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VLAWMO
Vadnais Lake Area
Water Management Organization

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VLAWMO TECHNICAL COMMISSION MEETING

8:00 AM December 14, 2022

Vadnais Heights City Hall, Council Chambers, 800 County Road E East, Vadnais Heights, MN 55127

Action items:

I. **Call to Order – 8:00am –Chair Jesse Farrell**
II. **Approval of Agenda**
III. **Approval of Minutes (November 7, 2022)** p. 2
IV. **Administration & Operations**
   A. December Financial Report for Payment – Phil **p. 6**
   B. December TEC Report to the Board – Phil **p. 14**

V. **Programs**
   A. Awards and Outreach
      1. Presentation of Watershed Awards - Nick **p. 15**
      2. Update on Education & Outreach 2022 results and 2023 Plan – Nick **p. 20**
   B. Cost Share Program Updates - Lauren **p. 15**

VI. **Projects**
   A. Consider Contracts/quotes for 2023 – Dawn **p. 16**
   B. Wilkinson BMP Project update – Dawn **p. 25**
   C. Spent lime grant submission authorization– Dawn **p. 18**
   D. MAWD annual meeting/carp project presentation – Dawn **p. 18**
   E. Update on 2023-2025 BWSR WBIF Grant - Lauren **p. 19**

VII. **Commisioner Reports**
VIII. **NOHOA**
IX. **Ramsey Soil & Water Conservation Division**
X. **St. Paul Regional Water Services**
XI. **Public Comment**
XII. **Next Meetings:** TEC: January 11, 2023, Regular Board Meeting: February 22, 2023
XIII. **Adjourn**

Vadnais Lake Area Water Management Organization
Technical Commission (TEC) Minutes
November 9, 2022
Vadnais Heights City Hall, Council Chambers
800 County Road E East, Vadnais Heights, MN 55127

Commission Members Present:

Jesse Farrell	Chair, Vadnais Heights (VH)
Gloria Tessier	Vice Chair, Gem Lake (GL)
Patricia Orud	North Oaks (NO) Alternate
Paul Duxbury	White Bear Township (WBT)
Terry Huntrods	White Bear Lake (WBL)

Absent: Andy Nelson (LL), Bob Larson (NO)- both with prior notice
Others in attendance: Phil Belfiori, Dawn Tanner, Brian Corcoran, Lauren Sampedro, Nick Voss (VLAWMO staff), Jeremy Erickson (SPRWS), Ed Shapland (CAC)

I. Call to Order

Vice Chair Tessier called the meeting to order at 8:05 am.

II. Approval of Agenda

It was moved by Commissioner Huntrods and seconded by Commissioner Duxbury to approve the November 9, 2022 TEC agenda Vote: all aye. Motion passed.

III. Approval of Minutes (October 14 , 2022)

It was moved by Commissioner Duxbury and seconded by Commissioner Huntrods to approve the October 14th meeting minutes as presented. Vote: all aye. Motion passed.

IV. Administration & Operations

A. Recognition of Appreciation

Chair Farrell presented an award and certificate of appreciation for Commissioner Duxbury for serving on the VLAWMO Technical Commission for over 5 years. Staff and TEC congratulated and thanked Paul for his time and dedication.

B. Financial Report for Payment

Administrator Belfiori summarized the financial report as included in the TEC packet. He highlighted some of the main expense items including the biochar project, design work for the Wilkinson project, Lambert Creek loan payment, and public drainage maintenance

planning. Belfiori expressed that VLAWMO is on track in terms of budget for this time of year and recommended approval of the financial report.

It was moved by Commissioner Orud and seconded by Commissioner Huntrods to approve the October financial report for payment. Vote: all aye. Motion passed.

V. Programs

A. Cost Share Program Updates

Sampedro presented a summary of proposed cost share program changes for 2023. Updates and changes are proposed for the Soil Health Grant Program, Landscape Level 1 Grant Program, and Landscape Level 2 Grant Program, with minor changes for the Rain Barrel Grant Program. Notable updates include requiring education components and native plants for Soil Health Grant Program projects, increasing the required maintenance period for Landscape Level 1 projects from 5 years to 10 years and adding a 25% funding level, and revising the eligible applicants and project types for the Landscape Level 2 Grant Program for increased flexibility to be responsive to partners. Smart irrigation controllers and smart irrigation controller pilot sites were added as eligible practices under Landscape Level 2. Staff are also proposing payments from all VLAWMO grant programs to occur only after project completion.

Other changes include language adjustments for readability and aesthetic improvements (color, photos, etc.) on the program materials.

Commissioner Orud expressed appreciation for the focus on native plants and requested staff's in-progress native plant guidance flier to be provided when it is completed.

It was moved by Commissioner Tessier and seconded by Commissioner Huntrods to approve the 2023 grant program policy changes to the Board Subcommittee and Board of Directors. Vote: all aye. Motion passed.

B. Annual Watershed Awards:

Voss introduced the watershed awards program's annual voting process for the TEC and provided voting forms to TEC members. Staff provided time to the TEC to review the received nominations and vote for each award category.

Sara Svir was elected as the winner of the Watershed Partner award.

Megan Sigmon-Olsen was elected as the winner of the Watershed Steward award.

Chair Farrell thanked all the nominees and explained how imporatant their services are in the community.

It was moved by Commissioner Huntrods and seconded by Commissioner Orud to approve the watershed awards. Vote: all aye. Motion passed.

VI. Projects

A. Vadnais-Sucker Lake Regional Park restoration update

Sampedro provided an update of the Vadnais-Sucker Lake Regional Park restoration project. She discussed that staff have begun meeting with partners on construction and communication planning for the project this fall. She said VLAWMO has completed draft signage for the project and Great River Greening has completed a draft RFP. Staff will be meeting with partners and discussing received bids in the next few weeks.

B. Maintenance plan scope of work for 2023 and partner support

Tanner provided an update on the 2023 maintenance plan scope of work.

Notable items in the scope include Yellow Iris on Deep Lake being expanded to Pleasant Lake in an effort to support native plant communities and especially rare species found in shoreline areas. An MOU for partnership with NOHOA was completed in addition to the maintenance plan scope of work.

Commissioner Orud thanked Dawn Tanner for her education efforts, such as newspaper articles that accompanied the project.

Chair Farrell asked about how Yellow Iris compares to Purple Loosestrife. Tanner explained that Yellow Iris is a newer infestation, has a more restricted range, and does not have a biological control mechanism such as loosestrife beetles. Yellow Iris removal is also recognized as a grant priority for the DNR.

It was moved by Commissioner Duxbury and seconded by Commissioner Orud to approve the maintenance plan scope of work. Vote: all aye. Motion passed.

C. Wilkinson BMP update

Tanner presented the current status of the Wilkinson BMP project. A memo from HEI with updated design alternatives is nearly completed and is expected at the Dec. TEC/ Board of Directors meetings.

D. Update on meander monitoring with NearMap

Tanner explained that the NearMap tool provides enhanced access and visibility for hard-to-access places in the watershed. Tanner presented a series of aerial photos from the Lambert Lake meander which were captured from NearMap.

E. Update on CPL grant closed, restoration maintenance for the year complete, and thank you for partner support.

Tanner explained that the CPL grant is now closed. This grant was focused on the 4th and Otter habitat enhancement. Tanner expressed gratitude for the City of White Bear Lake for assisting with the effort.

I. Commissioner Reports

Commissioner Duxbury expressed a thank you to everyone on the TEC for the assistance and support in his time serving as White Bear Township commissioner.

II. NOHOA

NOHOA expressed appreciation for Dawn Tanner's leadership in managing invasive species. The assistance has allowed NOHOA to continue the efforts and create additional plans for management in the spring of 2023.

III. Ramsey Soil & Water Conservation Division

None

IV. St. Paul Regional Water Services

None

V. Public Comment

None

VI. Next Meetings:

Next TEC meeting December 14th. Next BOD meeting December 14th.

XIII. Adjourn

It was moved by Commissioner Huntrods and seconded by Vice Chair Tessier to adjourn the meeting at 8:37 am . Vote: all aye. Motion passed.

Minutes compiled by Nick Voss.

