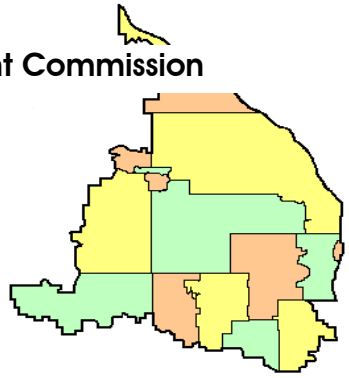
Shingle Creek Watershed Management Commission
West Mississippi Watershed Management Commission

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



July 1, 2020

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

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

Dear Commissioners:

Regular meetings of the Shingle Creek and West Mississippi Watershed Management Commissions will be held **Thursday, July 9, 2020, at 12:45 p.m.** **This will be a virtual meeting.**

Until further notice, all meetings will be held online to reduce the spread of COVID-19. To join a meeting, click https://zoom.us/j/834887565 or go to www.zoom.us and click **Join A Meeting**. The meeting ID is **834-887-565**.

If your computer is not equipped with audio capability, you need to dial into one of these numbers:

+1 929 205 6099 US (New York)
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+1 346 248 7799 US (Houston)
+1 301 715 8592 US

Meetings remain open to the public via the instructions above**.**

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

Regards,

Judie A. Anderson
Administrator

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

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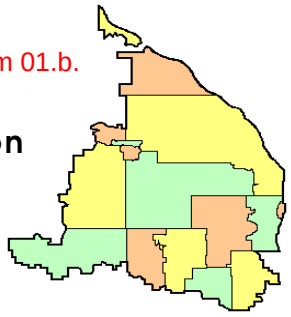

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A combined regular meeting of the Shingle Creek and West Mississippi Watershed Management Commissions will be convened Thursday, July 9, 2020, at 12:45 p.m. Agenda items are available at **http://www.shinglecreek.org/minutes--meeting-packets.html.**

Until further notice, all meetings will be held online to reduce the spread of COVID-19. To join a meeting, click https://zoom.us/j/834887565 or go to www.zoom.us and click Join A Meeting. The meeting ID is 834-887-565.

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		1.	Call to Order.				
	SCWM		a.	Roll Call.			
√	SCWM		b.	Approve Agenda.*			
√	SCWM		c.	Approve Minutes of Last Meeting.*			
		2.	Reports.				
√	SC		a.	Treasurer's Report.*	√ WM	c.	Treasurer's Report.*
√	SC		b.	Approve Claims* - voice vote.	√ WM	d.	Approve Claims* - voice vote.
	SCWM	3.	Open forum.				
		4.	Project Reviews.				
√	SC		a.	SC2020-006 BRT Metro Transit, Brooklyn Center.*			
		5.	Watershed Management Plan.				
√	SC	a.	Cost Share Application – Crescent Cove.*				
			1)	Staff recommendation.*			
	SCWM	6.	Water Quality.				
	SC		a.	Opportunity Grant Application – SRP Phase II.*			
	SCWM		b.	CWF Grant Solicitations.*			
	SCWM		c.	BWSR Watershed-Based Funding.*			
			1)	West Mississippi Basin – Project Evaluation Process.*			
			2)	Notes from Meeting #3.*			
			3)	MMW WBIF Project Evaluation Matrix 6-25-20.*			
			d.	HUC-8 Update.			
			e.	c. Filamentous Algae.			
		7.	Education and Public Outreach.				
	SCWM		a.	Next WMWA meeting – 8:30 a.m., Tuesday, July 14, 2020. *Virtual meeting.*			
	SCWM	8.	Staff Report.*				
			a.	Project Review Fees.			
	`		b.	SRP Reduction Project.			
			c.	Crystal Like Management Plan.			
			d.	Alum Treatment – Bass and Pomerleau.			
		9.	Communications.				
	SCWM		a.	Communications Log.*			
	SCWM		b.	Minnesota Stormwater Seminar.*			
			1)	Q and A's.*			
	SCWM	10.	Other Business.				
	SCWM	11.	Adjournment.				

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

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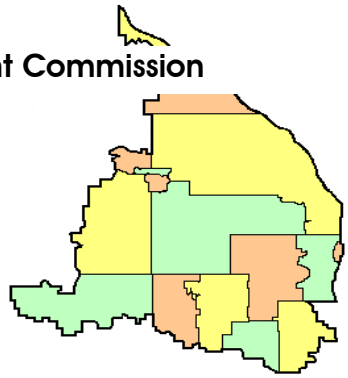


MINUTES
Regular Meeting
June 11, 2020

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

I. A joint virtual meeting of the Shingle Creek Watershed Management Commission and the West Mississippi Watershed Management Commission was called to order by Shingle Creek Chairman Andy Polzin at 12:47 p.m. on Thursday, June 11, 2020.

Present for Shingle Creek were: David Vlasin, Brooklyn Center; Steve Chesney, Brooklyn Park; Burton Orred, Jr., Crystal; Karen Jaeger, Maple Grove; Ray Schoch, Minneapolis; John Roach, Osseo; Andy Polzin, Plymouth; Wayne Sicora, Robbinsdale; Ed Matthiesen, Diane Spector and Erik Megow, Wenck Associates, Inc.; Troy Gilchrist, Kennedy & Graven; and Amy Juntunen and Judie Anderson, JASS.

Not represented: New Hope.

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

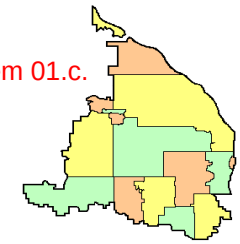
Also present were: Andrew Hogg, Brooklyn Center; Mitch Robinson and Jordan Vennes, Brooklyn Park; Mark Ray, Crystal; Derek Asche, Maple Grove; Liz Stout, Minneapolis; Megan Hedstrom, New Hope; Leah Gifford, Ben Scharenbroich and Amy Riegel, Plymouth; Richard McCoy and Marta Roser, Robbinsdale; and Stephen Mastey, Landscape Architecture, Inc.

II. Stephen Mastey presented the **Twin Lake North Condominium parking lot BMP project** which was paid in part with Commission cost-share funds totaling $43,510. The project moved the existing parking lot, which drained untreated directly into Twin Creek, out of the floodplain and restored the area with a diverse native plant community. The project featured a Tire Derived Aggregate (TDA) infiltration system and reduced the amount of impervious on-site by .39 acres.

[Roach and Orred arrived 12:55.]

III. Agendas and Minutes.

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



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

Motion by Schoch, second by Chesney to approve the **minutes of the May 14, 2020 regular meeting.*** *Motion carried unanimously.*

Motion by Johnson, second by Chesney to approve the **minutes of the May 14, 2020 regular meeting.*** *Motion carried unanimously.*

IV. Finances and Reports.

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

Motion by Schoch, second by Roach to approve the **Shingle Creek June claims.*** Claims totaling $99,799.79 were *approved by roll call vote:* ayes – Vlasin, Chesney, Orred, Jaeger, Schoch, Johnson, Polzin, and Sicora; absent – New Hope; nays – none.

Motion by Jaeger, second by Schoch to accept the **2019 Audit Report** contingent upon positive review by the Chair and Treasurer. *Motion carried unanimously*.

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

Motion by Johnson, second by Chesney to approve the **West Mississippi June claims.*** Claims totaling $14,398.56 were *approved by roll call vote:* ayes – Vlasin, Chesney, Butcher, Jaeger, and Johnson; nays – none.

Motion by Jaeger, second by Butcher to accept the **2019 Audit Report** contingent upon positive review by the Chair and Treasurer. Motion carried unanimously.

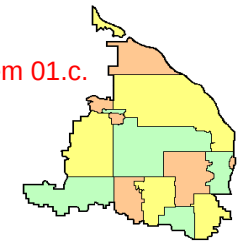
V. Open Forum.

VI. Project Reviews.

A. SC2020-002 CSAH 81 Bridges Reconstruction, Robbinsdale.* Construction of a bridge, roadway, and utility improvements on 13.7 acres located on West Broadway Avenue over the intersection of Lowry Avenue and Theodore Wirth Parkway. Following development, the site will be 47 percent impervious with 6.5 acres of impervious surface, a decrease of 0.2 acres. A complete project review application was received on May 8, 2020.

Because the net impervious increase is less than one acre for this project, stormwater quality, runoff rates, and infiltration regulations are not addressed. The staged erosion control plan includes rock construction entrances, perimeter silt fence, bio-roll, storm drain inlet protection, and rip rap at outlets. Erosion control plans for this project are included in a lump sum pay item and may be altered by the contractor. Any altered plans will be submitted to and approved by Hennepin County. The erosion control plan submitted in the 95% plans meets Commission requirements.

The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements. There are no Public Waters on this site. The applicant meets Commission Public Waters requirements. There is no FEMA-regulated floodplain on this site. The applicant meets Commission floodplain requirements. The site is not located in a Drinking Water Management Area. The applicant meets Commission drinking water protection requirements.



A public hearing on the project was conducted on July 8, 2019 as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

No stormwater management practices are proposed, thus a draft Operations & Maintenance (O&M) agreement between the applicant and the City is not required.

Motion by Sicora, second by Schoch to advise the City of Robbinsdale that project SC2020-002 is approved with no conditions. *Motion carried unanimously.*

B. SC2020-003 CSAH 152 Webber Parkway Reconstruction (Webber 44), Minneapolis.* Reconstruction of roadway and storm sewer from Penn Avenue to the west on 44th Avenue, Webber Parkway, and Lyndale Ave from Webber Parkway to 41st Avenue. The site is 15.38 acres. Following development, the site will be 75 percent impervious with 11.6 acres of impervious surface, a decrease of 1.1 acres. A complete project review application was received on June 5, 2020.

Typically, to comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 85% TSS removal and 60% TP removal. However, there is no net increase in impervious surface at this site, so the applicant meets Commission water quality treatment requirements.

Commission rules require that site runoff be limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Because there is no increase in impervious surface at this site, the applicant meets Commission rate control requirements.

Commission rules also require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours, but because there is no increase in impervious surface at this site, the applicant meets Commission volume requirements.

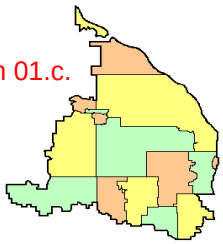
The erosion control plan includes rock construction entrances, inlet protection at catch basins within the site and offsite down-gradient structures, bio-roll and silt fence at down-gradient disturbed site limits, dust control measures near Webber Park, and erosion control covering over disturbed areas. The erosion control plan meets Commission requirements.

The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements. There are no Public Waters on this site. The applicant meets Commission Public Waters requirements. There is no FEMA-regulated floodplain on this site. The applicant meets Commission floodplain requirements. The site is not located in a Drinking Water Management Area (DWSMA). The applicant meets Commission drinking water protection requirements.

Multiple public notices on the project have been conducted as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

Motion by Schoch, second by Jaeger to advise the City of Minneapolis that project SC2020-003 is approved with no conditions. *Motion carried unanimously.*

C. SC2002-004 Candlewood/Hampshire Culverts, Brooklyn Park.* Reconstruction of a culvert with a bridge on Shingle Creek at Candlewood Drive and the construction of a new culvert on Shingle Creek at Hampshire Avenue. The site is 14.7 acres. Following development, the site will be 73 percent impervious with 10.7 acres of impervious surface, an increase of 0 acres. A complete project application was received on May 28, 2020.



Typically, to comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 85% TSS removal and 60% TP removal. However, there is no net increase in impervious surface at this site, so the applicant meets Commission water quality treatment requirements.

Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Because the increase in impervious surface at this site is negligible, the applicant meets Commission rate control requirements.

Commission rules also require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours, but because the increase in impervious area is negligible, the applicant meets Commission volume requirements.

The erosion control plan includes rock construction entrances, perimeter sediment control, inlet protection, and floating silt curtain. The erosion control plan meets Commission requirements.

The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements.

Shingle Creek is a DNR Public Water on this site. It is impaired for chloride, E. coli, dissolved oxygen, and macroinvertebrates. The proposed project is not anticipated to negatively impact the creek and its impaired status. The culvert replacement and installation will have no effect on water quality and since the hydraulic capacity is being maintained, compared to existing conditions, the project will not have an adverse effect on hydrology. The applicant meets Commission Public Waters requirements.

There is FEMA 100-year floodplain at this site. HEC-RAS modeling has been completed to show that the upstream and downstream 100-year base flood elevations are being maintained and that the new culverts provide equivalent hydraulic capacity to the existing conditions. The project will have no adverse impacts on the floodplain. The applicant meets Commission floodplain requirements.

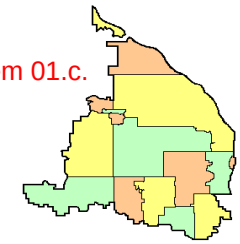
The site is located in a Drinking Water Management Area, but is outside of the Emergency Response Area. There is no proposed infiltration affiliated with the site, thus the applicant meets Commission drinking water protection requirements.

A public hearing on the project has been conducted on April 27, 2020 as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements. Additionally, a notice letter was sent out to nearby residents

Motion by Schoch, second by Chesney to advise the City of Brooklyn Park that project SC2020-004 is approved with no conditions. *Motion carried unanimously.*

D. SC2020-005 Crescent Cove, Brooklyn Center.* The proposed project is the construction of a play space along a wetland edge that incorporates wetland buffer, floodplain storage, and stormwater treatment. The site is 2.23 acres. Following development, the site will be 2 percent impervious with 0.04 acres of impervious surface, an increase of 0.02 acres. A complete project application was received on June 2, 2020.

Typically, to comply with the Commission's water quality treatment requirement, the site must provide ponding designed to NURP standards with dead storage volume equal to or greater than the volume of runoff from a 2.5" storm event, or BMPs providing a similar level of treatment - 85% TSS removal



and 60% TP removal. Because of the nature of the project, the applicant is exempt from demonstrating water quality requirements. However, the applicant has included two pretreatment sediment sumps within the parking lot and tire-derived aggregate underneath that will contribute to water quality improvements.

Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year storm events. Because of the nature of the project, the applicant is exempt from demonstrating rate control requirements.

Commission rules require the site to infiltrate 1.0 inch of runoff from new impervious area within 48 hours. Because of the nature of the project, the applicant is exempt from demonstrating rate control requirements.

Bio-log along the wetland edge and temporary seeding throughout the site is being used to control erosion during project construction. A rock spillway is used at the turf field drainage outlet. The erosion control plan meets Commission requirements.

A 0.2-acre, Type 3 wetland has been identified on site. The Commission is the LGU for Brooklyn Center. The site plan includes a 30' buffer strip containing pervious surface and natural vegetation. The applicant meets Commission wetland requirements.

Twin Lake is a DNR Public Water adjacent to this site and is impaired for nutrients. The proposed project is not anticipated to negatively impact Twin Lake or its impaired status. The applicant meets Commission Public Waters requirements.

The south and east portion of the site lies within the FEMA 100-year floodplain; however, the applicant does not propose to fill the floodplain or to construct any new buildings. The applicant meets Commission floodplain requirements.

The site is not located in a Drinking Water Management Area (DWSMA). The applicant meets Commission drinking water protection requirements.

A public hearing on the project is not required.

Motion by Jaeger, second by Schoch to advise the City of Brooklyn Center that project SC2020-005 is approved with no conditions. *Motion carried unanimously.*

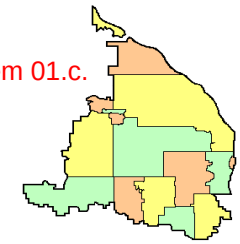
VII. 2021 Operating Budgets.

A. Shingle Creek.

The Joint Powers Agreement (JPA) governing operations of the Shingle Creek Watershed Management Commission requires a budget and the resulting proposed city assessments for the coming year to be reported to the member cities by July 1. The Commission discussed the proposed 2021 budget at its May meeting, and it has been reviewed by the Technical Advisory Committee (TAC).

