change may affect flood inundation areas within the RWMWD and will be used for discussion with stakeholders when evaluating future flood-risk reduction projects within the RWMWD.

In the near future, the RWMWD's model will be used to simulate rainfall events with different recurrence intervals now that the model has been updated with information from the DNR to update the FEMA floodplain maps. Model updates were substantially complete in February 2019. Currently, we are waiting for DNR comments to confirm that no changes are requested for the FEMA map updates. Simulation of design rainfall events could begin following receipt of DNR comments. This effort will help us better understand how lesser storms, other than the 100-year and 500-year events, affect (or do not affect) low-lying structures in order to prioritize projects in areas that flood during more frequent events.

Wetland restoration site search (Barr project manager: Karen Wold; RWMWD project manager: Paige Ahlborg)

The purpose of this project is to conduct a desktop review to identify potential wetland restoration sites throughout the RWMWD. This project was initiated because the Minnesota Wetland Conservation Act rules and statute are changing their focus to allow wetland replacement in areas outside of the RWMWD, there are no wetland banks within the RWMWD, and the RWMWD has a "no net loss" policy for wetlands within its boundaries.

This period, Barr scoped the project, as documented in the scope summary presented in last month's board packet. In addition, we prepared an initial base map and reviewed previous MnRAM information for potential restoration sites.

Automated lake-monitoring systems (Barr project manager: Chris Bonick; RWMWD project manager: Eric Korte)

The purpose of this project is to install an automated system to monitor lake levels throughout the RWMWD and allow real-time transfer of data to the RWMWD's website for public consumption.

Barr continues to set up, program, and bench test the equipment for the Phalen, Wabasso, and Owasso stations in preparation for installation this spring. The subcontractor will begin installing utilities and the shelters when ground conditions are suitable. Ramsey County Parks is still considering the proposed monitoring stations on Grass and Snail lakes. We anticipate that these stations and their locations will be approved for installation on county property; however, the approvals are not expected until later this spring or early summer. These monitoring stations will be used in conjunction with the emergency response plans to help guide plan implementation to protect homes.

Maplewood Mall monitoring (Barr project manager: Matt Kumka; RWMWD project manager: Paige Ahlborg)

The purpose of this project is to assess the functionality of the Maplewood Mall stormwater retrofit project as it enters its fifth year of total completion. Features that will be inspected include all stormwater infrastructure, plantings, and tree growth. The findings, including site improvement and maintenance recommendations, will be summarized and presented to the board.

Barr is preparing plans and specifications to replace the trees, as recommended to the board in February. A draft set of bidding documents will be available for RWMWD staff review in April. The tree replacements are planned for later this spring. A formal bidding process is unnecessary for this effort.

Spent-lime pond application research project (Barr project manager: Greg Wilson; RWMWD project manager: Eric Korte)

This project is a partnership between Barr (funded through the Minnesota Stormwater Research Council), the RWMWD, City of Maplewood, St. Paul Regional Water Services (SPRWS), and VLAWMO. The project will consist of a pond application of spent lime to control internal phosphorus loading in Wakefield Pond, the small stormwater pond immediately south of Wakefield Lake and north of Larpenteur Avenue.

On March 11, Barr and the RWMWD hosted a kickoff meeting with project stakeholders. Scope, schedule, budget, and roles and responsibilities were discussed and the project elements were presented.

Iron-aggregate pond application research project (Barr project manager: Tyler Olsen; RWMWD project manager: Eric Korte)

The purpose of this project is to provide monitoring and data evaluation support for University of Minnesota's St. Anthony Falls Lab's (SAFL's) research project at Shoreview Commons Pond (on the City of

Shoreview City Hall's campus). The project involves evaluating the effectiveness of adding iron aggregate to pond sediments to control the internal load of phosphorus from rich pond sediments.

There was no activity this month; Barr and RWMWD staff await the iron aggregate application that will occur before ice-out or shortly thereafter. SAFL's laboratory experiments have already determined the iron aggregate dose that will be applied to the pond.

Capital improvements

Wakefield Park/Frost Avenue stormwater project (Barr project managers: Michelle Kimble; RWMWD project manager: Paige Ahlborg)

The purpose of this project is to work with the City of Maplewood and its consultants to develop a site plan that involves stormwater management features with associated educational elements for the northern portion of Wakefield Park.

As you may recall, the board approved the permit for this project at its March 6 meeting. The City of Maplewood facilitated the bid opening on March 21, and contract award is expected on April 8. Bid information has not yet been shared. But, construction is anticipated this spring and summer and is planned to be complete by November 1, 2019.

Targeted retrofit projects (Barr project manager: Matt Kumka; RWMWD project manager: Paige Ahlborg)

The purpose of this project is to design, provide bid assistance for, and oversee construction of BMP retrofits on previously identified commercial, school, and faith-based properties throughout the RWMWD.

On March 22, bids were received for the BMP retrofits at Redeemer Lutheran Church in White Bear Lake and Cornerstone Montessori in St. Paul. These projects include three rain gardens, a shoreline buffer installation, and an erosion-control repair at the school's play yard. We received three bids for this project. The design estimate was $114,440.00. The low bidder, Outdoor Lab Landscape Design Inc., came in at $117,334.25.

Roseville High School campus stormwater retrofit (Barr project manager: Leslie DellAngelo; RWMWD project manager: Paige Ahlborg)

The purpose of this project is to complete the conceptual-level design of BMP retrofit projects on the campus of Roseville Area High School, coordinate the design and construction of the BMP retrofit projects with Roseville Area High School and its engineers, develop final designs, complete construction documents (plans and specifications), bid the project, and oversee construction.

Barr has completed the conceptual-level design of the BMP retrofit projects, including one regional filtration BMP and eight local bio-infiltration/filtration BMPs. Cost estimates and water quality benefits were updated, and results were summarized in a memorandum that was submitted to the RWMWD for review. Final design will commence this spring.

Willow Pond CMAC Project (Barr project manager: Erin Anderson Wenz; RWMWD project manager: Tina Carstens)

The purpose of this study is to evaluate the feasibility of using CMAC technology in a project that involves diverting flows from Willow Pond to a filter that will remove dissolved and particulate phosphorus to benefit Bennett Lake.

Construction is substantially complete. This month, the CMAC valve and associated instrumentation were installed. The project is expected to be closed out in April or early May, as weather permits. As soon as the weather is reliably warm, the system will be put online and monitored. Barr expects that some system optimization will be necessary during this first season of use.

Cottage Place wetland restoration (Barr project manager: Fred Rozumalski; RWMWD project manager: Paige Ahlborg

The purpose of this project is to evaluate options for restoring the wetland south of the St. Odelia Church property and west of the Cottage Place cul-de-sac in Shoreview. A restored wetland could be used to offset wetland loss in other parts of the RWMWD.

This period, Barr scoped the project and described the various banking options associated with a potential wetland restoration project in the area (as documented in the scope summary presented in last month's board packet). In addition, we began the project's phase I environmental site assessment, which involves creating a report that identifies potential or existing environmental contamination liabilities. After this initial step is complete, we will communicate results to the board to confirm desired next steps.

Markham Pond aeration project and grant reporting (Barr project manager: Keith Pilgrim; RWMWD project manager: Bill Bartodziej)

The purpose of this project is to obtain the necessary permits and install aeration to prevent winter fish kill in Markham Pond.

Barr and RWMWD staff are in the process of preparing the DNR permit application that will allow the District to purchase and install equipment and power prior to the grant's expiration in August 2019.