VLAWMO Finance Summary: December 2022

Nov-22		Actual 12/1/22	Actual to Date	2022 Budget	2021 carry over/Grants	Remaining in Budget	2022 Available	Act vs. Budget
BUDGET #	**INCOME**							
5.11	Storm Water Utility	$470,026	$1,040,309	$1,019,521	$0	($20,788)	$1,019,521	102%
5.12	Service Fees	$0	$300	$200	$0	($100)	$200	150%
5.13	Interest + mitigation acct	$5,115	$11,210	$1,500	$0	($9,710)	$1,500	747%
5.14	Misc. income - WCA admin & other	$0	$2,198	$3,000	$0	$802	$3,000	73%
5.15	Other Income Grants/loan	$5,019	$141,922	$324,500	$0	$182,578	$324,500	44%
5.16	Transfer from reserves	$0	$0	$192,367	$133,751	$326,118	$326,118	0%
	TOTAL	$480,160	$1,195,939	$1,541,088	$133,751	$478,900	$1,674,839	78%
EXPENSES								
3.1	**Operations & Administration**							
3.110	Office - rent, copies, post tel supplies	$2,180	$25,200	$27,097	$0	$1,897	$27,097	93%
3.120	Information Systems	$1,508	$20,834	$25,865	$0	$5,031	$25,865	81%
3.130	Insurance	$0	$9,136	$7,210	$0	($1,926)	$7,210	127%
3.141	Consulting - Audit	$0	$7,896	$8,191	$0	$295	$8,191	96%
3.142	Consulting - Bookkeeping	$0	$0	$1,500	$0	$1,500	$1,500	0%
3.143	Consulting - Legal	$128	$817	$5,000	$0	$4,183	$5,000	16%
3.144	Consulting - Eng. & Tech.	$725	$20,453	$30,000	$14,000	$23,547	$44,000	46%
3.150	Storm Sewer Utility	$0	$11,222	$14,000	$0	$2,778	$14,000	80%
3.160	Training (staff/board)	$871	$8,931	$12,500	$0	$3,569	$12,500	71%
3.170	Misc. & mileage	$372	$3,158	$6,300	$0	$3,142	$6,300	50%
3.191	Administration - staff	$30,144	$388,779	$391,400	$0	$2,621	$391,400	99%
3.192	Employer Liability	$9,313	$114,762	$114,425	$0	($337)	$114,425	100%
3.2	**Monitoring and Studies**							
3.210	Lake and Creek lab analysis	$0	$10,567	$18,000	$0	$7,433	$18,000	59%
3.220	Equipment	$0	$601	$3,000	$0	$2,399	$3,000	20%
3.230	Wetland assessment & management	$0	$0	$15,000	$0	$15,000	$15,000	0%
3.240	Watershed Plan Amendment	$0	$111	$15,000	$0	$14,889	$15,000	1%
3.3	**Education and Outreach**							
3.310	Public Education	$766	$2,074	$6,000	$0	$3,926	$6,000	35%
3.320	Marketing	$65	$5,932	$17,500	$0	$11,568	$17,500	34%
3.330	Community Blue Ed Grant	$0	$2,373	$2,000	$0	($373)	$2,000	119%
Total Core functions: Ops, Monitoring, Education		*$46,072*	*$632,846*	*$719,988*	*$14,000*	*$101,142*	*$733,988*	*86%*
Capital Improvement Projects and Programs								

3.4	**Subwatershed Activity**							
3.410	Gem Lake	$0	$0	$10,000	$0	$10,000	$10,000	
3.420	Lambert Creek	$11,128	$164,556	$44,432	$70,000	($50,124)	$114,432	144%
3.421	Lambert Lake Loan	$0	$38,568	$38,568	$0	$0	$38,568	100%
3.425	Goose Lake	$2,448	$24,343	$70,000	$10,000	$55,657	$80,000	30%
3.430	Birch Lake	$0	$6,057	$10,000	$0	$3,943	$10,000	61%
3.440	Gilf Black Tam Wilk Amelia	$20,610	$84,538	$93,500	$12,000	$20,962	$105,500	80%
3.450	Pleasant Charley Deep	$0	$35,823	$35,000	$10,000	$9,177	$45,000	80%
3.460	Sucker Vadnais	$1,520	$7,138	$41,500	$0	$34,362	$41,500	17%
3.48	**Programs**							
3.480	Soil Health Grant	$0	$6,415	$5,000	$0	($1,415)	$5,000	128%
3.481	Landscape 1	$0	$10,676	$16,000	$0	$5,324	$16,000	67%
3.482	Landscape 2/BWSR WBF	$0	$32,629	$28,000	$17,751	$13,122	$45,751	71%
3.483	Project Research & feasibility	$0	$0	$0	$0	$0	$0	#DIV/0!
3.485	Facilities Maintenance	$1,317	$55,151	$102,600	$0	$47,449	$102,600	54%
3.5	**Regulatory**							
3.510	Engineer Plan review	$0	$0	$2,000	$0	$2,000	$2,000	0%
	Total CIP & Program	*$37,023*	*$465,894*	$496,600	$119,751	*$150,457*	*$616,351*	*76%*
	Total of Core Operations & CIP	**$83,095**	$1,098,740	$1,216,588	$133,751	**$251,599**	$1,350,339	**81%**

Fund Balance		11/1/2022	12/1/2022
4M Account		$180,876	$582,228
4M Plus Savings		$327,000	$227,660
Total		$507,876	$809,888

Restricted funds	12/1/2022
Mitigation Savings	$21,014
Term Series	$0

	Nov 10 - Dec 14, 22
Ordinary Income/Expense	
Income	
5.1 · Income	
5.11 · Storm Water Utility	470,026.85
5.13 · Interest	5,115.37
Total 5.1 · Income	475,142.22
6.6.6 · Grants	5,019.00
Total Income	480,161.22
Gross Profit	480,161.22
Expense	
3.1 · Administrative/Operations	
3.110 · Office	
Copies	48.71
Phone/Internet/Machine Overhead	295.00
Postage	11.97
Rent	1,665.00
Supplies	160.18
Total 3.110 · Office	2,180.86
3.120 · Information Systems	
Hardware	208.00
IT Support	1,300.19
Total 3.120 · Information Systems	1,508.19
3.143 · Legal	128.22
3.160 · Training (staff/board)	871.36
3.170 · Misc. & mileage	372.51
3.191 · Employee Payroll	
payroll	30,144.02
Total 3.191 · Employee Payroll	30,144.02
3.192 · Employer Liabilities	
Admin payroll processing	44.92
Administration FICA	2,186.86
Administration PERA	2,260.80
Insurance Benefit	4,820.58
Total 3.192 · Employer Liabilities	9,313.16
Total 3.1 · Administrative/Operations	44,518.32
3.3 · Education and Outreach	
3.310 · Public Education	765.99
3.320 · Marketing	65.75
Total 3.3 · Education and Outreach	831.74
3.4 · Capital Imp. Projects/Programs	
3.420 · Lambert Creek Restoration	
LL VLAWMO cash match	11,128.45

Total 3.420 · Lambert Creek Restoration	11,128.45
3.425 · Goose Lake	
Oak Knoll	2,448.50
Total 3.425 · Goose Lake	2,448.50
3.440 · Gilfillan Black Tamarack Wilkin	
Wilkinson 319 grant 320705.50	14,860.00
3.440 · Gilfillan Black Tamarack Wilkin - Other	5,750.00
Total 3.440 · Gilfillan Black Tamarack Wilkin	20,610.00
3.460 · Sucker Vadnais	1,520.00
Total 3.4 · Capital Imp. Projects/Programs	35,706.95
3.48 · Programs	
3.485 · Facilities & Maintenance	1,317.01
Total 3.48 · Programs	1,317.01
Total Expense	82,374.02
Net Ordinary Income	397,787.20
Net Income	**397,787.20**

Vadnais Lake Area Water Management Organization
Check Detail
November 10 through December 14, 2022