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

The assessment cap in the JPA limits the annual city assessment increase to the June-to-June increase in the Consumer Price Index-Urban (CPI-U), using the assessment in 2004 as a base. The



allowable assessment for 2021 under that inflation cap is $369,190. This proposed recommended 2021 budget assumes an assessment of $363,590, or no increase over 2020.

With a few exceptions the proposed budget generally continues the same activities at the same level of effort as in 2020. While some of the line items have been adjusted and reallocations made, overall the proposed 2021 budget is $1,000 less than the 2020 budget. Each line item is explained in Staff's memo* dated June 5, 2020.

Motion by Schoch, second by Jaeger to approve the 2021 Operating Budget. *Motion carried unanimously.*

B. West Mississippi.

As with Shingle Creek, the Joint Powers Agreement (JPA) governing operations of the West Mississippi Watershed Management Commission requires a budget and the resulting proposed city assessments for the coming year to be reported to the member cities by July 1. The Commission discussed the proposed 2021 budget at its May meeting, and it has been reviewed by the Technical Advisory Committee (TAC).

The assessment cap in the JPA limits the annual city assessment increase to the June-to-June increase in the Consumer Price Index-Urban (CPI-U), using the assessment in 2004 as a base. The Commission could under that cap increase member city assessments for 2021 to $167,840. The draft 2021 budget assumes an assessment of $153,600, which for the third year in a row is no increase over the previous year.

With a few exceptions the proposed budget generally continues the same activities at the same level of effort as 2020. Some of the line items have been adjusted and reallocations made. Overall the proposed 2021 budget is $1,500 more than the 2020 budget, which is expected to be funded from increased interest earnings. Each line item is explained in Staff's memo* dated June 5, 2021.

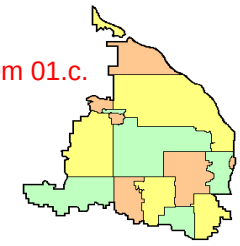
Motion by Butcher, second by Chesney to approve the 2021 Operating Budget. *Motion carried unanimously.*

VIII. Watershed Management Plan.

Proposed CIP. Staff's June 5, 2020 memo* describes the action to set the maximum amount of capital projects levy the Commissions expect to certify to Hennepin County. The actual levies will be certified in September after the Commissions hold public hearings on the proposed projects. The memo shows the CIP projects that will be considered in September – six in Shingle Creek and three in West Mississippi. The Maximum Levy sets the ceiling for the capital levy; the Commissions can certify a lower levy but cannot increase it.

In 2016 the Commissions began levying an additional 5% to cover administrative costs, and an additional 1% to cover uncollected levies, based on the historical rate of uncollectables. The $1,405,165 (Shingle Creek) and $287,660 (West Mississippi) maximum levies will be forwarded to Hennepin County by June 25, 2020.

At its May 28 meeting the TAC reviewed the potential impacts to individual property owners of the proposed levy for 2020 Capital Improvement Projects. The memo shows the estimated impact on a median single family home value by city based on the tax capacity rate experienced in the certify 2018/pay 2019 year. That levy of $479,900 resulted in a Tax Capacity Rate of $0.00355.



When considering this data, it should be noted:

1. The Tax Capacity Rate is variable year to year depending on the overall net tax capacity in the county and distribution by city.

2. The median value data is for all the single-family properties in the city, so it may not be representative of the median value of the homes in the Shingle Creek watershed.

3. This is a one-time levy, so the values shown are the total estimated cost of each project to a median valued home. In other words, if all the Shingle Creek projects are certified, the total one-time cost to the owners of a median-valued home in Brooklyn Center would be an estimated $20.31 and in Plymouth $39.92.

Motion by Chesney, second by Schoch to approve the maximum Shingle Creek levy and directing the TAC to review the proposed projects once more prior to certification. *Motion carried unanimously.*

Motion by Jaeger, second by Butcher to approve the maximum West Mississippi levy and directing the TAC to review the proposed projects once more prior to certification. *Motion carried unanimously.*

IX. Water Quality.

A. Included in the meeting packet is Staff's June 5, 2020 memo* and accompanying Memo of Understanding* (MOU) between the City of New Hope and the Commission regarding the **Meadow Lake Drawdown project.** Typically, when the Commission orders a project and certifies a levy, it also enters into a Cooperative Agreement with the member city or cities undertaking the project. That document spells out conditions, including an agreement to reimburse the member city from levy and/or grant proceeds. This project will be formally ordered in September.

New Hope would like to go forward with this project this fall and will be incurring expenses relating to design, monitoring, and permitting. By way of this MOU, the Commission is agreeing to reimburse the City for these expenses from future levy funds. The MOU is limited to "Phase 1," which is the preparation for and implementation of the fall drawdown. As is the usual case, when the project is ordered this fall, the City and Commission will enter into a cooperative agreement that will cover the entire project.

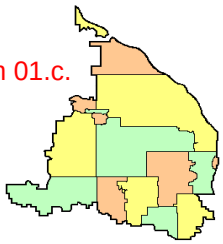
This MOU was drafted by the Commission's attorney and has been reviewed by the City's attorney. It was considered and approved at New Hope's June 8, 2020 City Council meeting.

Motion by Schoch, second by Chesney to approve the Memorandum of Understanding. *Motion carried, Jaeger voting nay.*

B. Hennepin County has reopened its **Opportunity Grants program** for another round of funding. These grants are for a maximum $100,000 and do not require a match, although matching funds increase the likelihood of award.

Staff and the TAC had previously discussed options for "phase 2" of the **SRP (soluble reactive phosphorus, a dissolved form) Reduction Project** at the outlet of Wetland 639W. Phase 1 retrofitted the wetland outlet weir box with filters to test three different media for efficiency at reducing SRP in outflow from the wetland. The original Phase 2 was to install another filter in Bass Creek at the outlet of the Cherokee Wetland using the best performing medium. Since the Commission is considering a Bass Creek restoration project, there is a potential to include the SRP filter in that project.

While the Wetland 639W filter has successfully demonstrated that SRP can be reduced by filter media, because at high flows the weir box is being bypassed, the amount of volume being filtered



is very low. There is a channel downstream of the weir box which conveys overflow and outlets that water further downstream back into the wetland. When it was constructed the channel was lined with limestone to attempt to remove SRP from channel flow. No appreciable reduction in SRP from the limestone has been measured.

Staff propose that Phase 2 instead would be to line the channel with the best-performing media. Preliminary calculations indicate that the most cost-effective option would be creating a short "cell" of the Alcan proprietary media, which is the best performing medium but is quite expensive, and the balance with iron-enhanced sand.

The preliminary cost estimate for this retrofit is around $250,000. However, since the proposed design would be "cells," it is possible to do this work in stages. Staff recommendation would be to request a $100,000 Opportunity Grant and match it with $10,000 from the funds that would have been spent on the original Phase 2 in Bass Creek.

This grant application period is open from June 1 to June 30, 2020. Staff recommendation would be to direct the TAC to review the application at its June 25 meeting and authorize the Chair to approve its submittal upon the TAC's recommendation.

Motion by Jaeger, second by Schoch to approve Staff's recommendation. *Motion carried unanimously.*

X. Education and Public Outreach.

A. WMWA. The **West Metro Water Alliance** met via Zoom on Tuesday, June 10, 2020.

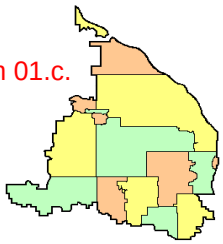
1. Watershed PREP and Education and Outreach Events. The 2019 WMWA Annual Report is included in the meeting packet for information and will be uploaded to the WMWA website http://www.westmetrowateralliance.org/annual-reports.html.

The educators, working with local cable provider CCX Media, filmed one of their classroom presentations and are preparing a short promotional video for Watershed PREP. The video is still being edited but should be available soon. The educators are also converting their classroom sessions into virtual, on-line learning experiences which will be available to educators, students, and the general public.

2. The sign maker WMWA is working with to fabricate a lightweight tabletop **native plants roots display** is waiting for all four entities (including WMWA) who have expressed interest in purchasing one to commit. The estimated cost of each is $2,500. The Blue Thumb roots display is one of the most popular items at events, but the current models are all very heavy and difficult to transport.

3. Website/Social Media. Catherine Cesnik, the WMWA Coordinator, is refreshing the WMWA website and updating content. Any input is appreciated. westmetrowateralliance.org/. In addition, she has now taken over social media posting duties. Cesnik sent a written communication to all cities, starting with the TAC representative, to better understand how WMWA can be a resource and to help fill education and outreach gaps. It is her goal to receive and compile this data for the July WMWA meeting.

4. Commission Website/Social Media. The website Google Analytics for the last three months are attached to Staff's June 10, 2020 memo* as are the Facebook insights for the last 30 days for both Shingle Creek and WMWA. As a reminder, Facebook Impressions are the number of times a post was viewed in a feed, Engagement is an action- a click, comment, share, or reaction. Facebook



followers continue a slow increase, 2-3 per month. The most engaging post was photos from the recent carp removal from Ryan Creek.

5. WMWA will next meet via Zoom at 8:30 a.m., Tuesday, July 14, 2020.

XI. Staff Report.*

A. Watershed-Based Funding. Work is continuing regarding the Board of Water and Soil Resources' (BWSR) Mississippi Twin Cities West - Metro Watershed-Based Implementation Funding (WBIF). The Commissioners will recall that the pilot of this program two years ago allocated just over $1 million to watersheds in Hennepin County. The WMOs decided simply to divvy up the funds to each WMO based on size and tax base. Shingle received $68,129 and West Mississippi $35,442. The Commissions allocated those funds to the city cost share program.

The second meeting of the group, described in Staff's June 10, 2020 memo,* was held Monday, June 8. The purpose of the meeting was to discuss and decide on criteria that will be used to select projects or programs to be funded from the $874,153 allocated to this basin. The partnership consists of representatives from the following organizations. The two city staff represent all the cities in the basin.

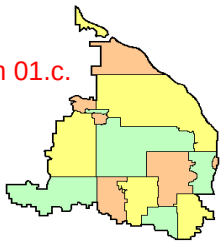
- Anoka Conservation District
- Carver County
- Elm Creek WMO
- Minnehaha Creek WD
- Shingle Creek WMO
- City of Maple Grove
- Bassett Creek WMO
- Carver SWCD
- Hennepin County (as SWCD)
- Mississippi WMO
- West Mississippi WMO
- City of Minnetonka

The group reviewed the project selection criteria that were developed for the Pilot Program two years ago. While there was general agreement about the criteria and how submitted projects were scored, ultimately the competitive grant approach was abandoned, and the group agreed to simply distribute the funding proportionate to land areas and tax capacity.

The criteria included the "gatekeeper" eligibility requirements shown in bullet 1 below. A proposed project that met all four of those gatekeeper requirements would then proceed on to be scored on a scale of 1-5 on the prioritization criteria shown in bullet 2. The scoring would be done by the group and would be by consensus of the group.

1. Identified project eligibility requirements:
- **a.** Resource need – targeted impaired or near-impaired waters
- **b.** Project readiness – land rights, capacity, feasibility study
- **c.** Partner support
- **d.** 25% match

2. Identified prioritization criteria:
- **a.** Water quality benefits – TP, TSS (weighted at 60%)
- **b.** Ancillary resource benefits - water quantity, ecological, groundwater (weighted at 30%)
- **c.** Community benefits - education/demonstration, amenities, other (weighted at 10%)



The partnership discussed and agreed to pursue this type of approach with some modifications:

a. The prioritization criteria would be condensed to two benefit areas: Water Quality Benefits, which would not be limited to TP and/or TSS, but would relate to the specific impairment being addressed; and Other Benefits, which would include those in 2.b. and 2.c. above as well as watershed priority, public access, and access by underserved communities of the receiving water.

b. There should be some sort of objective measure for awarding points for water quality benefits, such as ranking projects by cost per pound removed.

While the group unanimously agreed to the above criteria, they also agreed that there needs to be some refinement and further discussion of weighting. The group will meet again virtually the week of June 22 and would like to have the priorities and scoring process completed at that time so that eligible LGUs can submit funding applications in July/August. Once awards are recommended to BWSR, the funds would be available as soon as the LGU completed and received approval of a work plan with BWSR.

B. Project Review Fees. At its May 28 meeting the TAC reviewed information that compares the cost of undertaking project reviews to the project review fee collected. The results are quite variable, with some project costs exceeding the fee and others significantly less than the fee. The TAC asked staff to research alterative fee structures, including simply charging the applicant the actual cost of the review. The TAC will consider options at its June 25 meeting and bring a recommendation to the Commissions.

C. Maintenance Levy. The Commissions' attorney has been in discussion with the County regarding the possibility of a maintenance levy to fund the ongoing costs associated with maintaining a capital improvement or the benefits of a capital improvement. Wenck staff estimate that the annual maintenance need would be $30,000 - $50,000 per year.

The County's attorney and HCEE staff did not have a strong opinion as to the use of this authority, but did caution that given the current economic conditions, it may be difficult politically. County staff were going to continue to discuss internally.

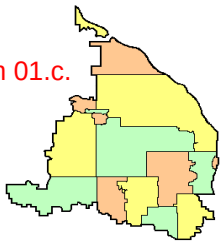
D. Project Updates.

1. SRP Reduction Project. The flow meters have been installed and monitoring has resumed. The outlet box design will be slightly modified to provide a boom or some other method of keeping large debris from being swept into the box.

2. Crystal Lake Management Plan. Wenck and Robbinsdale staff met with DNR staff to discuss the proposed method and how to proceed. Sediment cores have been taken and sent to UW-Stout for processing. Water quality monitoring has begun.

3. Bass and Pomerleau Lakes. Curly-leaf pondweed treatment has been completed on Bass. The second round of alum treatment is expected in late summer/early fall. There was a significant filamentous algae bloom on Bass Lake this spring, likely due to the combination of a warm spring and the water clarity. Other lakes, including those that had been treated with alum, also experienced such a bloom. Staff are exploring potential prevention and treatment actions and are preparing educational materials for residents.

4. Twin Lakes. A carp removal from Ryan Creek occurred on May 28. Unfortunately, only 49 fish totaling approximately 280 pounds were removed.



XII. Communications.

May **Communications Log.*** No items required action.

XIII. Other Business.

XIV. Adjournment. There being no further business before the Commissions, the joint meeting was adjourned at 3:09 p.m.

Respectfully submitted,

Judie A. Anderson
Recording Secretary
JAA:tim

Z:\Shingle Creek\Meetings\Meetings 2020\June 11 2020 regular meeting minutes.docx

SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION

PROJECT REVIEW SC2020-006: D Line BRT

Owner: Shahin Khazrajafari
Company: Metro Transit
Address: 560 6th Ave N
Minneapolis, MN 55411
Engineer: Chris Erickson
Company: HZ United
Address: 3025 Harbor Lane N
Plymouth, MN 55447
Phone: 763-551-3699
Email: chris.erickson@hzunited.com

Purpose: Pocket construction at two BRT station intersections on 0.56 acres.

Location: Metro Transit Route 5 at the intersections of Fremont Ave N and 42nd Ave N, and Fremont Ave N and Dowling Ave N (Figure 1).

Exhibits:

1. Project review application received 6/4/2020 and project review fee of $1,100, dated xx, received xx.

2. Erosion control, drainage, and turf-establishment plans (Figure 2), undated, received 6/4/2020.

Findings:

1. The proposed project is the construction of a new bus rapid transit line along Route 5 from the Mall of America to the Brooklyn Center Transit Center. The sites are within Shingle Creek is 0.56 acres. There will be no increase in impervious surface following development.

2. The complete project application was received on 6/4/2020. To comply with the 60-day review requirement, the Commission must approve or deny this project no later than the 7/9/2020 meeting. Sixty calendar-days expires on 8/3/2020.

3. The project is a linear project that will not add impervious surface to the site, therefore the project is exempt from the Commission's stormwater requirements.

4. The erosion control plan includes inlet protection within the construction and down-gradient areas, perimeter sediment control, sediment control log, and temporary geotextile covering for exposed soil. The erosion control plan meets Commission requirements.