Aldrich Arena site design (Barr Project Manager: Matt Metzger; RWMWD project manager: Paige Ahlborg)

The purpose of this project is to incorporate green-infrastructure stormwater management into the Aldrich Arena campus renovations. The parking lot will be milled and overlaid and/or full-depth reclaimed by Ramsey County, which would not trigger the need for a RWMWD permit. The partnership between the RWMWD and Ramsey County will achieve treatment of runoff from the parking lots where none currently exists.

At the January board meeting, a preliminary concept plan of the site's stormwater management features was presented to the board. The board instructed Barr to "dream big" in terms of stormwater improvements features, public art, and landscaping. The importance and visibility of the site were discussed at length.

Barr has since had additional meetings with Ramsey County and its design/build consultant to further the design. We are working to complete design documents by Memorial Day. This schedule will allow construction to begin in August 2019. Coordination meetings with the golf dome management and City of Maplewood are approaching. The schedule is being driven by Ramsey County's negotiations with the developer (Loeffler); we understand that they are in the process of negotiating a design-build arrangement for modifications to the arena and reconstruction of the parking lots. Barr is contracting directly with the developer's architect to assist with the non-stormwater civil design work.

CIP project repair and maintenance

CIP maintenance/repairs 2019 project (Barr project manager: Greg Nelson; RWMWD project manager: Dave Vlasin)

The purpose of this project is to maintain the existing systems and infrastructure owned and operated by the RWMWD and to assist and facilitate stormwater pond cleanouts to allow other public entities to meet their municipal separate storm-sewer system (MS4) requirements.

Work continues to progress well and on schedule. Weekly progress meetings are keeping the project on track and all parties informed. Payment application 3 is included in the bill list for the board's consideration.

New technology review

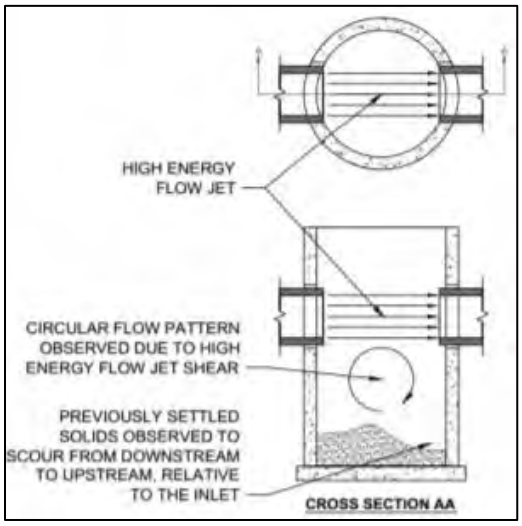
Preserver pretreatment

Innovative technology	The Preserver is a pretreatment technology used to remove solids from stormwater. The technology acts as an energy dissipater in sump manholes, slowing inflows to allow for solids to settle out in the manhole before leaving the structure.
Use	Removes solids (sediment and large debris) from stormwater in a storm sewer network
Benefits of technology	▪ Enhances removal of suspended sediment ▪ Suppresses scour during large storm events and retains captured sediment ▪ Captures and retains floatable pollutants like trash ▪ Installable into existing sump manholes ▪ Easy maintenance
Drawbacks	▪ Energy-dissipating holes may be more easily blocked by trash or large debris ▪ Multiple pieces for installation, compared to typical baffle structures
Case studies/ applications	▪ Applications include new and existing sump manholes in drainage areas with suspended solids removal requirements ▪ County State Aid Highway (CSAH) 23 reconstruction (Oak Park Heights, Minnesota) - The Preserver was installed to provide pretreatment for an infiltration basin receiving discharge from the construction of CSAH 23 in 2017 in Washington County. - The drainage area was 1.94 acres with 0.66 acres of impervious coverage. - Overall, the Preserver captured 2,418 pounds (dry weight) of solids, including 0.232 pounds (dry weight) of total phosphorus and 0.419 pounds (dry weight) of heavy metals (arsenic, copper, lead, zinc) attached to solids. ▪ Villa Park stormwater improvements (Roseville, MN) - The Preserver was installed to provide pretreatment for an irrigation cistern. - The drainage area was 8 acres with 2.4 acres of impervious coverage. - The Preserver captured 2,768 pounds (dry weight) of solids, including 0.526 pounds (dry weight) of total phosphorus and 0.256 pounds (dry weight) of heavy metals (arsenic, copper, lead, zinc) attached to solids.
Suppliers/contacts	Momentum Environmental 877-773-0073 http://www.momentumenv.com/ Supplied by Advanced Drainage Systems (https://www.ads-pipe.com/)

Conclusion	The Preserver has been shown to treat stormwater effectively, removing suspended solids and debris. The Preserver can be used as a pretreatment structure upstream of basins, or as infiltration features to minimize solids loading. The Preserver shows comparable results to similar technologies (i.e., SAFL Baffle). However, the clogging potential of the Preserver compared to common baffles is unknown. The case studies showed that during low flows, the Preserver clogged with leafy debris, but the debris was washed out during high flows.

Technology description

Sump manholes are traditionally used to remove sediment from storm sewer systems to reduce loading to downstream features or water bodies. A typical cross section and top view of a sump manhole is shown in the figure to the right. In the diagram, flow moves from left to right through the storm sewer pipes, and solids settle at the bottom of the sump. However, during high flow regimes, solids can be scoured due to high velocity recirculation and reenter the downstream pipe.



To reduce resuspension and increase solids removal, structures can be installed within the sump manhole to reduce flows and direct solids settling. The structures are typically baffles, vortex separators, false floors, or skimmers. The Preserver is similar to a typical baffle design (the commonly used SAFL Baffle is shown in Figure 1), but with two high-density polyethylene panels installed in the manhole near the inlet and outlet. The inlet panel acts as an energy dissipater with holes to allow for large debris to pass through. The outlet panel acts as a skimmer to prevent large floating debris from leaving the manhole downstream. A diagram of the Preserver is shown in Figure 2.

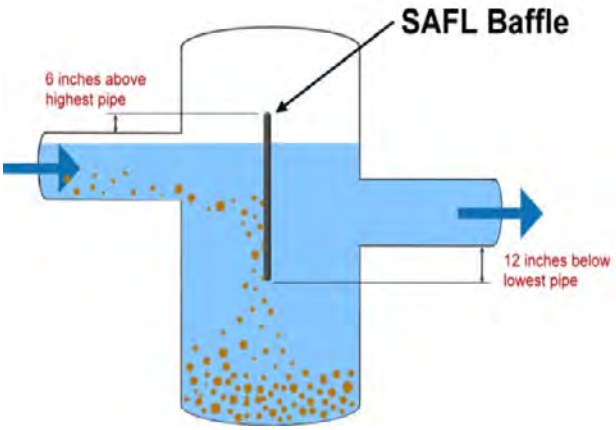


Figure 1: SAFL Baffle diagram (upstreamtechnologies.us)