Type	Num	Date	Name	Item	Account	Paid Amount	Original Amount
Check	**eft**	**12/01/2022**	**Reliance Standard**		**Checking - 1987**		**-303.62**
					Insurance Benefit	-91.50	91.50
					Insurance Benefit	-212.12	212.12
TOTAL						-303.62	303.62
Check	**5471**	**12/14/2022**	**City Of Roseville**		**Checking - 1987**		**-1,300.19**
					IT Support	-1,300.19	1,300.19
TOTAL						-1,300.19	1,300.19
Check	**5472**	**12/14/2022**	**City of White Bear Lake**		**Checking - 1987**		**-39,153.56**
					payroll	-30,144.02	30,144.02
					Administration FICA	-2,186.86	2,186.86
					Administration PERA	-2,260.80	2,260.80
					Insurance Benefit	-4,516.96	4,516.96
					Admin payroll processing	-44.92	44.92
TOTAL						-39,153.56	39,153.56
Check	**5473**	**12/14/2022**	**Bolton & Menk**		**Checking - 1987**		**-666.66**
					3.310 · Public Education	-666.66	666.66
TOTAL						-666.66	666.66
Check	**5474**	**12/14/2022**	**Hisdahl's Trophies**		**Checking - 1987**		**-32.21**
					3.320 · Marketing	-32.21	32.21
TOTAL						-32.21	32.21
Check	**5475**	**12/14/2022**	**Kennedy & Graven, Chartered**		**Checking - 1987**		**-1,014.01**
					3.485 · Facilities & Maintenance	-1,014.01	1,014.01
TOTAL						-1,014.01	1,014.01
Check	**5476**	**12/14/2022**	**City of Vadnais Heights**		**Checking - 1987**		**-2,020.68**
					Rent	-1,665.00	1,665.00
					Phone/Internet/Machine Overhead	-295.00	295.00
					Postage	-11.97	11.97
					Copies	-48.71	48.71
TOTAL						-2,020.68	2,020.68
Check	**5477**	**12/14/2022**	**SHI International Corp**		**Checking - 1987**		**-208.00**

			Hardware	-208.00	208.00
TOTAL				-208.00	208.00
Check	**5478**	**12/14/2022**	**Press Publications**	**Checking - 1987**	**-128.22**
			3.143 · Legal	-128.22	128.22
TOTAL				-128.22	128.22
Check	**5479**	**12/14/2022**	**Barr Engineering Co**	**Checking - 1987**	**-2,448.50**
			Oak Knoll	-2,448.50	2,448.50
TOTAL				-2,448.50	2,448.50
Check	**5480**	**12/14/2022**	**carp solutions**	**Checking - 1987**	**-1,520.00**
			3.460 · Sucker Vadnais	-1,520.00	1,520.00
TOTAL				-1,520.00	1,520.00
Check	**5481**	**12/14/2022**	**SEH**	**Checking - 1987**	**-4,510.95**
			LL VLAWMO cash match	-4,510.95	4,510.95
TOTAL				-4,510.95	4,510.95
Check	**5482**	**12/14/2022**	**Ramsey County**	**Checking - 1987**	**-5,750.00**
			3.440 · Gilfillan Black Tamarack Wilkin	-5,750.00	5,750.00
TOTAL				-5,750.00	5,750.00
Check	**5483**	**12/14/2022**	**Innovative Office Solutions**	**Checking - 1987**	**-160.18**
			Supplies	-160.18	160.18
TOTAL				-160.18	160.18
Check	**5484**	**12/14/2022**	**Houston Engineering, Inc**	**Checking - 1987**	**-15,163.00**
			3.485 · Facilities & Maintenance	-303.00	303.00
			Wilkinson 319 grant 320705.50	-14,860.00	14,860.00
TOTAL				-15,163.00	15,163.00
Check	**5485**	**12/14/2022**	**Nicholas Voss**	**Checking - 1987**	**-57.29**
			3.170 · Misc. & mileage	-23.75	23.75
			3.320 · Marketing	-33.54	33.54
TOTAL				-57.29	57.29
Check	**5486**	**12/14/2022**	**Brian Corcoran**	**Checking - 1987**	**-25.63**
			3.170 · Misc. & mileage	-25.63	25.63

TOTAL			-25.63	25.63
Check 5487 12/14/2022 Dawn Tanner	**Checking - 1987**			**-117.50**
	3.170 · Misc. & mileage		-117.50	117.50
TOTAL			-117.50	117.50
Check 5488 12/14/2022 Phil Belfiori	**Checking - 1987**			**-205.63**
	3.170 · Misc. & mileage		-205.63	205.63
TOTAL			-205.63	205.63
Check 5489 12/14/2022 Peterson Companies, Inc.	**Checking - 1987**			**-6,617.50**
	LL VLAWMO cash match		-6,617.50	6,617.50
TOTAL			-6,617.50	6,617.50

Vadnais Lake Area Water Management Organization
Custom Transaction Detail Report
October 1 through December 1, 2022

	Type	Date	Num	Name	Memo	Account	Clr	Split	Amount	Balance
Oct 1 - Dec 1, 22										
	Credit Card Charge	10/01/2022		Google*SVCAPPS_VLAWM		US Bank CC	√	WEB	42.00	42.00
	Credit Card Charge	10/03/2022		Best Buy	laptop charger Dawn	US Bank CC	√	3.310 · Public Education	64.41	106.41
	Credit Card Charge	10/10/2022		adobe *photography plan		US Bank CC	√	Software	9.99	116.40
	Credit Card Charge	10/12/2022		Amazon.com	camara tripod	US Bank CC	√	3.320 · Marketing	54.93	171.33
	Transfer	10/20/2022			Funds Transfer	US Bank CC	√	Checking - 1987	-169.77	1.56
	Credit Card Charge	10/26/2022		Adobe "Creative Cloud		US Bank CC	√	Software	32.20	33.76
	Credit Card Charge	10/28/2022		Meta	lake care weekend	US Bank CC	√	3.320 · Marketing	20.00	53.76
	Credit Card Charge	10/28/2022		EDCO	engraved plate	US Bank CC	√	3.310 · Public Education	83.43	137.19
	Credit Card Charge	10/28/2022		EDCO	engraved plate	US Bank CC	√	3.310 · Public Education	83.43	220.62
	Credit Card Charge	11/01/2022		Google*SVCAPPS_VLAWM		US Bank CC	√	WEB	42.00	262.62
	Credit Card Charge	11/04/2022		Fresh Thyme	CEL crew snacks	US Bank CC	√	3.170 · Misc. & mileage	23.96	286.58
	Credit Card Charge	11/15/2022		EDCO	engraved plate	US Bank CC		3.310 · Public Education	99.33	385.91
	Credit Card Charge	11/16/2022		Arrowwood Resort	MAWD Phil	US Bank CC		3.160 · Training (staff/board)	246.36	632.27
	Credit Card Charge	11/16/2022		Arrowwood Resort	MAWD Phil registration	US Bank CC		3.160 · Training (staff/board)	325.00	957.27
	Credit Card Charge	11/16/2022		Arrowwood Resort	MAWD dawn registration	US Bank CC		3.160 · Training (staff/board)	300.00	1,257.27
Oct 1 - Dec 1, 22									**1,257.27**	**1,257.27**

TEC Report to the Board
December 2022

Programs & Projects	Effort Level (LOW / MED / HIGH)	Completion Date	Comments
Projects			
319 Biochar	MED	2022	Project completed. Monitoring to start spring 2023.
East Goose Lk Adaptive Mgnt.	HIGH	ongoing	Feasibility study underway for Spent Lime study on Oak Knoll/Wood Lake pond. Grant submission authorization requested.
Public Ditch Maintenance	HIGH	ongoing	Drainage inspections have started.
MPCA 319 /Wilkinson Lake BMP	HIGH	2021-24	Wetland delineation and notice of decision completed. Permitting discussions resuming and early preliminary design memo provided.
Pleasant Lake Carp Management	MED	2022-25	Quote for 2023 provided.
Programs			
City/Township MS4	LOW	Oct-Dec	Consultations complete with each municipality to design and create additional MS4 materials - material creation to continue into spring, 2023.
Education/Outreach	HIGH	Oct-Dec	Communications planning surrounding Vadnais/Sucker park restoration, new cost-share policy and application forms being generated.
Website	MED	Oct -Nov	Website renovation underway with HDR, expected to be complete mid 2023.
WAV	LOW	Oct -Nov	WAV Fall '22 planning complete, minutes posted on volunteer page. Continued efforts in completing the Wetland Health Evaluation Pilot Program with Tamarack Nature Center. Shared volunteer banquet between VLAWMO and TNC December 11th. Recruiting new MN Water Stewards for 2023 cohort with Freshwater Society.
Cost Share & BWSR WBIF	HIGH	ongoing	Updates to cost share program policies and materials are underway consistent with TEC's 11/9 action. BWSR approved VLAWMO's WBIF budget request through eLINK for FY '22-23 funding and provided a grant agreement. A workplan was submitted to BWSR and recently approved. Next step is Board of Directors' approval of the workplan and execution of the grant agreement.
GIS	MED	ongoing	Working on Amelia Lake SLMR maps and updating Tamarack Lake and Gem Lake contours.
Monitoring	MED	ongoing	Data processing started, EQuIS completed for PCA.
WCA	MED	ongoing	Administering WCA as needed.