5. The National Wetlands Inventory does not identify any wetlands on site. The applicant meets Commission wetland requirements.

6. There are no Public Waters on this site. The applicant meets Commission Public Waters requirements.

7. There is no FEMA-regulated floodplain on this site. The applicant meets Commission floodplain requirements.

8. The site is not located in a Drinking Water Management Area (DWSMA). The applicant meets Commission drinking water protection requirements.

SC2020-006:

9. Multiple public notices have been made for this project as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

10. A Project Review Fee of $xx has been received.

Recommendation: Recommend approval subject to the following condition(s):

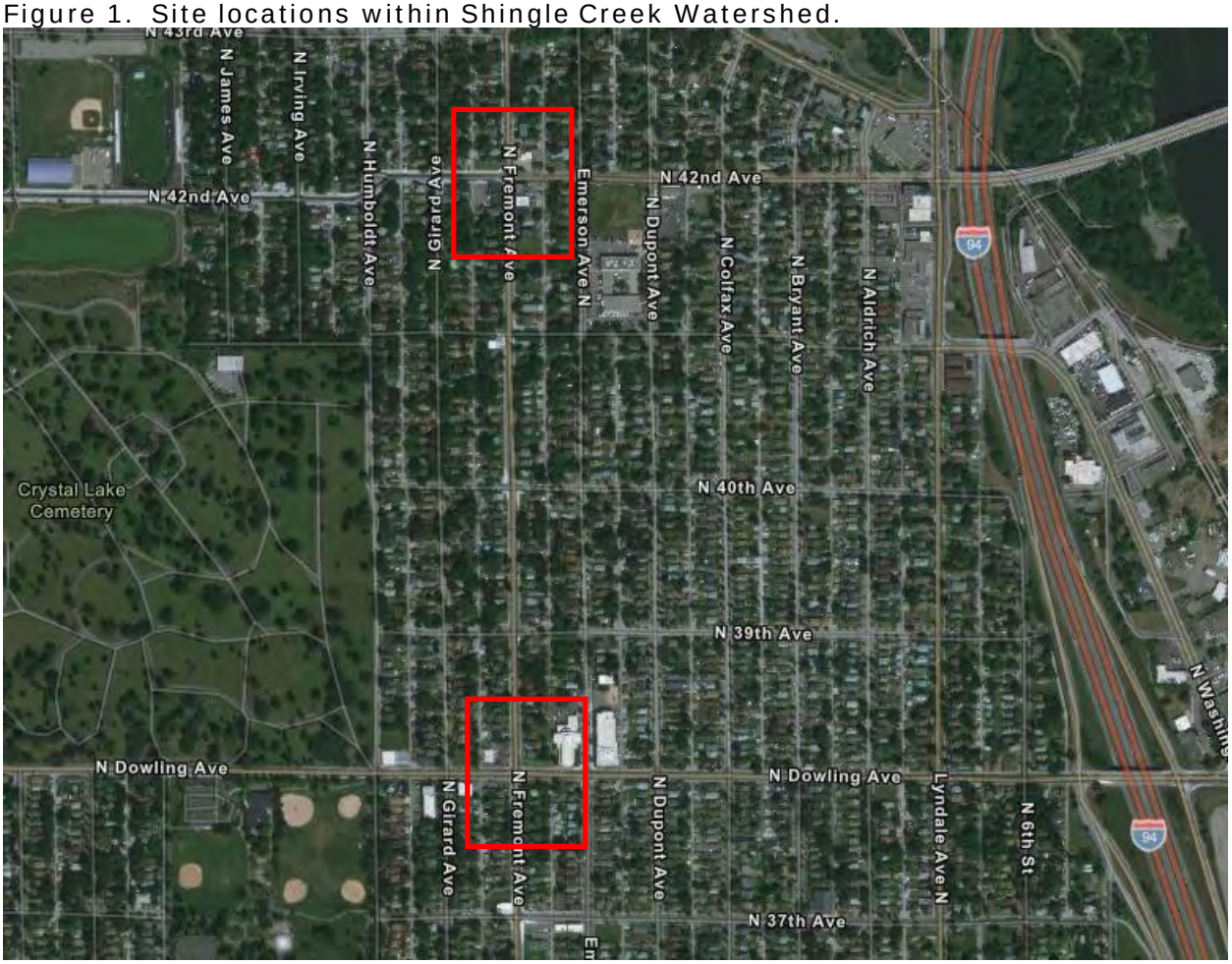
1. A project review fee is received.

Wenck Associates, Inc.
Engineers for the Commission

Ed Matthiesen, P.E. Date

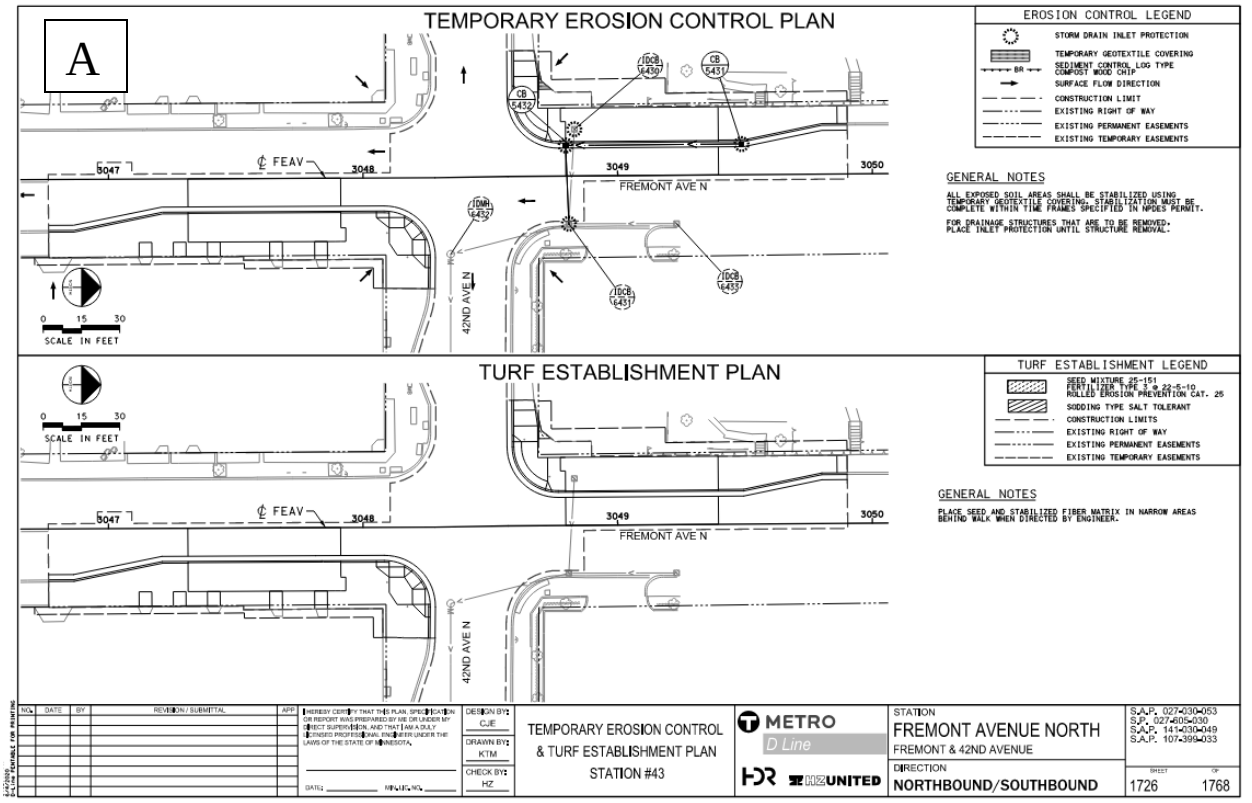
SC2020-006:

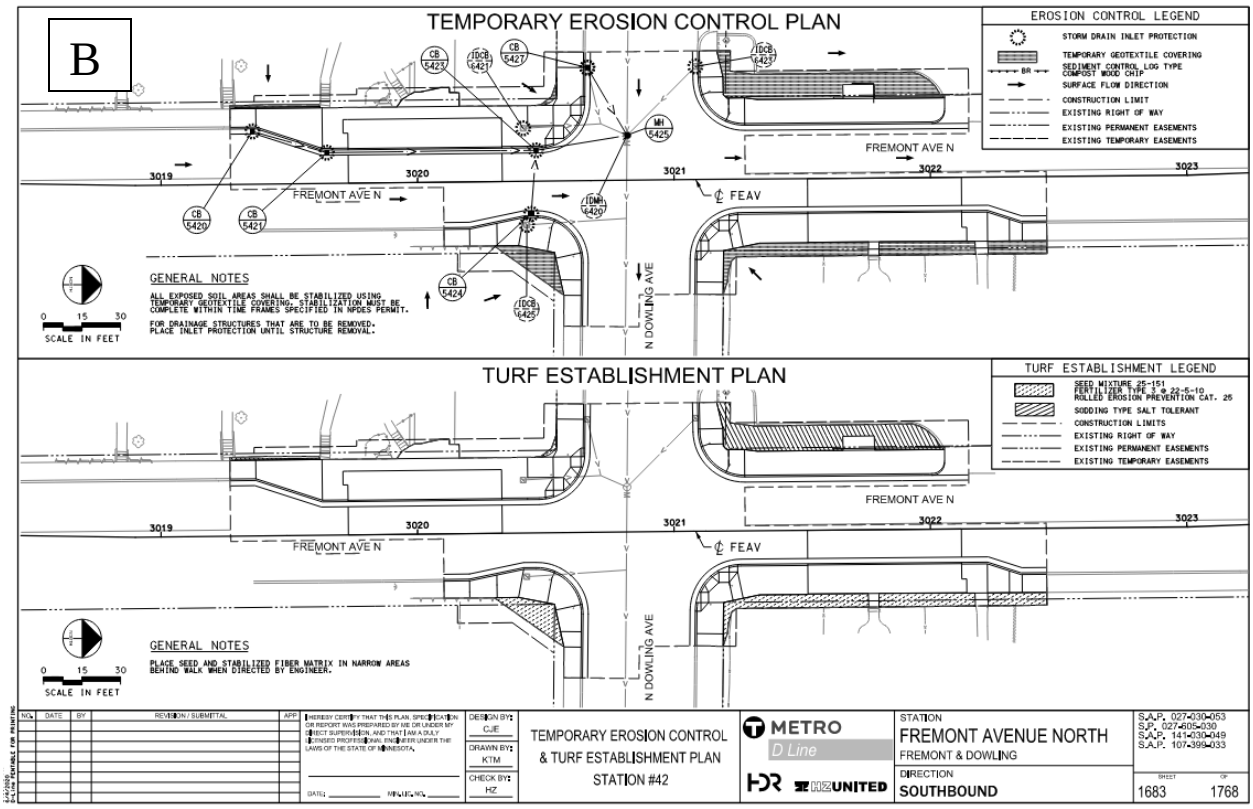
Figure 1. Site locations within Shingle Creek Watershed.



SC2020-006:

Figure 2. Site erosion control and turf establishment plans for (a) Fremont & 42nd and (b) Fremont & Dowling.





Shingle Creek Watershed Management Commission

3235 Fernbrook Lane N • Plymouth, MN 55447
Phone (763) 553-1144 • Fax (763) 553-9326

www.shinglecreek.org

Shingle Creek
Watershed Management Commissions
Partnership Cost-Share Program Guidelines

The Shingle Creek Watershed Management Commission will from time to time make funds available to its member cities to help fund the cost of Best Management Practices (BMPs) partnership projects with private landowners. The following are the guidelines for the award of cost-share grants from this program:

1. Projects on private property must be for water quality improvement, and must be for improvement above and beyond what would be required to meet Commission rules. Only the incremental cost of "upsizing" a BMP above and beyond is eligible.
2. Priority is given to projects in a priority area identified in a subwatershed assessment or TMDL.
3. Commission funds may reimburse up to 100% of the cost of the qualifying BMP.
4. The minimum cost-share per project is $10,000 and the maximum is $50,000.
5. Projects must be reviewed by the Technical Advisory Committee (TAC) and recommended to the Commissions for funding.
6. Cost-share is on a reimbursable basis following completion of project.
7. The TAC has discretion on a case-by-case basis to consider and recommend to the Commissions projects that do not meet the letter of these guidelines.
8. Unallocated funds will carry over from year to year and be maintained in a designated fund account. Any balance in said account in excess of $100,000 will be transferred to the City Cost Share Program Account.
9. The property owner must dedicate a public easement or equivalent sufficient to install and maintain the BMP.
10. The Member City must obtain a recordable maintenance agreement from the property owner that specifies maintenance requirements and schedule; authorizes the City to inspect the BMP and order maintenance and improvement; and authorizes the City to undertake ordered maintenance and improvement not completed by the property owner, and assess the cost that work to the property.
11. The standard Commission/Member Cooperative Agreement will executed prior to project construction.

Adopted November 2015
Revised February 2017

Shingle Creek Watershed Management Commission

3235 Fernbrook Lane N • Plymouth, MN 55447
Phone (763) 553-1144 • Fax (763) 553-9326

www.shinglecreek.org

Shingle Creek Watershed Management Commissions
Partnership Cost-Share Program Application

City:	City of Brooklyn Center
Contact Name:	Stephen Mastey, Landscape Architect
Contact Phone:	651.646.1020 Office, 651.246.1151 Mobile
Contact Email:	Stephen@landarcinc.com
Project Name:	Crescent Cove Play Area
Total Project Cost:	$365,000
Amount Requested:	$50,000
Project Location:	4201 58th Ave N, Brooklyn Center
Owner:	Crescent Cove
Address:	3440 Belt Line Blvd #207
City, State, Zip:	Saint Louis Park, Mn 55416
Phone:	Tara Anderson
Email:	tara.anderson@crescentcove.org

1. Describe the BMP(s) proposed in your project. Describe the current condition and how the BMP(s) will reduce pollutant loading and/or runoff volume. Note the estimated annual load and volume reduction by parameter, if known, and how they were calculated. Attach figures showing project location and BMP details including drainage area to the BMP(s).
Play Area Construction Project consists of creating a play area that is mostly within the 100 year floodplain and converting the adjacent existing non-native landscape with a diverse native plant community that creates an ecologically appropriate wetland buffer. Under a portion of the play area additional storage beyond the watershed requirements will be created by using a Tire Derived Aggerate Infiltration System similar to the product used across the street at the Twin Lake North Townhomes Parking Lot Renovation Project.

2. If this request is for cost share in "upsizing" a BMP, explain how the upsize cost and benefit were computed.
We are requesting for funds to help with the creation of the Stormwater Treatment Systems (innovative TDA infiltration System) including Native Plantings and Native Buffer to Restore area along the Twin Lake North Lake Shoreline / Wetland to a high quality water filtration system and pollinator habitat.

3. Show total project cost and the amount of cost share requested.
See Crescent Cove Designer's Estimate Dated 2020 06 04 Attached. With our currently proposed design our project total is $365,000. Of that total $122,500 could potentially have water Quality Improvement Benefits attached with those improvements. Therefore, we are requested $50,000 of Potential Grant Funding at this time with this current proposed design.

Shingle Creek Watershed Management Commission

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www.shinglecreek.org

4. What is the project schedule, when will work on the BMP(s) commence and when will work be complete?
Work is scheduled to begin late Summer of 2020 as soon as approvals are completed and completing the project as weather allows either Fall of 2020 or Early in the 2021 Construction Season.

The member City must verify that a public easement (or equivalent) is dedicated and that an Operations and Maintenance Agreement has been executed and recorded prior to release of any funds.