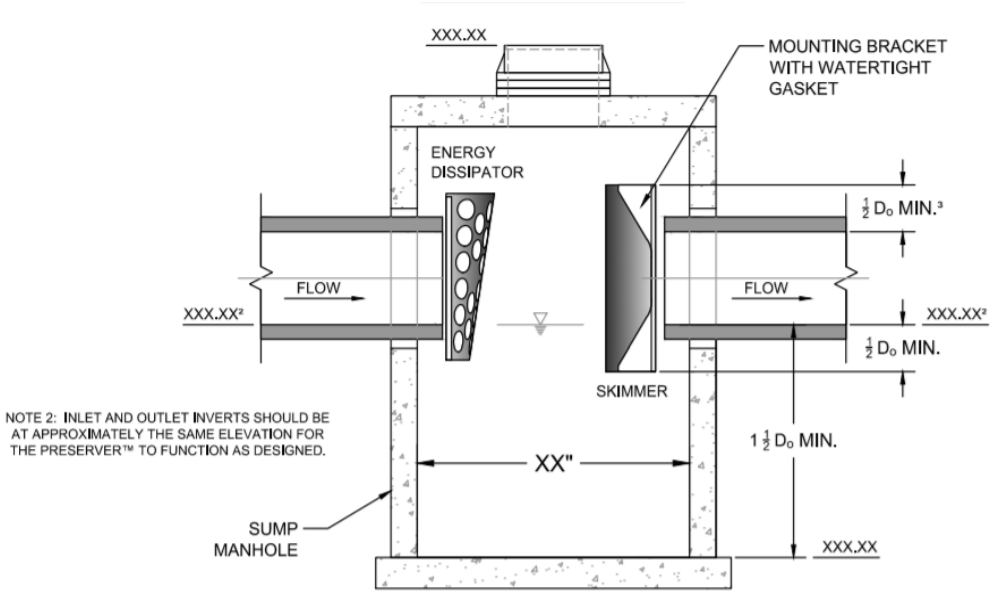


Figure 2: the Preserver diagram

Design

The Preserver can be installed in any new sump manhole or retrofitted into existing sump manholes. The sizing and angle of the Preserver can vary depending on the manhole dimensions as well. Below in table 1 and 2, Momentum Environmental provides recommended angles at which to install the Preserver based on the manhole diameter. Figure 3 and Figure 4 show how to determine the design angle for the Preserver's energy dissipater and skimmer.

Table 1: manhole sizing chart—multiple inlet and outlet

Pipe Diameter[1]	Manhole Diameter[1]															
	4'		5'		6'		7'		8'		9'		10'		12'	
	Recommended Minimum Angle Between Stock Preserver Components[2]															
12"	45°	46°	35°	37°	28°	29°	23°	24°	20°	20°	18°	18°	16°	16°	14°	13°
15"	51°	51°	41°	41°	33°	32°	27°	29°	23°	24°	20°	21°	18°	18°	15°	15°
18"	56°	56°	45°	46°	36°	34°	30°	33°	26°	27°	22°	23°	20°	20°	16°	16°
21"	61°	64°	49°	53°	39°	38°	33°	39°	28°	31°	25°	26°	22°	23°	18°	18°
24"	67°	71°	53°	61°	43°	42°	36°	44°	31°	36°	27°	29°	24°	25°	20°	20°
27"	72°	80°	57°	59°	46°	50°	39°	37°	33°	39°	29°	32°	25°	27°	21°	20°
30"			61°	65°	49°	58°	42°	42°	36°	42°	31°	34°	27°	29°	22°	22°
36"	*Contact Momentum*				56°	64°	47°	57°	41°	42°	35°	42°	31°	34°	26°	25°

1) Angles are accurate for circular pipes and manholes (any material). Contact Momentum to determine feasibility of designs with pipe and manhole sizes not listed, or for non-circular pipes and manholes.
2) Color legend: **Energy Dissipator** **Floatables Skimmer**
Angles are conservative in that only stock components are included and space is included between components for ease of installation. Alternative installation methods and custom components may be used to reduce angles.

Table 2: manhole sizing chart – single inlet and outlet

Pipe Diameter[1]	Manhole Diameter[1]															
	4'		5'		6'		7'		8'		9'		10'		12'	
	Minimum Angle Between Stock Energy Dissipator and Outlet Pipe[2]															
12"	35°	32°	27°	26°	22°	22°	19°	19°	17°	17°	15°	15°	14°	14°	13°	13°
15"	41°	38°	33°	30°	26°	26°	22°	22°	20°	20°	18°	18°	16°	16°	15°	15°
18"	46°	43°	37°	34°	30°	29°	25°	25°	22°	22°	20°	20°	18°	18°	16°	16°
21"	51°	49°	41°	38°	33°	32°	28°	28°	25°	25°	22°	22°	20°	20°	18°	18°
24"	57°	56°	45°	43°	36°	36°	31°	31°	27°	27°	24°	24°	22°	22°	20°	20°
27"	62°	60°	49°	46°	40°	38°	33°	32°	29°	29°	25°	25°	23°	23°	21°	20°
30"	69°	69°	53°	51°	43°	42°	36°	35°	31°	31°	28°	28°	25°	25°	22°	22°
36"			62°	59°	50°	48°	42°	40°	36°	35°	31°	31°	28°	28°	26°	25°

1) Angles are accurate for circular inlet pipes and manholes (any material), and circular concrete outlet pipes. Contact Momentum to determine feasibility of designs with pipe and manhole sizes not listed, for non-circular pipes and manholes, and for non-concrete outlets.

2) Color legend: **Energy Dissipator** **Outlet Pipe**

Angles are conservative in that only stock components are included and a concrete outlet pipe is assumed.

Custom components may be used to reduce angles.

Contact Momentum for project specifc details to ensure fit and function (recommended).

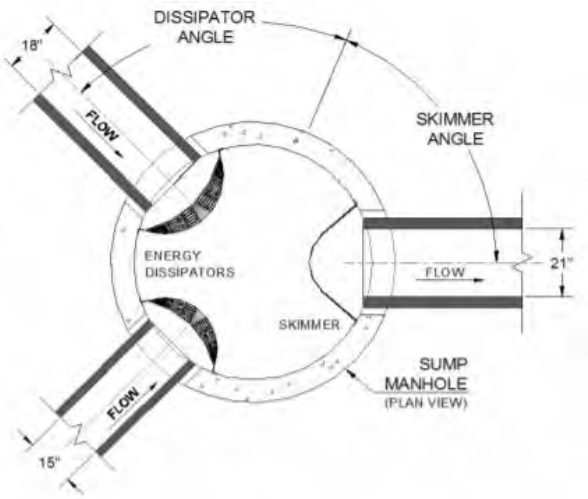


Figure 3: design angles for the Preserver—multiple inlet and outlet

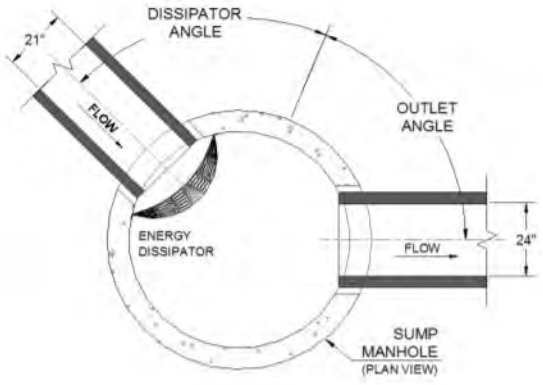


Figure 4: design angles for the Preserver—single inlet and outlet

Effectiveness

Several case studies have been conducted to determine the effectiveness of the Preserver. One of these include the CSAH 23 reconstruction in Oak Park Heights, Minnesota. The contributing drainage area was 1.94 acres of residential land use with 25.4-percent impervious coverage. Over one year after installation, the Preserver captured 2,418 pounds of solids, 0.232 pounds of total phosphorus, and 0.419 pounds of heavy metals including arsenic, copper, lead, and zinc. Another case study is at Villa Park in Roseville, Minnesota. The Preserver was installed as pretreatment for an irrigation cistern. The drainage area was 8 acres with 30-percent impervious coverage. The Preserver captured 2,768 pounds of solids, 0.526 pounds of total phosphorus, and 0.256 pounds of heavy metals.