Administration & Operation			
Audit	MED	2022	Work on record keeping continues as needed.
Budget	HIGH	for 2023 budget	2023 "working" budget considered at the December 14, 2022 Board meeting.
Personnel /HR	MED	ongoing	Staff continue to pursue professional development per their approved training plans. Year end staff reviews occuring.
SSU	MED	ongoing	2023 SSU certifications submited to Ramsey and Anoka County.
Strategic /watershed planning	MED	2022	Watershed plan amendment as approved at Oct. Board meeting distributed to partners per requirements.

FINANCIAL SUMMARY as of 12/1/2022		
4M Account (1.10)	4M Plus (1.23)	Total
$582,229	$227,660	$809,889

Budget Summary	Actual Expense YTD	2022 Budget amended	Remaining in Budget	% YTD
Operations	*$632,846*	*$719,988*	*$87,142*	88%
CIP	*$465,894*	$496,600	*$30,706*	94%
Total	$1,098,740	$1,216,588	$117,848	90%

VLAWMO
Vadnais Lake Area
Water Management Organization

800 County Road E East, Vadnais Heights, MN 55127
www.vlawmo.org; Office@vlawmo.org

TEC Staff Memo – December 14, 2022

IV. Administration & Operations

A. Financial Report for December & authorization for Payment

Please find the December 2022 Finance Report attached in the ePacket for review and approval.

B. VLAWMO December TEC Report to the Board

Please find the December 2022 TEC Report to the Board attached in the ePacket for review and approval.

V. Programs

A. Education and Outreach

1. Annual Watershed Awards

VLAWMO is pleased to present Principal Sara Svir and Megan Sigmon-Olsen as this year's annual watershed award winners. The recipients were voted on during the November 2022 TEC meeting, and the December 2022 meeting will include a recognition of the efforts that supported the awards in addition to a brief powerpoint describing the recipient's accomplishments.
vlawmo.org/get-involved/awards > "2022"

2. Update on 2022 Education and Outreach results, 2023 EOP

The 2022 Education and Outreach results and the 2023 Education and Outreach Plan are now available. A chart summarizing the 2022 efforts is included here in the December TEC packet. Voss will present a brief powerpoint highlighting partner and MS4 efforts from the year during the December TEC meeting.

2022 Raw numbers:
https://www.vlawmo.org/index.php/download_file/4244/
2022 Summary chart:
https://www.vlawmo.org/index.php/download_file/4245/
2023 Education and outreach plan:
https://www.vlawmo.org/index.php/download_file/4246/

B. Cost Share Program Updates

VLAWMO staff are proposing a second, final phase review of draft program material updates to the Rain Barrel Grant Program, Soil Health Grant Program, Landscape Level 1 Grant Program, and Landscape Level 2 Grant program for 2023. These changes largely focus on design changes to improve applicant digestion of the details of each program and to make the materials more inviting to applicants. Staff are also proposing a new cost share plant guide and one new policy change to the Soil Health Grant Program.

After the TEC's approval of the first phase of proposed 2023 cost share program policy changes at the November 9th TEC meeting, staff brought the recommended revisions to the VLAWMO Board Subcommittee for review. The Subcommittee recommended approval

of the program policy changes, as well as one additional revision of removing the proposed $20/hr landowner rate option (for Soil Health and Landscape Level 1 grant programs) and instead increasing the maximum Soil Health Grant award amounts. Staff support the Subcommittee's feedback, given the difficulty of verifying labor hours submitted by landowners, and recommend increasing the Soil Health Grant maximum award amounts to $1,000, and $1,250 for projects located within priority areas. The final grant award amounts would remain at 75% of the total costs of projects with this revision.

In the TEC packet as attached are the final proposed 2023 program materials for the four VLAWMO cost share programs. Also attached is the new cost share plant guide that was discussed by the TEC at the November meeting.

https://www.vlawmo.org/index.php/download_file/4271/

Requested action: Staff recommend the TEC recommends approval of the 2023 cost share program policy and program material changes as included in the TEC meeting packet to the Board of Directors.

VI. Projects

A. **Contracts/quotes for 2023:** VLAWMO staff have been working to assemble a batch of contracts for work in 2023. For our December TEC meeting:

- Blue-green algae sampling with Barr Engineering for East Goose Lake (2023-2025). This will give us a total of 5 years of data that will help to inform the status of blue-green algae blooms in East Goose and potential for occurrence/frequency of harmful algal blooms. The first 2 years of data show very high abundance late in the season (exceeding the human health standard), known toxin producers, and high variability. Five years of data will provide clearer understanding and inform ongoing management. Note that Barr recommends 10 years of data; we are starting with a commitment to 5 years with an ability to adapt as needed after 5 years. **Total amount: $4,800**
  https://www.vlawmo.org/index.php/download_file/4262/

- Carp Solutions ongoing work in Pleasant Lake and connected waterbodies for 2023. In 2022, a total of ~21,000 pounds of carp were removed from Pleasant Lake. In 2023, we plan to continue the project with a slight increase in effort/equipment for another round of spring removal. **Total amount: $31,300**
  https://www.vlawmo.org/index.php/download_file/4263/

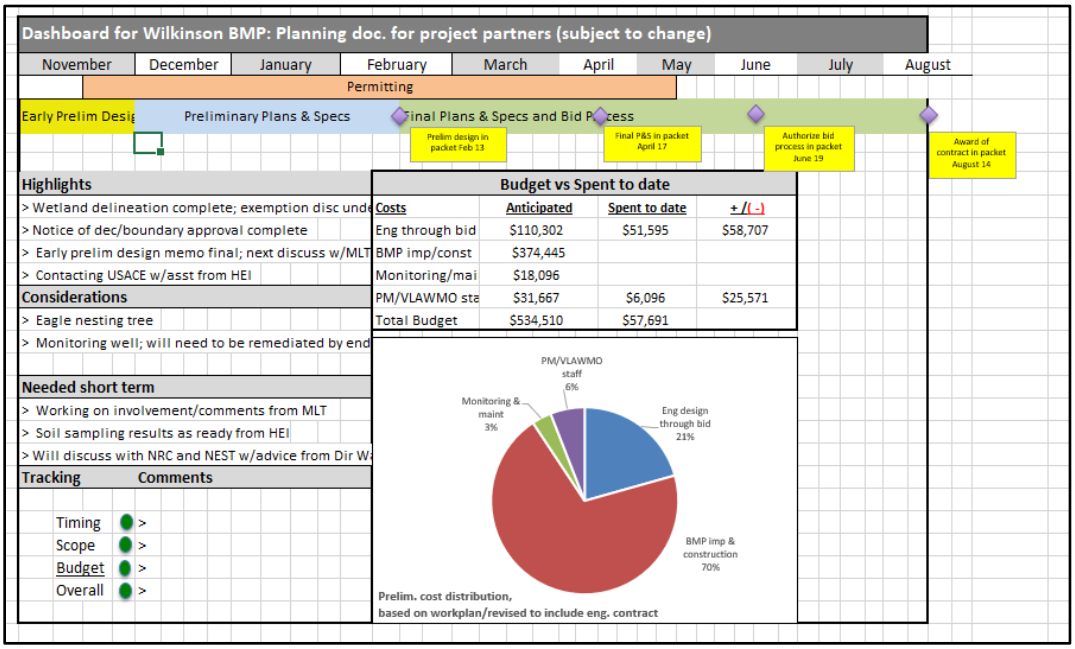
- Munch Bunch goats for maintenance of buckthorn removal and ongoing restoration of the City Hall wooded wetland in partnership with the City of Vadnais Heights in 2023. Goats will be used for 2 separate rounds of buckthorn resprout removal during the 2023 growing season covering 5 acres that have been cut and treated prior to this maintenance effort. VLAWMO proposes a 50% match with the City of Vadnais Heights. **Total amount for VLAWMO: $5,000**
  https://www.vlawmo.org/index.php/download_file/4264/