CRESCENT COVE **June 4, 2020**

4201 58th Avenue North, Brookyln Center, Minnesota

DESIGNER'S ESTIMATE *(Based off of LANDSCAPE ARCHITECTURE Drawing Set Dated 2020 05 12)*

NO.	ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
1	Natural Timber Play Feature (Tree House Feel with Slide, Climbers & Play Elements)	LS	1.0	60,000.00	$60,000.00
2	Storage Shed (with interactive exterior surface & storage for yard/garden tools)	LS	1.0	20,000.00	$20,000.00
3a	Double Row of Erosion Control, Temp. Seeding, Sweeping during Construction	LS	1.0	5,000.00	$5,000.00
3b	Site Demo of Buckthorn, Colorado Spruce & Existing Bit. Path with Haulaway Recycling	LS	1.0	4,500.00	$4,500.00
3c	Site Grading / Subcutting with Soil Haulaway/Recycling (300 cubic yards to be removed)	CY	300.0	50.00	$15,000.00
4	Relocate Electric & Tele-communications/internet out of Play Space	LS	1.0	13,000.00	$13,000.00
5	Wetland Delineation Process	LS	1.0	5,500.00	$5,500.00
6a	Subbase for Play Spaces & Paths	LS	1.0	20,000.00	$20,000.00
6a	Subbase for Mini Baseball Diamond / Innovative Stormwater Treatment System with TDA	LS	1.0	22,000.00	$22,000.00
7a	Surfaces: Play Spaces (ADA & Fall Protection Included)	LS	1.0	35,000.00	$35,000.00
7b	Surfaces: Mini Baseball Diamond (Funded by MN Twins Community Fund)	LS	1.0	25,000.00	$25,000.00
8	Stone Seat Walls Embracing Play Spaces (St. Croix Valley Limestone @ 18 inch height)	EA	10.0	500.00	$5,000.00
9	Concrete Paths & Edger at Play Surfaces	LS	1.0	18,000.00	$18,000.00
10	Plantings, Planting Soil Amendments & Shredded Western Red Cedar Bark Mulch	LS	1.0	65,000.00	$65,000.00
11	Music Therapy Pieces with Installation Columns	EA	3.0	8,000.00	$24,000.00
12	Irrigation: Renovation of Existing System impacted by install of Play Space & Entry Drive	LS	1.0	5,000.00	$5,000.00
13	Site Lighting (Donated by Friend of Crescent Cove)	LS	1.0	4,800.00	$0.00
14	Site Furnishings (ADA picnic benches & trash / recycling receptacles)	LS	1.0	7,500.00	$7,500.00
15	Blue Stone Pretreatment Sump Assembly with Restoration at Each for Existing Pavements	EA	2.0	5,000.00	$10,000.00
16	Construction Staking & Creation of As-built Drawings upon Completion of Installation	EA	1.0	5,500.00	$5,500.00
	TOTAL PROJECT COSTS				**$365,000.00**

Assumptions:

A. Items highlighted in Green Potentially have Water Quality Benefits (totaling $122,500)

B. Does Not Include Design Fees or Permitting Fees

C. Tulips per Planting Plan L4.0 by Owner

D. Additional Play Equipment Not Specified on Plans by Owner

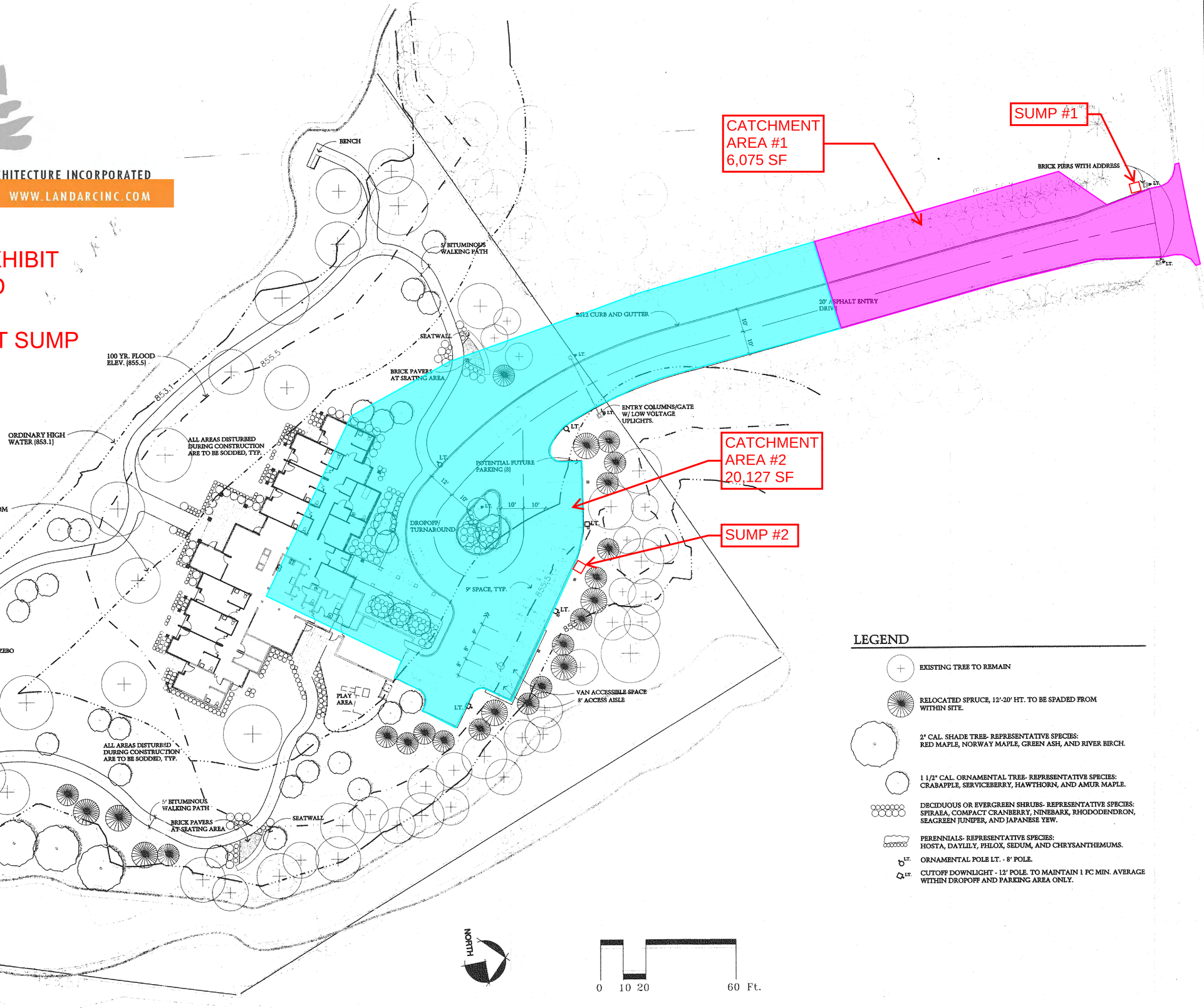
LANDSCAPE ARCHITECTURE, INC. 2350 BAYLESS PLACE ST. PAUL, MN 55114 PHONE 651.646.1020

LANDSCAPE ARCHITECTURE INCORPORATED

WWW.LANDARCINC.COM

CATCHMENT EXHIBIT FOR PROPOSED STORMWATER PRETREATMENT SUMP ASSEMBLY

2020 06 30



LEGEND

- EXISTING TREE TO REMAIN
- RELOCATED SPRUCE, 12'-20' HT. TO BE SPADED FROM WITHIN SITE.
- 2" CAL. SHADE TREE- REPRESENTATIVE SPECIES: RED MAPLE, NORWAY MAPLE, GREEN ASH, AND RIVER BIRCH.
- 1 1/2" CAL. ORNAMENTAL TREE- REPRESENTATIVE SPECIES: CRABAPPLE, SERVICEBERRY, HAWTHORN, AND AMUR MAPLE.
- DECIDUOUS OR EVERGREEN SHRUBS- REPRESENTATIVE SPECIES: SPIRAEA, COMPACT CRANBERRY, NINEBARK, RHODODENDRON, SEAGREEN JUNIPER, AND JAPANESE YEW.
- PERENNIALS- REPRESENTATIVE SPECIES: HOSTA, DAYLILY, PHLOX, SEDUM, AND CHRYSANTHEMUMS.
- LT. ORNAMENTAL POLE LT. - 8' POLE.
- LT. CUTOFF DOWNLIGHT - 12' POLE. TO MAINTAIN 1 FC MIN. AVERAGE WITHIN DROPOFF AND PARKING AREA ONLY.

North Memorial Health Care

Robbinsdale, Minnesota

NORTH RESIDENTIAL HOSPICE

Brooklyn Center, Minnesota

BWBR ARCHITECTS

400 Sibley Street, Suite 500
Saint Paul, Minnesota 55101
612-222-3701

Consultants

Hoisington Koegler Group Inc.
7900 Metro Boulevard Ste. 525
Minneapolis, MN 55439
(612) 835-9960

Name

Date 6/29/96 Reg. No. 23594

Issued For

Item	Date
City Submittal	5/29/96
Revised	6/24/96

Date 29 MAY '96 Drawn

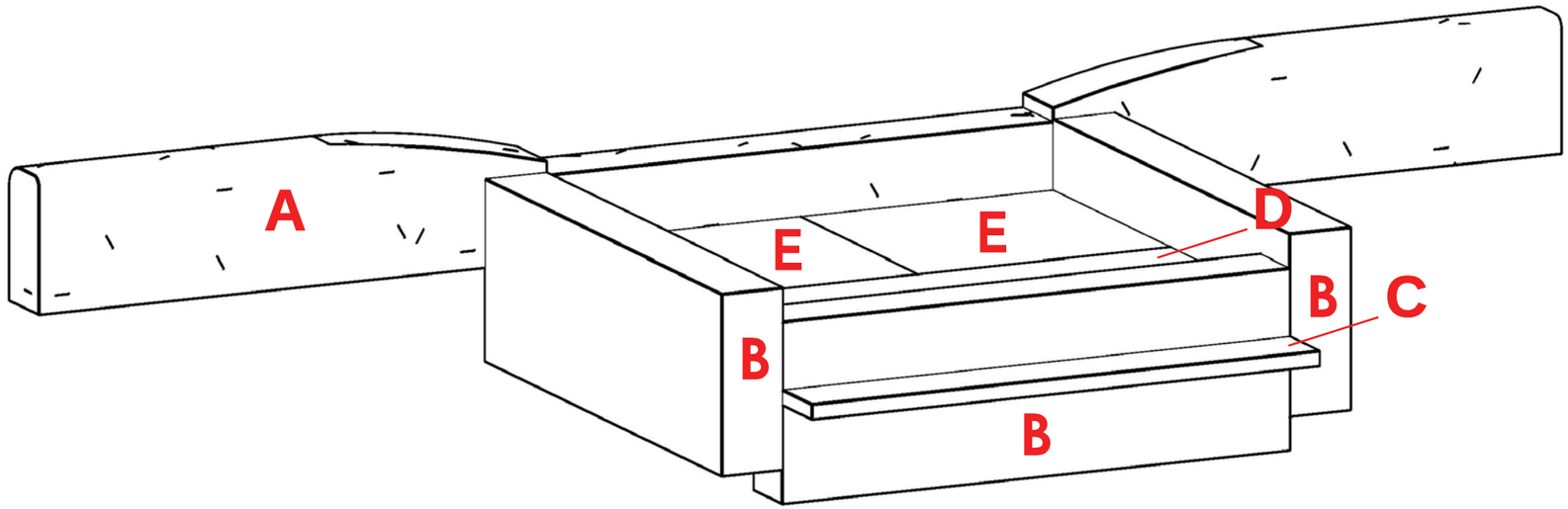
Comm. No. 96-28 Checked

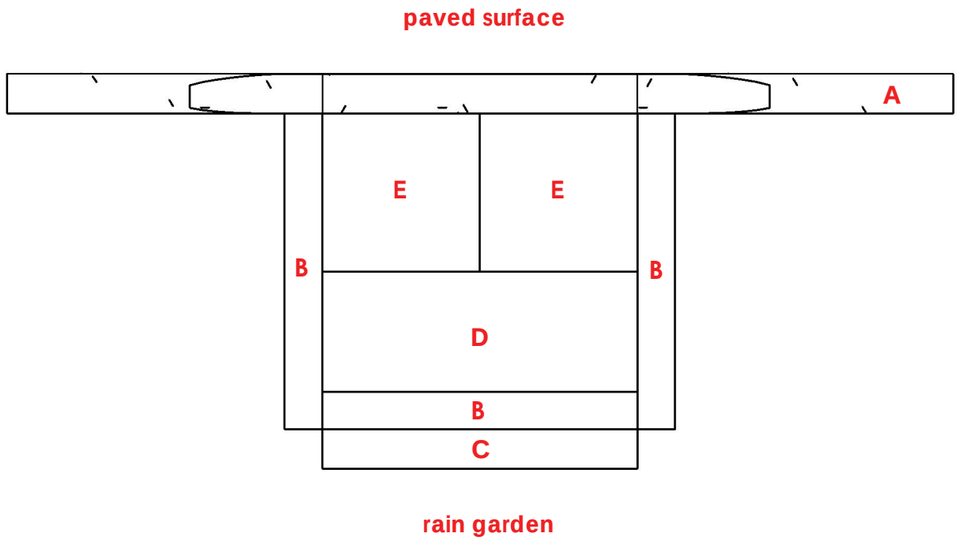
Sheet Title

SITE PLAN

Sheet No.

L2





A cast concrete curb

B 5.75” X 16” X 48” (3x)

C 6” X 48”

D 18” X 48”

E 24” X 24” (2x)

Raingarden Pretreatment Sump Assembly

Designed by Landscape Architecture, Inc.

Gunflint Bluestone Slabs
Material Supplier:
Rivard Stone
318 Hwy 35 & 64
Houlton, WI 54082
www.rivardstone.com
Tel. 715-247-3856

Material Surface Finish:
Thermal & Brushed Finish for all Exposed Surfaces
Cut / Sawn Finish for Abutting Joints

LANDSCAPE ARCHITECTURE INCORPORATED
WWW.LANDARCINC.COM

Wetland Buffer

Play Area & Associated Spaces
3,920 SF

Roof
1,955 SF

Mini Baseball Diamond & TDA Infiltration System
1,390 SF

Wetland Buffer

Wetland Buffer

0 8' 16' 32'

SCALE: 1/16" = 1'-0"

LANDSCAPE ARCHITECTURE, INC.
2350 Bayless Place Saint Paul, MN 55114
stephen@landarcinc.com 651.646.1020 landarcinc.com

PROJECT NAME:

Crescent Cove Amenity Spaces

REVISION HISTORY:

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 Landscape Architect under the laws of the state of Minnesota.

Signature: _____

Typed or Printed Name: STEPHEN MASTEY

Date: 00-00-0000 Reg. No.40629

PROJECT LOCATION:

4201 58th Ave N

Brooklyn Center, Minnesota
55429

DRAWING TITLE:

Localized Catchment Plan

SCALE: SCALE
DRAWN BY: SPM
CHECKED BY: SPM

L2.2

LANDSCAPE ARCHITECTURE, INC.
2350 Bayless Place Saint Paul, MN 55114
stephen@landarcinc.com 651.646.1020 landarcinc.com

PROJECT NAME:

Crescent Cove Amenity Spaces

REVISION HISTORY:

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 Landscape Architect under the laws of the state of Minnesota.