Overall, Momentum Environmental states that the Preserver performs similarly to other commercially available pretreatment structures. However, no results have been published for the clogging potential of the Preserver. The SAFL Baffle, a similar product, has been laboratory tested for clogging and efficiency

of the product when clogged. Without published results for the Preserver, it is recommended to monitor the clogging potential in any Preserver installed.

Cost

The cost for each component of the Preserver (energy dissipater and mounts, skimmer and mounts, and shipping cost) are included in Table 2, as provided by Momentum Environmental. These costs do not include labor hours and mobilization/demobilization costs. It is estimated that installation will require approximately 0.5 hours for two people.

Table 2: component costs for the Preserver

Pipe size	Energy dissipater	Skimmer	Shipping[1] ($150/component)	Total
12 to 15 inches	$2,175	$1,425	$300	$3,900
18 to 21 inches	$2,835	$2,100	$300	$5,235
24 to 27 inches	$3,375	$2,970	$300	$6,645

[1]*Shipping costs assume that one energy dissipater and one skimmer are required. If there are multiple inlets/outlets, the shipping cost will increase by $150 per component.*

Installation and maintenance

Installation of the Preserver is not intensive. The steps recommended by Momentum Environmental are:

1) Align and attach the mounting brackets to the manhole wall.
2) Attach the energy dissipater(s) and skimmer(s) components to the mounting brackets (mounting hardware, drill bits, and drivers are included).

It is recommended that the sump manhole be cleaned and inspected one to two times per year. Items to look for during inspection include pollutant depths, whether maintenance/cleaning has been performed, structural condition, site condition, pollutant composition, and water level in the sump manhole. A vacuum truck can be used to clean out the sump manhole of accumulated sediment. Large debris should be cleaned from the energy dissipater if it is clogged. A sample inspection form is shown in figure 6.

Conclusion

Overall, the Preserver is an effective option for pretreatment in new or existing sump manholes to remove solids from stormwater upstream of receiving treatment features or water bodies. The Preserver provides comparable treatment efficiencies to other commercially available products, such as the SAFL Baffle. The Preserver's flexible design allows for installation in a range of sump manhole sizes. The installation and maintenance of the Preserver is relatively simple, and the design provides added ease of maintenance. The cost is also similar to other products. A potential drawback is that the Preserver's clogging may potentially decrease its effectiveness, but more information is needed to determine how much of an impact or risk clogging poses.

Natural Resources Update – Bill Bartodziej and Simba Blood

"Smart" Aquatic Plant Harvesting - Draft Journal Article

Below is a draft article on aquatic plant harvesting from work (2015) conducted on Kohlman Lake. We plan to submit the paper to the North American Lake Management Society's *Lakeline* journal.

The premise of the paper has to do with using data to come up with sound aquatic plant harvesting approaches, and using this tool in comprehensive lake and watershed management plans.

For your reference, we have highlighted two passages where the Board of Managers has been mentioned. As always, we appreciate the Board support in making these hybrid management-research projects like this happen. We believe that the synthesis of the harvesting approach and applied data coming from this study will help other lake and watershed managers make informed decisions. Please let us know if you have editing suggestions. We very much appreciate your review.

"*Smart*" Aquatic Plant Harvesting in Lake Management

Bill Bartodziej, Keith Pilgrim, and Simba Blood

Introduction

The earliest record of aquatic plant harvesting taking place in the Phalen Chain of Lakes Watershed in the Twin Cities (Minnesota) dates back to 1923. At that time, the county engineer stated that: "Weed growth has an evil effect on Ramsey County lakes in several ways" (Coates 1924). Hence, a paddle-wheel boat was customized with a mechanical cutting blade to chop vegetation under the water (Figure 1). This vegetation would then float to the surface, be laboriously harvested by hand, and then piled on the shore to dry. The main objectives of this operation were to create open water for navigation and improve the look of the lake. The practitioners were innovative county workers who were not privy to even the most basic concepts of limnology. The plants were just an unsightly physical barrier that had to be removed.

Fast-forward almost 100 years, and it's interesting to see that aquatic plant harvesting has become considerably more efficient with bigger, faster, and more powerful machines. But perhaps the most substantial innovation has to do with how we use harvesting as a tool to reach comprehensive lake management objectives. Spurred on by advances in data collection and machine learning, savvy marketers are helping us become aware that our everyday goods and

services are new and improved, and even "smart." We have smart cars, smart accounting, smart homes, smart vacuums, and even smart golf. Over the last decade, we have seen progress in mechanical aquatic plant control, especially how we use data, and how we integrate this tool into lake management. So why not borrow the label and introduce the idea of "smart" aquatic plant harvesting?

The definition

We define smart aquatic plant harvesting as the thoughtful, strategic, and data-driven mechanical removal of vegetation where a multitude of lake factors and management objectives are taken into consideration. Balancing navigation, recreation, aesthetics, water quality, and the ecological function of the target lake system is paramount with this approach. Smart harvesting often fits well with lake and watershed management plans, and could be a component in Total Maximum Daily Load (TMDL) reduction plans. In general, the aquatic plant community is viewed as a critical component in lake systems and control must proceed judicially. Best professional judgement and available data are used to set limits on the aquatic plant harvest. When applicable, modest harvesting efforts over a several month period are employed to safeguard against potential overharvest. Data is collected during the operation to assess the effects of harvesting.

The backstory: improving Kohlman Lake's water quality

Surrounded by urban-residential land use, Kohlman (36 ha) is the northernmost lake of the Phalen Chain of Lakes (Figure 2)**.** This lake is relatively shallow, with a maximum depth of 4 m and the littoral area covering a majority of the lake surface, but is still popular for boating and fishing. In the 1980s and 90s, total phosphorus levels (TP) were high, with a growing season average of near 100 ug/l, but Kohlman still supported a rooted aquatic plant community with moderate algal blooms that did not impede recreational use. Shoreland owners were generally happy with the overall condition of Lake Kohlman.

In 2008, the Minnesota Pollution Control Agency placed Kohlman on the 303(d) Impaired Waters List due to growing season TP levels being consistently over the state standard of 60 ug/l. This triggered the Ramsey-Washington Metro Watershed District (RWMWD) to conduct a Total

Maximum Daily Load (TMDL) study. It was estimated that the watershed contributed 426 kg of TP and Kohlman experienced an internal TP load of 132 kg during a normal precipitation year. Mass balance modeling suggested that growing season reductions of 95 kg (22%) of TP from the watershed and 116 kg (88%) from internal loading would be needed to meet the state standard. Alum treatment, common carp management, and watershed best management practices were used to substantially reduce TP loading (Bartodziej et al. 2017a). This combination now seems to be a fairly standard approach for TP management in Twin Cities area shallow lakes. Since project implementation, transparency and TP values in Kohlman have satisfied the state standards (Figure 3).

The aquatic plant quandary

With an increase in water quality we observed a corresponding increase in the abundance of aquatic plants. A majority of the littoral zone had macrophytes growing to the surface, and a good portion of this plant material was colonized by filamentous algae (Figure 4). Kohlman reaching a "clear water state" and sustaining a lush aquatic plant cover was one of our primary educational messages at the beginning of the project. In our discussions about the expected plant community changes with the public, we would use straightforward phrases like, "clear water grows plants" and "a lot of plants in a shallow lake is normal". But in reality, public education can only go so far. Once a popular recreational lake is dominated by large expanses of surfaced vegetation, most shoreland owners and lake users become frustrated and eventually turn disgruntled.

An opportunity to develop smart harvesting

Although the RWMWD is not in the business of aquatic plant management, we believe that this was a special situation where state rules prompted action that resulted in a complicated resource management situation. With the robust database that exists on Kohlman, it was our aim to conduct harvesting on an experimental basis and seek a balance with water quality regulation, watershed management, ecological function, and human use of the lake resource. Our Board of Managers supported the idea that this was a learning opportunity and a goodwill effort unassociated with any sort of legal obligation.