- Ramsey County SWCD lake survey work for 2023. A macrophyte and bathymetry analysis is scheduled for Gilfillan in accordance with the VLAWMO Comprehensive Watershed Management Plan/SLMP schedule. Birch Lake survey work is also included in the quote for 2023 to provide pre/post survey for EWM and CLP removal in partnership with BLID for the second year of our grant with MN DNR and a fall follow-up turion check. VLAWMO staff often assist with these surveys when possible. That provides a cost savings to VLAWMO, which is reflected in the quote for 2023. The total amount is an upper limit without assistance; the actual amount will likely be less. **Total amount: $5,225**
  https://www.vlawmo.org/index.php/download_file/4267/

  Requested action: VLAWMO staff request that the TEC recommend the assembled quotes/contracts to the Board, including: Blue-green algae sampling in East Goose Lake with Barr Engineering, Carp Solutions ongoing work and spring removal, the Munch Bunch for maintenance of buckthorn removal, and RCSWCD lake surveys for 2023.

B. **Wilkinson BMP Project update:** Houston Engineering, Inc. has provided the early preliminary design memo (included in the packet) on schedule for ongoing review/comment with stakeholders and permitting entities to continue to advance design details. The wetland delineation has been completed, and notice of decision/boundary approval was received in November. Soil sample results are expected in the next couple of weeks. Meetings with partners are ongoing, and permitting discussions are underway.

VLAWMO staff developed an Excel tracking tool for use in major projects. The Excel tool includes a dashboard that summarizes the project to date. A snapshot of the dashboard will be presented regularly to TEC and Board to provide clear project status going forward.



C. **Spent Lime progress for Oak Knoll Pond:**

As was discussed at the September 2022 TEC meeting, the VLAWMO Board approved a scope of work to conduct a spent lime demonstration project feasibility study for Oak Knoll Pond /Wood Lake in partnership with the City of White Bear Lake. The ultimate outcome of this ongoing Study is to confirm the potential feasibility of a possible spent lime demonstration project on Oak Knoll Pond.

Barr Engineering has now nearly completed this feasibility work and has identified a possible competitive grant opportunity that could provide financial support for the application of spent lime in Oak Knoll Pond and to test if spent lime is a possible economically viable method for treating the internal phosphorus load.

Pending final results of the feasibility, Barr Engineering would like authorization to apply for the recently announced competitive grant through the University of Minnesota Water Resources Center (WRC), in cooperation with the Minnesota Stormwater Research Council (MSRC), for the Urban Stormwater Pond Research Request for Proposals (RFP), linked here and consistent with the approved 2023 budget.

The RFP includes application requirements and instructions. Specific deadlines:

1. **Pre-proposals are required and due by 5pm CST on December 20, 2022**
2. **A presentation of your pre-proposal is required on January 5 & 6, 2023**
3. **Full proposals are due by 5pm CST on February 17, 2023**

Requested action: VLAWMO staff request that the TEC recommend to the Board authorization of Barr Engineering to submit a proposal for spent-lime treatment in Oak Knoll Pond grant proposal to the Urban Stormwater Pond Research RFP, pending final conducive results of the feasibility, and in partnership with the City of White Bear Lake.

D. **MAWD annual meeting/carp project presentation**

VLAWMO staff attended the annual MAWD meeting, Dec. 1-2 and gave a presentation to the statewide annual meeting and conference on Dec. 2, 2022. The conference is an important resource for watershed organizations to share about projects and progress. The carp project is demonstrating clear results and success to date. Sharing the results of this project helps to inform others working on and considering working on removal of invasive common carp.

Submitted Abstract:

VLAWMO has been working with carp control professionals to understand carp status, establish management goals, and conduct removals. In 2019, electroshocking surveys were used to estimate biomass, which was found to be 273 kg/ha (well above the 100 kg/ha management threshold for water quality). A bias toward large, old fish was noted during these surveys. During spring of 2020 and 2021, Carp Solutions used an antenna system to monitor movement. Timing and peak movement periods were identified. During winter 2021-2022, WSB attempted a harvest; that was not successful. During spring 2021, Carp Solutions conducted a stream removal. Approximately 21,000 pounds of carp were removed, with an average size of 23 pounds per carp. Large, old fish are

likely the result of a prior barrier built to prevent movement into a known spawning lake and nursery area. Resulting biomass and goals for next year are currently being determined and will be included.

E. 2023-2025 BWSR WBIF Grant Update

Since the convene meeting held this past July for the next round of BWSR Watershed-based Implementation Funding (WBIF), VLAWMO staff have worked with convene meeting members to complete a budget request and draft workplan to secure the $75,000 of available grant funding. Staff submitted a WBIF budget request on September 30th, which BWSR approved. Staff then submitted a workplan to BWSR on November 21st and BWSR approved it on November 29th. The final step of the grant application process to receive the grant funds is Board approval of the BWSR-approved workplan and an executed grant agreement. The workplan and grant agreement will be brought forward to the Board of Directors for execution at its December 14th meeting. If executed, the grant funds will be available to VLAWMO and partners for the implementation of at least one water quality Landscape Level 2 grant project.

V. A. 2.

2022 Education and Outreach Update

Highlights
MS4 Contributions

Nick Voss
VLAWMO Education and Outreach Coordinator
December 14, 2022

Vadnais Lake Area Water Management Organization

2022 Highlights

Drought Recovery for your Lawn
April 14th - Guest speaker "Organic Bob"

White Bear Montessori Native Plant Tour
August 11th – Guest speaker Tracy Lawler/Natural Shores Technologies

Saint Mary's Raingarden Renovation
July-August – Eagle Scout Alex Nelson

Good Neighbor Guide
September – MN Water Steward/VLAWMO effort

Bridgewood Raingarden Kick-off Party
July 12th – City of Vadnais Heights, MN Master Naturalists, WAV

Vadnais Lake Area Water Management Organization

2022 MS4 Contributions

Education and Outreach Plan Goal #1
"VLAWMO will support partner Cities and Townships in making progress in their MS4's."

MS4: Municipal Separate Storm Sewer System
The 5-year general permit cycle runs from 2020-2025.

Vadnais Lake Area Water Management Organization

2022 MS4 Contributions

Highlight Presentations:

SWPPP Tips webinars: Feb 17, Feb 22, April 17, June 21, July 27

MS4 Presentation to Gem Lake City Council. Feb 22nd

Vadnais Heights Parks Commission: Presentation on Bridgewood Park raingarden. June 22nd.

North Oaks collaboration: Entrance raingarden webinar. August 29th.

Vadnais Lake Area Water Management Organization

2022 MS4 Contributions

Collaborations:

- Groundwater conservation flyer with White Bear Township: July
- Vadnais Heights: Pool drainage graphic used by the City of Vadnais Heights. March 8th
- White Bear Township clean-up day collaboration: Use of "Drippy" Mascot and handouts. May 7th.
- North Oaks collaboration: Watershed and MS4 handouts used for Arbor Day. May 14th.
- White Bear Lake school district digital backpack newsletter: Jr Watershed Explorer. August
- Gem Lake collaboration: IDDE flyers and video presentation, website reconfiguration.
- Lino Lakes IDDE Collaboration: newsletter supported by VLAWMO IDDE infographics - Nov 1st

Vadnais Lake Area Water Management Organization

Materials Development

Groundwater conservation:

- Custom flyer created with White Bear Township, additional communities planned for 2023
- "Help out in a drought" EPA materials
- 2023 VLAWMO website renovation to include a new groundwater page

Vadnais Lake Area Water Management Organization

Materials Development

Each MS4 receives:

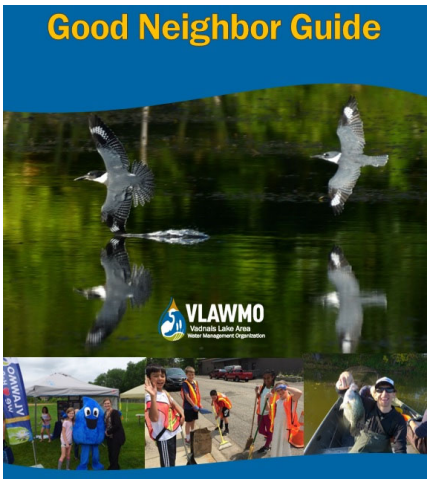
- Pet Waste: Mailing slip, social media graphic, door hanger
- IDDE (Illicit Discharge): Mailing slip, social media graphic, full page info flyer, door hanger
- Smart Salting: Mailing slip, social media graphic, door hanger
- Pool drainage guide

Vadnais Lake Area Water Management Organization

2023 Goals

- Circulate the Good Neighbor Guide
- New resident welcome packet (City of North Oaks)
- BMP inspection training recording
- Groundwater conservation webpage, expanded education materials, education on well interference
- Water conservation and watering restrictions, integrate with VLAWMO cost-share program for water conservation
- Cost-share promotion and info-packet development for prospective applicants

2023 Campaigns: Wilkinson BMP, Vadnais/Sucker Park restoration, Landscape Level 2 cost-share projects, ditch and floodplain education



Vadnais Lake Area Water Management Organization

Questions & Discussion

Vadnais Lake Area Water Management Organization

V.I.B.

HOUSTON engineering, inc.

Technical Memorandum

To: Dawn Tanner and Phil Belfiori
VLAWMO

From: Adam N. Nies PE, CFM
Chris Otterness PE
Houston Engineering, Inc.

Subject: Wilkinson Lake Concept BMP Development

Date: November 19, 2022

Project: 7057-0014

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am duly Licensed Professional Engineer under the laws of the State of Minnesota.

Adam N. Nies 11/19/2022
Reg. No. 53358

INTRODUCTION

Wilkinson Lake is an impaired lake located in Vadnais Lake Area Water Management Organization (VLAWMO). The area immediately upstream to the south of Wilkinson Lake is located on property owned by the North Oaks Company (NOC) which includes a relatively flat ditch system that drains north to the lake. Further upstream, multiple large waterbodies are within the drainage area of Wilkinson Lake. Most immediately upstream are Black Lake, which is a high-quality lake to the southwest, and Fish Lake, which is a small lake to the east. The direct drainage area as well as area that flows through Tamarack and Birch Lakes contribute to the total phosphorus (TP) loading of Wilkinson Lake. Full detail of the condition of the upstream lakes is contained within the March 2021 VLAWMO Nine Key Element Document for Birch, Tamarack, and Wilkinson Lakes. See **Figure 1** for an overview of the region and project area.

The goal of the Wilkinson Lake BMP Project (the Project) is to create a multipurpose wetland restoration project that will both create habitat and decrease TP loading to Wilkinson Lake from the ditch south of the lake and create a mosaic of heterogeneous deep-water wetland habitat.

This technical memorandum summarizes the findings and multipurpose wetland restoration concepts generated as Task 1 of the Project. This includes a review of existing feasibility studies and other reports, meeting with VLAWMO staff, soil investigation (soil borings completed but soil sample results pending), wetland delineation, preparation of concept alternative layouts, creation of a concept level Hydrologic and Hydraulic model, creation of a nutrient load reduction model, and preliminary cost estimate. Using this memorandum, VLAWMO staff can engage with stakeholders and determine which alternative to proceed with for preliminary design and regulatory coordination.

DESIGN CONSIDERATIONS/CONSTRAINTS

The following are project constraints that were identified in review of project requirements and meetings with VLAWMO staff that were considered in shaping the alternatives

- The project will be a wetland restoration enhancing wetland hydrology and habitat as well as providing nutrient reduction function for downstream lakes.
- No increase in wetland runout elevation. Current elevation is 896[1]. The project must cause no significant change in upstream hydrologic/hydraulic conditions.
- Provide a 3' average depth permanent pool. This is necessary to achieve the goal of creating a deep-water habitat.
- The MPCA stormwater manual recommends that at least 25 percent of the wetland pool volume of a restored treatment wetland be in deep-water zones with a depth greater than four feet. They also provide recommendations for the area and depth of the marsh zone.
- Restore the wetland which is currently being impacted by a deep ditch through the center. Wetlands in the construction area are partially drained at present and increasing depth of the wetlands through excavation as a restoration strategy will restore hydrology and reduce the non-native, invasive vegetation that currently dominates the area.
- Maintain a 100' buffer from an eagle's nest located near the project area, per guidance from USFWS.
- Any excavation should be located as far north as possible near the narrower section of the easement due to the likely sandier soils in the area and for ease of maintenance access and to protect wetland area by focusing excavation in upland areas where possible.
- Project footprint must be limited to the available project easement, maximize wetland restoration area and reconnect adjacent wetlands where possible, and account for any potentially contaminated soils.

BMP CONCEPT ALTERNATIVES

Two alternatives were developed and considered based on the design considerations and constraints identified. The primary considerations for the wetland restoration project were restoring hydrology to a wetland that is currently impacted by drainage, and creating a wetland that provides wildlife habitat features, including deep, open water. This approach to the wetland restoration provides benefits that are two-fold: 1) considering that this basin is dominated by non-native, invasive vegetation (reed canary grass and hybrid cattail), this is the most effective approach to restoration that will reduce the presence of the non-native vegetation and the associated seedbank within the construction area, which is likely very established and would be difficult to manage without removing the soil and seed bank; and 2) the deep water habitat provides the most water quality benefits compared to other wetland types.

[1] All elevations provided herein are based on North American Vertical Datum of 1988 (NAVD 88) unless otherwise noted.

Alternative 1: Deep Water Wetland Excavation

This alternative consists of creation of a deep-water wetland directly along the ditch that runs through the project area. The existing ditch is an incised channel, approximately 4-6 feet deep adjacent to the project, and with channel banks in the project area between elevation 898 and 900. The alternative will excavate below the ditch invert elevation to add a permanent pool where there is none.

Approximately 5,000 cu.yds. of material will be removed in the creation of the deep-water wetland and will have a footprint of approximately 0.7 acres as displayed in **Figure 2**. An average depth of 3 feet within the footprint of the pond will establish a permanent pool with shallow areas and a deep-water section at 6 feet deep with pond bottom elevation of 890. By excavating below the existing wetland runout elevation of 896, the Project has no adverse effect to the hydraulic conditions of the ditch or upstream roadways.

Spoil of the excavated material will be analyzed for contamination levels to determine if it will be allowed to spoil on-site. Assuming that contamination levels are favorable, the spoil will be placed within the project easements, but outside of the wetland delineation area with an approximate footprint of 1.4 acres, to a height of 5 ft and side slopes of 10:1. An example location of the spoil footprint is displayed on **Figure 2**. Contouring and micrograding will be defined in the next design phase to work to fit the spoil areas into the existing landscape. Other design details will include reinforcement of the channel to maintain the wetland spill-out elevation, and erosion and sediment control management.

This alternative serves the goals of the project and controls costs in the process. The project site is at the downstream of a drainage area with significant retention within upstream lakes, so most larger diameter particulates will have settled out prior to entering the project area. However, much of the wetland area in the watershed are channelized such that areas of direct drainage carry a significant load of finer particulates and phosphorus.

Alternative 2: Deep Water Wetland Excavation with Expanded Footprint

This alternative contains the same project components as Alternative 1, but with a larger restoration footprint and volume.

This alternative focuses on creating a native dominated deep-water habitat wetland that will both restore the drained wetland to nearer the pre-drainage condition of the basin, and via excavation, will remove the non-native and invasive plant species and seed banks to pursue a native wetland habitat along the shore. To achieve this, approximately 10,000 cu.yds. of material will be removed in the creation of the deep-water wetland and will have a footprint of approximately 1.4 acres as displayed in **Figure 3**. An average depth of 3 feet within the footprint of the pond will establish a permanent pool with shallow areas and a deep-water section at 6 feet deep with pond bottom elevation of 890.

By excavating below the existing wetland runout elevation of 896, the Project has no adverse effect to the hydraulic conditions of the ditch or upstream roadways.

Assuming that contamination levels are favorable, the spoil will be placed within the project easements, but outside of the wetland delineation area with an approximate restoration footprint of 2 acres, to a height of 6 ft and side slopes of 10:1. An example location of the spoil footprint is displayed on **Figure 3**. As with Alternative 1, additional refinement of the site grading and stabilization will occur in the next design phase.

Alternatives Not Evaluated: Iron Enhanced Sand Filter.

Additional TP removal may be achievable through an Iron Enhanced Sand Filter (IESF) as an add-on project to either Alternative 1 or 2. Dissolved phosphorus is likely a significant portion of the loading downstream, and an IESF may be an effective option to capture the dissolved phosphorus.

Consideration has been given to either a gravity fed system or a pump-and-treat system, each with certain challenges in the project area. A IESF requiring pumping would utilize the ponds created in Alternatives 1 or 2 as a storage basin from which to pump water up to an IESF. This type of system would require increased operation and maintenance, as well as an increased cost. A gravity fed system could involve a terraced design consisting of a long narrow bench running alongside the channel. This concept would involve setting the terrace elevation at the normal water levels, such that the 1-year storm event would flood out the IESF and trickle through back into the ditch. Typical gravity fed IESF require 2.5 feet height from top of filter to outlet pipes re-entering the ditch. Water would filter through the iron enhanced sand and back into the ditch to flow downstream to Wilkinson Lake. A concept level review indicates 1.6 feet of stage increase above normal water levels for the 1-year storm event up to elevation 897.6, providing limited opportunity for a drip filter to be implemented without further modification of the downstream culvert invert which is currently at 895.5 ft. Extension of buried drain pipes north through the road could also accomplish the required fall since the ditch north to Wilkinson Lake appears to have more sufficient grade and depth. A preliminary concept layout is sketched within **Figure 4**. Though a gravity system also has maintenance required to maintain functionality, it would eliminate the need to service pumps.

An IESF has an increased cost and long-term maintenance requirement but may be considered as a secondary phase of the Project following construction of either Alternatives 1 or 2, including additional design to determine feasibility and final design. An IESF would target dissolved phosphorus, which is challenging to remove via most other practices. Additionally, the gravity filter effectiveness would be dependent on the frequency of rain events large enough to wet the filter out. Anticipated TP removals would thus be variable from year to year and total treatment provided is anticipated to be relatively low. A pump and treat IESF system would have more predictable treatment levels as the pumping would be able to be controlled to maximize the available filtration for the system. Both types of IESF practices will require annual inspection and maintenance, though the pumped system likely will include greater maintenance cost and time commitment.

EVALUATION OF ALTERNATIVE EFFECTIVENESS

Wetland Habitat

Alternatives 1 and 2 involve creation of a deep-water wetland habitat. By excavating for a deep-water wetland and seeding the project with appropriate vegetation, the habitat will serve wildlife in the North Oaks area and may be an aesthetic feature for the community that may be viewable via the trail network, if so incorporated.

Almost the entire available area for construction of the project is within delineated wetland due to the topography of the area. Because the proposed project constitutes a restoration and enhancement to the wetlands within the construction area, any construction within the existing wetland is considered to be in service of improving wetland quality and the proposed project siting is the best balance for improving wetland habitat. Alternatives 1 and 2 will also potentially qualify for the Wildlife Habitat Exemption in Mn Rules 8420.0420 Subp. 9.

Hydrology/Hydraulics

The hydrology and hydraulics contributing to system flows were assessed using XPWMM (see Appendix A for full details). Black Lake flows north to Wilkinson Lake through the Project area. The Ordinary High Water Level (OHWL) of Black Lake is roughly four feet above the OHWL of Wilkinson Lake. The proposed alternatives will not adversely affect the hydraulics of the system.

Water Quality

The water quality benefit provided by each alternative has been assessed through P8 water quality modeling software (see Appendix A for details) with resulting TP removals summarized in **Table 1**.

Alternative 1 provides a moderate amount of TP reduction. Alternative 2 includes an expanded deep-water wetland footprint compared to Alternative 1. The increase in wetland footprint provides improvement in TP reduction, though it has an increased cost/pound of TP removal compared to Alternative 1. The increased footprint of Alternative 2 removes a greater total amount of phosphorus and serves the goal of creation of a deep-water wetland.

Cost

Table 1 summarizes the preliminary opinion of probable construction costs and effectiveness of the described alternatives. These cost estimates are concept level and subject to change as design proceeds. They do not include engineering fees for design or construction management. They are intended to represent the major items making up the project including:

- Excavation
- Clearing and Grubbing
- Control of water
- Channel Stabilization
- Maintenance access area for sediment removal

- Erosion management
- Seeding
- SWPPP

Total project construction funds are targeted at approximately $345,000.

BMP	Concept-Level Estimated Construction Cost	Estimated TP Removal (lb/year)
Alternative 1: On-Path Deep Water Wetland Excavation	$210,000	17
Alternative 2: On-Path Deep Water Wetland Excavation with Expanded Footprint	$320,000	26

Soil Contamination Sampling

Contamination testing for soils in the project area is currently being performed by Braun Intertec. The results of this testing are pending and will substantially increase the opinion of probable construction cost if spoil is not able to be placed on-site.

RECOMMENDATION

We recommend that VLAWMO staff balance their preferred alternative with current goals and relate to long term watershed planning. Alternatives 1 and 2 represent effectively the same project and differing scales of work /cost. Both options have the potential to achieve the project goals, though Alternative 2 achieves additional water quality and habitat restoration benefit (at a higher cost). As the project has a fixed budget and construction costs can vary depending on a variety of factors, we recommend the preliminary and final plan develop incorporate measures to provide flexibility in the scale/scope of the wetland restoration area to enable the project to maximize the benefit received from the available project funds. Once VLAWMO provides concurrence on project approach, HEI can begin regulatory engagement concurrent with plan development. This will be followed by preliminary and final plan development, contractor procurement, and construction.

Constructing the recommended project will also open up avenues for future restoration activities. Depending on the results of the current project and future regional needs, addition of an IESF can be considered for future design and implementation.

APPENDIX A – MODELING METHODOLGY

XP-SWMM

The analysis was performed using XPSWMM (v. 2020.1) hydrologic modeling software. Both existing and proposed models were created using Curve-Number (CN) hydrologic methodology, which estimates runoff volumes based on the combination of rainfall input, soil type, and land use at any given location (NRCS TR55). Detailed modeling has not been completed for incorporation of storm sewer systems that may alter the timing of water delivered to the project site. The input parameters remain identical between existing and proposed conditions to represent only that change that is directly related to the proposed BMP. The modeling completed for this analysis is short-duration based analysis according to the 24-hour storm. It does not account for the long-term changes to the system related to soil moisture content, groundwater table, evapotranspiration, or nutrient loading.

Using the National Oceanic and Atmospheric Administration's (NOAA) Atlas 14, in combination with the Hydrology Guide for Minnesota, a basic rainfall frequency was established, and corresponding rainfall to runoff correlation was determined. Rainfall amounts over the project area were obtained from the Atlas-14 Point Precipitation Frequency database. The rainfall inputs and corresponding return periods are displayed in **Table 1**. These rainfall depths were applied in the model under the MSE3 rainfall distribution for a 24-hour storm event.

Table 1 – Rainfall depths over the project area.

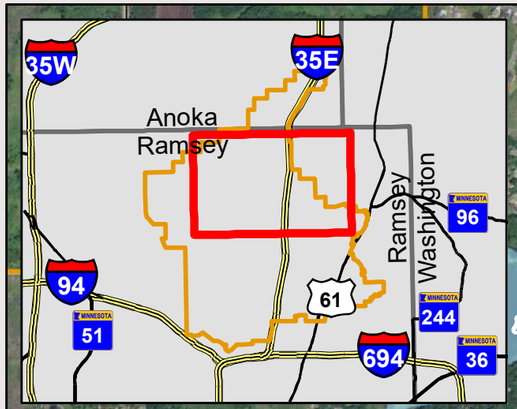
Return Period (Years)	Rainfall (inches)
2	2.80
10	4.17
25	5.25
50	6.20
100	7.25

The CN was assigned by comparing the 2016 NLCD Land Use data with SSURGO soils data. The watershed for the project area exhibits relatively varied land use and a composite CN was assigned to each catchment delineated within the study area. The CN value assigned is identical between existing and proposed conditions.

P8

The water quality analysis was performed using P8 (v. 3.5) water quality modeling software. A timescale of 30 years was used. Files MSP4918.pcp, MSP4918.temp, and nurp50.p8p were used for precipitation data, air temperature data, and particle data. Watersheds were carried over from

XPSWMM. The CN was assigned using SSURGO soils data. University of Minnesota TCMA Land Cover data was used to determine the impervious area for the watersheds. Sutherland equations were used to determine the directly connected impervious percentage. Assumptions were made for subwatershed interconnectivity as this area is heavily channelized. Detailed modeling has not been completed for incorporation of storm sewer systems that may alter TP loading of water delivered to the project site. The CN and watershed parameters are identical between existing and proposed conditions.



Wilkinson

Deep

COUNTY 60 ROAD

COUNTY 249 ROAD

White Bear Twp.

COUNTY 5 ROAD

35E

35E

COUNTY 6 ROAD

North Oaks

Tamarack

COUNTY 59 ROAD

Black

Fish

COUNTY 86 ROAD

Centerville Rd

White Bear La

Gilfillan

Birch

N

0 1,000 2,000 Feet

Project Area Easements

- Construction Easement
- Extended Temporary Easement
- Ditch Centerline
- Lakes
- Drainage Area to Project
- VLAWMO Boundary
- Cities

Figure 1 - Overview of Project Area

Scale:	Drawn by:	Checked by:	Project No :	Date:	Sheet:
AS SHOWN	AS	AN	7057-0014	10/26/2022	1

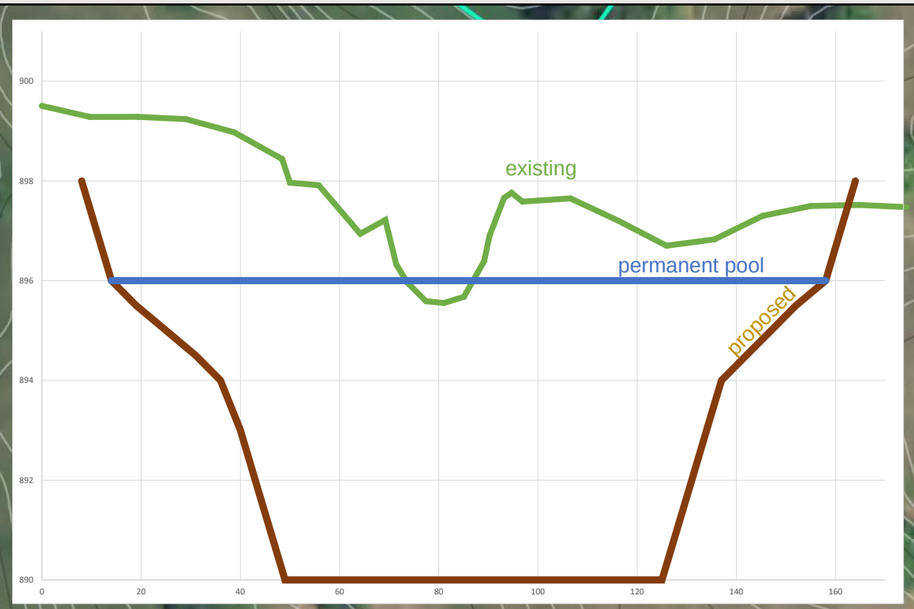
HOUSTON engineering, inc.

Figure 2 - Alternative 1

Scale:	Drawn by:	Checked by:	Project No :	Date:	Sheet:
AS SHOWN	AS	AN	7057-0014	11/6/2022	1

HOUSTON engineering, inc.

0 150 300 Feet



N

Cross Section

Project Area Easements

- Construction Easement
- Extended Temporary Easement

Feature

- Maintenance Access
- High Flow Bypass
- Spoil Pile

Wetland Pool / Grading

Depth (ft)/Elev.

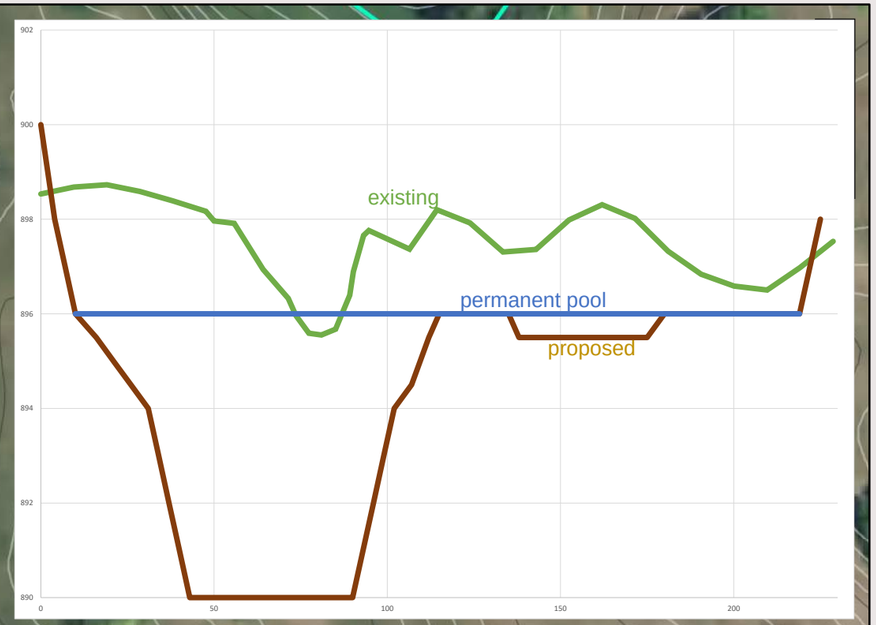
- [900]
- [899]
- [898]
- [897]
- 0 - 0.5 [896]
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6
- Eagle's Nest Location
- 100' Buffer from Eagle's Nest
- Wetland Boundary
- Intermediate Contour
- Index Contour

Figure 3 - Alternative 2

Scale:	Drawn by:	Checked by:	Project No :	Date:	Sheet:
AS SHOWN	AS	AN	7057-0014	11/6/2022	1

HOUSTON engineering, inc.

0 150 300 Feet



Cross Section

Project Area Easements

- Construction Easement
- Extended Temporary Easement

Feature

- High Flow Bypass
- Maintenance Access
- Spoil Pile

Wetland Pool / Grading

Depth (ft)/Elev.

- [900]
- [899]
- [898]
- [897]
- 0 - 0.5 [896]
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6
- Eagle's Nest Location
- 100' Buffer from Eagle's Nest
- Wetland Boundary
- Intermediate Contour
- Index Contour

Figure 4 - IESF Concept

Scale:	Drawn by:	Checked by:	Project No :	Date:	Sheet:
AS SHOWN	AS	AN	7057-0014	11/6/2022	1

HOUSTON engineering, inc.

0 150 300 Feet

N

930 920 940 900 930 940 920 930 940 930 910 910 900

Project Area Easements

- Construction Easement
- Extended Temporary Easement

Feature

- High Flow Bypass
- IESF Bench
- Maintenance Access
- Spoil Pile

Wetland Pool / Grading

Depth (ft)/Elev.

- [900]
- [899]
- [898]
- [897]
- 0 - 0.5 [896]
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6
- Eagle's Nest Location
- 100' Buffer from Eagle's Nest
- Wetland Boundary
- Intermediate Contour
- Index Contour