Signature: _____

Typed or Printed Name: STEPHEN MASTEY

Date: 00-00-0000 Reg. No.40629

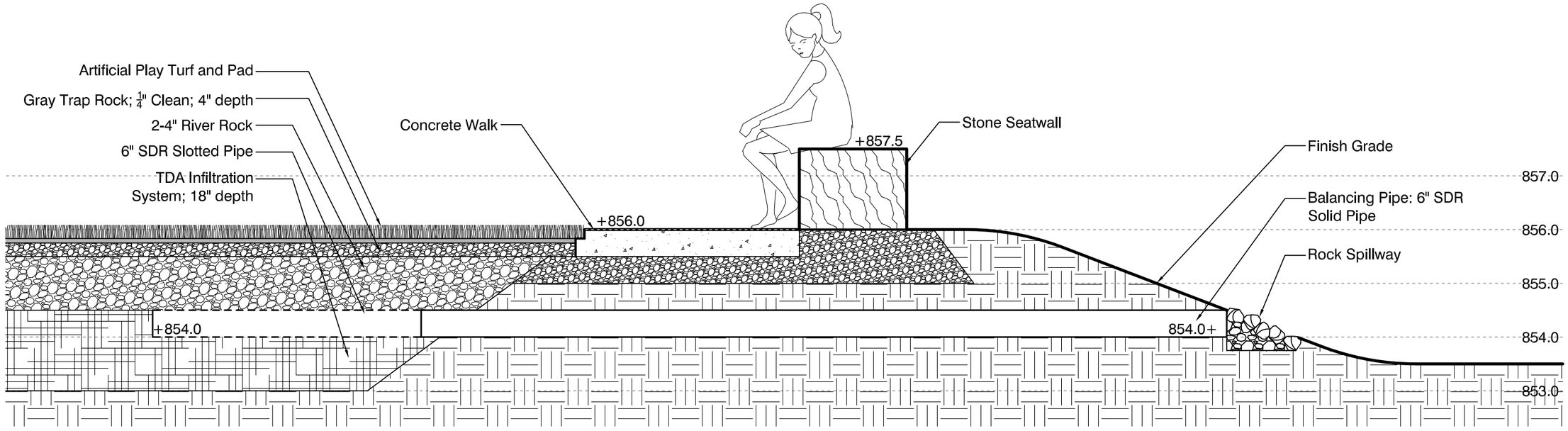
PROJECT LOCATION:

4201 58th Ave N

Brooklyn Center, Minnesota
55429

DRAWING TITLE:

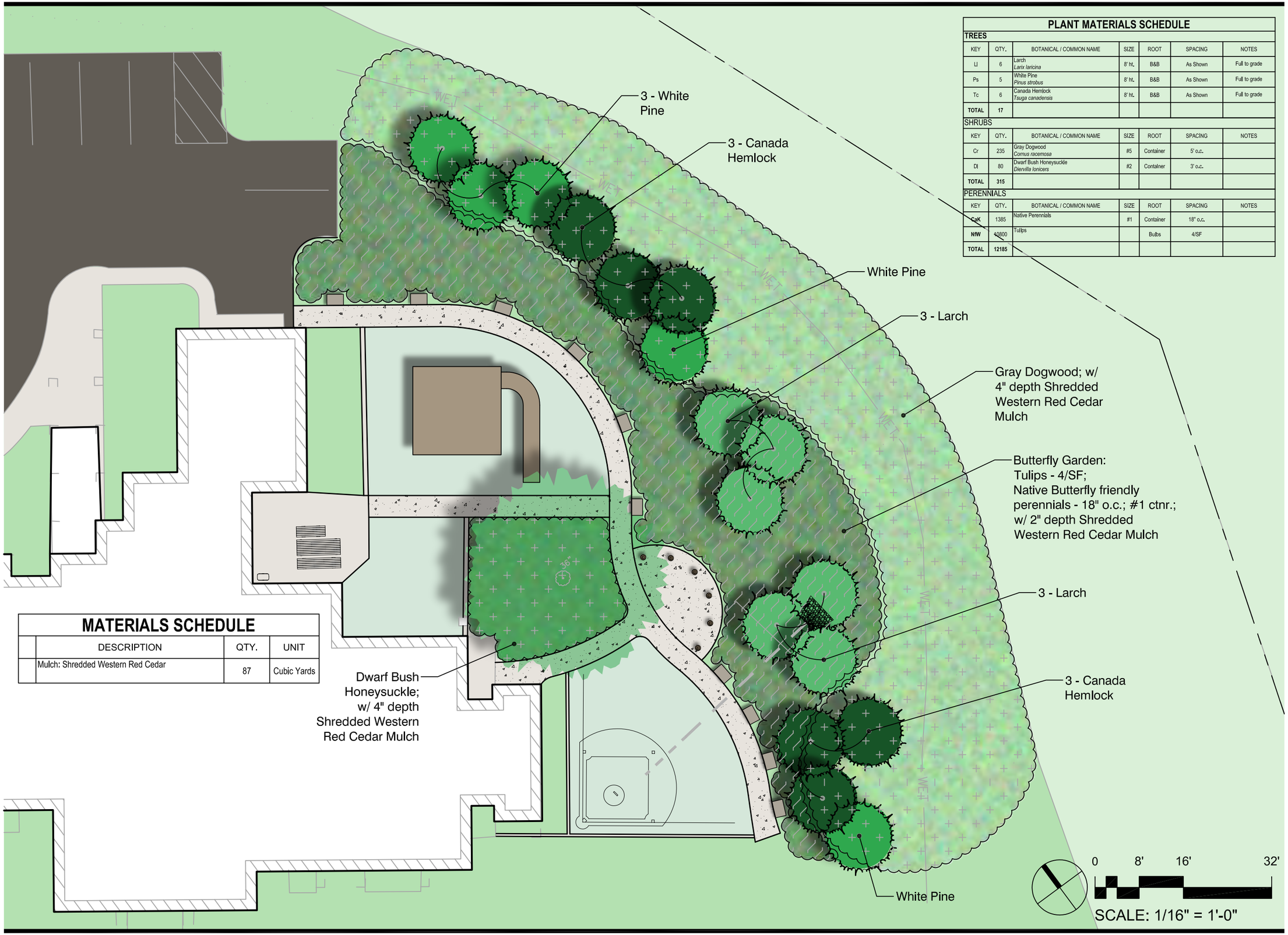
Grading and Utility Section



1 PLAY AREA: SECTION
1/2"=1'-0"

SCALE: SCALE
DRAWN BY: SPM
CHECKED BY: SPM

L2.1



PLANT MATERIALS SCHEDULE

TREES

KEY	QTY.	BOTANICAL / COMMON NAME	SIZE	ROOT	SPACING	NOTES
Ll	6	Larch *Larix laricina*	8' ht.	B&B	As Shown	Full to grade
Ps	5	White Pine *Pinus strobus*	8' ht.	B&B	As Shown	Full to grade
Tc	6	Canada Hemlock *Tsuga canadensis*	8' ht.	B&B	As Shown	Full to grade
TOTAL	**17**					

SHRUBS

KEY	QTY.	BOTANICAL / COMMON NAME	SIZE	ROOT	SPACING	NOTES
Cr	235	Gray Dogwood *Cornus racemosa*	#5	Container	5' o.c.	
Dl	80	Dwarf Bush Honeysuckle *Diervilla lonicera*	#2	Container	3' o.c.	
TOTAL	**315**					

PERENNIALS

KEY	QTY.	BOTANICAL / COMMON NAME	SIZE	ROOT	SPACING	NOTES
CaK	1385	Native Perennials	#1	Container	18" o.c.	
NtW	10800	Tulips		Bulbs	4/SF	
TOTAL	**12185**					

MATERIALS SCHEDULE

	DESCRIPTION	QTY.	UNIT
	Mulch: Shredded Western Red Cedar	87	Cubic Yards

LANDSCAPE ARCHITECTURE, INC.
2350 Bayless Place Saint Paul, MN 55114
stephen@landarcinc.com 651.646.1020 landarcinc.com

PROJECT NAME:

Crescent Cove Amenity Spaces

REVISION HISTORY:

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 Landscape Architect under the laws of the state of Minnesota.

Signature: _____

Typed or Printed Name: STEPHEN MASTEY

Date: 00-00-0000 Reg. No.40629

PROJECT LOCATION:

4201 58th Ave N

Brooklyn Center, Minnesota
55429

DRAWING TITLE:

Planting Plan

SCALE: SCALE
DRAWN BY: SPM
CHECKED BY: SPM

L4.0

Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek WMO Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: July 3, 2020

Subject: Crescent Cove Partnership Cost Share

Recommended Commission Action	Approve a Partnership Cost Share Grant for the Crescent Cove project in the amount of $50,000.

The City of Brooklyn Center has forwarded a Partnership Cost Share application from Stephen Mastey on behalf of Crescent Cove, a children's respite care and hospice facility on the north end of Upper Twin Lake. Improvements to the site including a play space, gardens, and native buffer were reviewed as part of project review SC2020-005.

Projects adjacent to public waters or wetlands or within the floodplain require a mandatory Commission review. While the overall project minimally increases impervious area, the applicant is incorporating voluntary BPMs that will have water quality or habitat benefit. The project includes two pretreatment sumps to treat runoff from the drive and parking lot and part of the roof. The applicant also proposes to create new runoff storage in a Tire Derived Aggregate infiltration system below the new play area. Finally, the current turf grass adjacent to the wetland and channel along the east side of the property will be replaced with a new native plant buffer and a pollinator garden that will also treat runoff from the site. The turf is difficult to maintain because it is located within the floodplain of Upper Twin Lake.

The proposed application for $50,000 was reviewed by the TAC at its July 25, 2020 meeting. While generally in favor of approving the cost-share, the TAC asked for more information regarding potential pollutant load removals. The applicant provided the attached figures and the following narrative. The applicant will be present at the July 9, 2020 Commission meeting.

1. Catchment Areas Exhibit @ Existing Entry Drive & Parking Lot. For both we are assuming the proposed Sediment Traps will reduce Phosphorus by 30%. Catchment #1 is 100% entry driveway & parking stalls along entry drive. Catchment #2 is 75% entry driveway & parking stalls, 10% building roof & 10% landscape sloping back to parking area.
2. L2.2 Catchment Areas within Proposed Project Area (for the Mini-Baseball Diamond & TDA Infiltration System) based off of the storage within the system and sandy parent material /soils present we don't anticipate any stormwater leaving that system / balancing pipe. The remainder of the Project area will be filtered over land with the proposed Native Planting Buffer along Wetland Edge to Playspace Averaging at least 30 feet to effectively allow for infiltration and pollutant removal prior making its way via subsurface or surface flow to the wetland resource.

Natural Resources “Opportunity” Grant Program

This Natural Resources “Opportunity” Grant Application Form is available at:

http://www.hennepin.us/residents/environment/natural-resources-funding

Guidelines for submitting Natural Resource "Opportunity" Grants

Please **email** your application to Kris Guentzel at Kristopher.guentzel@hennepin.us or send to:

U.S. Postal Mailing Address:

Hennepin County
Environment and Energy
Attn: Kris Guentzel
701 Fourth Avenue South, Suite 700
Minneapolis, MN 55415-1842

Find out more at http://www.hennepin.us/residents/environment/natural-resources-funding

About the Natural Resources "Opportunity" Grant Program

In an effort to work with partners to preserve, establish and restore our natural resources, reduce erosion and protect and improve water quality, Hennepin County Environment and Energy Department has initiated the *Natural Resources "Opportunity" Grant* program. Through the *Natural Resources "Opportunity" Grant* program, Hennepin County provides funds to potential partners to implement projects that address an identified natural resource management problem or need and/or undertake assessments that directly lead to the siting of projects that meet common natural resource management goals.

Questions & technical assistance

Prospective applicants are encouraged to contact the program managers shown below for assistance, including feedback on ideas, suggestions for activities, help with the application or any general questions and concerns.

Hennepin County Project Managers:

Kris Guentzel	612-596-1171	Kristopher.guentzel@hennepin.us
Kristine Maurer	612-348-6570	Kristine.maurer@hennepin.us
Karen Galles	612-348-2027	Karen.galles@hennepin.us

Selection criteria

The Natural Resources "Opportunity" Grant review committee will evaluate the application based on the following criteria to determine if the project sufficiently meets the threshold for partial funding of the project, assessment and/or project grant application:

- The primary purpose of the proposed must address a natural resource problem or need including:
  - Improving water quality
  - Preserve, establish or restore the County's natural resources including critical habitats, natural resource corridors and greenways, and designated open spaces.
  - Reduce erosion and sedimentation
- Special consideration is given to applications that are able to leverage resources (e.g., Clean Water Land and Legacy Amendment funds (CWL&L) or other funding sources).
- The proposed project helps meets goals, objectives and strategies identified in the Hennepin County Natural Resources Strategic Plan.

- Severity of the natural resource problem or need:
  - Relates directly to a total maximum daily load (TMDL) impairment load reduction
  - Addresses loading to a water resource on the State's 303d list of impaired waters
  - Is identified as a priority in the potential partner's plan(s) (i.e., watershed management plan, comprehensive plan Capital Improvement Project (CIP), etc.)
  - Addresses critical habitat for federally listed species or provides/improves habitat for state listed species with preference for species of greatest conservation need
  - Conserves or enhances habitat for rare plants or community types
- Environmental importance:
  - Addresses approved TMDL or subwatershed priority area(s)
  - Addresses climate resiliency goal such as reduced flooding or improved carbon sequestration
  - Falls within priority natural resource corridor(s) or Significant Natural Area(s)
  - Located adjacent to protected high quality natural areas like regional parks, Scientific and Natural Area (SNA), and/or wildlife refuges
  - Located in subwatershed of sensitive waters (nearly or barely impaired waterbody or watercourse, phosphorus-sensitive waterbody, lake of biological importance)
  - Addresses human health concern (area with high E coli, cyanobacteria bloom)
- Scientific feasibility:
  - Draft or final design/engineering plans completed or substantially underway, even at a conceptual level
  - Restoration plan and actions are clearly identified and follow recommendations of current scientific literature
  - Likelihood for long-term sustainability of practice with clear plan for operation and maintenance
- Need for County role:
  - Project that includes multiple jurisdictions and would benefit from higher level coordination
  - Project unlikely to happen without County resources
  - Project is on County property

All contracts recommended by the Hennepin County Environment and Energy Department are subject to approval by the Hennepin County Board of Commissioners.

Program guidelines and requirements

ELIGIBILITY	• The project must be located in Hennepin County • Eligible organizations include: – Local, state or regional governmental unit; – Non-profit organization; – Business; and/or – Landowner. • The project must have consent of all landowners.

FUNDING	Funding is available to share the costs with eligible applicants to implement water quality projects to preserve, establish and restore urban, suburban and rural natural resources and to meet common natural resource management goals. Special consideration is given to applications that are able to leverage resources (e.g., Clean Water Land and Legacy Amendment funds (CWL&L)).
AWARD AMOUNT	Up to $100,000, per the discretion of the *Natural Resources "Opportunity" Grant* review committee and Hennepin County Administration.
TIMELINES	• *Natural Resources "Opportunity" Grant* requests are non-competitive, and applications can be submitted year-round, with funds being allocated to projects substantially meeting one or more selection criteria as funds are available. • Each application is ranked against a set of criteria and must meet a minimal score in order to be funded. • In an effort to emphasize the desire to award Opportunity grants that catalyze and leverage additional investment, grant award notifications will be timed to allow recipients to use an Opportunity grant award to support competitive grant programs operated by the State of Minnesota, although other sources of leveraged funds are encouraged as well. • Funding reimbursement cannot occur before contract approval by Hennepin County. • Semi-annual project progress/summary reports must be provided as determined through contract agreement. • Final report within 2 months after project completion.
REPORTING REQUIREMENTS FOR AWARDED PROJECTS	• Work plan and budget. • Project design and specifications. • All invoices for consultant and/or contractor work. • Approval of in-kind contributions prior to work. • Certification that the project was installed according to the approved plans and specifications. • Operation and maintenance plan covering the life of the practice. • Final project report
ACCEPTABLE EXPENSES	Grant funds may be used for environmental/engineering consulting fees, materials, supplies, labor and inspection fees.
PROJECT AGREEMENT	Each project recipient must formally enter into a project agreement with the county. The agreement will address the conditions of the award, including implementation of the project and a final report. The agreement is a legal, binding document. Project recipients are expected to keep accurate financial records of the project which includes documentation of all expenses.

PAYMENTS	Final payment will be provided after the final report is approved by the County Project Manager. Interim payments can be made on a project by project basis as documented in the project agreement. Interim payments will be based on documentation of expenditures and project stage of completion.

Application instructions

The Application

The Natural Resources "Opportunity" Grant application is to be used by local, state or regional governmental units, landowners, and other organizations to seek Natural Resources "Opportunity" Grant program funds from the County. Please complete all required sections of the application. Incomplete applications will not be considered for funding.