Aquatic plants provide several ecosystem services such as habitat, food, cover and shading, temperature moderation, and nutrient uptake and sequestration and as such naturally lie at the center of the shallow lake ecosystem (Carpenter and Lodge 1986). Aquatic plant management should strive to minimize the disturbance of these critical services. The role of aquatic plants in moderating phosphorus availability and phytoplankton blooms is qualitatively understood but rarely quantified by most lake managers. It is largely recognized that any management activity that measurably affects aquatic plants also has the potential to affect phosphorus, triggering phytoplankton blooms, and affecting lake clarity. For those tasked with managing water quality as well as aquatic plants, the question naturally arises: "To what degree can we manage plants without affecting water quality?" While this question was being asked for Kohlman Lake, it was soon clear that the literature did not provide concrete answers.

Harvesting approach and data collection

In 2015, the RWMWD employed a private contractor to conduct macrophyte management between June 29 and August 27. A paddlewheel driven harvester with a 2 m cutting swath with a 1 m cutting depth was used on Kohlman. To seek a balance with recreation, water quality, and ecological function, our overall goal was to keep 20-25 ha in the center of the lake perpetually free of surfaced aquatic plants and algae during the growing season. On average, the harvester worked 2 to 3 days per week to keep this area open. We instructed the harvester not to use "deep cuts" – over 1 m in depth. This decreased the efficiency of the operation, but safeguarded against overharvest. We used sonar, point-intercept surveys, and plant biomass sampling to closely monitor the aquatic plant community. GPS mapping was used to track the harvesting. Harvested plant material was hauled off site to a local public works yard for composting. The total wet weight of each harvesting effort was calculated using the total number of trailer loads and the average plant material payload weight. Random plant samples were taken off the trailer and sent to a laboratory for TP and wet to dry weight analyses.

We formulated a list of data necessary to quantitatively assess the effects of harvesting. This list included: (1) phosphorus in submerged plant tissue and in attached filamentous algae, (2) total biomass of plants and algae during the growing season, (3) water quality in Kohlman Lake and in the tributaries, (e.g., phosphorus, solids, chlorophyll *a*), (4) mass of plants harvested over

time, and (5) mass of phosphorus harvested in plants. To glue these data together and understand the effect of harvesting, a custom one-dimensional, completely mixed mass balance water quality model was built that include inflows (flow and chemistry), lake temperature, climate (e.g., solar radiation), settling, phytoplankton growth and mortality, and aquatic plant growth and mortality. This model was used to quantify the Kohlman Lake phosphorus mass balance including uptake by aquatic plants and removal by harvesting, aquatic plant growth rate and deduced effects of harvesting, and the overall effects of harvesting on phytoplankton growth and abundance.

Effects of harvesting

The depth of cut and the extent of harvesting can be surmised from the sonar images in Figure 5 below. Recreation was not substantially impeded by macrophytes and lake users were generally happy with the harvesting approach. One of the goals of smart harvesting is to avoid severely setting back the native macrophyte community through overharvest. Our measurements of aquatic plant biomass and modeling simulation suggest that aquatic plant growth was not affected by the harvesting (Figure 6). It's reasonable to consider that this had to do with the conservative approach of only cutting to a depth of 1 m.

Water quality monitoring data also suggest that the extent of harvesting did not impact water quality as total phosphorus remained within recently observed historic ranges during harvesting (Figure 7). There was a slight decrease in Secchi disk depth at the start of harvesting, however this corresponded with a large storm event delivering high flows and phosphorus. Modeling confirms that increases in phosphorus and reduced Secchi disk depth in July was a function of external load. Furthermore, harvesting in August corresponded to a decline in phosphorus and Secchi disk depth which were a response to lowered external loads.

Plant mass and phosphorus removal through harvesting

While substantial harvesting took place to preserve recreation, the mass of plants harvested was just under 20% of the peak mass measured in the lake. Modeling was necessary to account for the macrophyte dynamics, which included both growth and mortality. As a result, phosphorus uptake by plants (218 killograms) was more than may be estimated by stand-alone plant biomass and phosphorus measurements. Aquatic plants were capturing a significant

fraction of the phosphorus delivered by tributaries to Kohlman Lake (Table 1). The dominant plant species were coontail (*Ceratophyllum demersum*), Canada elodea (*Elodea Canadensis*), and a mix of surfaced filamentous algae. Harvesting removed 15% of the TP captured by macrophytes, and this accounted for over 4% of the TP load from external sources.

Because harvesting removes a considerable amount of TP, the idea of incorporating this activity in TMDL studies as well as using submersed plants in water treatment systems has been discussed (Reisinger et al. 2008, Evans and Wilke 2010, Souza et al. 2013,). In addition, the cost of TP removal by macrophyte harvesting is quite economical when compared to phosphorus management practices that take place in upland watershed areas, e.g., rain gardens (Bartodziej, et al. 2017b). The cost of TP removal was $318 per kg in Kohlman, and this is comparable to estimates generated from another RWMWD harvesting study. Harvesting certainly presents cost-effective opportunities for TP removal, and has the potential to factor into dynamic and creative watershed management approaches. For instance, the RWMWD Board of Managers, recently passed a resolution supporting a cost-share program for aquatic plant harvesting. Although as an organization the RWMWD does not manage aquatic plants, the Board will financially support and partner on harvesting efforts that fit into comprehensive TP reduction plans. This approach may gain some popularity as resource management organizations are more and more dealing with excessive macrophyte growth after TMDL implementation, especially for shallow lake systems.

Management implications

Best professional judgement is always a component of lake and natural resources management, and this certainly came into play when setting a harvesting plan for Kohlman Lake. We really didn't have the luxury of citing a body of literature to support our management decisions. But having a robust historical dataset on Kohlman and collecting data while harvesting gave us some comfort that we were not totally "flying by the seat of our pants." The smart harvesting approach helped us to better assess our plant management activities and aid in determining how this activity fits into more comprehensive lake and watershed management plans. As more smart harvesting studies become available, robust datasets will help managers determine precise harvesting objectives and relate these to water quality and other natural

resources goals. We think back 100 years ago, when the managers of the Phalen Chain of Lakes considered all macrophytes "evil" that must be destroyed by mechanical means. We have certainly come a long way, and we look forward to how smart harvesting can contribute to resource management in the future.

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Figure 1. A 1924 Ramsey County harvester working in Keller Lake.

Figure 2. The Phalen Chain of Lakes.

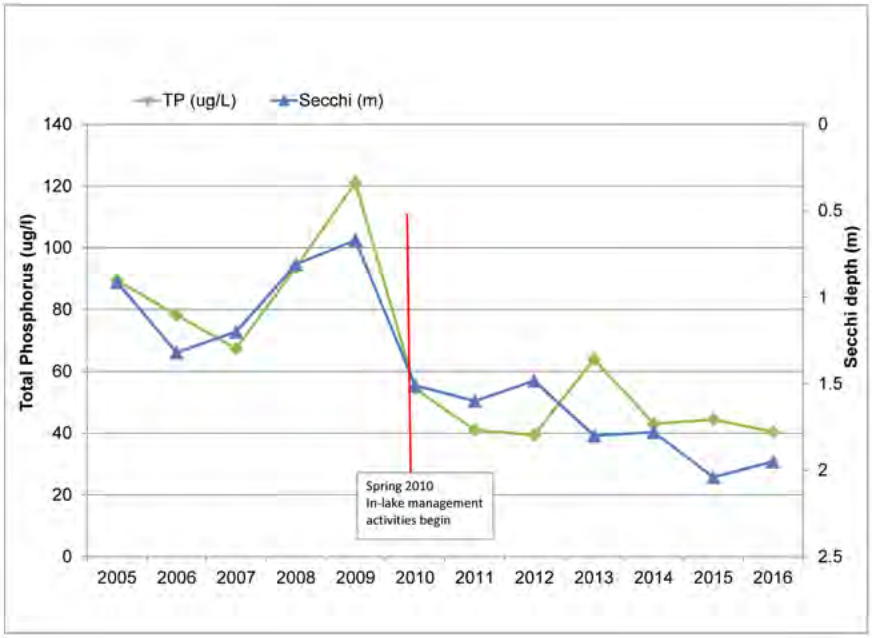

Figure 3. Lake Kohlman TP and Secchi depth before and after in lake management activities.