Part 1 of the application requests background information on the applicant, the project area, project type and funding request. Part 2 of the application requests detailed information on the project, natural resources problem or need being addressed, scope of work and project budget.

Application Resources

An overview of all Hennepin County Natural Resource funding opportunities, programs, guidelines and applications can be found at http://www.hennepin.us/residents/environment/natural-resources-funding

Hennepin County Environment and Energy Department staff are available to provide clarification and answer questions regarding the funding program, process and requirements.

Part 1
Natural Resources "Opportunity" Grant Application

Application No. _____

Place the cursor in the gray box at question 1, fill in the answer, and then use the F11 function key to navigate through the remaining questions in the application.

1. PROJECT TITLE:

Channel Modification to Enhance SRP Removal

2. APPLICANT NAME:

Shingle Creek Watershed Management Commission

3. APPLICANT SIGNATORY: *(The person whose name is listed here must sign Part 1 -Box 7 of this application)*

Name: Judie Anderson

Title: Administrator	Telephone Number:763-553-1144	E-Mail Address: judie@jass.biz

Mailing Address
Agency: Shingle Creek Watershed Management Commission
Address: 3235 Fernbrook Ln N
City: Plymouth State: MN Zip Code: 55447

4. PROJECT DURATION:

Estimated Start Date: 10/1/2020

Estimated Completion Date: 11/15/2020

Anticipated PROJECT Length: 1 months

Part 1
Natural Resources "Opportunity" Grant Application

5. PROJECT TYPE:
☒ 1. Water Quality Project ☐ 2. Wetland Restoration ☐ 3. Habitat Restoration/Protection ☐ 4. Assessment Identifying Future Projects ☐ 5. Other:

6. FUNDING REQUEST: (*Provide the amount of funding requested to complete your project.)*	
Check for consistency with costs provided in Part 2, Question 2.	**Project Amount:**
Total PROJECT Cost This amount represents the full cost of the PROJECT.	$110,000
Natural Resources "Opportunity" Grant Request	$100,000
Other Match Funds in PROJECT Identify secured source(s) of funds: Funding Source Shingle Creek WMC Funding Source _____ Funding Source _____ Funding Source _____ Describe the status of the matching funds: Secured, in budget	$10,000 $_____ $_____ $_____

7. APPLICATION CERTIFICATION:	
I CERTIFY TO THE BEST OF MY KNOWLEDGE THAT THE INFORMATION IN THIS APPLICATION IS TRUE AND CORRECT AND THAT I AM THE **LEGALLY AUTHORIZED SIGNATORY** OR DESIGNEE FOR THE SUBMITTAL OF THIS INFORMATION ON BEHALF OF THE APPLICANT.	
Judie Anderson	Judie Anderson
Printed Name	Signature
Administrator	6/30/20
Title	Date

Part 1
Natural Resources "Opportunity" Grant Application

THIS CONCLUDES PART 1

Part 2
Natural Resources "Opportunity" Grant Program

This is the rated portion of the application with a total of 200 possible points.
Each question identifies the proportion of available points. Applicants should provide clear and concise answers. The Scoring Guide, shown below each scored question, provides information on what reviewers will look for in a successful application.

EXECUTIVE SUMMARY *(0 points)*

Summarize the overall project and associated water quality problem and how the project will address or solve the problem. (limit your answer to 250 words or less).

Wetlands that have received many decades of nutrient and sediment-rich runoff from agricultural and developed land uses are at risk of transforming from nutrient sinks to nutrient sources. The discharge from these altered wetlands is often high in soluble reactive phosphorus (SRP) and low in dissolved oxygen. In the Shingle Creek watershed nearly all the remaining wetlands are highly disturbed. The Channel Modification to Enhance SRP Removal project is the installation of a media filter in a channel conveying high SRP outflow from a wetland in the City of Crystal to Upper Twin Lake, which is an Impaired Water for excess nutrients. SRP is easily taken up by algae and fuels algal blooms. The Commission had previously undertaken the SRP Reduction Project, a pilot field trial to evaluate the effectiveness of several types of media in reducing SRP. That trial modified the outlet structure of Wetland 639W and measured the effectiveness of iron-enhanced sand and two proprietary media to reduce SRP in a limited amount of wetland outflow. This proposed project would increase the project scale to treat all the outflow from the wetland by lining approximately 300 feet of the outlet channel with interconnected cells of the two best-performing media, which consistently reduced 70-90% of SRP. It is estimated that the project will reduce SRP load to Upper Twin by about 50 pounds per year, or about 25% of the remaining phosphorus load reduction. See 2019 project results at: http://www.shinglecreek.org/srp-reduction-project.html.

1. SCOPE OF WORK *(up to 30 points)*

Scoring Guide	**Total 30 points**
Clear and concise project description	Up to 5 points
Clear description of project tasks	Up to 5 points
Project deliverables are clearly defined	Up to 10 points
Clearly defined timeline for the project	Up to 5 points
The purpose meets defined shared goals	Up to 5 points

Reviewers award points for a clear, complete and thorough scope that directly addresses the natural resource management problem/need. The scope demonstrates an understanding of the work required to fully implement and complete the project.

Using the area below, please provide:

- A detailed scope of work for the project that includes clearly defined tasks, deliverables, timelines and purpose.
    - Describe the intended results (what is the benefit?).
        - Be specific, clear and concise.
    - Describe the project area and provide supporting map(s) and relevant diagrams and/or pictures.

Part 2
Natural Resources "Opportunity" Grant Program

Wetland 639W is in the cities of Crystal and Brooklyn Center, and is immediately east of the MAC Crystal Airport. Several hundred acres of developed lands in Crystal, Brooklyn Park, and Brooklyn Center drain to the wetland, which is partially ditched. The wetland discharges through a channel into Upper Twin Lake, which is an Impaired Water for excess nutrients. Years of study and monitoring have concluded that the wetland has transformed form a nutrient sink into a nutrient source, and outflow was the largest single source of phosphorus to Upper Twin Lake. Over the past 10 years a series of projects have been identified and constructed by the Shingle Creek Watershed Management Commission and the City of Crystal to reduce this pollutant discharge (see answer #2).

The original Wetland 639W Outlet Modification Project installed a new weir at the outlet of the wetland, and an overflow weir higher up in the wetland to provide an outlet for higher flows. The outlet structure is a three-sided weir box filled with limestone, which outletted into a new channel that was constructed in the upland adjacent to the wetland. That channel, too, was lined with limestone. The limestone was intended to provide some SRP reduction, however, the actual reduction has been negligible. In the pilot SRP Reduction Project, the outlet structure (see Figure 1 and http://www.shinglecreek.org/srp-reduction-project.html) was modified to evaluate three different filter media – iron-enhanced sand (IES) and two proprietary media – at effectiveness in reducing SRP. The pilot study documented a consistent 70-90% reduction in SRP by one of the proprietary products and by IES. The IES findings were surprising as research at the St. Anthony Falls Lab and elsewhere had concluded the IES works best when allowed to dry out between events and did not work as well in low-oxygen environments. The third proprietary product did not perform as well as the other two and was discontinued from further consideration.

The load reduction achieved by the pilot field test was small since the fraction of water volume treated was small. The proposed Channel Modification to Enhance SRP Removal project would scale up the pilot to provide treatment in the discharge channel. The project would construct within the channel a series of cells lined with filter media underlain with drain tile assuring that each cell can draw down to allow the media to dry out. The proprietary medium, called Alcan, had the best removal rate but was several times more expensive than IES. Alcan would be used in the first cell to treat the runoff directly from the wetland, while the less expensive IES would line the more downstream cells to act as a "polishing" filter.

The Commission maintains a level logger in the pool upstream of the overflow weir to estimate the total volume discharged from the wetland. Regular grab samples are taken from that pool and in the downstream channel. These are used to estimate the annual water volume and pollutant load discharged from the wetland to the lake.

Upstream and downstream grab samples will be analyzed for TP, SRP, and TSS, and flow, DO and pH will be measured. The Commission has a rating curve based on limited flow data at the downstream end of the channel. A continuous flow meter will be installed to improve that rating curve and more precisely measure the volume being treated by the filter channel. Based on the ratio of filter area to load reduction from the pilot study, it is estimated that the in-channel filter can achieve an SRP load reduction of 50 pounds annually. The Commission will undertake this monitoring as part of its match to the grant.

Task 1: Final design and construction documents. The 30% design will be finalized, construction documents prepared, and quotes solicited from qualified contractors. This task also includes obtaining approval from the MAC, which is the owner of the property. The City of Crystal has an ongoing agreement with MAC to manage the wetland and adjacent upland as the MAC Park Preserve that also allows the city to make improvements for water quality. The Commission's Engineer will work with the City of Crystal to complete this task. Deliverable = construction documents.

Task 2: Installation. The Commission and City will engage a qualified contractor to obtain the filter material and to install the filter cells and drain tile. The Commission's engineer will be responsible for inspecting the work to assure it is completed according to specifications. The project is best suited for late fall/early winter construction, and could be completed as soon as Fall 2020.

Task 3: Monitoring. The Commission currently monitors outflow into the overflow weir for volume and water quality as well as discharge into the overflow channel. In this task, data will be routinely collected for two years to calculate removal effectiveness. Deliverable: monitoring report.

Part 2
Natural Resources "Opportunity" Grant Program

2. PROPOSED BUDGET *(up to 50 points)*

Scoring Guide	**Total 50 points**
Complete project budget is consistent with the scope of work and estimates are clear and reasonable.	Up to 5 points
Project attempts to leverage other local, state, or federal resources.	Up to 30 points
The project budget represents a good value for the work and natural resource benefit achieved.	Up to 15 points

Reviewers award points to cost-effective projects with accurate cost estimates. Points are awarded for a complete, reasonable budget that is consistent with the tasks described in the scope of work.

Using the areas below, please provide:

- A budget for the project including total cost for the project broken down into tasks.
    i. Additional lines may be added to the Proposed Project Budget table if necessary.
- Identify the match sources.

Proposed Project Budget	
Task elements	**Total Project Cost**
1. Design and Construction Oversight	$ 7,200
2. Construction	$ 95,800
3. Monitoring	$ 7,000
4.	$ _____
5.	$ _____
6.	$ _____
Total costs needed to complete:	$ 110,000

In addition to the proposed budget above, please provide the following information:

Total Project Cost $ 110,000
Natural Resources "Opportunity" Grant request $ 100,000

Match sources:
List other funding sources and amounts, including local cash matching funds. In-kind contributions are not eligible.

Funding Source: Shingle Creek WMC $ 10,000
Funding Source: _____ $ _____
Funding Source: _____ $ _____

Describe the status of matching funds: Secured, in budget

Part 2
Natural Resources "Opportunity" Grant Program

3. SEVERITY OF PROBLEM/NEED *(up to 55 points)*

Scoring Guide	**Total 55 points**
Severity of the problem/need is well documented.	Up to 15 points
Project will achieve substantial natural resources benefits.	Up to 20 points
Project success can be measured, and proposed methods to measure success are reasonable.	Up to 10 points
The Project provides long-term sustainability of natural resource benefits (e.g. operation and maintenance, long-term follow-up, natural resources management), and/or identifies additional projects to address specific problems area(s).	Up to 10 points

Reviewers award points for addressing severe natural resource problems and needs, documentation of those problems and needs and expected protection and/or improvements achieved by the proposed. Projects with measurable improvements receive more points than those with unclear or vague benefits. Reviewers will consider the actual benefit, the level of implementation and the severity of the problem. Reviewers will consider only changes that can be achieved by the proposed scope of work.

Using the area below, please provide:

- A detailed description of the severity of the problem or need to be addressed by the project.
  - Include how the problem has been documented in a plan or assessment (e.g., TMDL, CIP, or presence on State's 303(d) impairment list).
  - Describe how the problem will be addressed by the project and how success will be measured.

The Shingle Creek Watershed Management Commission and the cities of Crystal and Brooklyn Center have studied Upper Twin Lake and the entire Twin Lake chain of four lake for decades to diagnose water quality issues and develop and implement Best Management Practices which have since been installed throughout the lakeshed. Monitoring prior to the 2007 TMDL identified a large wetland upstream of Upper Twin Lake as a significant source of phosphorus to the lake system. A new outlet structure was installed to control discharge from the wetland, and successfully reduced phosphorus load into the lake by over 200 pounds per year. However, a high proportion of the remaining estimated 250 pounds per year is dissolved phosphorus. This is quite common in disturbed wetlands where hydrology has been altered and the soils are alternately wetted and dried out and release phosphorus under anoxic conditions. (http://www.shinglecreek.org/tmdls.html).

As noted above, inflow and outflow from the channel will be monitored for two years and annual load reduction estimated. The project will be considered a success if it reduces SRP in the outflow to Upper Twin Lake by at least 50 pounds annually.

Part 2
Natural Resources "Opportunity" Grant Program

4. PROJECT TEAM *(up to 10 points)*

Scoring Guide	**Total 10 points**
Team members' roles and responsibilities are well defined and expected contributions to the project are adequate for the scope of work.	Up to 5 points
Team members' qualifications and past experiences are relevant.	Up to 5 points

Reviewers will award points based on skills, qualifications and experience of the project team members.

Using the area below, please provide:

- List contact information for the partners, staff and volunteers who will implement the project
- Briefly describe their relevant skills, qualifications, past experiences and expected contributions in the project (*do NOT submit resumes*).

Ed Matthiesen, PE, Project Manager (Wenck Associates). Ed has 40 years of extensive experience in water resources and environmental engineering, including as the District Engineer for three Twin Cities area watershed districts and four Joint Powers Associations, including the Shingle Creek WMC. He has completed comprehensive stormwater plans, designed outlet structures and storm sewers, computer hydrologic and hydraulic models, and has extensive experience designing and overseeing construction of stream and ditch restorations and stabilization projects.

Brian Kallio, PE, Project Engineer. Brian has more than 25 years of experience as a Senior Civil and Water Resources Engineer. His engineering experience includes managing, designing, and overseeing construction for a broad assortment of large and small civil engineering and water resources projects throughout Minnesota. Specialties include integrating water resources needs with site design and development, retrofitting new stormwater management facilities into limited spaces in urban areas, and producing creative solutions to challenging conditions. Brian designed and was project manager for the pilot SRP Reduction Project.

Katie Kemmitt, Monitoring Manager. Katie is an Environmental Scientist who currently oversees the monitoring program for the 16 lakes and several streams in the Shingle Creek and West Mississippi watersheds. She provides lake and stream monitoring flow and water quality monitoring; fish, macroinvertebrate, and aquatic vegetation surveys; and specialty monitoring and manages other staff and interns.

Mark Ray, PE. City of Crystal Director of Public Works/City Engineer. Mark and his staff will provide technical and maintenance advice and oversight of the project.

Part 2
Natural Resources "Opportunity" Grant Program

5. PROJECT DEVELOPMENT PROCESS/ LOCAL COMMITMENT *(up to 30 points)*

Scoring Guide	Total 30 Points
A comprehensive decision-making process was used to arrive at the proposed project.	Up to 10 pts.
The level of local support and commitments from project partners is documented.	Up to 15 pts.
A collaborative process will be implemented to execute the project.	Up to 5 pts.

Reviewers award points based on project development and implementation efforts and commitments from project partners. Provide documentation as appropriate.

Using the area below, please provide:

- Describe the decision-making process used to select the project (i.e. why was this project chosen over other solutions).
- List where the proposed project is identified as a priority by a local, state, or federal unit of government that manages natural resources (e.g., state approved watershed management plan).
- Describe how you have involved and fostered local, regional and statewide partnerships for the success of the project.

The Commission has on an ongoing basis made reduction of excess nutrients discharged from Wetland 639W a priority, as this is the largest single source of phosphorus to the Impaired Water Upper Twin Lake. Outflow from Upper Twin is the largest single source of phosphorus to Middle Twin Lake, which flows into Lower Twin Lake. Improving water quality in Upper Twin benefits multiple lakes. Three EPA/MPCA Section 319 grants have assisted the Commission in diagnosing the mechanics of the nutrient export and in constructing the original outlet modification project and the pilot SRP reduction study.

This project is a high priority to the Commission not only because of the need to continue to reduce phosphorus to Upper Twin Lake, but also because export of SRP from disturbed wetlands impacts other waterbodies in the watershed. There are several flow-through wetlands that discharge into Shingle and Bass Creeks, including Palmer Lake, the Cherokee Drive wetland, and I-94 wetland along Shingle Creek and the Timber Shores wetlands discharging to Bass Creek. Excess nutrients in both these streams are contributors to the DO impairment, which is a primary stressor to the fish and macroinvertebrate impairments in those streams. Demonstrating successful removal of SRP in wetland discharge to impaired waters is consistent with Minnesota's Nutrient Reduction Strategy of nonpoint source reductions in urban runoff.

Part 2
Natural Resources "Opportunity" Grant Program

6. READINESS TO PROCEED *(up to 25 points)*

Scoring Guide	Total 25 Points
Project elements are in place for the project to proceed and documentation is provided (e.g. planning, design and permits).	Up to 25 pts.

Reviewers will award points based on how soon a project can begin construction.

Using the area below, please provide:

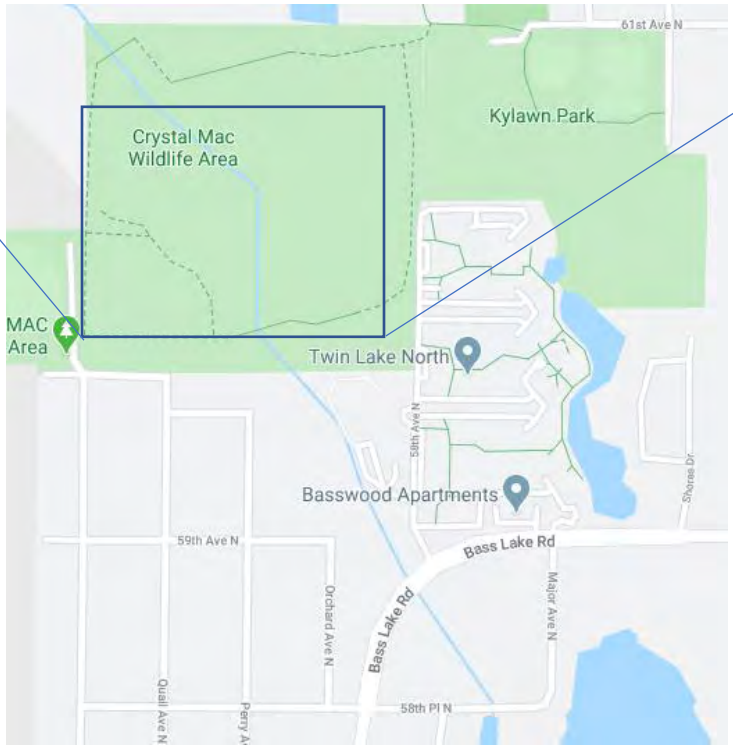
- Describe the steps you have taken to proceed immediately with the project. Provide information and documentation on project elements such as status of designs, permits, inter-local agreements, landowner agreements, easements, other secured funding, and staff or agency approvals.

The project has been 30% designed and can quickly proceed to final design and construction. The project site is located within the city of Crystal, on land that is owned by the Metropolitan Airports Commission (MAC) for the Crystal Airport and operated as the MAC Park Preserve under a cooperative agreement with the city that also allows the city to make improvements for water quality. The City will work with MAC staff to obtain permission to make modifications to existing facilities, similar to the approval gained to undertake the pilot SRP Reduction project, and the original outlet modification project. No other permits, agreements, or easements will be required.

THIS CONCLUDES PART 2

Part 2
Natural Resources “Opportunity” Grant Program

Figure 1. **The overflow weir and channel at wetland 639W.**



Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek/West Mississippi WMO Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: July 3, 2020

Subject: Clean Water Fund Grant Solicitation

Recommended Commission Action	Authorize preparation of CWF grant applications for the Connections II, Bass Creek restoration, and Meadow Lake Management Plan Projects.

The Board of Water and Soil Resources (BWSR) is now taking applications for Clean Water Fund (CWF) grants. Up to $12 million is available for projects that protect, enhance, and restore water quality in lakes, rivers, and streams in addition and/or protect ground water and drinking water sources from degradation. Funds would be available in early April 2021 and must be spent by December 31, 2023. Grants require a minimum 25% local match.

Last year the Commission submitted the Connections II stream restoration project and Phase 1 Meadow Lake Management Plan, which was the proposed drawdown. Staff recommends resubmitting the Connections II project as is as well as preparing an application for the Bass Creek Stabilization project. Staff also recommends resubmitting the Meadow Lake project but changing the focus from the drawdown to the upcoming alum treatment. We believe that application did not fare well last year because it is difficult to quantify pollutant load reductions from a drawdown, but it is more straightforward for an alum treatment.

There are no pending projects in West Mississippi that would be suitable for the grants.

Applications are due by August 17, 2020. If authorized, staff will prepare applications for review at your August 13, 2020 meeting.

Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek/West Mississippi WMC Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: July 3, 2020

Subject: BWSR Watershed Based Implementation Funding

The Board of Water and Soil Resources (BWSR) on June 25, 2020 hosted a third meeting of the Metro-Mississippi Twin Cities West partnership. The purpose of the meeting was to continue to discuss and decide on criteria that will be used to select projects or programs to be funded from the $874,153 allocated to this basin. As a reminder, the partnership consists of representatives from the following organizations. The two city staff represent all the cities in the basin.

- Anoka Conservation District
- Carver County
- Elm Creek WMO
- Minnehaha Creek WD
- Shingle Creek WMO
- City of Maple Grove
- Bassett Creek WMO
- Carver SWCD
- Hennepin County (as SWCD)
- Mississippi WMO
- West Mississippi WMO
- City of Minnetonka

The meeting notes prepared by BWSR are attached. The group reviewed and revised the previously developed Project Evaluation Process guidance (attached) and developed a spreadsheet application form (attached). Rather than further refining the process and deciding, for example, if there was going to be a maximum grant, or some type of weighting to help spread the funds out), the group agreed they wanted to see what kinds of projects and project costs were under consideration. The group agreed that all parties should populate the spreadsheet with 1-2 of their top projects before any further decisions are made. Following that submittal, the group will score each submittal by consensus.

Staff requests input from the Commissions as to which projects to submit. For consideration. The funds became available July 1 and would be disbursed this fall as soon as the partnership selects the funded projects and the applicants submit a workplan to BWSR.

Some suggested projects include:

1. Meadow Lake Drawdown
2. Connections II
3. Bass Creek Stabilization

Watershed Based Implementation Funding
West Mississippi Basin – Project Evaluation Process
6-14-20 Draft
Revised and adopted 6-25-20

Project Eligibility:

- Eligible activities – design, project management, and construction of projects
- 25% minimum local match required

Project Evaluation Matrix Instructions:

- **LGU** – local government unit submitting the project
- **Project Description** – briefly describe project location, type, and purpose
- **Resource Need** – describe the resource need (impaired, nearly impaired, protection) and TMDL reduction target (if applicable)
- **Resource Priority Level** – describe the priority level of the resource (regional vs. local, public access, prioritization in local plan, etc.)
- **Project Goals/Benefits** – describe the estimated benefits (pollutant load reduction, volume reduction, ecological benefits, community benefits, etc.) and progress toward resource goals
- **Project Timeline/Obstacles to Completion** – describe the implementation timeline and project readiness (e.g. feasibility study, land rights, staff and financial capacity, permitting, etc.) Projected installation completion timing. Obstacles to completion – landowner funding, landowner O&M agreements, local matching funds secured, U.S. ACE permitting, local permitting, etc.
- **Partners** – list any partner entities
- **Estimated Total Project Cost** – total design, project management, and construction cost
- **Local Matching Funds** – amount of local matching funds.
- **Other State Funds** – amount of other state funds applied to the projects.
- **WBIF $ Request** – estimated total, less matching funds and other state funds. Must not exceed 80% of total. (I assume that 25% match means that a $125K project could have $100K WBIF and $25K match, making the match 25% of the grant amount. In this case, WBIF is 80% of the total.)
- **Cost/Benefit** – calculate the cost/benefit for the life of the project (e.g. $/lb TP/30 yr), can also provide any relevant context (e.g. land use, alternatives analysis)
- **WQ Benefit** – score of 1-5 considering resource need, priority level, estimated water quality benefit, progress toward goals
- **Secondary Benefits** – score of 1-5 consider volume reduction, ecological benefits, community benefits (e.g. greenspace, recreation, underserved communities), education, etc.

Potential Allocation Options:

- Establish funding tiers (higher score = higher level of funding)
- Establish funding cutoff (only the top X projects or projects scoring higher than X)
- Establish funding cap per project or entity

Metro – Mississippi Twin Cities West
Watershed-based Implementation Funding (WBIF)
Notes from Meeting #3

June 25, 2020
2:00 - 3:00 p.m.

Purpose of meeting: To review project matrix updates, discuss potential allocation options as identified and finalize the matrix. Discuss next steps for compiling and selecting a list of potential projects.

Attendees: Chris Lord (Anoka Conservation District), Laura Jester (Bassett Creek WMO), Tim Sundby (Carver County), Mike Wanous (Carver SWCD), Amy Juntunen (Elm Creek WMO), Karen Galles (Hennepin County (as SWCD)), Derek Asche (City of Maple Grove), Becky Christopher (Minnehaha Creek WD), Doug Snyder (Mississippi WMO), Diane Spector (Shingle Creek WMO and West Mississippi WMO)

Agenda

2:00 Welcome and Purpose of Meeting

2:05 **Project Matrix**

- Reviewed project evaluation process including eligibility. Clarified match needs to be at least 25% of the grant amount.
- Added obstacles to completion to project timeline.
- Life-cycle cost discussion: Will include all costs for installation & maintenance for designated lifespan of the practice.
- Jester: Should education be included in total project cost if associated, or as a separate item/activity? Public meetings included in design cost? Both should be included in total cost
- Matrix will need to be updated for consistency with Word doc.
- Group agreed to a 70/30 weighted scoring criterion.
- Spector motioned approval to accept Chris Lord's recommended changes, Snyder seconded. All agreed.

2:30 **Discuss allocation options**

- Funding Tiers, Minimum, Maximum, Not all receive funding?
- Start populating the spreadsheet, then consider how to fund?
- Group wants to see the money go further down the list rather than focusing all of the WBIF money to one or two projects.
- Suggested for each LGU to enter top two projects into spreadsheet.
- Group would like to see both minimum and cap.
- Spector moved to populate spreadsheet with top two projects, Juntunen seconded. All agreed.

2:50 Discuss next steps for compiling and selecting a list of potential projects

- Juntunen will create shareable spreadsheet for joint entry of projects (Due one week prior to meeting). Spreadsheet will also have tab for definitions. Add anticipated installation date to project timeline or in the notes.
- Next meeting will be late July via Zoom.
- BWSR will send meeting availability request.
- Next meeting will discuss allocation and scoring.

Watershed-Based Implementation Funding **6/25/20 Draft**
West Mississippi Basin - Project Evaluation Matrix

LGU	Target Water Body	Project Description	Resource Need	Resource Priority Level	Project Goals/Benefits	Timeline - Anticipated Completion year	Obstacles to Completion	Partners	Local Matching Funds	Other State Funds	WBIF $ Request	Est Total Project Cost	% Match (> 20)	Life Cycle (yrs)	Life Cycle Cost	Life Cycle Cost/Benefit	WQ Benefit Description	Secondary Benefit Description	Score 1 (Low) to 5 (High)			Potential Allocation Options						
																			WQ Benefit 70%	Secondary Benefits	Total Weighted	Option 1 - 3 tiers,		Option 2 - 3		Option 3 - 4 tiers,	
																						Tier	Funding	Tier	Funding	Tier	Funding
Example	Rupert Lake	300' shoreland stabilization and buffer to reduce sediment and nutrients into the lake	Nearly impaired for nutrients	Regional recreational lake with public access and county park	Reduce sediment load to lake by 2 tons/yr and associated nutrients as well as .25lbs/yr TP from overland flow	2022	Landowner matching funds, DNR & Local permits	Landowner, Lake Improvement District, WMO	$ 5,000.00	$ 6,000.00	$ 25,000.00	$ 36,000.00	20%	10	$ 45,000.00	$ 2,000.00	2.25 lbs-TP/yr reduction, 2% progress toward goal, currently at 36%	2 tons - TSS/yr reduction, .25 acre pollinator habitat buffer, on property owned by Islamic center, and near public beach in Co. Park, lake discharges to Mississippi River 1 mile downstream	4.08	4.33	4.16						
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Technical Memo

WENCK ASSOCIATES

Responsive partner.
Exceptional outcomes.

To: Shingle Creek/West Mississippi WMC Commissioners

From: Ed Matthiesen, P.E.
Diane Spector

Date: July 3, 2020

Subject: June 2020 Monthly Staff Report

Project Review Fees
Staff is still researching alterative fee structures, including potentially simply charging the applicant the actual cost of the project review. The TAC will consider options at its July 23 meeting and bring a recommendation to the Commissions.

Project Updates

SRP Reduction Project. Monitoring is underway. We will be slightly modifying the outlet box design to provide a boom or some other method of keeping large debris from being swept into the box.

Crystal Lake Management Plan. Sediment cores have been taken and sent to UW-Stout for processing. Water quality monitoring is underway. Staff have taken zooplankton and phytoplankton samples on Crystal Lake. Staff observed a significant amount of cyanobacteria, which are blue-green algae. Some species of blue-green algae can emit a toxin that is harmful to animals and humans. We have not gotten the phytoplankton identification and enumeration results back yet.

Katie and intern Aaron doing zooplankton and phytoplankton sampling on Crystal Lake.

Bass and Pomerleau Lakes. The second round of alum treatment is expected in late summer/early fall and staff and Plymouth staff are preparing bidding docs. Sediment core results have been received and are being analyzed to determine the effectiveness of the first dose and if adjustments to dosing are necessary. The filamentous algae bloom on Bass Lake this spring has mostly cleared up. Staff are continuing to explore potential prevention and treatment actions such as refining how we do alum dosing to include a light application in the shallows, and are preparing educational materials for residents. Phosphorus concentrations in Bass and Pomerleau continue to be well below the state standard at both the surface and bottom samples.

WENCK ASSOCIATES
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SHINGLE CREEK / WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION
MONTHLY COMMUNICATION LOG
June 2020

Date	From	To	SC	WM	Description
6/4/2020	Dr. Pete Weiss @ Valparaiso University	Katie K., Ed M.	x	x	Looking for monitoring data on IESF projects
6/12/20	CCX Media	SC WMC	X		Completed a cable new story regarding the upcoming Meadow Lake Drawdown project https://ccxmedia.org/news/meadow-lake-drawdown-project-will-improve-water-quality/
6/15/20	Roxy Robertson @ WSB	Ed M.		X	Elm Creek Restoration Phase IV
6/16/2020	Eric Roerish @ SRF	Ed M.	X		Status of Highway 81 bridges SC2020-003
6/18/20	Anoka SWCD	SCWM WMC	X	X	Notice through Watershed Partners that the Anoka County Water Resource Outreach Collaborative produced an animated video about lakeshore restoration and stewardship https://www.youtube.com/watch?v=sSNnz2PNq8Q
6/23/20	Pete Moreau @ Sambatek	Ed M.	X	X	Project review for Northcross Business Park in Brooklyn Park
6/23/20	Mary Kaius, HCEE	SCWM WMC	X	X	Notice that due to COVIS work restrictions the County will not be coordinating volunteer wetland monitoring though WHEP this year.
6/24/2020	Brian Vlach @ TRPRD	Ed M.	X		Grant eligibility for Eagle Lake Golf Course pond water irrigation
6/24/20	Resident, Middle Twin Lake	S WMC	X		Email asking if the Commission tests the water in Middle Twin for bacteria. Responded "no."
6/24/20	Mario Traveline, DNR	Nick O, Katie K	X		Notice that due to COVID work restrictions the DNR will not be doing a fish survey on Crystal Lake this year.
6/24/20	Landscape designer	SC WMC	X		Question whether the Commission has a standard for maximum impermeable surface coverage and buffer zones adjacent to Lower Twin Lake. responded "no.

From: Diane F. Spector <dspector@wenck.com>
Sent: Tuesday, June 30, 2020 8:20 AM
To: Judie Anderson <Judie@jass.biz>; Amy Juntunen <Amy@jass.biz>
Cc: Ed A. Matthiesen <ematthiesen@wenck.com>
Subject: FW: Thanks for attending the Minnesota Stormwater Seminar Series featuring Jane Clary

Here's the information about the Stormwater Seminar I did, along with a link to the video and the Q & A.

From: Andy Erickson <eric0706@umn.edu>
Sent: Monday, June 29, 2020 5:41 PM
To: Andy Erickson <eric0706@umn.edu>
Cc: Jane Clary <clary@wrightwater.com>; Anderson, Anita.C (MDH) <anita.c.anderson@state.mn.us>; Michael Sadowsky <sadowsky@umn.edu>; Diane F. Spector <dspector@wenck.com>; John Gulliver <gulli003@umn.edu>; John Bilotta <bilot002@umn.edu>
Subject: Thanks for attending the Minnesota Stormwater Seminar Series featuring Jane Clary

[EXTERNAL EMAIL]

Greetings!

Thanks for attending the Minnesota Stormwater Seminar Series with Jane Clary on June 18th, 2020! We hope you enjoyed the presentation and panel discussion. Thanks so much for submitting your questions both in response to the pre-seminar questionnaire and during the event. Our speaker and panelists have responded to many questions in the attached document. In addition, our speaker and panelists have agreed to share their contact information with our audience in case you'd like to contact them directly with questions (in order of introduction):

- Jane Clary <clary@wrightwater.com>
- Anita Anderson <anita.c.anderson@state.mn.us>
- Mike Sadowsky <sadowsky@umn.edu>
- Diane Spector <dspector@wenck.com>

If you missed it, the recording is live at: https://www.youtube.com/watch?v=9UFM4aWiQNc
You can find other recordings of past MN Stormwater Seminars on our Youtube Channel (https://www.youtube.com/channel/UCBmXT6jnWo9xAKs0RFnny8Q). If you are interested in PDHs for this or other seminars, please contact me (eric0706@umn.edu) by email to request the certificate.

Our next seminar will be September 17th, with Robert Traver, talking about Research to Practice: Lessons in Resilience from Monitoring Urban Stormwater Transportation Systems. Stay tuned for announcements of future seminars by signing up for UPDATES (http://stormwater.safl.umn.edu/updates) or visiting the MN Stormwater Seminar Series website at https://www.wrc.umn.edu/swseminars.

Thanks again for supporting the MN Stormwater Seminar Series!

-Andy

Andy Erickson, PhD, PE
Research Associate
St. Anthony Falls Laboratory :: University of Minnesota
612-239-2046 | http://stormwater.safl.umn.edu/

Questions Submitted by Registrants Prior to the Seminar:

- How concerned should we be about infiltration based green infrastructure creating a vector for pathogens entering groundwater?
    - Anita Anderson: I think we need to be aware of the setting for infiltration including geology, groundwater flow, and proximity to water wells.
    - Jane Clary: See these resources: https://www.epa.gov/green-infrastructure/green-infrastructure-and-ground-water-impacts
- Can you please discuss the presence of non-human born pathogens in SW runoff that pose a health threat to humans.
    - Anita Anderson: Some primary pathogens of concern include Cryptosporidium, Campylobacter and pathogenic E. coli from cows and sheep. While pathogens from birds may be less concerning for human health, the risk is not non-existent.
- How well do performance assessments of controls focused on indicator bacteria address actual pathogen removals?
    - Anita Anderson: Before and after measurements of indicator bacteria can tell you something about how a control is working, but are not usually a direct indicator of pathogen removals.
    - Diane Spector: In the Shingle Creek Biochar study, we had quite variable results. In the most highly controlled case, where we removed streamflow from the Creek, passed it through an enclosed filter, and then returned the filtered flow to the Creek, we saw very consistent 90%+ reductions. However, in the less controlled environments, e.g., adding biochar to iron-enhanced sand pond filter benches, the results were inconsistent. We did not have enough data to even start to understand what the causes of that variability might be. And since we were focused only on the indicator bacteria, we had no way of knowing whether pathogen removal was also inconsistent or was even happening.
    - Jane Clary: This is an area where additional research is needed. Some of the organizations with active research in this area include Monash University (Chandrasena, McCarthy and others) in Australia and Stanford (Alexandra Boehm's Group). Some examples include: https://www.mdpi.com/2073-4441/9/12/949, https://pubmed.ncbi.nlm.nih.gov/29289923/ https://web.stanford.edu/~aboehm/research.htm https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6760807/
    -
- Storm sewer networks provide an environment favorable to Bacterial growth. What design practices and maintenance procedures can be used to minimize pathogens in pipes and structures?
    - Anita Anderson: This advice comes from knowledge of managing drinking water infrastructure, but likely periodic flushing and/or disinfection, temperature monitoring, and nutrient management would be helpful.

    - Jane Clary: In terms of human pathogens, source controls related to sanitary sewer leaks intercepted by the storm drain system would be the highest priority.
- Recently, there have been dashboards used to report data. Are there dashboards part of those tools?
    - Jane Clary: Not exactly sure which dashboards are being referred to, but www.bmpdatabase.org is a source of performance information with dynamic statistical tools available for bacteria and other pollutants.
- Is there any way to find out what an HNF183 e.coli test costs?
    - Jane Clary: It depends on whether a university lab or commercial lab is being used. Costs vary depending on number of samples and other samples, but several hundred dollars per analysis is typical (e.g., $300+/- $50).

Questions posted in the Q&A (Unanswered Live):

- Do you feel that fungal enhancements of bioretention facilities have potential to reduce pathogen concentrations or does the sensitivity of E. coli and Klebsiella to fungal degradation suggest that this approach will achieve technical compliance without improving the safety of the water for human contact?
- What are your opinions about relatively new proprietary devices that claim to remove bacteria from urban stormwater?
    - Anita Anderson: Would need to see information specific to each device, and what testing went into the performance claims.
    - Jane Clary: Agree with Anita. Field-based testing with real stormwater (instead of lab testing) is a key part of real-world evaluation. Additionally, performance over time and maintenance requirements should be considered. Also see discussion here: https://udfcd.org/wp-content/uploads/uploads/resources/guidance%20documents/Denver%20E%20%20coli%20Toolbox%2008-5-2016.pdf
- Have similar analyses been completed for practices that are typically used in rural/agricultural areas?
    - Anita Anderson: I don't know but control of pathogens may be especially important in agricultural areas.
    - Jane Clary: Daren Harmel (USDA-ARS) (and others) have conducted studies in this area and published some excellent papers related to uncertainty associated with monitoring for E. coli. A few examples include: https://www.ars.usda.gov/ARSUserFiles/30980500/graphics/EcoliUncJOH2016.pdf https://www.researchgate.net/publication/48855582_Effects_of_Agricultural_Management_Land_Use_and_Watershed_Scale_on_E_coli_Concentrations_in_Runoff_and_Streamflow
- Can you talk about actions partners (beyond the public works people) have taken that were useful?

    - Diane Spector: Education and outreach that links behaviors to outcomes, such as 'If you don't clean up after your dog you won't be able to swim at the local beach' can be effective.
    - Jane Clary: trash management related to raccoons and other urban wildlife. Other ideas here: https://udfcd.org/wp-content/uploads/uploads/resources/guidance%20documents/Denver%20E%20%20coli%20Toolbox%2008-5-2016.pdf
- If a BMP is demonstrated to remove bacteria and "claims" and designs are made to the effect, should the BMP be registered with the EPA under the FIFRA, Federal Insecticide, Fungicide and Rodenticide Act
    - Anita Anderson: My understanding is that FIFRA applies to substance (e.g. bleach) but not necessarily a process. Water filters are not registered.
- Recent research has shown pervious concrete does a better job reducing E. Coli than other permeable pavements. The reason was attributed to low pH due to construction materials in concrete. Are you aware of 'disinfecting' materials that are currently or potentially can be incorporated into filter media?
    - Anita Anderson: Copper and silver have sometimes been used on the drinking water side, but I don't think they would work well for stormwater.
- Do you have a maintenance estimate for underdrains?
- How expensive is the HF183 molecular test?
    - Jane Clary: It depends on whether a university lab or commercial lab is being used. Costs vary depending on number of samples and other samples, but several hundred dollars per analysis is typical for commercial labs (e.g., $300+/- $50).
- Do any of you think that epidemiological studies should be the prime focus of research?
    - Anita Anderson: Some consider epidemiological studies to be the gold standard, but they can be incredibly difficult and expensive to conduct. They may be possible for a very controlled set of circumstances.
    - Jane Clary: Agree with Anita, QMRA may be a better focus area. However, studies like the SCCWRP Surfer Health Study (http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/943_SurferHealthStudy.pdf) help to fill gaps on stormwater-impacted recreational areas. Some additional studies along these lines could be helpful.

Questions posted in the Q&A (Answered Live; feel free to add, elaborate, or include additional links to resources):

- To what extent do existing stormwater BMPs CONTRIBUTE to bacteria loading? Sump manholes, underground vaults, infiltration structures, stormwater ponds, etc.?
    - Anita Anderson: I'm not familiar with the research but could see warm, stagnant, high nutrient situations as contributors.
    - Jane Clary: They can--maintenance is important.
- Should the bacteria water quality standards be revised to consider the sources? Aren't bacteria from animal sources less dangerous for humans than bacteria from human

sources? How should we evaluate TMDL WLAs that are based largely on high bacteria loads from animal sources? What does it mean for compliance for MS4 permittees?
    - Anita Anderson: Maybe in some way. As mentioned previously certain animal sources are quite concerning (cows, sheep, others?), and would of course depend on the reliability of the source tracking methods.
    - Jane Clary: Birds--lower risk, cattle--not lower risk. The QMRA option in EPA's Recreational Water Quality Criteria provides an option for alternative site-specific standards based on equivalent risk concepts. It's not clear to me whether this is a realistics option for many smaller communities though. This is an area where more policy discussion is needed related to regulatory options.
- Are there any examples of MS4-permitted cities that have successfully achieved a TMDL WLA with a significant pollutant reduction for bacteria? Has it ever been done?!
    - Diane Spector: There are a handful of delistings on the Minnesota 303(d) list, but most are in rural/ag areas where animal waste/noncompliant septic systems can be significant, controllable sources. I'm not aware of any urbanized area delistings. Complicating the matter for MS4s is that most bacteria/*E. coli* TMDLs are expressed as load duration curves rather than a single WLA. They don't lend themselves to a typical reporting approach of estimating removals from all the BMPs you've undertaken to see if you've achieved the required WLA.
- Good street sweeping (frequent and the right equipment) appears to remove significant amounts of phosphorus and solids from urban stormwater systems. Do you think there is potential that good street sweeping might make a significant dent in bacteria loading too?
    - Diane Spector: It can't hurt and you're doing it anyway. For perspective, in the Shingle Creek Biochar study, two of our filter test sites were catch basin inserts, one on a county road, and one in a large parking lot. *E. coli* concentrations in the impervious runoff were highly variable, ranging from 24,200 MPN/ml (the upper limit of the lab test) to 30 MPN/ml. The county road influent concentrations were generally higher than the parking lot concentrations. This does suggest that there is some buildup/washoff occurring, but more research is necessary to quantify that rate and to estimate load reduction.
- Do we actually have stormwater BMPs that reliably and cost-effectively lower bacteria loadings?
    - Jane Clary: There are BMPs that can lower bacteria loadings; however, consistent attainment of primary contact recreation standards at the end of pipe is not demonstrated. (UV disinfection, typically applied to dry weather discharges, is an exception.) The 2020 BMP Database Summary Statistics report is forthcoming later this summer, but the last version is here: http://www.bmpdatabase.org/performance-summaries.html
- What does it mean, for TMDL compliance by permitted cities, that we find bacteria in high concentrations almost everywhere we look and that bacteria appear to grow almost everywhere, including in receiving waters and stormwater systems?

    - Jane Clary: Agree that this is frustrating. This is one of the reasons that communities are prioritizing control of human waste sources first. Additional policy discussion is needed in this area. See https://ocgov.app.box.com/v/SOC-WMA-CHWSRS-Work-Plan
- We promote infiltration, where feasible, as effective for reducing bacteria loading to surface water. Many people are concerned about impacts to groundwater. Any thoughts on this?
    - Jane Clary: See these resources: https://www.epa.gov/green-infrastructure/green-infrastructure-and-ground-water-impacts
- What types of amendments in bioretention filter media have shown promise in reducing bacterial levels?
    - Jane Clary: Biochar is a popular area of research right now that shows promise. Continued study in real-world field applications and evaluation of performance over time are important.
- Should we move beyond indicator organisms and work directly with organisms that are pathogenic for humans?
    - Anita Anderson: Could be ideal but currently methods for pathogen detection are still complex and expensive, and pathogen communities are variable so might be difficult to choose a “target” organism.
- On the topic of BMP monitoring, we are continuing to use E.Coli to assess the effectiveness of reduction practices. Given the limitations of using E.Coli, what should we be monitoring for?
    - Anita Anderson: Depending on the BMP, there may be other surrogates such as nutrients or turbidity that would be useful to monitor, but might be a case-by-case basis.
- What does it mean that the research questions from your 2014 book are still valid? Is there so little research being done in this field that important questions remain unaddressed for 6 years?
    - Anita Anderson: Microbial research takes time and is expensive, need to study a variety of conditions.
    - Jane Clary: There is good research going on, but more is needed. I think there has been more research on the technical side than there has been progress on the policy side.
- It seems like we are in a situation where our regulations are lagging too far behind the quickly evolving field of bacteria/pathogens. For those in the stormwater field managing programs and trying to move the dial, where should we be focusing our limited resources right now? Is priority #1 identifying potential human fecal sources?
    - Anita Anderson: I think identifying potential human fecal sources, and major agricultural sources, would be a very good focus.
    - Jane Clary: Yes, human sources. Also, continued implementation and maintenance of BMPs that target multiple pollutants. Also basic source control practices related to pet waste, etc.

- What concrete steps do you recommend to address the big policy questions related to TMDLs and attainability? In what forums should these discussions happen? What organizations should lead this process, especially from the MS4 permittees' perspective?
    - Jane Clary: That's a complicated question--probably not easily answered in these quick notes. Multi-disciplinary work groups at the regional, state and federal levels are a starting point. In Colorado, we held a one-day symposium that included EPA, the Colorado Water Quality Control Division, MS4 permittees, consultants and watershed groups to discuss research, local case studies, BMP performance, and other issues. Increased communication like this is a starting point.

Questions Posted in the Chat:

- Detention vs retention vs wetland basin difference? (posted during Jane's talk, when she was reporting BMP database results, if that's helpful)
    - Jane Clary: Detention basins (extended detention basins for water quality) drain between storms--grass-lined basins. Retention ponds maintain a permanent pool (i.e., wet ponds). Wetland basins also have a permanent pool, but include wetland vegetation. In terms of performance, historically, we have said that facilities with permanent pools perform better. The current data set shows lower effluent concentrations for detention basins; however, I would not necessarily prioritize them as "better."
- The MN Stormwater Research Program (MN SWRP, https://www.wrc.umn.edu/projects/stormwater) is funding a new biochar research study that will in part research the effectiveness of biochar for bacteria. ….....We will be sending more information about this and all the NEW funded projects next week. ...and on this most recent question, the MN SWRP is also funding part II of a SW reuse study looking at bacteria (Ischii), and Anita is involved with that project. More on that specific project announced next week too!