Figure 4. Surfaced coontail and Canada elodea with mats of filamentous algae.

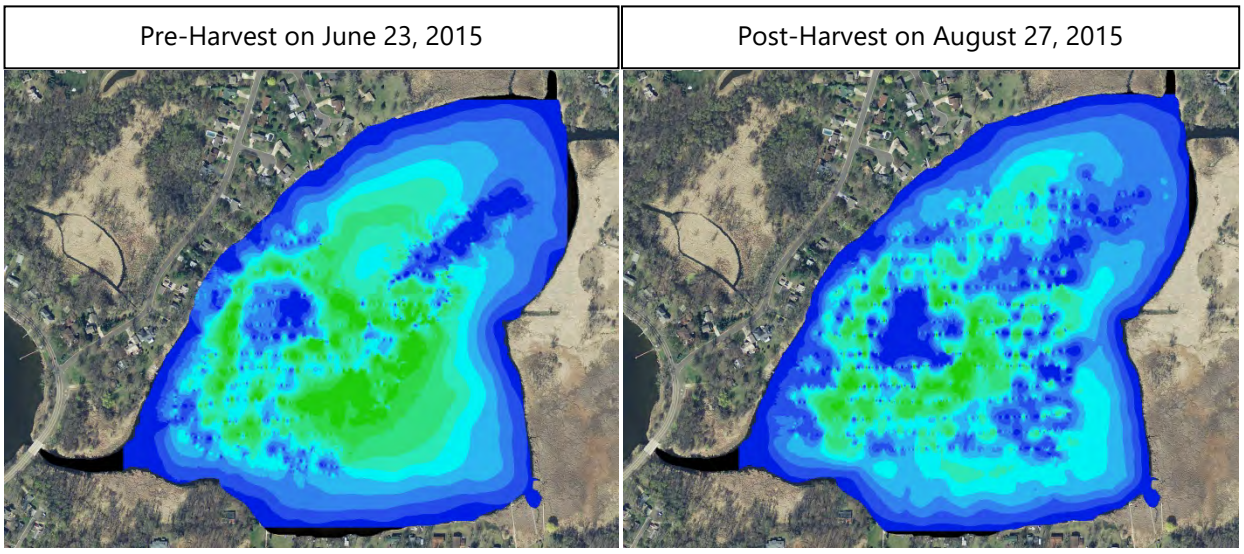

Figure 5. Results of sonar surveys showing plant height prior to the start of harvesting and after the completion of harvesting. The blue colors represent gradations of plant height between 0 and 1.5 meters while the green colors are plant heights between 1.5 to 2.7 meters.

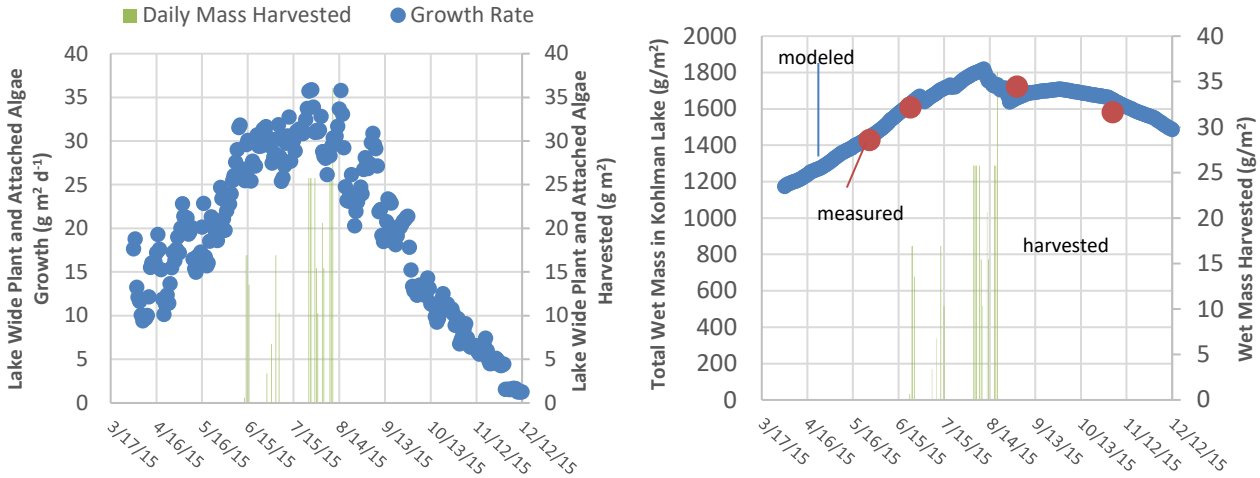

Figure 6. Use of measured in-lake aquatic plant biomass and harvesting data to identify the aquatic plant growth rate during the growing season.

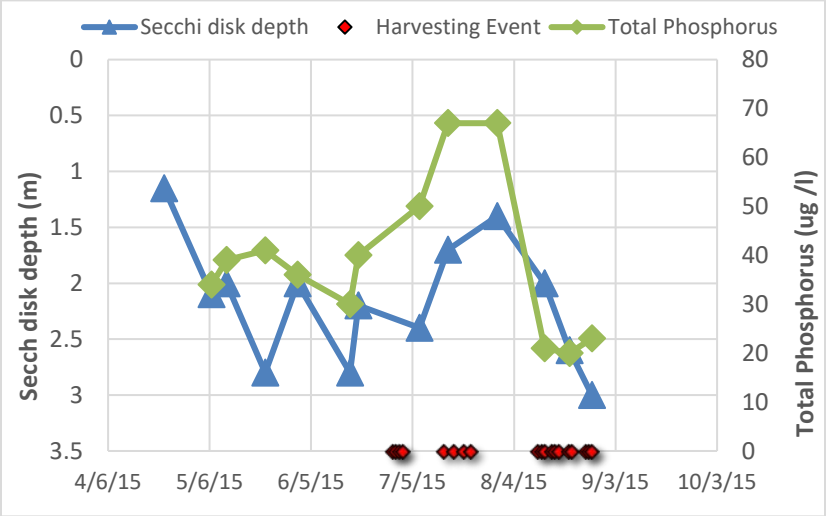

Figure 7. Secchi disk depth and total phosphorus in Kohlman Lake.

Table 1. Total phosphorus and aquatic plant balances in Kohlman Lake, April 15 to October 31, 2015.

Balance or Measurement	Value
Phosphorus Uptake by Plants (kg)	218
Phosphorus Mass Harvested (kg)	33
External Load from Primary Tributary (kg)	759
Average Phosphorus in Plants (g dry kg-1)	3.6
Average Phosphorus in Filamentous Algae (g dry kg-1)	2.5
Peak Measured Wet Mass of Plants and Attached Algae (g m-2)	1,722
Peak Wet Mass of Plants and Attached Algae in Lake (kg)	466,919
Harvested Wet Mass of Plants and Attached Algae (kg)	93,364
Cost of harvest	$10,500
Cost of TP removed ($ per kg)	$318

Glyphosate Risk Communication from UMN Extension & Glyphosate Use by RWMWD

Glyphosate use in agriculture has increased over the past two decades. Glyphosate's potential connection to cancer has been the focus of recent media stories. It's possible that managers may receive questions about glyphosate use by staff. This presentation includes an abridged version of the current UMN extension's presentation on glyphosate, plus an overview of the use of the herbicide on District projects. Simba will be giving a presentation and will answer any questions regarding this topic.

Public Involvement and Education Program – Sage Passi

2019 Master Water Stewards Unveil Capstone Plans at Fairgrounds Charette

Bette

Danielson (left) uses maps and photos to describe her East St. Paul storm drain project ideas with mentor, Linda Neilson (center) and Vince Tilley (right) at the charette. A targeted Adopt-a-Drain area east of Phalen (right).

The 2019 East Metro Class of Master Water Stewards have now completed their online and in person classes for the year. The group began taking classes in October 2018 and met on March 9 at the Minnesota State Fairgrounds History and Heritage Center to share their capstone plans for both their installation projects and their outreach campaigns. They also consulted with technical professionals, watershed staff and learned how to report volunteer projects and activities on the online reporting system. They will be working the rest of the year to refine, develop and implement their projects with help from Watershed District staff, Michael Schumann (Ramsey County) and other Master Water Stewards. Below is a summary of their capstone projects.

Bette Danielson and Stuart Knappmiller: Lake Phalen sub-watershed. Expand the Adopt-a-Drain program on the east and west sides of Lake Phalen. Outreach during WaterFest. Storm drain stenciling.

Bette says, "This project will focus on making the issue LOCAL since most residents in the area have their own relationships with the lake. Whether their relationship is for recreation, photography, exercise or enjoying watching the wildlife, the environment invites these residents to make a personal connection." 1) Initial outreach: Door hangers within the subwatershed using the Adopt-A-Drain program. Potential use of a second door hanger showing a map and outfall locations. Recruit Johnson Jr. ROTC youth to help with the door hanging as well as current Adopt-A-Drain residents and other Master Water Stewards. 2) Educational outreach and further recruitment of adopters during WaterFest. Education about the common pollutants found in stormwater. 3) Creation of new catch basin stencils specifically mentioning "drains to Lake Phalen." Contact City of St. Paul Public Works regarding the possibility of repair of some of the catch basins along E. Shore Drive and discuss/ promote the installation of catch basin drain filters to prevent large debris from washing into the lake.

Stuart Knappmiller: **Lake Phalen subwatershed - Installation of a rain garden to the west of Lake Phalen at 1112 Orange Avenue East (Stuart's residence). Stuart has been exploring this idea for several years and had his site evaluated by Michael Schumann.**

Ann Hagerman and Vince Tilley: Lake Gervais shoreline restoration on the west side of lake

This 2000 square foot shoreline restoration will be located at a prominent location along the western shore of Lake Gervais in Little Canada adjacent to Ann Hagerman's residence. Michael Schumann conducted a preliminary site assessment shortly before winter and will be returning in the spring to do a more comprehensive site assessment. His recommendations include rough grading to achieve a more appropriate bank slope, installation of rip rap to secure the toe of the slope, as well as a few soil lifts to stabilize soils above the top of rip rap. Additionally, the immediate shoreline, slope and areas above will be planted with native vegetation. This will be a multi-year project. Ann and Vincent intend to develop an educational outreach campaign to encourage residents in the area to restore their shorelines. They are also planning to incorporate other watershed educational activities related to pollution and environmentally friendly landscaping.

Logan Stapleton: Master Gardener/Master Water Steward Plans Lake Phalen Shoreline Restoration

Logan is a resident who grew up on the eastside of Lake Phalen who still lives in the area. He is also currently going through the Master Gardener training program. He has proposed a restoration project on the north side of the large east point, near an outfall south of Larpenteur Avenue in an area that was never restored (140 feet in length and 12 feet wide.) He met with Natural Resources staff to discuss this project and secure their support. The restoration will include upland, wet meadow and emergent plants. The Watershed District will provide plants, site prep and design. Logan will do the installation, some of the maintenance, and education and will recruit other Master Water Stewards and Master Gardeners to assist in the preparation and planting. The sand point and adjacent turf will not be blocked, as this is a busy recreational area. The City of St. Paul has given preliminary permission to proceed with the planning and implementation of this restoration project.

Site for Logan Stapleton's Lake Phalen Shoreline restoration on the East Side of St. Paul

Bobbie Scott: Beltline sub-watershed. Solving erosion issues and increasing biodiversity with a bee lawn, native plants and a possible rain garden in her front yard at 2004 Freemont Ave. E in District 1 in St. Paul.

Bobbie intends to draw on the experience of other Master Water Stewards who recently installed a bee lawn in east St. Paul. (Michelle Natarajan and Melissa Peck). She has been talking with the director of District Planning Council One about offering a class on resilient yards. She attended a Blue Thumb workshop on healthy soils and will be attending one of their upcoming classes on Resilient Lawns.

Bobbie's front yard

Upcoming Spring Workshops and Events Offer Learning Opportunities

The Watershed District is promoting several upcoming neighborhood workshops, tours and events to teach residents how to infiltrate more water into their soil, improve soil health and create more diversity along wetland edges. Washington Conservation District's EMWREP program is hosting tours of the beautiful wetlands at Tamarack Nature Preserve and Oakdale Discovery Center and Preserve. Maplewood Nature Center is offering a class about the best plants to attract pollinators to yards and garden and infiltrate stormwater. Two Landscape Revivals will provide markets where visitors can purchase native plants this spring and learn from exhibitors and displays. Plans are in motion for WaterFest to be held on June 1. To see locations and descriptions of these opportunities, visit our watershed district's events page, https://www.rwmwd.org/category/events/

April 4: Native Plants Do Double Duty – Stop Water and Feed
April 25: The Universe beneath Our Feet – Restoring Soil Ecosystems
May 23: Planting for Clean Water – Wonderful Wetlands Workshop
May 23: Healthy Soils and Water Conservation
May 30: Family Hike at Tamarack Nature Preserve
June 1: WaterFest (Lake Phalen) and Landscape Revival (Shoreview)
June 8: Landscape Revival (Oakdale)

Experts helped our volunteers and partners increase native plant diversity, taught techniques for improving soil health, and educated professionals about invasive species removal strategies in March.

On the right: 16 Master Gardeners worked with 15 classrooms in March to plant and transplant native seedlings.

Left photo: Organic Bob advised Master Water Steward Phyllis Webster about invasive removal and remediating soil health at her Maple Hills Townhome Association stormwater pond.

Right photo: Craig Stark, Ecoscapes, Bre Bauerly, Minnesota Native Landscapes, and Carole Gernes (not shown) offered their expertise about buckthorn removal at a Blue Thumb Partners training meeting at Maplewood Nature Center.

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Informational Items

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Flooding along the Mississippi River has menaced St. Paul from its earliest days

This view of St. Paul during the historic 1881 flood was captured from the city's West Side. (Courtesy of the Minnesota Historical Society) By Nick Woltman | nwoltman@pioneerpress.com | Pioneer Press
PUBLISHED: March 27, 2019 at 10:42 am | UPDATED: March 27, 2019 at 12:32 pm

On a spring day in 1952, 6-year-old Nick Castillo was watching his mother bake a cake when they heard a crash in the basement of their home on the West Side Flats.

Castillo started downstairs to find out what made the noise. It was the swollen Mississippi River, pouring through their windows.

"It came fast," a 70-year-old Castillo told the Pioneer Press in 2016. "We were at home that morning, and by 7 or 8 o'clock that night, we were in a shelter."

Castillo, who died in 2017, would spend the next two weeks with his family in that Dayton's Bluff Red Cross shelter, along with dozens of other flood victims.

The flood of 1952 was the most destructive St. Paul has ever faced, displacing 5,000 people and causing millions of dollars in damage. It reshaped the city in ways that are still felt today.

St. Paulites have always lived under the threat of flooding. Their city's placement just downstream from the confluence of the Mississippi and Minnesota rivers means runoff from the two watersheds converges on the city when the winter snow melts each spring.

A handful of notable floods menaced the city's earliest settlers, drowning their crops and swamping their cellars. But it wasn't until 1881 that St. Paulites discovered just how vulnerable they were.

That year's flood damaged several homes and businesses on the city's low-lying West Side and a handful of Lowertown warehouses. One house, belonging to a man named French Joe, was torn from its foundation and carried downriver, according to a report in the Pioneer Press.

Several smaller floods followed, but the 1881 flood was the benchmark by which they were measured. Its 19.7-foot crest would stand as the city's record until 1952.

TURNING POINT

The impact of the 1952 flood would be felt most acutely in two of the city's tight-knit immigrant communities — the West Side Flats and Little Italy.

An aerial view of the devastating 1952 flood in St. Paul. Little Italy can be seen partially submerged next to the old High Bridge. The West Side Flats are also visible toward the middle of the frame. (Courtesy of the Minnesota Historical Society)

The Flats were directly across from downtown, while Little Italy was on the river's east bank, in the shadow of the High Bridge. Real estate in these flood-prone neighborhoods was cheap, and they attracted many low-income families.

Their residents had plenty of experience with floods — the flood of 1951 had come within inches of the 1881 record — but nothing compared to what they would see in the spring of 1952.

Just four days after reaching flood stage — 14 feet at the Robert Street Bridge — the river rose to 20 feet, breaking the record set by the 1881 deluge. And the worst was yet to come.

Floodwaters pushed at least 14 blocks into the West Side Flats, and breached the sandbag dike that protected Little Italy.

It wasn't just homes that were damaged. Flood-idled factories and packing plants tallied millions of dollars in lost production and were forced to lay off workers. The state reported that 2,500 St. Paulites filed for flood-related unemployment assistance by the time the water crested at 22 feet on April 16.

The flood caused $7 million in damage to St. Paul and South St. Paul — nearly $63 million in today's dollars. It was also blamed for two deaths.

Castillo's home was among 1,135 damaged by the flood that year. Like many others, his family returned to repair and clean their house when the water subsided.

But they wouldn't be allowed to stay for long.

In the early 1960s, the St. Paul Port Authority bought out the homeowners in the West Side Flats and Little Italy, and demolished their houses.

The Flats would be turned into an industrial park; Little Italy would become a scrap yard. Many former residents are still bitter about the forced relocation.

"We didn't want to move," Castillo said. "That was our home."

THE WALL

Work on a three-mile flood wall protecting the new West Side industrial park began in summer 1961.

This further antagonized former residents, who felt betrayed by the timing of the project, says flood survivor Gilbert de la O, who lived near Castillo.

"They built the flood wall after we moved out," de la O said. "Why didn't they build it while we lived there?"

The $3.75 million project was completed in 1963 and was designed to protect the Flats from flooding up to six feet higher than the 1952 level.

The city didn't have to wait long to try out its new defenses.

A view of the record-breaking flood of 1965 from the bluffs at Indian Mounds Park. (Courtesy of the Minnesota Historical Society)

The 1965 flood crested at 26 feet, and remains the highest flood in the city's history. The high water mark is painted on the downtown-facing side of the flood wall and can still be seen today.

Despite this unprecedented deluge, damage was largely limited to businesses along Shepard Road and in Lowertown. Only 45 St. Paul families registered for Red Cross Flood assistance by the time the water began to recede.

Another massive flood followed in 1969, cresting at 25 feet, with similar results.

The past few decades have been relatively quiet, but a handful of notable floods have prompted the city to further improve its flood defenses. A $20 million project in the early 1990s raised and extended the existing flood wall.

After a 23.5-foot flood in 2001 that temporarily shut down the city's Holman Field airport, a controversial $25 million flood wall was erected to protect it.

But hydrologists speculate that these man-made flood defenses are driving floods higher by preventing the swollen river from spreading out in its natural floodplain.

This article originally appeared in the Pioneer Press' April 2016 special section 'River City.'

Metropolitan Council - metrocouncil.org

WASTEWATER TREATMENT STAFF PREPARE FOR SPRING FLOODING

Posted In: Wastewater & Water **Date:** 3/22/2019

0Share

The clock has started ticking on flood preparations at the massive Metropolitan Wastewater Treatment Plant on the Mississippi River in Saint Paul.

On March 12, the river level at the plant was just below its normal average, which is 687.2 feet above sea level. After a week of daytime temperatures in the 30s and low 40s — but nighttime temperatures below freezing — the river was slowly rising and closing in on 690.

As of March 25, the National Oceanic and Atmospheric Administration (NOAA) was predicting that the Mississippi will rise to about 704 feet above sea level in downtown Saint Paul by March 29, which is considered major flood level.

Aerial view of the Metropolitan Wastewater Treatment Plant along the Mississippi River, about three miles downstream of downtown Saint Paul, in fall 2008.

But well before the river started to rise, the Flood Team at the Metro Plant had reviewed and updated flood response plans.

“We stage our response according to how high the river is,” explained Mike Mereness, who manages wastewater collection and treatment at the Metropolitan Council. “Each benchmark initiates the next phase of activities, all geared toward keeping the plant in full operation during the flood and continuing to meet our clean water discharge permit requirements.”

Slow rise of the river provides an advantage

When it comes to spring flooding, the Metro Plant and its staff have several big advantages — time, experience, and infrastructure that provides access to and protects the plant.

“It’s not like a tornado or a flash flood,” Mereness said. “The mighty Mississippi gives us enough time to get ready.”

A gauge on the river in downtown Saint Paul measures the elevation every 15 minutes. The Flood Team also has access to automated readings from a station near the end of the channel where cleaned wastewater — called effluent — enters the Mississippi from the plant.

Put together with weather forecasts and river level predictions based on sophisticated computer modeling from NOAA, the team is armed with sufficient data to carry out its work.

From buying supplies to building a temporary road

Before the river starts rising, plant staff order supplies they will need to last through a potential flood (for example, chemicals used in the treatment process). That’s because once Childs Road — the primary access to the plant — floods (at

to plant equipment. The plant was shut down for three weeks after the river crested to clean up the mess left by the flood.

Read an account of the 1965 flood at the Metro Plant.

That disaster created the impetus for construction of a mile-long concrete floodwall, completed in 1975, to protect the plant. It tops off at 716 feet above sea level. Flood water must reach 708.7 feet before it covers The Barrel, though wave action can create havoc at slightly lower levels.

Aerial photo of the Metro Plant during the 1965 flood, looking south.

Heavy rains can change the equation

In addition to the amount of snow on the ground, rainfall can greatly impact both the level of flooding and the speed at which the river rises. In some recent years, flooding has occurred well after all the snow is gone due to torrential rainfalls in May and June.

“We’ve had a lot of experience with flood preparation at the plant in recent years,” Mereness said. “We’ll be ready for the flood that’s predicted this year.”

Posted In: Wastewater & Water

Tags: