EST 1983
VLAWMO
Vadnais Lake Area
Water Management Organization

800 County Road E East, Vadnais Heights, MN 55127
www.vlawmo.org
office@vlawmo.org
(651) 204-6070

# VLAWMO BOARD OF DIRECTORS MEETING AGENDA

**7:00 PM** August 26, 2020

**Meeting will be held in-person at City of Vadnais Heights City Hall Council Chambers, 800 County Road E East, Vadnais Heights, MN 55127**

**COVID-19 safety recommendation, masks & social distancing Per VLAWMO approved preparedness policy.**

I. **Call to Order**, Chair, Jim Lindner

II. **Approval of Agenda**

III. **Visitors and Presentations**

A. Public visitors – non agenda items
B. TEC Report and Financial – Aug. –Phil

IV. **Consent Agenda**

A. Approval of Minutes June 24, 2020
B. Project Updates
C. Ramsey County GIS Users Group 2021-2025 JPA

V. **Business**

A. Administration
   1. Approval of storm sewer utility rates for 2021 - Resolution 04-2020– Phil
   2. Consider WBCA - Watershed Boundary Petition – Phil
   3. Consider East Mississippi River Collaborative Project List – Phil

B. Projects and Programs
   1. Consider approval of the Lambert Lake Project Plans and Spec and consider authorize of staff to go out for Bid - Res. 05-2020 - Dawn
   2. Birch Lake 4th & Otter Project - Summary of Project Outcomes and Project Completion Actions – Tyler
      a. Authorization of final payment to Blackstone Contractors, LLC
      b. Consider Operations & Maintenance Agreement
      c. Consider MAWD Award application
   3. Consider Appointment of Subcommittee to Update Cost Share Program Policy – Tyler

VI. Operations and Administration – Reports

1. Whitaker Wetland Report Summary - Brian

VII. **Discussion /Updates**

A. Update on Spent Lime Research Project

VIII. **Administration Communication** –MAWD Resolution ideas and status of annual meeting. Discussion on audio taping meetings?

XI. **Adjourn**

Next regular meeting: October 28, 2020

**Upcoming Events: vlawmo.org/events**

**Fridays in Sept (12:30-3:30 pm):** Buckthorn busting volunteer workdays at 4th and Otter (and Vadnais Heights City Hall if we finish)

TEC Report to the Board
August 2020

| Programs & Projects | Effort Level<br>LOW<br>MED<br>HIGH | Completion Date | Comments |
|---|---|---|---|
| **Projects** | | | |
| East Goose lk. Adaptive Mgnt. - Boat Launch | | late 2020 | Upon Board approval for E. Goose Adaptive Lake Management Project in May, staff has continued to work on boat launch construction and anticipate final construction in the coming few months. |
| East Goose Lk Adaptive Mgnt. - subshed project | | 2020- 21 | Anticipated stakeholder meeting for East Goose Lk. Adaptive Management Project - scheduled later in 2020. |
| Lambert Creek - Ditch 14, branches | | 2021 | MN DNR and USACE permits are in place. S.E.H. is finalizing specs and anticipating going out for bid following the August Board meeting. |
| Birch Lake | | 2017-20 | Barr is working with Blackstone for the final construction bill, project closeout memo & supporting documents. Monitoring has begun. |
| Wetland Assessment - Vadnais Sucker | | 2020 | SEH has finished the field work, currently working on report |
| Whitaker Wetlands | | 2020 | Final report was received |
| **Programs** | | | |
| Outreach | | April-June | Floodplain Friday series finishing in August. Birch Lake sand-iron filter video published. Fall article included in Vadnais Heights and WBL City Newsletters. 3 summer email newsletters sent to public and MS4's. |
| Education | | April-July | Jr Watershed Steward booklet being made by Master Water Stewards with support of Community Blue. Birch Lake education sign complete. |
| Website | | Ongoing | Blue-green Algae news story, Sucker channel restoration featured by DNR, remote camera story maps. New website consultations occurring with other watersheds. |
| WAV | | May-July | Master Water Stewards coordinating rainbarrel workshop (Aug 13) and Social-distance neighborhood tour (Aug 22, 23) Volunteers continuing Leaf Pack macroinvertebrate monitoring with WAV plus a Century College service learning student. Recruiting for 2 new master water stewards in 2021. |
| Cost Share | | ongoing | Cost Share Grant policy updating for 2021. Subcommittee members from TEC & Board solicited to meet in September. |
| GIS | | ongoing | SSU Fee dataset, programs support |
| Monitoring | | ongoing | 2020 season is underway |
| WCA | | ongoing | administering WCA as needed |

TEC Report to the Board
August 2020

| Administration & Operation | | | |
|---|---|---|---|
| SLMPs | | 2020 | Lake surveys are completed for 2020, and planning is underway for Amelia in 2021. |
| Budget | | August 2020 | Administrator continues to manage 2020 budget funds and track anticipated 2020 budget carry over amounts. |
| Administration/ HR | | August 2020 | Staff have completed mid year check-in meetings and have worked with the Administrator to establish priority work objectives for the coming six month period and corresponding professional development /training targets. |
| SSU | | ongoing | Staff are working consultant on defining the 2021 SSU rates. |
| Administration/ HR | | ongoing | Per Board discussion at the June Meeting, Administrator has been investigating possible options for 2021 Health care and employee benefits renewal - anticipate bring recommendations and options to the Personnel Committee of the Board in Sept./Oct. |

| FINANCIAL SUMMARY as of 8/1/2020 | | |
|---|---|---|
| 4M Account (1.10) | 4M Plus (1.23) | Total |
| $168,274 | $723,986 | $892,260 |

| CD's | 4M Term Series | |
|---|---|---|
| | Maturity | Rate |
| Term series | | |
| | | |

| Budget Summary | Actual Expense YTD | 2020 Budget amended | Remaining in Budget | % YTD |
|---|---|---|---|---|
| Operations | *$388,643* | *$697,800* | *$309,157* | 56% |
| CIP | *$200,519* | $666,695 | *$466,176* | 30% |
| Total | $589,162 | $1,364,495 | $775,333 | 43% |

| August-20 | | Actual 8/1/20 | Actual to Date | 2020 Budget | 2019 carry over/Grants | Remaining in Budget | 2020 Available | Act vs. Budget |
|---|---|---|---|---|---|---|---|---|
| BUDGET # | **INCOME** | | | | | | | |
| **5.11** | Storm Water Utility | $455,289 | $471,738 | $890,800 | $0 | $419,062 | $890,800 | 53% |
| **5.12** | Service Fees | $100 | $300 | $200 | $0 | ($100) | $200 | 150% |
| **5.13** | Interest + mitigation acct | $31 | $4,137 | $5,000 | $0 | $863 | $5,000 | 83% |
| **5.14** | Misc. income - WCA admin & other | $0 | $5,150 | $3,000 | $0 | ($2,150) | $3,000 | 172% |
| **5.15** | Other Income Grants | $22,262 | $68,028 | $0 | $0 | ($68,028) | $0 | |
| **5.16** | Transfer from reserves | $0 | $150,000 | $0 | $0 | ($150,000) | $0 | |
| | TOTAL | $477,682 | $699,353 | $899,000 | $0 | $199,647 | $899,000 | 78% |
| | **EXPENSES** | | | | | | | |
| **3.1** | **Operations & Administration** | | | | | | | |
| **3.110** | Office - rent, copies, post tel supplies | $1,851 | $15,683 | $25,200 | $0 | $9,517 | $25,200 | 62% |
| **3.120** | Information Systems | $1,289 | $8,184 | $20,000 | $2,000 | $13,816 | $22,000 | 37% |
| **3.130** | Insurance | $3,899 | $4,019 | $5,800 | $0 | $1,781 | $5,800 | 69% |
| **3.141** | Consulting - Audit | $0 | $6,893 | $6,700 | $0 | ($193) | $6,700 | 103% |
| **3.142** | Consulting - Bookkeeping | $0 | $0 | $1,500 | $0 | $1,500 | $1,500 | 0% |
| **3.143** | Consulting - Legal | $716 | $1,015 | $4,000 | $2,500 | $5,485 | $6,500 | 16% |
| **3.144** | Consulting - Eng. & Tech. | $2,650 | $4,153 | $30,000 | $0 | $25,847 | $30,000 | 14% |
| **3.150** | Storm Sewer Utility | $212 | $3,690 | $14,000 | $0 | $10,310 | $14,000 | 26% |
| **3.160** | Training (staff/board) | $235 | $235 | $4,500 | $1,500 | $5,765 | $6,000 | 4% |
| **3.170** | Misc. & mileage | $248 | $2,989 | $5,500 | $800 | $3,311 | $6,300 | 47% |
| **3.191** | Administration - staff | $26,616 | $248,702 | $347,200 | $50,000 | $148,498 | $397,200 | 63% |
| **3.192** | Employer Liability | $7,650 | $66,268 | $89,600 | $12,000 | $35,332 | $101,600 | 65% |
| **3.2** | **Monitoring and Studies** | | | | | | | |
| **3.210** | Lake and Creek lab analysis | $1,413 | $5,905 | $22,000 | $10,000 | $26,095 | $32,000 | 18% |
| **3.220** | Equipment | $0 | $236 | $4,000 | $0 | $3,764 | $4,000 | 6% |
| **3.230** | Wetland assessment & management | $8,593 | $8,593 | $10,000 | $0 | $1,407 | $10,000 | 86% |
| **3.3** | **Education and Outreach** | | | | | | | |
| **3.310** | Public Education | $0 | $2,363 | $8,500 | $1,000 | $7,137 | $9,500 | 25% |
| **3.320** | Marketing | $0 | $1,663 | $7,500 | $0 | $5,837 | $7,500 | 22% |
| **3.330** | Community Blue Ed Grant | $100 | $8,052 | $10,000 | $2,000 | $3,948 | $12,000 | 67% |
| *Total Core functions: Ops, Monitoring, Education* | | *$55,473* | *$388,643* | *$616,000* | *$81,800* | *$309,157* | *$697,800* | *56%* |
| **Capital Improvement Projects and Programs** | | | | | | | | |
| **3.4** | **Subwatershed Activity** | | | | | | | |
| **3.410** | Gem Lake | $0 | $0 | $0 | $0 | $0 | $0 | |
| **3.420** | Lambert Creek | $3,543 | $64,322 | $120,000 | $63,275 | $118,953 | $183,275 | 35% |
| **3.425** | Goose Lake | $873 | $35,563 | $60,000 | $150,316 | $174,753 | $210,316 | 17% |
| **3.430** | Birch Lake | $3,620 | $26,497 | $10,000 | $39,067 | $22,570 | $49,067 | 54% |
| **3.440** | Gilf Black Tam Wilk Amelia | $0 | $7,362 | $30,000 | $50,000 | $72,638 | $80,000 | 9% |
| **3.450** | Pleasant Charley Deep | $824 | $15,789 | $10,000 | $9,000 | $3,211 | $19,000 | 83% |
| **3.460** | Sucker Vadnais | $0 | $3,164 | $12,000 | $10,000 | $18,836 | $22,000 | 14% |
| **3.48** | **Programs** | | | | | | | |
| **3.481** | Landscape 1 | $4,182 | $15,354 | $24,000 | $11,500 | $20,146 | $35,500 | 43% |
| **3.482** | Landscape 2 | $2,452 | $22,621 | $20,000 | $11,361 | $8,740 | $31,361 | 72% |
| **3.483** | Project Research & feasibility | $0 | $9,725 | $0 | $0 | ($9,725) | $0 | #DIV/0! |
| **3.470** | Facilities Maintenance | $122 | $122 | $5,000 | $29,176 | $34,054 | $34,176 | 0% |
| **3.5** | **Regulatory** | | | | | | | |
| **3.510** | Engineer Plan review | $0 | $0 | $2,000 | $0 | $2,000 | $2,000 | 0% |
| | *Total CIP & Program* | *$15,615* | *$200,519* | $293,000 | $373,695 | *$466,176* | *$666,695* | *30%* |
| | **Total of Core Operations & CIP** | **$71,088** | $589,162 | $909,000 | $455,495 | **$775,333** | $1,364,495 | **43%** |

| **Fund Balance** | | 7/1/2020 | 8/1/2020 |
|---|---|---|---|
| 4M Account | | $103,141 | $168,274 |
| 4M Plus Savings | | $363,428 | $723,986 |
| Total | | $466,569 | $892,260 |

| Restricted funds | 8/1/2020 |
|---|---|
| Mitigation Savings | $21,035 |
| Term Series (3/28/19) | $0 |

# Profit & Loss

## July 11 through August 14, 2020

Cash Basis

| | Jul 11 - Aug 14, 20 |
|---|---|
| Ordinary Income/Expense | |
| Income | |
| 5.1 · Income | |
| 5.11 · Storm Water Utility | 455,289.42 |
| 5.12 · Service Fees | 100.00 |
| 5.13 · Interest | 30.90 |
| Total 5.1 · Income | 455,420.32 |
| 6.6.6 · Grants | 22,261.90 |
| Total Income | 477,682.22 |
| Gross Profit | 477,682.22 |
| Expense | |
| 3.1 · Administrative/Operations | |
| 3.110 · Office | |
| Copies | 25.24 |
| Phone/Internet/Machine Overhead | 275.00 |
| Postage | 10.75 |
| Rent | 1,540.00 |
| Total 3.110 · Office | 1,850.99 |
| 3.120 · Information Systems | |
| IT Support | 1,259.00 |
| Software | 30.00 |
| Total 3.120 · Information Systems | 1,289.00 |
| 3.130 · Insurance | 3,899.00 |
| 3.143 · Legal | 716.40 |
| 3.144 · Eng. & Tech. | 2,650.41 |
| 3.150 · Storm Sewer Utility | 212.00 |
| 3.160 · Training (staff/board) | 235.00 |
| 3.170 · Misc. & mileage | 247.71 |
| 3.191 · Employee Payroll | |
| Payroll | 26,616.01 |
| Total 3.191 · Employee Payroll | 26,616.01 |
| 3.192 · Employer Liabilities | |
| Admin payroll processing | 44.92 |
| Administration FICA | 1,843.72 |
| Administration PERA | 1,996.20 |
| Insurance Benefit | 3,765.57 |
| Total 3.192 · Employer Liabilities | 7,650.41 |
| Total 3.1 · Administrative/Operations | 45,366.93 |
| 3.2 · Monitoring and Studies | |
| 3.210 · Lake & Creek lab analysis | 1,413.00 |
| 3.230 · Wetland Asses. & Manage | 8,593.09 |
| Total 3.2 · Monitoring and Studies | 10,006.09 |

| | |
|---|---|
| **3.3 · Education and Outreach** | |
| **3.310 · Public Education** | 0.00 |
| **3.330 · Community Blue Education Grant** | 100.00 |
| **Total 3.3 · Education and Outreach** | 100.00 |
| **3.4 · Capital Imp. Projects/Programs** | |
| **3.420 · Lambert Creek Restoration** | |
| **LL VLAWMO cash match** | 1,602.48 |
| **Whitaker Wetlands** | 1,940.55 |
| **Total 3.420 · Lambert Creek Restoration** | 3,543.03 |
| **3.425 · Goose Lake** | |
| **WB Funding - Goose subshed** | 656.70 |
| **3.425 · Goose Lake - Other** | 216.00 |
| **Total 3.425 · Goose Lake** | 872.70 |
| **3.430 · Birch Lake** | |
| **4th & Otter project** | 3,620.13 |
| **Total 3.430 · Birch Lake** | 3,620.13 |
| **3.450 · Pleasant Charley Deep** | 824.06 |
| **3.470 · Facilities & Maintenance** | 121.60 |
| **Total 3.4 · Capital Imp. Projects/Programs** | 8,981.52 |
| **3.48 · Programs** | |
| **3.481 · Landscape 1 - cost-share** | 4,182.11 |
| **3.482 · Landscape 2** | 2,451.64 |
| **Total 3.48 · Programs** | 6,633.75 |
| **Total Expense** | 71,088.29 |
| **Net Ordinary Income** | 406,593.93 |
| **Net Income** | **406,593.93** |

| Type | Num | Date | Name | Item | Account | Paid Amount | Original Amount |
|---|---|---|---|---|---|---|---|
| **Check** | **eft** | **07/21/2020** | **Reliance Standard** | | **Checking - 1987** | | **-176.03** |
| | | | | | Insurance Benefit | -176.03 | 176.03 |
| TOTAL | | | | | | -176.03 | 176.03 |
| **Check** | **eft** | **08/10/2020** | **further** | | **Checking - 1987** | | **-5.00** |
| | | | | | Insurance Benefit | -5.00 | 5.00 |
| TOTAL | | | | | | -5.00 | 5.00 |
| **Check** | **4974** | **07/13/2020** | **SEH** | | **Checking - 1987** | | **-2,415.21** |
| | | | | | 3.144 · Eng. & Tech. | -2,415.21 | 2,415.21 |
| TOTAL | | | | | | -2,415.21 | 2,415.21 |
| **Check** | **4975** | **08/14/2020** | **Ed Welsch** | | **Checking - 1987** | | **-2,000.00** |
| | | | | | 3.481 · Landscape 1 - cost-share | -2,000.00 | 2,000.00 |
| TOTAL | | | | | | -2,000.00 | 2,000.00 |
| **Check** | **4976** | **08/14/2020** | **anthony monda** | | **Checking - 1987** | | **-662.44** |
| | | | | | 3.482 · Landscape 2 | -662.44 | 662.44 |
| TOTAL | | | | | | -662.44 | 662.44 |
| **Check** | **4977** | **08/14/2020** | **Joel Matuzak** | | **Checking - 1987** | | **-1,789.20** |
| | | | | | 3.482 · Landscape 2 | -1,789.20 | 1,789.20 |
| TOTAL | | | | | | -1,789.20 | 1,789.20 |
| **Check** | **4978** | **08/14/2020** | **Stefan Wills** | | **Checking - 1987** | | **-2,000.00** |
| | | | | | 3.481 · Landscape 1 - cost-share | -2,000.00 | 2,000.00 |
| TOTAL | | | | | | -2,000.00 | 2,000.00 |
| **Check** | **4979** | **08/14/2020** | **Colleen O'Brien** | | **Checking - 1987** | | **-182.11** |
| | | | | | 3.481 · Landscape 1 - cost-share | -182.11 | 182.11 |
| TOTAL | | | | | | -182.11 | 182.11 |
| **Check** | **4980** | **08/14/2020** | **RMB Environmental Laboratories, Inc.** | | **Checking - 1987** | | **-1,413.00** |
| | | | | | 3.210 · Lake & Creek lab analysis | -605.00 | 605.00 |
| | | | | | 3.210 · Lake & Creek lab analysis | -246.00 | 246.00 |
| | | | | | 3.210 · Lake & Creek lab analysis | -94.00 | 94.00 |
| | | | | | 3.210 · Lake & Creek lab analysis | -468.00 | 468.00 |
| TOTAL | | | | | | -1,413.00 | 1,413.00 |
| **Check** | **4981** | **08/14/2020** | **SEH** | | **Checking - 1987** | | **-9,739.77** |

| | | | | | |
|---|---|---|---|---|---|
| | | | 3.144 · Eng. & Tech. | -235.20 | 235.20 |
| | | | LL VLAWMO cash match | -1,602.48 | 1,602.48 |
| | | | 3.230 · Wetland Asses. & Manage | -7,902.09 | 7,902.09 |
| TOTAL | | | | -9,739.77 | 9,739.77 |
| **Check** | **4982** | **08/14/2020** | **Barr Engineering Co** | **Checking - 1987** | **-8,926.79** |
| | | | 4th & Otter project | -3,620.13 | 3,620.13 |
| | | | 3.450 · Pleasant Charley Deep | -5,306.66 | 5,306.66 |
| TOTAL | | | | -8,926.79 | 8,926.79 |
| **Check** | **4983** | **08/14/2020** | **Ramsey County** | **Checking - 1987** | **-216.00** |
| | | | 3.425 · Goose Lake | -216.00 | 216.00 |
| TOTAL | | | | -216.00 | 216.00 |
| **Check** | **4984** | **08/14/2020** | **Jim Shapland** | **Checking - 1987** | **-100.00** |
| | | | 3.330 · Community Blue Education Grant | -100.00 | 100.00 |
| TOTAL | | | | -100.00 | 100.00 |
| **Check** | **4985** | **08/14/2020** | **Regents of the University of Minnesota** | **Checking - 1987** | **-691.00** |
| | | | 3.230 · Wetland Asses. & Manage | -527.00 | 527.00 |
| | | | 3.230 · Wetland Asses. & Manage | -106.00 | 106.00 |
| | | | 3.230 · Wetland Asses. & Manage | -58.00 | 58.00 |
| TOTAL | | | | -691.00 | 691.00 |
| **Check** | **4986** | **08/14/2020** | **carp solutions** | **Checking - 1987** | **-517.40** |
| | | | 3.450 · Pleasant Charley Deep | -517.40 | 517.40 |
| TOTAL | | | | -517.40 | 517.40 |
| **Check** | **4987** | **08/14/2020** | **Anoka County** | **Checking - 1987** | **-212.00** |
| | | | 3.150 · Storm Sewer Utility | -212.00 | 212.00 |
| TOTAL | | | | -212.00 | 212.00 |
| **Check** | **4988** | **08/14/2020** | **City of White Bear Lake** | **Checking - 1987** | **-34,085.39** |
| | | | payroll | -26,616.01 | 26,616.01 |
| | | | Administration FICA | -1,843.72 | 1,843.72 |
| | | | Administration PERA | -1,996.20 | 1,996.20 |
| | | | Insurance Benefit | -3,584.54 | 3,584.54 |
| | | | Admin payroll processing | -44.92 | 44.92 |
| TOTAL | | | | -34,085.39 | 34,085.39 |
| **Check** | **4989** | **08/14/2020** | **City Of Roseville** | **Checking - 1987** | **-1,259.00** |
| | | | IT Support | -959.00 | 959.00 |
| | | | IT Support | -300.00 | 300.00 |
| TOTAL | | | | -1,259.00 | 1,259.00 |

| | | | | | |
|---|---|---|---|---|---|
| **Check** | **4990** | **08/14/2020** | **League of MN Cities Insurance Trust P & C** | **Checking - 1987** | **-3,899.00** |
| | | | 3.130 · Insurance | -3,899.00 | 3,899.00 |
| TOTAL | | | | -3,899.00 | 3,899.00 |
| **Check** | **4991** | **08/14/2020** | **Kennedy & Graven, Chartered** | **Checking - 1987** | **-1,452.70** |
| | | | 3.143 · Legal | -716.40 | 716.40 |
| | | | WB Funding - Goose subshed | -656.70 | 656.70 |
| | | | 3.470 · Facilities & Maintenance | -79.60 | 79.60 |
| TOTAL | | | | -1,452.70 | 1,452.70 |
| **Check** | **4992** | **08/14/2020** | **City of Vadnais Heights** | **Checking - 1987** | **-1,850.99** |
| | | | Rent | -1,540.00 | 1,540.00 |
| | | | Phone/Internet/Machine Overhead | -200.00 | 200.00 |
| | | | Phone/Internet/Machine Overhead | -75.00 | 75.00 |
| | | | Postage | -10.75 | 10.75 |
| | | | Copies | -25.24 | 25.24 |
| TOTAL | | | | -1,850.99 | 1,850.99 |
| **Check** | **4993** | **08/14/2020** | **Burns & McDonnell** | **Checking - 1987** | **-1,940.55** |
| | | | Whitaker Wetlands | -1,940.55 | 1,940.55 |
| TOTAL | | | | -1,940.55 | 1,940.55 |
| **Check** | **4994** | **08/14/2020** | **Dawn Tanner** | **Checking - 1987** | **-37.38** |
| | | | 3.170 · Misc. & mileage | -37.38 | 37.38 |
| TOTAL | | | | -37.38 | 37.38 |
| **Check** | **4995** | **08/14/2020** | **Tyler J Thompson** | **Checking - 1987** | **-91.88** |
| | | | 3.170 · Misc. & mileage | -91.88 | 91.88 |
| TOTAL | | | | -91.88 | 91.88 |
| **Check** | **4996** | **08/14/2020** | **Brian Corcoran** | **Checking - 1987** | **-109.62** |
| | | | 3.170 · Misc. & mileage | -109.62 | 109.62 |
| TOTAL | | | | -109.62 | 109.62 |
| **Check** | **4997** | **08/14/2020** | **Nicholas Voss** | **Checking - 1987** | **-8.83** |
| | | | 3.170 · Misc. & mileage | -8.83 | 8.83 |
| TOTAL | | | | -8.83 | 8.83 |

## Vadnais Lake Area Water Management Organization

9:58 AM

## Custom Transaction Detail Report

08/05/2020

**July 1 through August 1, 2020**

Accrual Basis

| | Type | Date | Num | Name | Memo | Account | Clr | Split | Amount | Balance |
|---|---|---|---|---|---|---|---|---|---|---|
| **Jul 1 - Aug 1, 20** | | | | | | | | | | |
| | Credit Card Charge | 07/03/2020 | | Google*SVCAPPS_VLAWM | | US Bank CC | | WEB | 36.00 | 36.00 |
| | Credit Card Charge | 07/08/2020 | | Ace Hardware | Stakes for VH city hall | US Bank CC | | 3.470 · Facilities & Maintenance | 27.99 | 63.99 |
| | Credit Card Charge | 07/15/2020 | | Prairie Moon Nursery | seed for VH city hall | US Bank CC | | 3.470 · Facilities & Maintenance | 42.00 | 105.99 |
| | Credit Card Charge | 07/24/2020 | | hologram | account refill | US Bank CC | | Software | 30.00 | 135.99 |
| | Credit Card Charge | 07/27/2020 | | University of Minnesota | project management training Dawn | US Bank CC | | 3.160 · Training (staff/board) | 235.00 | 370.99 |
| **Jul 1 - Aug 1, 20** | | | | | | | | | **370.99** | **370.99** |

The Vadnais Lake Area Water Management Organization
800 County Road E East, Vadnais Heights, 55127 651-204-6070
Website: www.vlawmo.org; Email: office@vlawmo.org

MINUTES OF THE BOARD OF DIRECTORS – June 2020 REGULAR BOARD MEETING
June 24th, 2020

| Attendance | | Present | Absent |
|---|---|---|---|
| Jim Lindner, Chair | City of Gem Lake | X | |
| Marty Long, Vice Chair | City of North Oaks | | X |
| Rob Rafferty, Secretary-Treasurer | City of Lino Lakes | X | |
| Ed Prudhon | White Bear Township | X | |
| Dan Jones | City of White Bear Lake | X | |
| Patricia Youker | City of Vadnais Heights | X | |
| | | | |
| Phil Belfiori | Administrator | X | |
| Brian Corcoran | Water Resources Mgr. | X | |
| Dawn Tanner | Program Development Coord. | X | |
| Nick Voss | Education & Outreach Coord. | | X |
| Tyler Thompson | GIS Watershed Tech. | X | |

**Others in attendance:** Gary Eagles (North Oaks Company); Emily Jennings (SEH Engineering, Inc.); Jack Graser, Diane & Melvin Rich (City of White Bear Lake residents).

## I. Call to Order

The meeting was called to order at 7:00 pm by Chair Lindner.

## II. Approval of Agenda

The agenda for the June 24, 2020 Board meeting was presented for approval, Chair Lindner asked for any additions or corrections. Thompson asked to add item VI. B. Metro-INET JPA direction. Lindner allowed the addition to the agenda, as-amended.

A motion was made by Rafferty and seconded by Jones to approve the June Board meeting agenda, as amended. Vote: all aye. Motion passed.

## III. Visitors and Presentations

### A. Public Visitors – non-agenda items

Jack Graser, President of Goose Lake Townhomes Association, addressed the Board that there is some concern among townhome residents about the loss of large trees for the boat ramp location and what type of material will be used for the access, along with gate placement. Belfiori addressed that these questions and concerns will be addressed later in the meeting. With no other visitor comments, Chair Lindner closed item III.

## IV. Consent Agenda

Chair Lindner asked if any Board members wished to speak on the project updates; no comments made. Belfiori noted the VH COVID-19 Preparedness Plan.

### A. Approval of Minutes: May 27, 2020

The minutes from the May 27th, 2020 Board meeting are placed on the consent agenda for approval, as presented.

### B. COVID-19 Preparedness Plan

The City of Vadnais Heights COVID-19 Preparedness Plan was included in the June Board meeting packet for approval. No comments or discussion.

### C. Project Updates

Staff prepared updates for projects and programs in the June Board meeting packet. No comments or discussion.

A motion was made by Prudhon and seconded by Youker to approve the June Board meeting consent agenda, as presented. Vote: all aye. Motion passed.

## V. Business

### A. Administration

#### 1. 2021 Budget, Res. 03-2020

Belfiori started off by thanking the 2021 budget /finance subcommittee, then presented a summary of the recommended VLAWMO 2021 budget for consideration. Belfiori noted that the recommended budget was consistent with the consensus recommendation from the 2021 Budget /Finance Subcommittee and the direction provided by the majority of Board members at the April Board meeting budget discussion. He then noted that the 2021 budget comes while the economic realities due to the unpresented pandemic are still unfolding and that these changing economic realities come at a time when VLAWMO has set the stage for the next several years of generally moving towards a more project implementation focus while still maintaining a strong foundation of nonstructural programs. He stated that the VLAWMO is also attempting to increase the uncommitted fund balance to over 50% as was discussed at the April Board meeting. He referenced that the State's Clean Water Legacy grant programs are likely seeing double digit cuts in funding.

Belfiori presented an overview of the consequences from implementation of the recommended 2021 budget (with no increase in SSU) including a reduction in CIP/Project implementation of large scale high impact regional projects in 2022 and beyond and a slowing of implementation of many of the critical partnership based projects identified in the Board approved 2017 Watershed Management plan.

Belfiori then provided an overview of the recommended 2021 budget highlights including a targeting of CIP /Project budgets in two Subwatershed funds (Goose Lake and Lambert Creek) given the ongoing and pending Projects, maintaining other core administrative programs at roughly 2020 levels, and maintaining core watershed management programs budgets at approximately 2020 budget levels. He also noted that the Board packet information closely tracks projected 2020 fund balances and stated that if no increase in SSU is proposed, fund balances will need to be more closely tracked to allow for more precise year end and year to year budgeting. He identified that after the 2021 Budget /Finance Subcommittee meeting, the Personnel Subcommittee met and did reach consensus on a recommendation on the adjustments in employee payroll and benefits based on the Board approved salary policy.

**Discussion:** Board members discussed the current economic realities and how the proposed recommended budget could affect the long term ability to implement many of the partnership based projects identified in the approved Watershed Plan. Prudhon asked what percentage of the budget went up for policy and personnel. Belfiori answered that the Personnel Subcommittee consensus recommendation would allow up to an average of 3.5% increase based on the Board approved 2018 policy. Jones followed up with additional background on the Personnel Subcommittee consensus recommendation and how it is consistent with the 2018 approved Board Policy. Lindner addressed that flat-lining the SSU will create big decisions in future budget years, and advised we're budgeting the best we can based on current economic conditions. Jones addressed he doesn't agree with the "flat" no increase in SSU given it further delays projects down the road and then he discussed the possibility of reductions in other program budgets to then allow for an increase in 2021 CIP implementation funding. Prudhon identified that a roughly 7% increase was approved within the last few years and Rafferty noted that no

increases had taken place for many years, as VLAWMO was drawing down its fund balance. Youker noted that maintenance on the Ditch 14 system is an important project item for Vadnais Heights and would appreciate the ability to have VLAWMO as a larger partner in Ditch 14 maintenance. Rafferty noted that if a municipality is looking to partner on a project that is ready to go, VLAWMO should consider investing to partner on important projects. Jones proposed going for a $5 increase for the residential SSU for projects and improving employee health insurance and benefits. Prudhon mentioned that with different referendums that passed and with economic hardships right now, a SSU increase for 2022 should be considered. Jones mentioned the possibility of cutting programming budgets, such as the cost share grant program. Belfiori overviewed the cost share grant program and the relatively high cost-benefit it provides while also noting that completing larger projects may also be more important to VLAWMO's mission. Rafferty noted value in keeping programs alive while cutting their budgets to make room for projects that are ready for implementation.

Jones made a motion and Rafferty seconded to increase the proposed single owner residential Storm Sewer Utility fee from $50.50 to $55.50, opening the item for discussion. Jones also identified that he thought that this proposed increase in the SSU rate could go towards providing for some revenue to start to pursue a regional maintenance project on Ditch 14.

Youker made a friendly amendment motion for a 5% increase in the SSU rate for the 2021 budget. Both Jones and Rafferty stated they agreed to this friendly amendment. A motion was then made by Jones and seconded by Rafferty for the approval of Resolution 02-2020, as amended for a 5% increase in SSU rate, for the approval of the 2021 VLAWMO budget. Vote: all five Board members in attendance voting Yea. Motion passed.

**Resolution 02-2020** (Amended per approved motion at the 6/24/20 meeting)
Of the Vadnais Lake Area Water Management Organization (VLAWMO)
**Approving the 2021 Budget**

Resolution 02-2020 was moved by Director Jones and seconded by Director Rafferty:

**Whereas**, the Board of the Vadnais Lake Area Water Management Organization has considered the 2021 Budget as recommended by the 2021 Budget/Finance Committee and the attendant information. The 2021 budget and footnotes are attached to this Resolution, and

**Whereas**, Total revenue for 2021 is projected at $$2,029,059 of which $935,340 is from the VLAWMO Storm Sewer Utility (5% increase in the VLAWMO Storm Sewer Utility from 2020) and the remainder of the revenue being from a MPCA Loan for the Lambert Pond Project, a MPCA 319 Lambert Project Grant, Fund balance carryover from 2020, BWSR Watershed Based Fund grant, local partnership revenue, and fees/investment income.

**Whereas**, the total expenditures for 2021 are projected at $2,029,059 which will be paid utilizing: 1) $1,134,380 of VLAWMO funds/carry over funds from 2020, and 2) $894,679 of loan, grant and partnership funds.

**Therefore** be it resolved that the 2021 Budget, dated 6-24-2020 is approved.

The question was on the adoption of the resolution and there were __ yeas and __ nays as follows:

| | Yea | Nay | Absent |
|---|---|---|---|
| *Dan Jones* | ☐ | ☐ | ☐ |
| *Ed Prudhon* | ☐ | ☐ | ☐ |
| *Rob Rafferty* | ☐ | ☐ | ☐ |
| *Marty Long* | ☐ | ☐ | ☐ |
| *Patricia Youker* | ☐ | ☐ | ☐ |
| *Jim Lindner* | ☐ | ☐ | ☐ |

_____ Board Chair Date

_____ Attest Date

## B. Projects

### 1. Lambert Lake Meander, Res. 03-2020

Tanner presented the findings of fact for the Lambert Lake Meander EAW, as staff has continued to work closely with SEH and the DRN on, which was deemed necessary following the February 2020 VLAWMO Board meeting. Staff conducted an NHIS inventory of species, and species of concern information was communicated to the USFWS, and guidance has been requested for how best to proceed and accommodate requirements during project construction. A formal letter of concurrence from the DNR has been included with the EAW, and it has been determined, based on the recommendation from the Project Engineer, that the meander will be able to be completed with a single mobilization for winter construction. The EAW was completed with consultation and review provided by SEH. Notice was published in Press Publications on 5/20/20, and in the Environmental Water Quality Board Monitor on 5/18/20, with the comment period running from May 19th to June 17th. Received comments are included in the Finding of Fact and have been incorporated into Resolution 03-2020. Plans for the Lambert Lake Meander are nearly complete, but due to additional assistance needed from SEH for the EAW, and permit coordination with the DNR and the USACE, and project planning for the possibility of a 2-stage construction, SEH has estimated another $11,900 to complete permitting, project final design, and bidding oversight. Staff is requesting approval for an additional $11,900 in engineering funds. Project construction estimates are also coming in higher than anticipated due to increased sheetpile depth. The MPCA Clean Water Partnership loan does allow for applying for additional funding, but staff will wait until the bidding process is complete before applying for additional funding, if necessary. Lab work on the treatment cells with the UMN researchers also began in early June, with delay caused by needing to be designated as essential workers, and prototype design work is underway in the Twin Cities.

**Discussion:** Tanner noted that many different options were proposed and talked about with SEH for cost reduction of the project. Jennings rose for questions. Lindner asked if used sheetpile would be acceptable for the project. Jennings noted that a geotechnical engineer would need to review the material to make sure it fits specs, and answered that used sheetpile would be allowed if it met integrity spec. Lindner asked the likelihood of used sheetpile availability. Jennings noted that perhaps excess materials from a job that weren't used may be available, but it is unlikely. Prudhon asked what the difference in used sheetpile age would be to be considered acceptable for use. Jennings answered that as long as the product met specs, it would be useable.

A motion was made by Jones and seconded by Youker for the approval of Resolution 03-2020 ratifying the Finding of Fact and Conclusions resultant of the EAW process. Vote: all aye. Motion passed.

A motion was made by Jones and seconded by Prudhon to approve an additional $11,900.00 in project funding for engineering and bid administration. Vote: all aye. Motion passed.

**Resolution 03-2020**

Of the Vadnais Lake Area Water Management Organization (VLAWMO)

**Approving the Finding of Fact for the Vadnais Lake Area Water Management Organization (VLAWMO) Bacteria, Nutrient, and Sediment Reduction Project Environmental Assessment Worksheet (EAW)**

Resolution 03-2020 was moved by Director _____ and seconded by Director _____:

**Whereas**, the Board of the Vadnais Lake Area Water Management Organization (VLAWMO) has reviewed the Environmental Assessment Worksheet (EAW) and comments submitted by MN DOT, USACE, MPCA, and Minnesota State Historic Preservation Office, and accompanying responses included in the Finding of Fact prepared by the VLAWMO, and

**Whereas**, the VLAWMO has the legal authority to manage the County Ditch 14 (Lambert Creek), which is the channel flowing through the wetland basin known as Lambert Lake, and

**Whereas,** current and past studies support that the Lambert Lake Project, as generally described in the EAW, will provide beneficial results to the wetland resource, downstream water quality, and flood management for the local community, and

**Whereas** the current project builds upon and improves prior projects constructed at the site and will not adversely impact the wetland,

**Therefore**, be it resolved that the VLAWMO finds the Lambert Creek Project will have no significant adverse environmental impact and an Environmental Impact Statement is not deemed necessary.

The question was on the adoption of the resolution and there were __ yeas and __ nays as follows:

| | Yea | Nay | Absent |
|---|---|---|---|
| *Dan Jones* | ☐ | ☐ | ☐ |
| *Ed Prudhon* | ☐ | ☐ | ☐ |
| *Rob Rafferty* | ☐ | ☐ | ☐ |
| *Marty Long* | ☐ | ☐ | ☐ |
| *Patricia Youker* | ☐ | ☐ | ☐ |
| *Jim Lindner* | ☐ | ☐ | ☐ |

_____ Board Chair Date

_____ Attest Date

## 2. East Goose Lake Boat Ramp Agreement

Belfiori opened up the conversation and overviewed the project, and the access being on public land being important for liability perspective and for completing lake management activities on East Goose Lake. Corcoran presented a Memorandum of Agreement (agreement) between VLAWMO and the City of White Bear Lake in regards to construction and installation of a limited-access boat launch on East Goose Lake, as the City owns Right of Way on the Highland Avenue offshoot to the south shore of East Goose Lake. Pursuing a non-public boat launch access was included in Board direction from the April 2020 VLAWMO Board meeting as a key effort to implement an adaptive lake management plan to improve East Goose Lake's water quality over the coming years. The boat launch would be used sparingly, and would allow access for lake surveys, rough fish removal, water quality monitoring and treatment, and vegetation management. VLAWMO would be responsible for operations & maintenance, and is anticipating between $6,000-$9,000 for grading and constructing the launch. Private property has been used in the past for these activities, per the generosity of landowners, though liability is also a concern, and a limited-access launch on public property mitigates this issue. All proper permitting agencies have been contacted and are moving forward. Staff is recommending approval of the attached MOU for the East Goose Lake boat launch access. Corcoran noted that the City of White Bear Lake is the only agency requiring permitting, and overviewed the flex-mat. Corcoran overviewed only 2 large trees are anticipated at being removed, along with smaller buckthorn bushes. Access would be restricted with a gate or chains.

Discussion: Lindner clarified that this would not be a public access but limited-use boat access on public easement. Corcoran clarified yes. Rafferty asked for clarification where Highland Ave ends. Prudhon asked about signage. Corcoran noted the only sign would be a small sign on the chain. Jones asked why VLAWMO needs a ramp on East Goose Lake. Corcoran noted that all public waters in VLAWMO are public property and there are several easements in the Watershed that have been gotten over the years (Grass, Lambert, and Pleasant Lake). The main concern is that private access in the past can't be relied upon forever, as well as being a liability. Prudhon asked if the project is being put out for bid. Graser asked about 2 trees and if branch trimming will be necessary. Corcoran addressed that we want it to be as little impact and visibility as possible, but to have enough space to conduct management activities.

A motion was made by Jones and seconded by Rafferty for the approval of the Memorandum of Understanding with the City of White Bear Lake for the East Goose Lake Boat Launch Access with any non-material changes and upon advice of Counsel. Vote: all aye. Motion passed.

## C. WCA

## 1. Anderson Woods South Replacement Plan

North Oaks Company is proposing a 21.43-acre 9-lot single-family residential development known as Anderson Woods South. The project will include a street and utilities. The site does not include any existing structures. Stormwater management practices will provide treatment of runoff before discharge to wetlands after development.

Anderson Woods South will require 0.1925 acre of permanent impact to one wetland. The need for a safe, efficient and functional site access street consistent with land use guidance and accepted engineering practices renders proposed wetland impacts unavoidable. The project has been designed to minimize wetland impacts to the extent practicable and includes construction practices to reduce or eliminate secondary wetland impacts. Permanent wetland impacts will be replaced by withdrawing 0.3850 acre of wetland credit from the North Oaks Company wetland bank, Account #170. This wetland bank is owned by

the Applicant and located within the same County, Major Watershed, and Bank Service Area as the wetland impact. Staff and the Technical Commission are recommending for the Board to approve of the proposed impacts of 0.1925 acres permanent wetland impact and replacement at 2:1 ratio via wetland bank credits 0.3850 acres. Corcoran noted all the proper surveys and proceedings were followed for wetland sequencing, as part of the Wetland Conservation act. Project alternatives were explored but all were deemed infeasible.
**Discussion:** Youker asked if the water was as high this year as when it was surveyed. Corcoran answered, though regardless of water levels, all 3 indicators of a wetland must be met to be considered a wetland. Prudhon asked about the length of the cul-de-sac. Gary Eagles answered and that North Oaks does not have an ordinance for cul-de-sac length.
A motion was made by Youker and seconded by Prudhon for the approval of the Anderson Woods South Replacement Plan, as proposed. Vote: all aye. Motion passed.

## VIII. Discussion/Updates

### A. Blue Thumb Resilient yard webinar

Agenda item postponed.

### B. Metro-INET JPA Update

Thompson outlined that at the February 2020 Board meeting it was mentioned that Metro-INET was seeking verbal confirmation that its member organizations are invested in moving forward with Metro-INET as a Joint Powers Agreement (JPA). It was not identified in the February Board minutes under discussion if the Board is invested in moving forward. Staff is asking for verbal consensus from the Board in their interest, moving forward, with entering into a JPA with Metro-INET.
**Discussion:** The Board gave their general consensus on interest in moving forward with and exploring being a JPA member of Metro-INET.

## IX. Administration Communication

None.

## X. Adjourn

A motion was made by Rafferty and seconded by Prudhon to adjourn at 8:45 pm. Vote: all aye. Motion passed.
Minutes compiled and submitted by Tyler Thompson.

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

**To:** VLAWMO Board of Directors
**From:** VLAWMO Staff
**Date:** August 26, 2020

**Re:** **IV. B. Project Updates**

1. **Carp Project Updates:** VLAWMO is preparing for a fall carp harvest on Pleasant Lake. SPRWS will be repairing the boat launch on the south shore of Pleasant Lake to allow commercial boat access. We appreciate SPRWS ability and commitment to complete this improvement. NOHOA will prepare a permit for the commercial fisher. Carp Solutions and MN DNR are also assisting and sharing information as we coordinate this effort.

   A box net removal is being tested on West Vadnais during July/August. The nets are set up on the south shore of West Vadnais. They are baited with corn, which is attractive to carp but generally not to native fish. Coordination with RWMWD, SPRWS, and the Ramsey County Water Patrol are essential to this project. We appreciate partner involvement on this project.

| | |
|---|---|
|  |   |
| The box nets can be checked with a team using a floating bar of PVC. As the team works their way along, the net is reset behind them. | Carp Solutions is continuing to modify their strategies to maximize removal. A couple of removals have occurred at the time of packet preparation. |

2. **Pleasant Lake Sedimentation Study: Core Sample & Bathymetry:** This study has recently been completed. The draft memos, which are currently being finalized by Barr Engineering, are included in the packet. VLAWMO did not request any changes to the draft memos. The final memos will be posted on the Pleasant Lake section of the VLAWMO website when they are ready.

   The study included detailed bathymetry of the west bay area, and sediment cores for substrate composition and phosphorus levels.

   What we learned: The sand bar and shallow area that was reported as an expanding nuisance and prohibitive to sailing/recreation on Pleasant Lake is not a reasonable result of incoming Mississippi

River water. The sand bar is too far away (1500 feet east of the discharge area) to be formed from the incoming water. There is a hole (approximately 2 feet deep), 400 feet east of the discharge location. This is likely scour resulting from the current when pumping levels are high. The hole is too small to be contributing to the sediment and shallower water levels in the bay.

The sediment composition between the hole and the sand bar is organic muck. If this area was part of the sand bar, it would have a sandy composition. The organic muck is very high in roots and decayed plant matter. This area is also high in plant density in the water column. Early in the season, it is dominated by Curly-leaf pondweed, which is invasive. Later in the season, dominant plants transition over to natives such as Coontail. The vegetation is so thick that the sampling crew from Barr had a difficult time locating the bottom while doing bathymetry in this area (in May when Curly-leaf has high dense coverage). Equipment gave false readings because of the plant density, so manual readings were needed at key points. Equipment readings were often off by 0.5-feet or more because plants gave a false bottom depth.

The sand bar is present. Barr was able to sample it took look at grain sizes. It is next to a much older deep section of lake on the east side. The sand bar is likely a result of a large flood in the past 100-200 years. The deeper part is likely quite old and a result of glacial geologic processes.

This relationship could be further explored, but Barr does not feel it is necessary to continue with a 3D model to understand the flow relationship to the sand bar. Preliminary information is clearly indicating that there is not a connection between the incoming river water and the sand bar. However, dense vegetation and invasive species coverage are likely building up the layer of organic muck and hampering recreation. Increased effort to control Curly-leaf pondweed, with coordination with SPRWS, could be a way to improve recreation in the west bay if it was decided to be a priority.

Internal loading and phosphorus levels were also investigated in a preliminary way. Phosphorus levels are quite high, and the oxygenation system being run by SPRWS is providing clear benefit. The oxygenation system appears to be preventing top sediments from going anoxic and releasing phosphorus across the lake, not only in areas immediately surrounding the oxygenation sites. The oxygen injection keeps more iron oxidized and available to bind with P, which prevents P from being released and contributing to algae blooms. Iron may be limited in the sediment and becoming saturated with P late in the season. This could be a reason why algae blooms occur on Pleasant Lake. Barr is going to do an additional step to test the sediment cores for iron. We'll report on those results next month.

- Additional subwatershed modeling and feasibility will be needed to determine best next steps for Pleasant Lake. Steps could involve and alum treatment or additional iron. More information is needed to determine those steps. Barr is preparing a quote to advise VLAWMO on how to best proceed with Pleasant Lake, both in identifying ways to improve water quality and in preparing for the upcoming TMDL that will be required with MPA.

3. Aquatic Veg Surveys with RCSWCD: Aquatic veg and bathymetry surveys were completed on East Vadnais Lake (2 days, June 23 and 24) and Sucker Lake (June 30). Invasive Eurasian watermilfoil and Curly-leaf pondweed were abundant. Many native species with wide coverage were documented also. These surveys will be used to build Sustainable Lake Management Plans (SLMPs) for these lakes.

| | |
|---|---|
|  |  |
| Cha and Dawn collecting plant data using the double-sided rake. Note: Dawn isn't angry at the plants; she's just focusing. 😊 | The water was clear, and the vegetation healthy in many places including White water-crowfoot (flowers visible at surface) and Flat-stemmed pondweed (visible in foreground below the surface). |

4. **Girl Scouts Silver Award:** The Girl Scouts have been working on their Silver Award with D. Tanner for the past year. They have focused their project on expanding education about lead sinkers and wildlife. Their efforts led to proposed legislation by Representative Fischer and Senator Wiger during spring, 2020. Legislation was put on hold when COVID-19 issues became prevalent for the Legislature. The Girl Scouts have submitted their final project report and are awaiting news on receiving their award. It's been a pleasure and inspiration working with them

5. **Environment and Natural Resources Trust Fund/Vadnais-Sucker Park Update:** The 45-acre restoration in Vadnais-Sucker Lakes Regional Park was scheduled to begin this fall, pending contract signing during summer 2020. The House voted for the package of projects and approved ENRTF funds for the year. The Senate refused to vote, so the package is on hold. Great River Greening continues to coordinate and support our project in this suite of projects. We hope that the project will only wind up being delayed by a year. The future of this specific project is dependent upon action by the Legislature.

6. **319 Priority Watershed process beginning:** VLAWMO and MPCA have begun preparing for the 319 funding round for 2021. First steps involve preparing a 9-element plan with MPCA and EPA. This preparation work will occur over the next couple of months with a goal of having a related project selected for the 2021 funding round.

7. **Pursuing single maintenance contract for restorations:** VLAWMO is coordinating our maintenance for previously completed restoration sites. VLAWMO currently works with the City of White Bear Lake to fund annual maintenance of the Birch Lake shoreline project and others. VLAWMO is funding maintenance of the Sucker Channel restoration, and previously grant-funded creek restorations have not been maintained. We are working with Natural Shore Technologies for a quote to combine these maintenance efforts into a single annual contract to protect original investments and keep these restorations providing their shoreline stabilization and pollinator habitat as intended and stipulated by grant funding agreement requirments.

8. **Education and Outreach: Junior Watershed Explorer Kids' Program:** VLAWMO's Master Water Stewards, Ceci and Ed Shapland, have started an initiative to provide a kids watershed education and activity book. A Community Blue application for $960 was approved at the August 14th TEC meeting to support funding a graphic design element to the project. The official draft will be available on the VLAWMO website under "schools" on August 25th, and the final product will be finished in October, 2020 to be made available to families, homeschoolers, and public school students.

resourceful. naturally.
engineering and environmental consultants

BARR

# Technical Memorandum

**To:** Dawn Tanner
**From:** Omid Mohseni
**Subject:** Pleasant Lake Bathymetry Survey
**Date:** July 22, 2020
**c:** 23/62-1356

Saint Paul Regional Water Services (SPRWS) operates a system that transports water from the Mississippi River at the Fridley Pump Station through two 60-inch pipes to Charley Lake. The Mississippi water flows by gravity from Charley Lake through a connecting channel to the west bay of Pleasant Lake, located in North Oaks, a suburb of Saint Paul, Minnesota. There have been reports by residents that a sandbar has formed as a result of water discharge from Charley Lake into Pleasant Lake. To address the potential adverse effects of the perceived sandbar, Vadnais Lake Area Water Management Organization (VLAWMO) retained Barr Engineering Co. (Barr) to complete a bathymetry survey of the west bay of Pleasant Lake in 2020 to accurately locate the sandbar. This memorandum is a summary of the bathymetry survey.

## 1.0 Field Work

The bathymetry survey was conducted on May 20, 2020, by a two-person surveying team. The instruments were a CEE Echo Hydrographic system, Trimble R7 GPS Receiver, and Topcon RTK GA GPS. The survey started at the north end of the west bay of Pleasant Lake. As the survey team proceeded to the north end, they noticed very thick weeds in the lake, predominately on the west and northern parts of the bay. The surveying team was concerned that the echo sounder would not be able to correctly capture the bottom shelf of the lake. As a result, they did some survey pole shots using GPS to check the actual depths in the area covered with aquatic plants. The pole shots verified that the echo sounder was occasionally capturing the lake bed. Accuracy of the data located in that area was within 0.5 feet.

The team surveyed a 50-foot grid across the bay. The coverage is shown in Figure 1. The echo sounder takes 15+ points per second. The west side of the bay was all weeds. In the northern part of the bay, most of these 15 points were on weeds. Once the team made it to the "sandbar," they could see sand and rock on the bottom. The depth over the sandbar was approximately 2 to 3 feet. As the team proceeded south of the sandbar, they encountered a very deep area, approximately 40 feet.

Where the channel from Charley Lake discharges into the west bay of Pleasant Lake, no sandbar was evident and depths were constant.

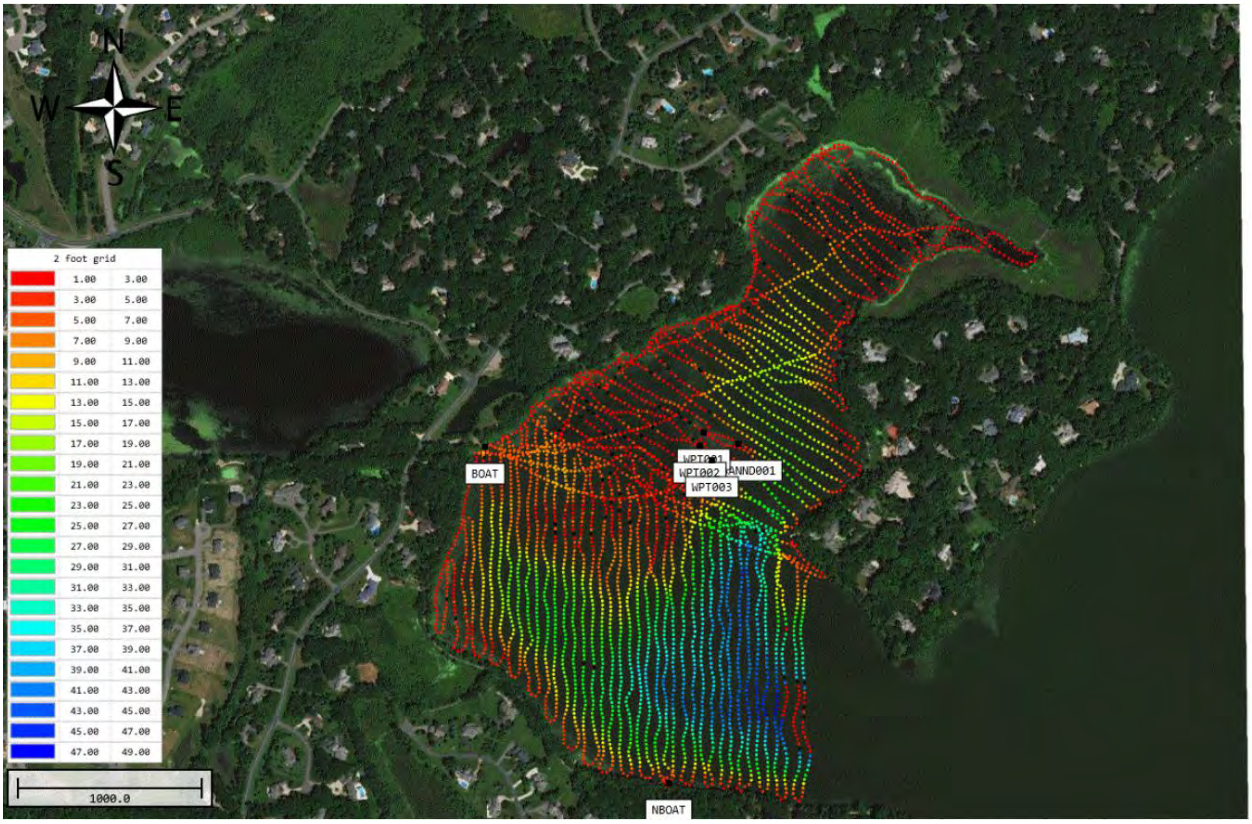


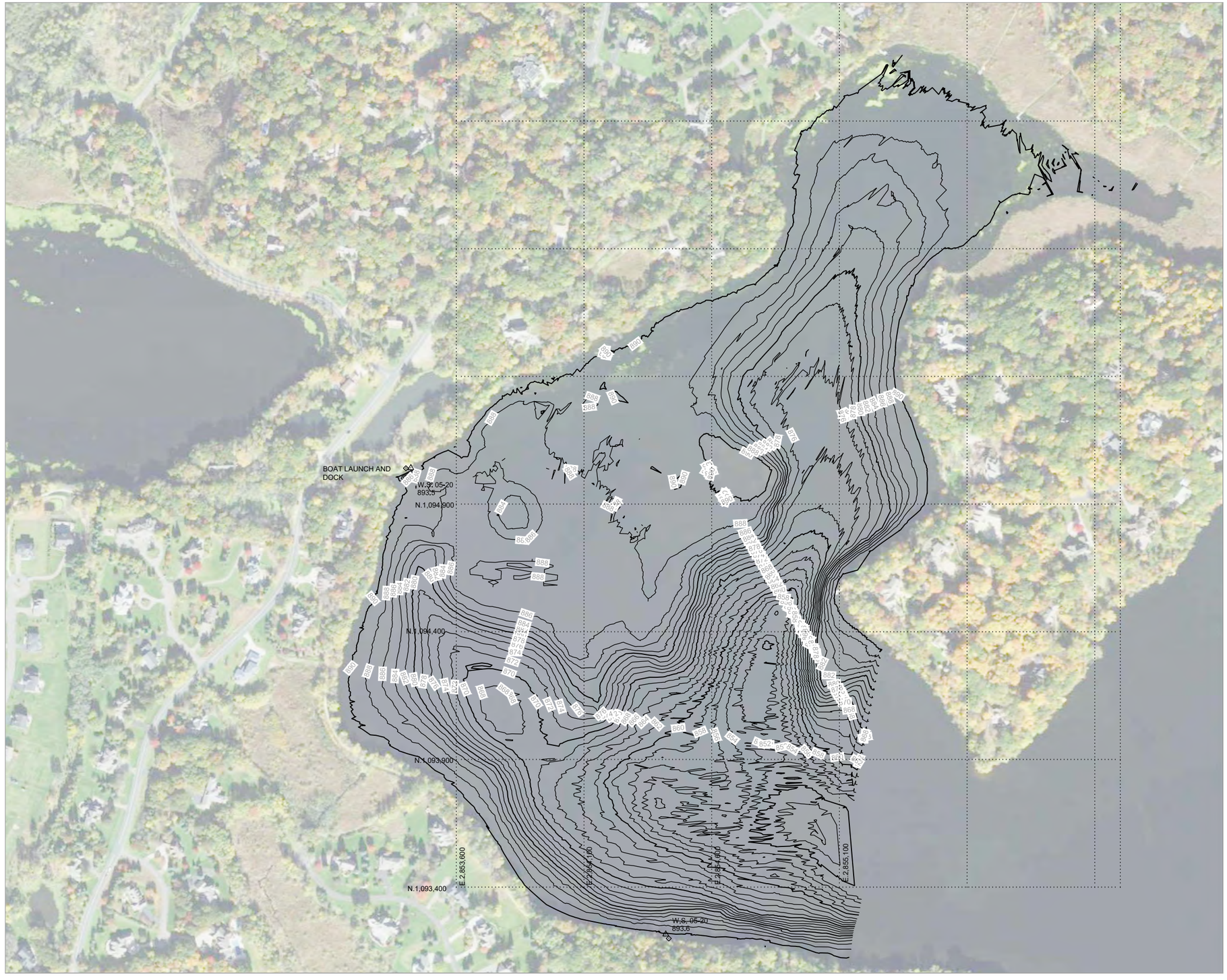

**Figure 1. The survey paths of the west bay of Pleasant Lake**

## 2.0 Bathymetry Map

The data collected during the survey was used to develop a bathymetry map of the west bay in the Civil 3D software program. To develop the map, 80 to 90 percent of the bathymetry data shots west of the "sandbar" were eliminated due to the weed thickness. This process was completed using HydroMagic hydrographic software.

The attached map is the result of the bathymetry survey. The horizontal datum is NAD83 and the vertical datum is NAVD88.

The map shows a hole approximately 400 feet to the east of the discharge point of the channel from Charley Lake. The identified sandbar is approximately 1,500 feet to the east of the discharge point.




0 200 400
SCALE IN FEET

## SURVEY LEGEND

800 MAJOR CONTOUR
801 MINOR CONTOUR
GRID LINES (500')

WATER SURFACE 05-22-2020 □ 893.6

### BASIS OF DRAWING FILE:

DATE OF SURVEY: 05-20-2020

ORIGIN/DATE OF BASE: MSPN/2020

COORDINATE SYSTEM: Minnesota State Plane,SOUTH Zone

HORIZONTAL DATUM: NAD83 (2011) REF. VRS SYSTEM

VERTICAL DATUM: North American Vertical Datum of 1988

ADDITIONAL FILE INFORMATION:
CEE ECHO HYDROGRAPHIC SYSTEM

| NO. | BY | CHK | APP. | DATE | REVISION DESCRIPTION |
|---|---|---|---|---|---|
| 23 | | | | | |

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

PRINTED NAME _____

SIGNATURE _____

DATE _____ LICENSE # _____

RELEASED TO/FOR

| A | B | C | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| DATE RELEASED | | | | | | |

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

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

| | |
|---|---|
| Scale | AS SHOWN |
| Date | |
| Drawn | JHS |
| Checked | |
| Designed | |
| Approved | |

# VADNAIS LAKE WATER MANAGEMENT
VADNAIS HEIGHTS, MINNESOTA

## PLEASANT LAKE
NORTH OAKS, MINNESOTA

BATHYMETRY SURVEY WEST BAY
05-2020

BARR PROJECT No. 23/62-1356.00
CLIENT PROJECT No.
DWG. No.
REV. No.

resourceful. naturally.
engineering and environmental consultants

BARR

# Technical Memorandum - DRAFT

**To:** Dawn Tanner
**From:** Kevin Menken and Omid Mohseni
**Subject:** Pleasant Lake Sediment Study
**Date:** July 22, 2020
**c:** 23/62-1356

Pleasant Lake in North Oaks, Minnesota, is listed by the Minnesota Pollution Control Agency (MPCA) as impaired for mercury and high levels of nutrients. The MPCA requires a total maximum daily load (TMDL) or equivalent study to address the nutrient impairment of the lake. In addition, it appears that there are some potential issues with sediment transport from Charley Lake into Pleasant Lake through the connecting channel between the two lakes.

Vadnais Lake Area Water Management Organization (VLAWMO) retained Barr Engineering Co. (Barr) to conduct a field study to (1) investigate the physical characteristics of the sandbar in the shallow area in the west bay of Pleasant Lake, and (2) determine the concentrations of various phosphorus fractions in sediment in deep areas of Pleasant Lake. The purpose of this field study is to aid VLAWMO with a future TMDL or equivalent study of the lake. This memorandum summarizes the results of the field study conducted by Barr in 2020.

## 1.0 General Description of Pleasant Lake

Pleasant Lake is located in North Oaks, a suburb of the city of Saint Paul. The surface area of the lake is 607 acres and the maximum depth is 58 feet. The littoral zone includes about 45 percent of the lake.

Saint Paul Regional Water Services (SPRWS) operates the system that transports water from the Mississippi River at the Fridley Pump Station through two 60-inch pipes to Charley Lake. The Mississippi water flows by gravity from Charley Lake through a connecting channel to the west bay of Pleasant Lake. The transported water is then routed through Sucker Lake and Vadnais Lake into the McCarrons Water Treatment Plant, which serves Saint Paul residents.

Barr collected sediment samples from Pleasant Lake on May 29, 2020, and June 24, 2020. The sampling locations are shown in Figure 1.

## 2.0 Physical Characteristics of the Sandbar in the West Bay

### 2.1 Field Work

The bathymetry of the west bay of Pleasant Lake shows a shallow sandbar near the center of the west bay (Figure 1). Water depth is approximately 2 to 3 feet over the sandbar, and vegetation is sparse. Sand, gravel, cobble, and boulders (1 to 2 feet in diameter) were observed in this area. To the north, west, and

south of this sandbar, water depth increases and thick, curlyleaf pondweed was observed during the field work.

Sediment cores were collected at four locations in shallow water in the west bay of the lake using a 3-inch-diameter push corer. Sediment cores were extruded in a plastic tray in the boat and logged for appearance and physical characteristics. On May 29, 2020, sediment samples were collected from coring locations S7 and S8. These two locations were identified after the bathymetry survey of the west bay that was performed on May 20, 2020.

### 2.2 Analysis of the Sandbar Samples

The sediment samples were sent to Soil Engineering Testing (SET) in Bloomington, Minnesota, for grain-size analysis and sediment density measurement. The SET lab report is provided in Attachment A. On June 24, 2020, additional sediment samples were collected to verify the location of the sandbar. These samples were collected at locations S9 and S10 and logged for physical description, but no analysis was performed. They contained the root system of aquatic plants (macrophytes) with little-to-no sand particles, i.e., locations S7 and S8 more accurately represent a sandbar in the west bay than locations S9 and S10. Observations of sediment samples collected at locations S7, S8, S9, and S10 are summarized below.

- Sediment sample S7
    - Water depth: 2 feet
    - Sediment core interval: 0–1 foot
    - Area: Sparse vegetation, sand and gravel visible on lake bottom
    - Sediment: Medium-to-dark brown; sand with silt and a little bit of gravel, shell fragments, plant roots, and dead plant matter
    - Percent fines: 6%
    - Median size ($d_{50}$): 220 microns
    - Specific gravity: 2.63
- Sediment Sample S8
    - Water depth: 2.6 feet
    - Sediment core interval: 0–1 foot
    - Sparse vegetation; sand and gravel visible on lake bottom
    - Medium-to-dark brown; sand with silt and a little bit of gravel and plant roots. Small plant roots were quite numerous and seemed to be helping sediment core hold its shape after extruding from coring tube.
    - Percent fines: 12%

- Median size ($d_{50}$): 280 microns
- Specific gravity: 2.57

- Sediment sample S9
  - Water depth: 4 feet
  - Medium-to-dark brown soft organic muck
- Sediment sample S10
  - Water depth: 4 feet
  - Medium-to-dark brown soft organic muck

### 2.3 Synthesis of the Sandbar Data

Based on the bathymetry survey conducted in 2020, the particle size distribution of samples collected at locations S7 and S8, and the presence of dense aquatic plants, it is unlikely that the sandbar located about 1,500 feet away from the discharge point of the channel from Charley Lake is the result of water discharge from Charley Lake into Pleasant Lake. However, the hole near the discharge point may be the result of water discharge from Charley Lake into the west bay of Pleasant Lake.

## 3.0 Sediment Phosphorus Fractionation

### 3.1 Field Work

Sediment cores were collected for phosphorus analyses at coring locations S1 through S6, where water depth was greater than 20 feet (Figure 1). Areas with water depths greater than 20 feet normally exhibit thermal stratification and anoxia (low oxygen) in summer months, which could result in internal loading. Currently, SPRWS is managing a direct oxygen injection system at the three deepest points in Pleasant Lake (see Figure 1). At these locations, sediments that would normally experience anoxic conditions during summer thermal stratification may stay partially oxygenated at the sediment-water interface due to the oxygen injection at the bottom of the lake.

Sediment cores were collected by a gravity corer suspended on a rope. A 7-centimeter (cm)-diameter core tube is pushed into the sediment from weights attached to the coring device, and a messenger is sent down the rope to close a stopper on the top of the coring tube. Each sediment core was extruded from the coring tube and sliced into 2-cm-thick intervals from 0 cm to 10 cm, and 4-cm intervals from 10 cm to 18 cm. The sediment samples were placed in a cooler with ice for transport until they could be stored in a refrigerator at Barr's field office.

### 3.2 Analysis of the Bed Sediment Samples

Sediment samples were analyzed for several phosphorus fractions, percent moisture content, and percent organic matter. Moisture content was determined by measuring the mass loss of samples dried in an oven at 100 °C. Percent organic matter was determined by measuring the mass lost by burning the

samples at 550 °C (loss on ignition). Measurement of various phosphorus fractions was achieved by subjecting the sediment samples to various extraction solutions, as summarized below:

- Mobile phosphorus, including iron-bound phosphorus fraction (mobile-P): solution of sodium dithionite and sodium bicarbonate. Dithionite reduces insoluble ferric iron to soluble ferrous iron, while bicarbonate buffers the pH.
- Aluminum-bound phosphorus fraction (Al-P): solution of 0.1M NaOH (sodium hydroxide) to raise the pH and dissolve aluminum-bound phosphorus.
- Organic phosphorus fraction (Org-P): solution of 0.1M NaOH digested with potassium persulfate.
- Calcium phosphorus fraction (Ca-P): solution of 0.5M HCl (hydrogen chloride) to lower the pH and dissolve calcium-bound phosphorus.

Results of sediment phosphorus fractionation are plotted in Figure 2, reported as milligram phosphorus per gram dry sediment (mg P/g dry sediment), and Figure 3, reported as mg P/cm$^3$ wet sediment. Average concentrations of mobile-P and organic-P in the top 6 cm of each core were calculated and are summarized in Table 1. Results in Table 1 are presented as g P/cm-m$^2$, a unit of concentration that makes it easier to assess the amount of phosphorus per square meter of lake bed, i.e., 1 g P/cm-m$^2$ is equal to 10 mg P/cm$^3$.

**Table 1. Concentrations of Mobile-P and Organic-P in Top 6cm of Sediment**

| Sediment Core | Mobile-P (g P/cm-m$^2$) | Org-P (g P/cm-m$^2$) |
|---|---|---|
| S1 | 0.82 | 0.25 |
| S2 | 0.85 | 0.24 |
| S3 | 1.73 | 0.33 |
| S4 | 0.36 | 0.22 |
| S5 | 0.71 | 0.27 |
| S6 | 0.88 | 0.32 |

### 3.3 Synthesis of the Sediment Data

Concentrations of mobile-P are high in Pleasant Lake sediment cores, likely due to the oxygen injection system keeping more iron oxidized. The oxygenation of the hypolimnion (the water column below the thermocline) prevents the top of the sediment from going anoxic and allows for the buildup of oxidized iron, or ferric iron [Fe(III)]. Without the oxygenation system, the hypolimnion would be depleted of oxygen in the warm summer months, and microorganisms in the anoxic sediment would use iron for respiration in place of oxygen, converting insoluble ferric iron [Fe(III)] to soluble ferrous iron [Fe(II)].

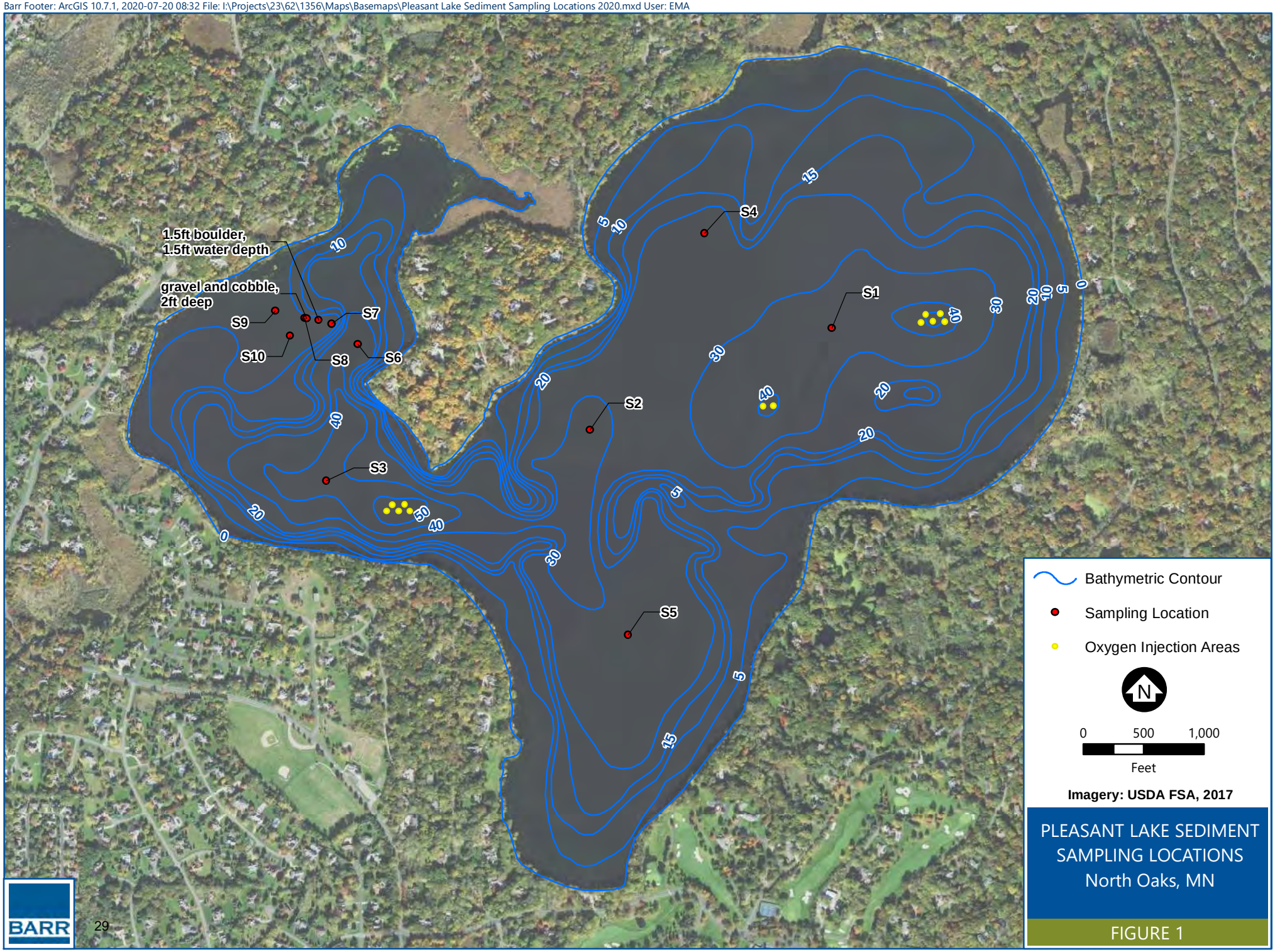
Relationships between concentrations of mobile-P and internal loading rates of phosphorus from lake sediments have been studied. Pilgrim et al. (2007) reported phosphorus internal loading rates under anoxic conditions for sediment cores collected from Minnesota lakes with a range of sediment mobile-P

concentrations. The concentrations of mobile-P in Pleasant Lake sediment cores S1, S2, S5, and S6 are comparable to the highest mobile-P observed in that study, while mobile-P concentrations in S3 are nearly double those observed by Pilgrim et al. (2007). The oxygen injection system in Pleasant Lake appears to be effectively keeping iron oxidized in the top several centimeters of sediment, building up iron-bound phosphorus (mobile-P). However, if the sediment of Pleasant Lake were to turn anoxic, the insoluble ferric iron would start to be reduced to ferrous iron and could contribute to high rates of internal loading.

The sediment mobile-P concentrations can provide an estimate of the maximum internal loading rate of phosphorus that might be expected under continuous anoxic conditions in a stratified lake, using the relationship developed by Pilgrim et al. (2007). The dynamics of anoxia in sediment, and therefore internal loading of phosphorus in Pleasant Lake, are more complex due to the oxygen injection system. To better understand internal loading that may still be occurring in Pleasant Lake, more detailed water quality data could be collected, such as dissolved oxygen concentration profiles near the lake bottom at various distances from the oxygen injection points and at different points in the season. Sediment samples that were collected for phosphorus fractionation could also be analyzed for total iron concentrations to determine the ratio of iron to mobile-P in the sediment. This would help assess whether there is sufficient iron in the sediment to potentially bind more phosphorus under oxic conditions. A phosphorus mass balance model could also be developed for the lake that could simulate phosphorus concentrations in the hypolimnion (deep water) and epilimnion (surface mixed layer) of the lake.

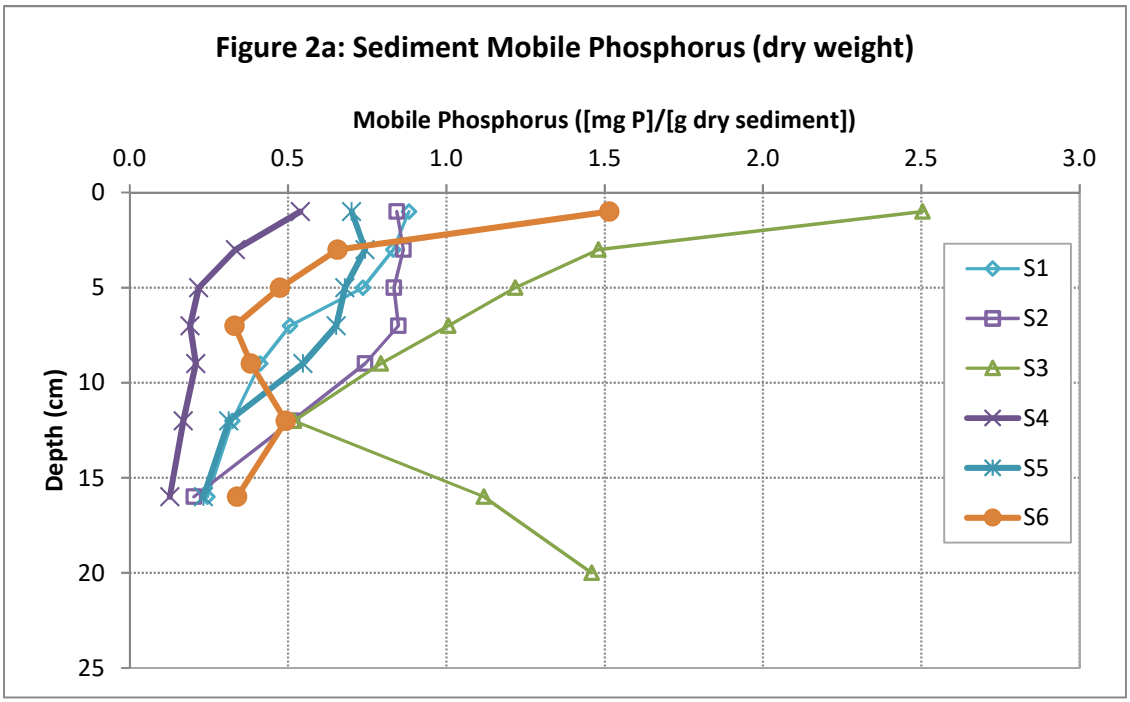
## References

Pilgrim, K.M., Huser, B., and Brezonik, P.L. 2007. A method for comparative evaluation of whole-lake and inflow alum treatment. *Water Research*, 41(6):1215-24. DOI: 10.1016/j.watres.2006.12.025.




# PLEASANT LAKE SEDIMENT SAMPLING LOCATIONS
North Oaks, MN

FIGURE 1



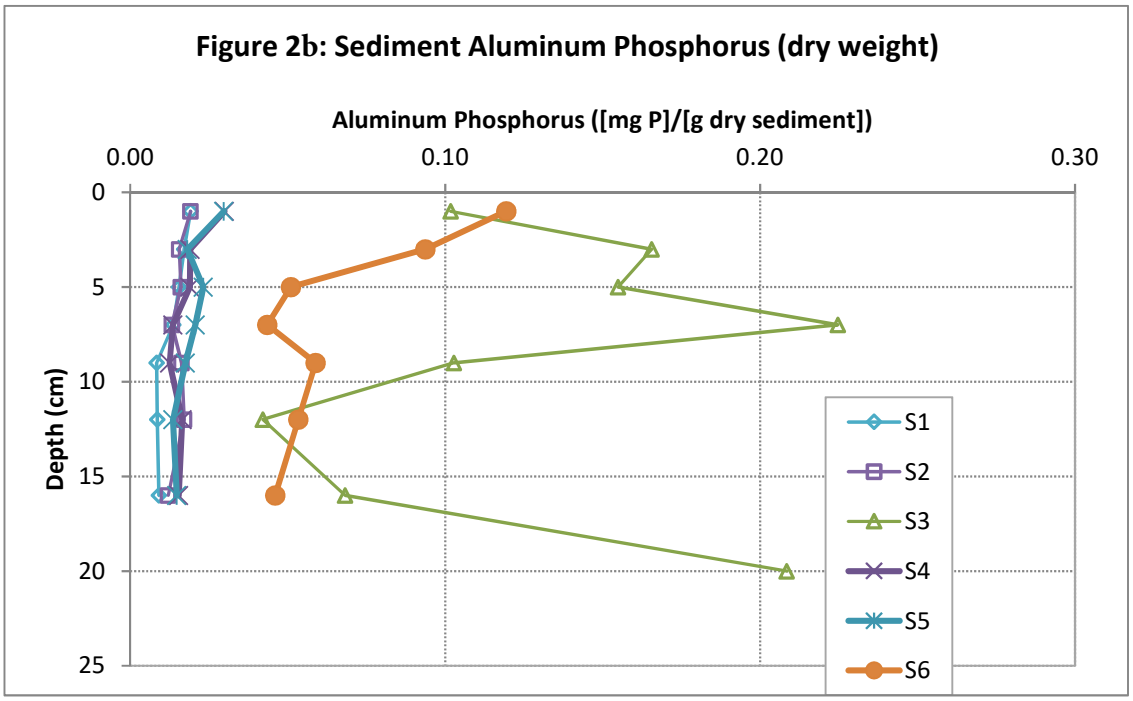
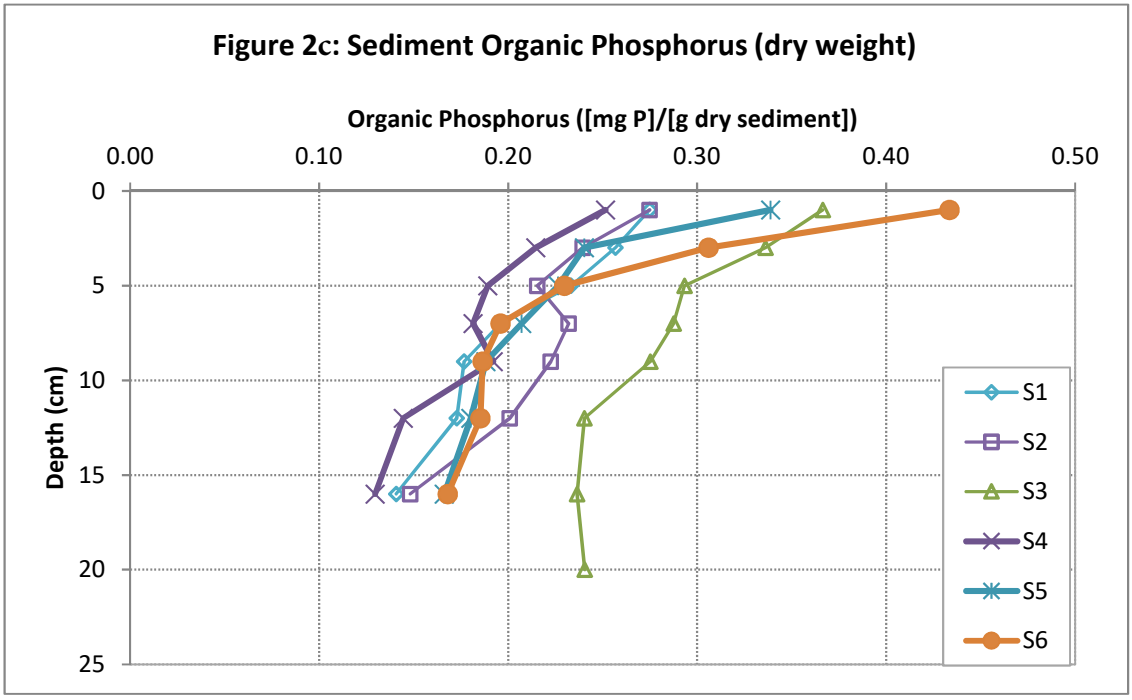




**Figure 2. Pleasant Lake Sediment Phosphorus Fractionation, Dry Weight Basis.**



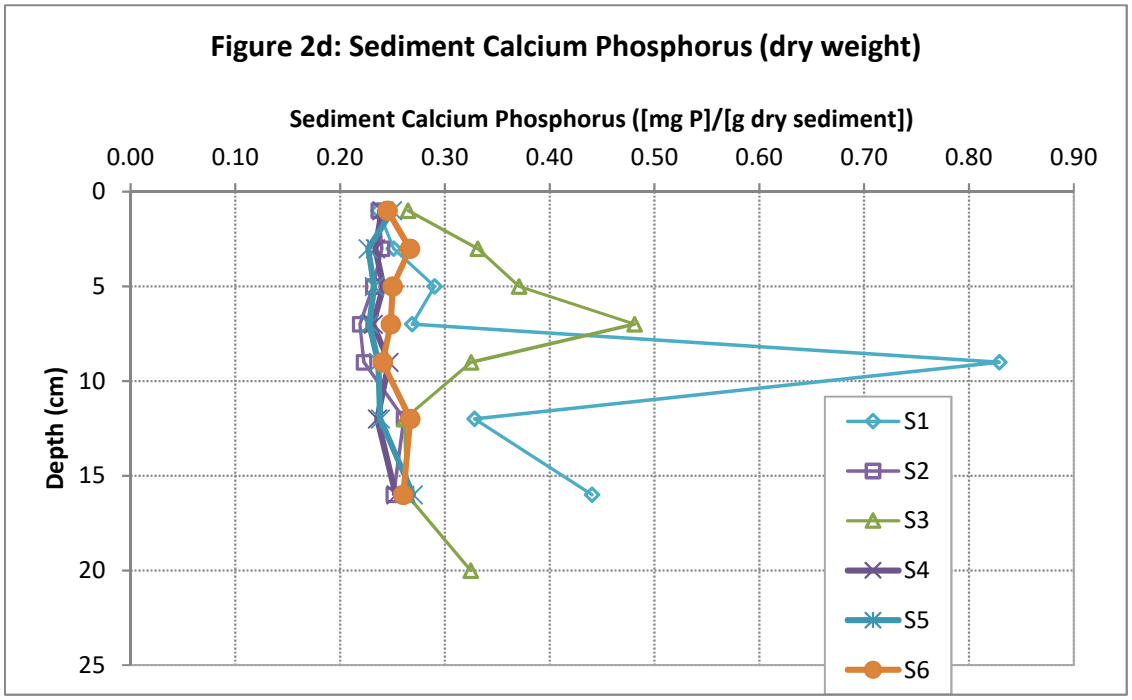
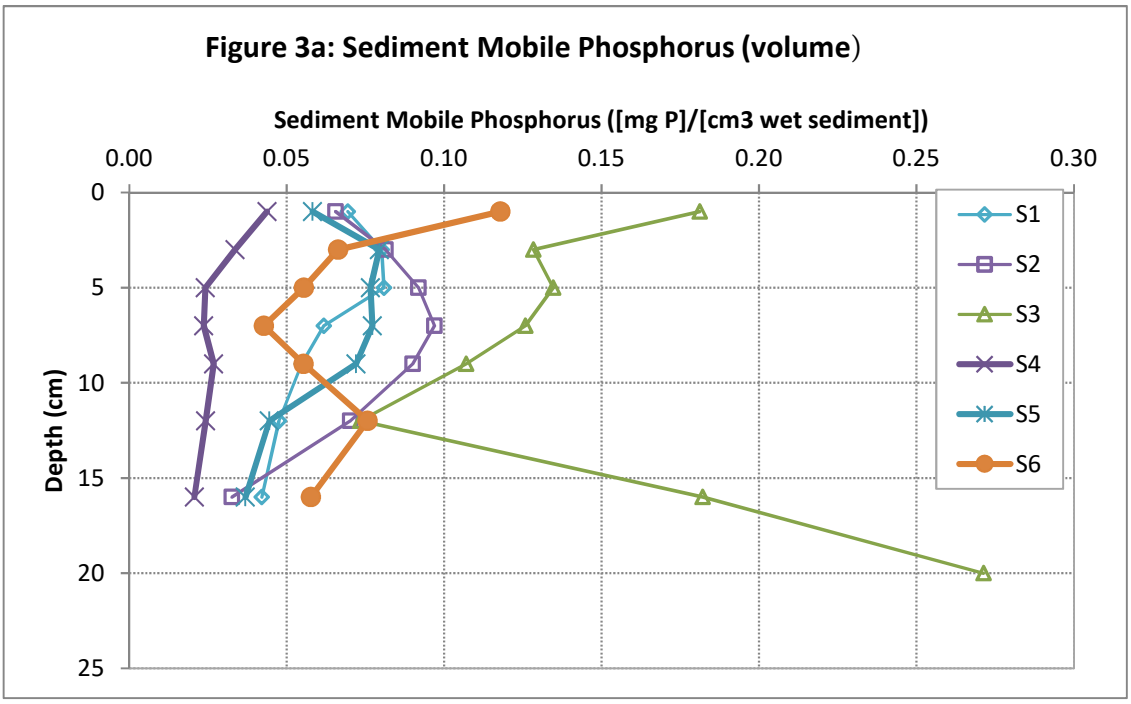




**Figure 2. Pleasant Lake Sediment Phosphorus Fractionation, Dry Weight Basis.**



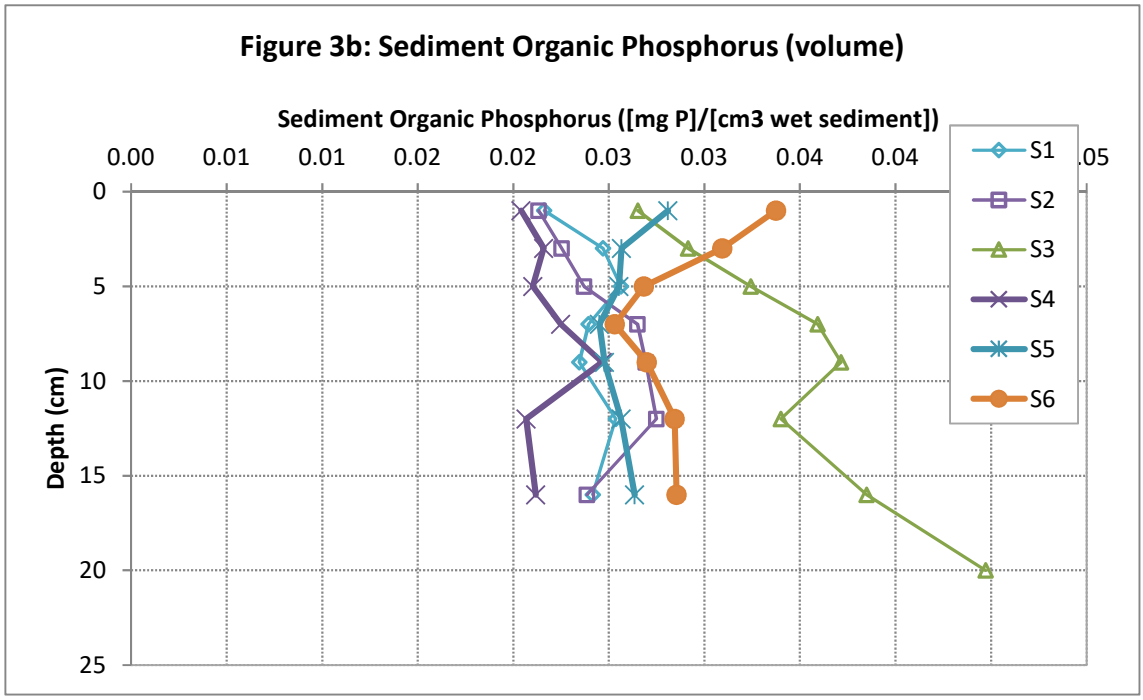
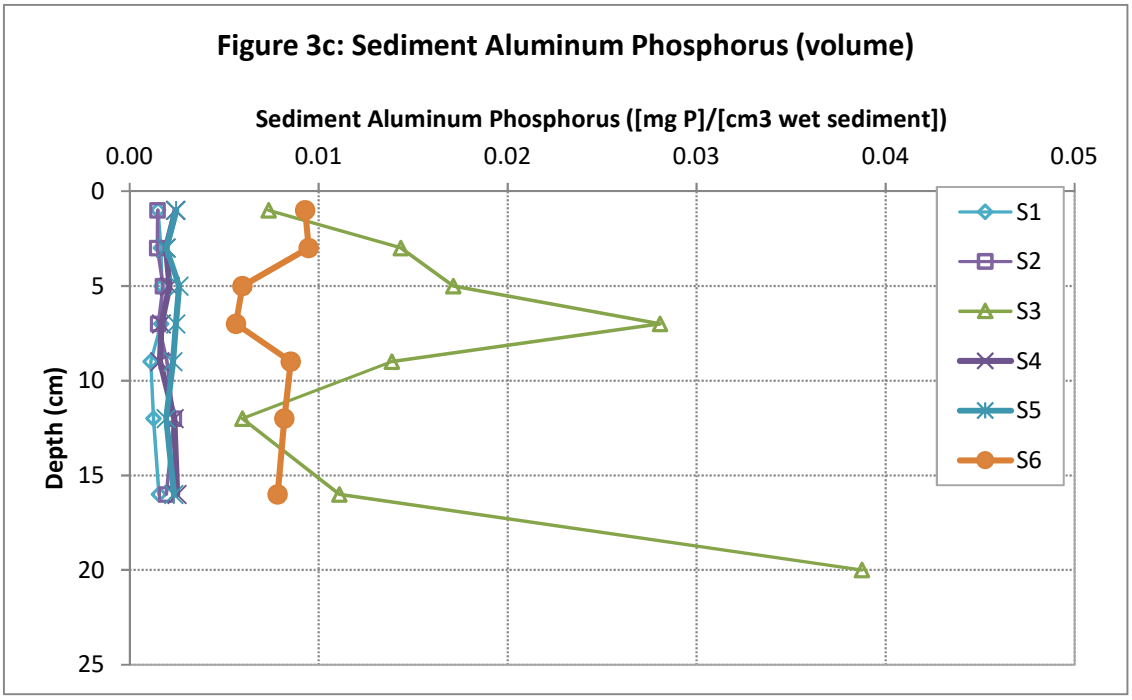




**Figure 3. Pleasant Lake Sediment Phosphorus Fractionation, Sediment Volume Basis.**



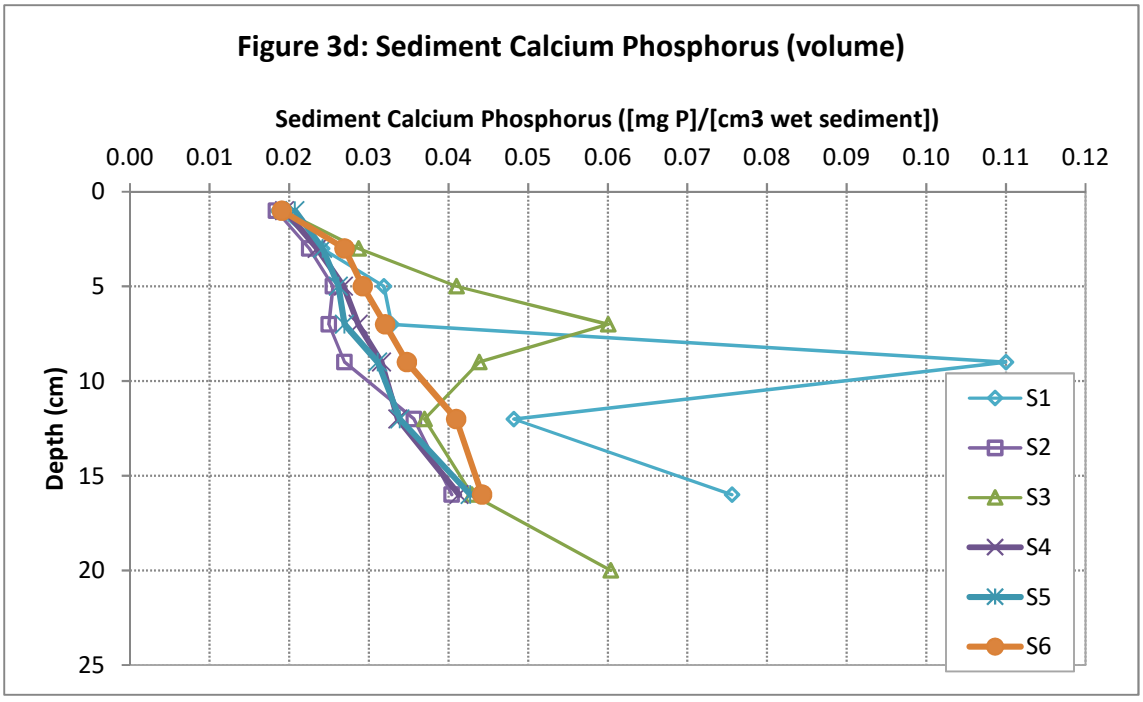




**Figure 3. Pleasant Lake Sediment Phosphorus Fractionation, Sediment Volume Basis.**

Attachment A:

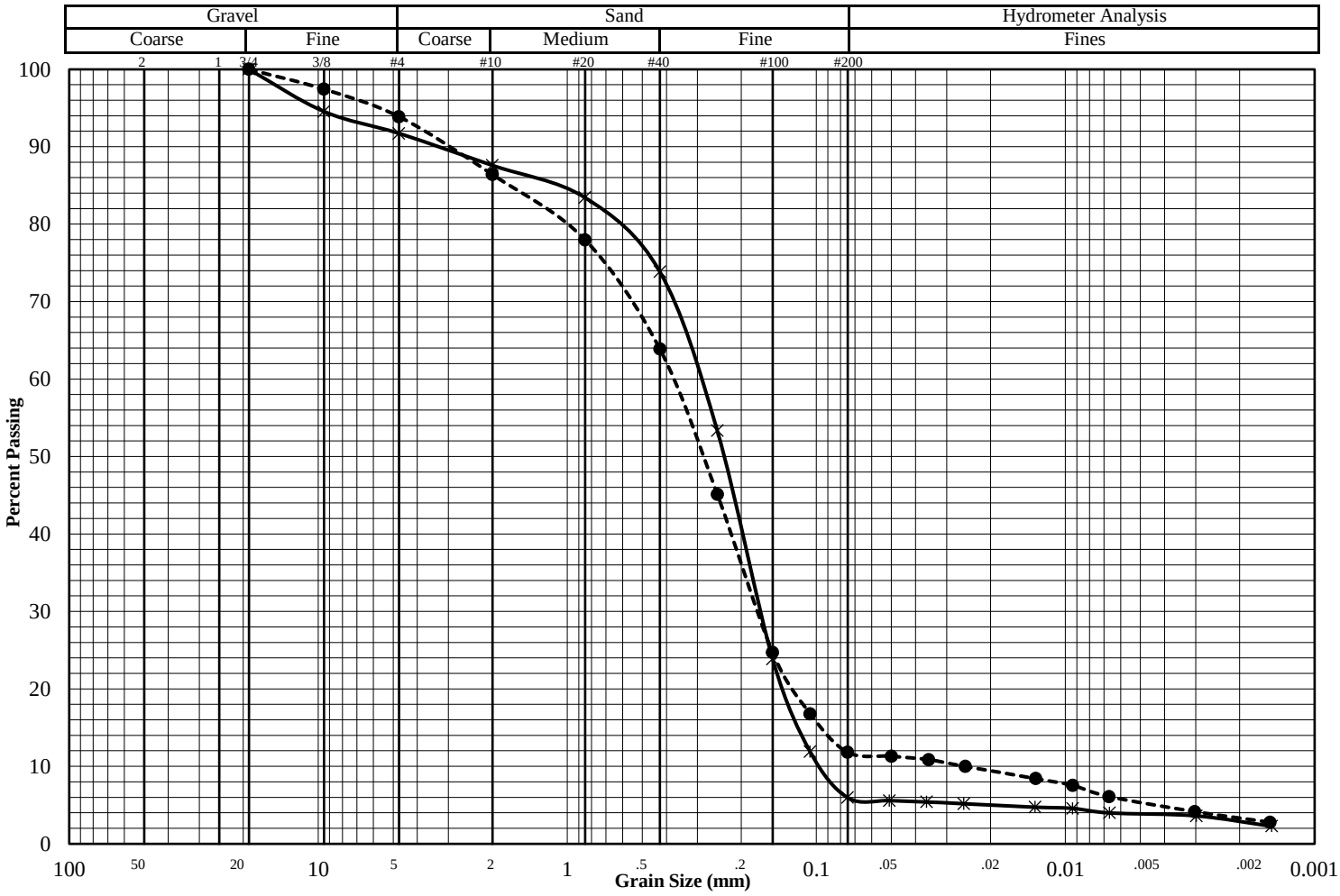
SET Laboratory Report on the Sandbar Sediment Samples

# Grain Size Distribution ASTM D6913/D7928

Job No. : **12586**

| | | | |
|---|---|---|---|
| Project: | Pleasant Lake | Test Date: | 6/12/20 |
| Reported To: | Barr Engineering Company | Report Date: | 6/22/20 |

| | Sample Date / Time | Sample No. | Depth (ft) | Sample Type | Soil Classification |
|---|---|---|---|---|---|
| * | 5/29/20, 15:30 | S7 | | Bag | Sand w/silt, a little gravel, and a trace of organic material, fine grained (SP-SM/SP) |
| ● | 5/29/20, 16:00 | S8 | | Bag | Sand w/silt, a little gravel, and a trace of organic material, fine grained (SP-SM/SM) |
| ◇ | | | | | |




| Additional Results | * | ● | ◇ |
|---|---|---|---|
| Liquid Limit | | | |
| Plastic Limit | | | |
| Plasticity Index ASTM:D4316 | | | |
| Water Content ASTM:D2216 | | | |
| Dry Density (pcf) ASTM:D7263 | | | |
| Specific Gravity ASTM:D854 | 2.63 | 2.57 | |
| Porosity | | | |
| Organic Content ASTM:D2974 | | | |
| pH ASTM:D4972 Method B | | | |

(* = assumed)

Percent Passing (Single Set)

| | * | ● | ◇ |
|---|---|---|---|
| Mass (g) | 752.7 | 597.6 | |
| 1" | | | |
| 3/4" | 100.0 | 100.0 | |
| 3/8" | 94.6 | 97.4 | |
| #4 | 91.7 | 93.9 | |
| #10 | 87.6 | 86.4 | |
| #20 | 83.4 | 78.0 | |
| #40 | 73.9 | 63.9 | |
| #60 | 53.3 | 45.1 | |
| #100 | 23.9 | 24.7 | |
| #140 | 11.9 | 16.8 | |
| #200 | 6.0 | 11.8 | |

**Sieves larger than 1" reported on page 2

| | * | ● | ◇ |
|---|---|---|---|
| $D_{60}$ | | | |
| $D_{30}$ | | | |
| $D_{10}$ | | | |
| $C_U$ | | | |
| $C_C$ | | | |

Remarks:

**The specific gravities were run only on material passing the #200 sieve.



9530 James Ave South

SOIL ENGINEERING TESTING, INC.

Bloomington, MN 55431

# Grain Size Distribution ASTM D6913/D7928

Job No. : **12586**

| | | | |
|---|---|---|---|
| Project: | Pleasant Lake | Test Date: | 6/12/20 |
| Reported To: | Barr Engineering Company | Report Date: | 6/22/20 |

| | Sample Date / Time | Sample No. | Depth (ft) | Sample Type | Soil Classification |
|---|---|---|---|---|---|
| Spec 1 | 5/29/20, 15:30 | S7 | | Bag | Sand w/silt and a little gravel, fine grained (SP-SM/SP) |
| Spec 2 | 5/29/20, 16:00 | S8 | | Bag | Sand w/silt and a little gravel, fine grained (SP-SM/SM) |
| Spec 3 | | | | | |

## Sieve Data

| Specimen 1 | | Specimen 2 | | Specimen 3 | |
|---|---|---|---|---|---|
| Sieve | % Passing | Sieve | % Passing | Sieve | % Passing |
| 3" | | 3" | | 3" | |
| 2" | | 2" | | 2" | |
| 1 1/2" | | 1 1/2" | | 1 1/2" | |
| 1" | | 1" | | 1" | |
| 3/4" | 100.0 | 3/4" | 100.0 | 3/4" | |
| 3/8" | 94.6 | 3/8" | 97.4 | 3/8" | |
| #4 | 91.7 | #4 | 93.9 | #4 | |
| #10 | 87.6 | #10 | 86.4 | #10 | |
| #20 | 83.4 | #20 | 78.0 | #20 | |
| #40 | 73.9 | #40 | 63.9 | #40 | |
| #60 | 53.3 | #60 | 45.1 | #60 | |
| #100 | 23.9 | #100 | 24.7 | #100 | |
| #140 | 11.9 | #140 | 16.8 | #140 | |
| #200 | 6.0 | #200 | 11.8 | #200 | |

## Hydrometer Data

| Specimen 1 | | Specimen 2 | | Specimen 3 | |
|---|---|---|---|---|---|
| Diameter (mm) | % Passing | Diameter | % Passing | Diameter | % Passing |
| 0.051 | 5.6 | 0.050 | 11.3 | | |
| 0.036 | 5.4 | 0.035 | 10.9 | | |
| 0.026 | 5.2 | 0.025 | 10.0 | | |
| 0.013 | 4.7 | 0.013 | 8.4 | | |
| 0.009 | 4.6 | 0.009 | 7.6 | | |
| 0.007 | 4.0 | 0.007 | 6.1 | | |
| 0.003 | 3.6 | 0.003 | 4.2 | | |
| 0.001 | 2.3 | 0.002 | 2.8 | | |

## Remarks

| Specimen 1 | Specimen 2 | Specimen 3 |
|---|---|---|
| | | |



9530 James Ave South

SOIL ENGINEERING TESTING, INC.

Bloomington, MN 55431

800 County Road E East, Vadnais Heights, MN55127
www.vlawmo.org; Office@vlawmo.org

**To:** VLAWMO Board of Directors

**From:** Tyler Thompson

**Date:** August 20, 2020

**Re:** **IV. C. Ramsey County GIS Users Group 2021-2025 JPA**

VLAWMO is and has been a member of the Ramsey County GIS Users Group (RCGISUG) since 2008. The RCGISUG is a collective Joint Powers of government organizations within Ramsey County that pools money for GIS projects and programs, such as aerial imagery and GIS datasets (impervious surface data). Ramsey County often pays the majority of these data costs, and the RCGISUG helps pay a percentage of these costs. VLAWMO's annual member contribution is $254.26, has remained unchanged since joining in 2008, and nets us access to extremely beneficial and invaluable data and partnering that directly support VLAWMO's mission for improved water quality.

The 2018-2020 RCGISUG JPA is set to expire at the end of 2020, and a new and revised 2021-2025 JPA (attached) is ready to sign to continue our membership with the Users Group. Tyler was involved with the JPA revision process, and the new JPA has been reviewed and approved by the City of Falcon Heights attorney. The revisions update, replace, and remove old language dating back to the 90's that is now not applicable. The 2021-2025 JPA also extends the JPA term from 2 to 4 years, as the 2-year term was deemed to be unnecessary. Staff is recommending the Board review and authorize the Board Chair to signing into the 2021-2025 Ramsey County GIS Users Group JPA

**Staff is recommending the Board review and authorize the Board Chair to signing into the 2021-2025 Ramsey County GIS Users Group JPA**

**Proposed Motion**: It was moved by ___ and seconded by ___ for authorization and approval to sign and enter into the renewed 2021-2025 Ramsey County GIS Users Group Joint Powers Agreement. Vote:

**Attachments:** RCGISUG JPA 2021-2025_APPROVED

JOINT POWERS AGREEMENT

AMONG

MEMBERS OF THE RAMSEY COUNTY GEOGRAPHIC INFORMATION SYSTEMS USERS GROUP

This JOINT POWERS AGREEMENT ("Agreement") is entered into pursuant to the provisions of Minn. Stat. §471.59 among Governmental Units for the purposes of forming the Ramsey County Geographic Information System Users Group ("Users Group").

## ARTICLE I. INTENT OF THIS AGREEMENT

In 1995, an informal alliance, known as the Ramsey County Geographic Information System Users Group ("Users Group"), was formed among Governmental Units interested in using Geographic Information Systems (GIS) and data created and maintained by Ramsey County. This agreement is intended to establish and enable the Users Group to represent the parties to this Agreement for the purposes of undertaking negotiations and transactions.

## ARTICLE II. DEFINITIONS

Section 1. **Members** means those Governmental Units that have executed this Joint Powers Agreement and have paid the annual membership dues as provided in Article X.

Section 2. **Governmental Unit** has the meaning set forth in Minnesota Statutes §471.59.

Section 3. **Users Group** means a group made up of one representative of each Member with the powers and responsibilities described in this Agreement.

## ARTICLE III. GIS BOARD OF DIRECTORS STRUCTURE

Section 1. There is hereby created a GIS Board of Directors (Board).

Section 2. Each Member shall appoint one person to serve as a Director. Each Member may also appoint a person to serve as an Alternate Director. Members shall notify the Board in writing if the Director or Alternate Director changes.

Section 3. The Board shall have the following officers: a Chair, Vice Chair, Secretary, and Treasurer (Officers).

Section 4. All Officers will be elected by the Board in the first meeting of the agreement's term as identified in Article X. Section 1. The Chair will be elected to a one-year term. The Vice-chair will be elected as Vice-chair in year one and Chair in year two. The Secretary will be elected annually for a three year term in which they will serve as Secretary in year one, Vice-chair in year two, and Chair in year three. The Treasurer will be elected by the Board for a five year term coinciding with the term of this agreement. Any Officer vacancies will be elected by the Board as-needed.

Section 5. The Officers shall serve on a voluntary basis without pay.

Section 6. A quorum will consist of at least 40% of the full membership of the Board, whether or not all vacancies have been filled.

Section 7. Decisions of the Board will be made by a majority of the quorum. Directors may vote and participate in all meeting proceedings from a remote site pursuant to Minnesota Statute 13D.02.

## ARTICLE IV. DUTIES OF THE GIS BOARD OF DIRECTORS

Section 1. The Board shall meet at least two times per year.

Section 2. The Board shall approve and adopt the formula for the Users Group member dues annually by December 31 for the following year.

Section 3. The Board shall arrange for and facilitate regular meetings of the Users Group and for Users Group activities. Meetings shall be held in accordance with Minnesota Statute 13D.01 .

Section 4. The Chair presides at Users Group meetings. The Vice Chair will preside in the absence of the Chair. The Secretary is responsible for recording the proceedings of the Board and communicating these proceedings to all Member organizations. The Treasurer is responsible for the funds and financial records of the Board.

Section 5. The Chair and the Treasurer must sign vouchers or orders disbursing funds of the Users Group. Disbursement will be made in the method prescribed by law for statutory cities.

Section 6. The Board may take such actions as it deems necessary and convenient to accomplish the general purposes of this Agreement.

Section 7.The Board shall purchase liability insurance on behalf of the Users Group to insure against liability of the Users Group and its constituent Members.

Section 8. The Board may:

(i) Enter into contracts to carry out its powers and duties, in full compliance with any competitive bidding requirements imposed by State or local law;

(ii) Provide for the prosecution, defense, or other participation in proceedings at law or in equity in which it may have an interest;

(iii) Employ such persons as it deems necessary on a part-time, full-time, or consultancy basis;

(iv) Purchase, hold, or dispose of real and personal property;

(v) Contract for space, commodities or personal services with a Member or group of Members;

(vi) Accept gifts, apply for and use grants or loans of money or other property from the state, the United States of America, and from other government units and may enter into agreements in connection therewith and hold, use and dispose of such money or property in accordance with the terms of the gift, grant, loan or agreement relating thereto;

(vii) Appoint a fiscal agent.

## ARTICLE V. NEW MEMBERS

Section 1. Any Governmental Unit that is not a party to the initial Agreement may join as a Member at any time.

Section 2. To become a Member, a local unit of government shall adopt a resolution and shall sign this Joint Powers Agreement.

Section 3. New Members will pay the annual membership dues for the year in which the new Member is joining, as set by the Board pursuant to Article IV, Section 2, as calculated by the current formula. Fees will not be pro-rated for new Members who join after January 1 of each year.

## ARTICLE VI. GIS DATA TO BE EXCHANGED AS PART OF THIS AGREEMENT

Section 1. Members agree to exchange any GIS data with Ramsey County and with any requesting Member for the requesting party's own use where that GIS data has been in some way derived and/or developed from the County GIS Data accessed through this Agreement or future agreements between the Users Group and Ramsey County. Members agree to exchange with Ramsey County and with any other Member any attribute data that it has created and maintained where that data can be associated to a parcel using a parcel identifier. Members also agree to exchange any building permit data requested by Ramsey County for the identification of future physical feature data base updates.

Section 2. The Board will negotiate with Ramsey County on behalf of the Members in all matters deemed necessary relating to supply of GIS data generated by a Member.

## ARTICLE VII. DATA ACCESS AND USAGE

Section 1. All Members shall have equal rights to access Ramsey County GIS Data.

Section 2. Data generated by Ramsey County and provided to Members may not be sold in its original form to third party agencies. However, a Member may allow use of the original data by a third party for specific contracted purposes.

Section 3. Data which results from enhancement of Ramsey County GIS Data by a Member, received pursuant to this Agreement, may be made available to a third party.

Section 4. All Members will adhere to future Users Group license agreements for County or other agency GIS data.

## ARTICLE VIII. DATA SECURITY

All Members agree to abide by the data privacy and data security standards of the Member when using Ramsey County GIS Data or any derivative or enhancement of the data.

## ARTICLE IX. FINANCIAL MATTERS

Section 1. The fiscal year of the Users Group is the calendar year.

Section 2. The Board shall adopt an annual budget prior to December 31 of each year for each succeeding year. The Board will give an opportunity to each Member to comment or object to the proposed budget before adoption. Notice of the adopted budget must be distributed promptly thereafter to the appointed Director of each Member.

Section 3. Operational costs shall be shared according to a method agreed upon by majority decision of the Board of Directors. The costs could be met by membership dues. These costs could include Users Group administrative costs, purchase of liability insurance, and others as appropriate.

Section 4. Annual Membership Dues: Members shall commit to payment of Annual Membership Dues, except where limited by State Statutes.

Section 5. Billings to the Members are due and payable no later than 60 days after the receipt of the invoice. In the event of a dispute as to the amount of a billing, a Member must nevertheless make payment as billed to preserve membership status. The Member may make payment subject to its right to dispute the bill and exercise any remedies available to it. Failure to pay a billing within 60 days results in suspension of voting privileges of the Member Director. Failure to pay a billing within 120 days is grounds for termination of membership, but the Users Group's right to receive payment survives termination of membership.

## ARTICLE X. TERM

Section 1. The Term of this Agreement is January 1, 2021, through December 31, 2025.

Section 2. Based on the annual review of the operating procedures within the Agreement conducted by the Board, a new Agreement will be developed and circulated at least three months prior to December 31, 2025 and be agreed upon and signed on or before December 31, 2025.

## ARTICLE XI. TERMINATION

Each Member shall have the right to terminate its membership and participation in the Users Group by formal resolution of the Member's organization and communicated to the Board in writing. However, the Member is still obligated to its financial commitments for the year during which termination of membership occurs.

These commitments include:

(i) Any balance of the Annual Membership Dues. This commitment applies to all Members;

(ii) Any balance owing on Special Projects Assessments. This commitment applies to Members which have entered into any special project agreement(s).

## ARTICLE XII. DISSOLUTION

Section 1. The Users Group may be dissolved by a two-thirds vote of its Members in good standing. Dissolution is mandatory when the Secretary has received certified copies of resolutions adopted by the governing bodies of the required number of Members requesting dissolution.

Section 2. In the event of a dissolution, the Board must determine the measures necessary to effect the dissolution and must provide for the taking of such measures as promptly as circumstances permit, subject to the provisions of this Agreement and law.

Section 3. In the event of dissolution, following the payment of all outstanding obligations, assets of the Users Group will be distributed among the then existing Members in direct proportion to their cumulative annual contributions. If those obligations exceed the assets of the Users Group, the net deficit of the Users Group will be charged to and paid by the then existing Members in direct proportion to their cumulative annual contributions.

## ARTICLE XIII. ACCESS TO DOCUMENTS

Until the expiration of six years after this Agreement terminates, the Users Group shall make available to the Member organizations and to the State Auditor, a copy of this Agreement and books, documents, accounting procedures and practices of the Users Group relating to this Agreement.

## ARTICLE XIV. HOLD HARMLESS

Section 1. Each Member agrees to defend, indemnify, and hold the other Members harmless from any claims, demands, actions or causes of action, including reasonable attorney's fees, against or incurred by such other Members, for injury to, death of, or damage to the property of any third person or persons, arising out of any act or omission on the part of the indemnifying Member or any of its agents, servants or employees in the performance of or with relation to any of the work or services provided by Members under the terms of this Agreement.

Section 2. Nothing in this Agreement shall constitute a waiver by any Member, the Users Group of any limitation of liability under Minnesota Statutes Chapter 466, or other statutory or common law immunities, limits, or exceptions on liability.

Section3. Under no circumstances, however, shall a Member be required to pay on behalf of itself and other Members, any amounts in excess of the limits on liability established in Minnesota Statutes Chapter 466 applicable to any one Member. The limits of liability for some or all of the Members may not be added together to determine the maximum amount of liability for any Member.

## ARTICLE XV. EQUAL EMPLOYMENT OPPORTUNITY

The Members and the Users Group agree to comply with all federal, state, and local laws, resolutions, ordinances, rules, regulations, and executive orders pertaining to unlawful discrimination on account of race, color, creed, religion, national origin, sex, sexual preference, marital status, status with regard to public assistance, disability, or age.

## ARTICLE XVI. DATA PRACTICES

Section 1. All data collected, created, received, maintained, or disseminated for any purpose in the course of either the Member's or the Users Group's performance of this Agreement is governed by the Minnesota Government Data Practices Act, Minnesota Statutes Chapter 13, and rules adopted to implement the Act.

Section 2. The Members and the Users Group agree to abide strictly by these statutes, rules, and regulations.

IN WITNESS WHEREOF the parties have caused this Agreement to be executed on this ____ day of _____,

2020.

ORGANIZATION **Vadnais Lake Area WMO**

Approved:

By:_____

( Name, Title ) JIM LINDNER, VLAWMO BOARD OF DIRECTORS CHAIR

By:_____

( Name, Title ) PHIL BELFIORI, VLAWMO ADMINISTRATOR

DESIGNATED DIRECTOR TO REPRESENT ORGANIZATION:

Name: TYLER THOMPSON

Phone: 651-204-6071

Email: TYLER.THOMPSON@VLAWMO.ORG

ALTERNATE DIRECTOR (IF APPLICABLE):

Name:_____

Phone:_____

Email:_____

By:_____

(Nate Zwonitzer, Chair of Users Group )

VLAWMO
Vadnais Lake Area
Water Management Organization

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

To: Board of Directors

From: Phil Belfiori, Administrator

Date: August 20, 2020

Re: **V. A.1. 2021 Storm Sewer Utility Rates, Resolution 04-2020**

The annual Storm Sewer Utility (SSU) rates are based on the budget approved by the Board at its June meeting. The Storm Sewer Utility is then calculated on the amount of impervious surface generally associated with different land use types and provides the major financial support for watershed activities. To achieve this SSU revenue amount included in the approved 2021 budget ($935,340), the proposed 2021 SSU annual rate is proposed at $53.16/unit for the residential 1-3 until land use classification (an increase of $2.76 /year or about $0.23 / month) and for all other land use classifications the 2021 annual rate is proposed at $77.04/acre (which is an increase of $4.08 / acre for the year or $0.34 /month).

Overall, the 2021 SSU rate is an increase of 5.5% over last year. This rate includes a 0.5% buffer to account for subsequent parcel changes, manual overrides and delinquent payments. This is less than the 7.69% increase for Pay 2020. See the attached memo from Jeanne Vogt of Ehlers for further discussion.

At the August 26, 2020 VLAWMO Board meeting the Administrator will provide a short presentation summarizing the 2021 SSU rate and also provide information comparing surrounding watersheds. This comparison identifies that “average” VLAWMO residential property owners pay less in stormwater fees than compared to the surrounding watersheds in Ramsey County (when compared to the median residential property tax rate).

As discussed at the June Board meeting, this year’s SSU revenue will address funding for the high profile regional projects as identified in the amended Water Plan including (but not limited to) targeting CIP budgets for implementation of the over $1 million dollar Lambert Lake Project (including an estimated $650K in debt service), initiating implementation of the adaptive Lake Management Project at E. Goose Lake, maintaining core watershed management programs, adjustments in employee payroll and benefits based on the Board approved policy and providing funding for partnership on a regional maintenance project on Ditch 14.

**Recommendation:** Approval of Resolution 04-2020 setting the Storm Sewer Utility Rates for 2021.

Attachments:

- Resolution 04-2020
- Memo from Jeanne Vogt at Ehlers with attachment
- PowerPoint presentation summarizing proposed SSU rate

# MEMORANDUM

TO: Phil Belfori, Administrator
FROM: Jeanne Vogt
DATE: August 12, 2020
SUBJECT: Pay 2021 Proposed SSU Rates

The Vadnais Lake Area Water Management Organization ("VLAWMO") has asked Ehlers to complete the calculation of the Storm Sewer Utility ("SSU") rates for taxes payable in 2021 and update the annual presentation to the VLAWMO Board. This has been completed and below are highlights for your consideration:

1. **Manual Overrides** – VLAWMO has the authority to remove any SSU charges on parcels as needed. Attached please find the list of parcels with manual overrides. There are 324 parcels with a manual override for Pay 2021.
2. **Property Classification Changes** – The following parcels had property classification changes from Pay 2020 to Pay 2021

| PIN Number | Prior Class | Current Class | Change in Fee | Manual Override? |
|---|---|---|---|---|
| 14.30.22.42.0053 | Res 1 Unit | Muni Serv Other | +$15.70 | No |
| 15.30.22.44.0093 | Res V Land | Muni Serv Other | +$163.44 | No |
| 21.30.22.33.0001 | Agricultural | Res V Land | ($0.24) | No |
| 21.30.22.34.0037 | Agricultural | Apt +4 Units | +$41.66 | No |
| 21.30.22.34.0038 | Agricultural | Apt +4 Units | $687.53 | No |
| 28.30.2242.0001 | Agricultural | Res 1 Unit | ($118.85) | No |
| 35.31.22.32.0004 | Res 1 Unit | Exempt - Muni | +$215.82 | No |

3. **Tax Forfeited Properties** – VLAWMO has had properties become tax forfeited as a result of unpaid property taxes. For taxes payable in 2021, there are 18 parcels currently in tax forfeited status, all in Ramsey County. This is unchanged from last year.
4. **Comparison to Surrounding Watershed Districts** – VLAWMO is unique in that there is special legislation allowing you to certify a SSU fee using the existing special assessment process available in state statute. This differs from the surrounding watersheds, who levy a property tax on all eligible parcels in their respective districts. Included in this year's presentation is a comparison of VLAWMO to Capital Region Watershed, Ramsey-Washington Metro Watershed, and Rice Creek Watershed. Comparisons will include:
    a. Annual SSU Fee vs. Certified Property Tax Levy
    b. Impact on a Median Valued Home in VLAWMO

In both cases, VLAWMO property owners pay less in stormwater fees than compared to surrounding watersheds.

5. Proposed Pay 2021 Storm Sewer Utility Rates – Based on a budget of $935,340, the new rate for Pay 2021 is $53.16 per unit. This is an increase of 5.5% over last year. This is less than the 7.69% increase for Pay 2020. This also includes a 0.5% buffer, which is similar to past years to account for future divisions and any additional manual overrides.

| | | | | | | | 324 | | |
|---|---|---|---|---|---|---|---|---|---|
| COUN | PIN | BLDG_NUM | STREETNAME # | STREE | CITY | OWNER_NAME | Manual Override | | Comments |
| 123 | 043022210020 | 1 | PHOEBE | LN | NORTH OAKS | ACCENT HOMES INC | Y | 0.00 | vacant land |
| 123 | 043022210021 | 3 | PHOEBE | LN | NORTH OAKS | ACCENT HOMES INC | Y | 0.00 | vacant land |
| 123 | 043022210022 | 5 | PHOEBE | LN | NORTH OAKS | DAVID RUFLEDT | Y | 0.00 | vacant land |
| 123 | 043022210023 | 7 | PHOEBE | LN | NORTH OAKS | JOAN S JOHNSON | Y | 0.00 | vacant land |
| 123 | 043022210024 | 9 | PHOEBE | LN | NORTH OAKS | RANDALL S OLSON | Y | 0.00 | vacant land |
| 123 | 043022210025 | 11 | PHOEBE | LN | NORTH OAKS | LAWRENCE BELL | Y | 0.00 | vacant land |
| 123 | 043022210026 | 29 | PHOEBE | LN | NORTH OAKS | ACCENT HOMES INC | Y | 0.00 | vacant land |
| 123 | 043022210027 | 0 | PHOEBE | LN | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 043022220002 | 15 | PHOEBE | LN | NORTH OAKS | JAMES WARREN BEGUN | Y | 0.00 | vacant land |
| 123 | 043022220003 | 17 | PHOEBE | LN | NORTH OAKS | BARBARA J PALENSKY TR | Y | 0.00 | vacant land |
| 123 | 043022220004 | 19 | PHOEBE | LN | NORTH OAKS | TIMOTHY R BATES TR | Y | 0.00 | vacant land |
| 123 | 043022220005 | 21 | PHOEBE | LN | NORTH OAKS | JOSEPH P NEGLIA | Y | 0.00 | vacant land |
| 123 | 043022220006 | 23 | PHOEBE | LN | NORTH OAKS | JAMES B HARE | Y | 0.00 | vacant land |
| 123 | 043022220007 | 25 | PHOEBE | LN | NORTH OAKS | DANIEL B SANTARSIERO | Y | 0.00 | vacant land |
| 123 | 043022220008 | 27 | PHOEBE | LN | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 043022220009 | 0 | PHOEBE | LN | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 043022220010 | 0 | PHOEBE | LN | NORTH OAKS | PRESBYTERIAN HOMES OF NORTH | Y | 0.00 | vacant land |
| 123 | 043022240034 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | Outlot |
| 123 | 043022240035 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | Outlot |
| 123 | 043022310010 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | DD072952 - Private Road; No Fee |
| 123 | 043022340001 | 0 | CENTERVILLE | RD | NORTH OAKS | NORTH OAKS FARMS INC | Y | 1.20 | vacant land |
| 123 | 043022420009 | 5656 | CENTERVILLE | RD | WHITE BEAR TOWN | MARK A LETOURNEAU | Y | 0.01 | vacant land |
| 123 | 043022440002 | 1188 | ANDERSON | LN | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 043022440051 | 0 | OTTER VIEW | TRL | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 053022120017 | 0 | LEAF WING | DR | NORTH OAKS | RAPP FARM HOME OWNERS ASSN | Y | 0.00 | vacant land |
| 123 | 053022210026 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022210051 | 0 | J | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022210052 | 0 | J | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022210053 | 0 | J | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022210054 | 0 | J | | NORTH OAKS | RAPP FARM HOME OWNERS ASSO | Y | 0.00 | vacant land |
| 123 | 053022210055 | 0 | J | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022210063 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022210064 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022220026 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022220027 | 0 | UNASSIGNED | | NORTH OAKS | RAPP FARM HOME OWNERS ASSN | Y | 0.00 | vacant land |
| 123 | 053022220028 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022220029 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |

| | | | | | | | 324 | | |
|---|---|---|---|---|---|---|---|---|---|
| COUN | PIN | BLDG_NUM | STREETNAME # | STREE | CITY | OWNER_NAME | Manual Override | | Comments |
| 123 | 053022220030 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | vacant land |
| 123 | 053022220032 | 0 | UNASSIGNED | | NORTH OAKS | RAPP FARM HOME OWNERS ASSN | Y | 0.00 | vacant land |
| 123 | 053022220033 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | Outlot |
| 123 | 053022220080 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | Outlot |
| 123 | 053022220081 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | Outlot |
| 123 | 053022220098 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS COMPANY LLC | Y | 0.00 | Outlot |
| 123 | 053022330016 | 11 | SOUTH DEEP LAKE | RD | NORTH OAKS | PAUL C SEEL | Y | -0.01 | vacant land |
| 123 | 053022410003 | 0 | UNASSIGNED | | NORTH OAKS | NORTH OAKS FARMS INC | Y | 0.00 | vacant land |
| 123 | 063022140004 | 0 | NORTH DEEP LAKE | RD | NORTH OAKS | NORTH OAKS FARMS INC | Y | -0.29 | vacant land |
| 123 | 073022440002 | 13 | DOGWOOD | LN | NORTH OAKS | DAN L BUCHOLZ | Y | -0.01 | vacant land |
| 123 | 083022120002 | 0 | J | | NORTH OAKS | NORTH OAKS FARMS INC | Y | 0.01 | vacant land |
| 123 | 083022120006 | 0 | RED FOREST | LN | NORTH OAKS | MICHAEL FRIEDRICH | y | 0.00 | vacant land |
| 123 | 083022120007 | 0 | RED FOREST | LN | NORTH OAKS | KAREN NANCEKIVELL | y | -0.03 | vacant land |
| 123 | 083022120008 | 0 | RED FOREST | LN | NORTH OAKS | JAMES WATCHKE KORANNE | y | -0.03 | vacant land |
| 123 | 083022120013 | 4 | CATBIRD | CIR | NORTH OAKS | JUSTIN TIMOTHY BRAUN | Y | 0.00 | vacant land |
| 123 | 083022130001 | 0 | UNASSIGNED | | NORTH OAKS | JAMES S NANCEKIVELL | Y | 0.03 | vacant land |
| 123 | 083022130002 | 3 | HAWK | LN | NORTH OAKS | RABIA HASAN | Y | 0.10 | vacant land |
| 123 | 083022130003 | 0 | UNASSIGNED | | NORTH OAKS | DAVID A BERNLOHR | Y | 0.02 | vacant land |
| 123 | 083022130005 | 0 | UNASSIGNED | | NORTH OAKS | CARL A SANNS JR | Y | 0.14 | vacant land |
| 123 | 083022220003 | 79 | EAST PLEASANT LAKE | RD | NORTH OAKS | PAUL F TILLQUIST | Y | 0.00 | vacant land |
| 123 | 083022240029 | 0 | UNASSIGNED | | NORTH OAKS | LORRIE K PILGRIM | Y | -0.02 | vacant land |
| 123 | 083022240030 | 0 | UNASSIGNED | | NORTH OAKS | CARL A SANNS JR | Y | -0.13 | vacant land |
| 123 | 083022310026 | 5 | BENT TREE | LN | NORTH OAKS | SUNITA SURI | Y | 0.14 | vacant land |
| 123 | 083022420013 | 0 | UNASSIGNED | | NORTH OAKS | ANTHONY JOSEPH DIMKE | Y | -0.08 | vacant land |
| 123 | 083022420014 | 0 | UNASSIGNED | | NORTH OAKS | WILLIAM H REICHWALD | Y | -0.07 | vacant land |
| 123 | 083022430001 | 0 | SPRING FARM | LN | NORTH OAKS | DEAN K HEDSTROM | Y | -0.07 | vacant land |
| 123 | 083022430017 | 0 | UNASSIGNED | | NORTH OAKS | DENNIS B JOHNSON | Y | -0.03 | vacant land |
| 123 | 083022430018 | 0 | UNASSIGNED | | NORTH OAKS | STEVEN J MARTIN | Y | 0.07 | vacant land |
| 123 | 093022110104 | 0 | PROVENCE | LN | WHITE BEAR TOWN | PINE RIDGE ASSOCIATION INC | Y | 0.00 | vacant land |
| 123 | 093022120050 | 0 | PROVENCE | LN | WHITE BEAR TOWN | PINE RIDGE ASSOCIATION INC | Y | -0.08 | vacant land |
| 123 | 093022320002 | 0 | BLACK LAKE | RD | NORTH OAKS | NORTH OAKS FARMS INC | Y | 0.01 | vacant land |
| 123 | 093022440009 | 0 | HAMMOND | RD | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | -0.06 | vacant land |
| 123 | 103022220051 | 0 | TOWNSHIP | DR | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 103022220063 | 5485 | TOWNSHIP | DR | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | -0.08 | vacant land |
| 123 | 103022220064 | 0 | EAGLE | DR | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.01 | vacant land |
| 123 | 103022240001 | 5395 | OTTER LAKE | RD | WHITE BEAR TOWN | RAMSEY COUNTY PARKS AND REC | Y | -0.11 | vacant land |
| 123 | 103022310001 | 5271 | OTTER LAKE | RD | WHITE BEAR TOWN | RAMSEY COUNTY PARKS AND REC | Y | 0.00 | vacant land |

| | | | | | | | 324 | | |
|---|---|---|---|---|---|---|---|---|---|
| COUN | PIN | BLDG_NUM | STREETNAME # | STREE | CITY | OWNER_NAME | Manual Override | | Comments |
| 123 | 103022330003 | 0 | HAMMOND | RD | WHITE BEAR TOWN | RAMSEY COUNTY PARKS AND REC | Y | -0.09 | vacant land |
| 123 | 123023220033 | 0 | HODGSON | RD | NORTH OAKS | BOARD OF WATER COMM ST PAUL | Y | 1.46 | vacant land |
| 123 | 123023230099 | 0 | WILDFLOWER | WAY | NORTH OAKS | BOARD OF WATER COMM ST PAUL | Y | 0.02 | vacant land |
| 123 | 123023330035 | 0 | HODGSON | RD | NORTH OAKS | NORTH OAKS HOME OWNERS ASS | Y | 0.00 | vacant land |
| 123 | 123023330036 | 0 | HODGSON | RD | NORTH OAKS | NORTH OAKS HOME OWNER'S ASS | Y | 0.00 | vacant land |
| 123 | 123023330038 | 4 | MAYCOMB | LN | NORTH OAKS | DAVID R GETTE | Y | 0.00 | vacant land |
| 123 | 133023110043 | 0 | HILL FARM | CIR | NORTH OAKS | HILL FARM HISTORICAL SOCIETY | Y | 0.01 | Hill Farm Historical Society |
| 123 | 133023440007 | 32 | MEADOWLARK | LN | NORTH OAKS | SWAGATA BANERJEE | Y | 0.02 | vacant land |
| 123 | 143022230085 | 0 | 6TH | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | -0.02 | vacant land |
| 123 | 143022330049 | 0 | 5TH | AVE | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.01 | vacant land |
| 123 | 143022330147 | 0 | EUGENE | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 143022330148 | 1950 | FLORENCE | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 143022330149 | 0 | EUGENE | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 153022110001 | 0 | UNASSIGNED | | WHITE BEAR LAKE | TOWN OF WHITE BEAR LAKE | Y | 2.26 | vacant land |
| 123 | 153022110020 | 0 | 9TH | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.06 | vacant land |
| 123 | 153022140087 | 1700 | 9TH | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 153022230006 | 0 | WHITE BEAR | PKWY | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | -0.06 | vacant land |
| 123 | 153022230012 | 0 | WHITE BEAR | PKWY | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 153022240019 | 0 | WHITE BEAR | PKWY | WHITE BEAR LAKE | HARLAN HANSON | Y | 0.00 | vacant land |
| 123 | 153022310012 | 0 | BIRCH LAKE | BLVD | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 153022420093 | 0 | 4TH | ST | WHITE BEAR LAKE | COUNTY OF RAMSEY PUBLIC WOR | Y | 0.01 | Exempt beginning Pay 2014 |
| 123 | 153022420114 | 0 | OTTER LAKE | RD | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 163022110003 | 0 | HAMMOND | RD | WHITE BEAR TOWN | ECONOMIC DEV AUTHORITY | Y | -0.01 | vacant land |
| 123 | 163022110006 | 0 | HAMMOND | RD | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 163022110007 | 0 | HAMMOND | RD | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 163022110008 | 1270 | HAMMOND | RD | WHITE BEAR TOWN | ECONOMIC DEVELOPMENT AUTHO | Y | -0.38 | vacant land owned by WBT EDA |
| 123 | 163022120005 | 0 | CONSTELLATION | DR | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.01 | vacant land |
| 123 | 163022140013 | 0 | BIRCH LAKE | BLVD | WHITE BEAR TOWN | CITY OF WHITE BEAR LAKE | Y | 0.08 | vacant land |
| 123 | 163022140014 | 0 | TOWNSHIP | PKY | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.01 | vacant land |
| 123 | 163022240002 | 0 | CENTERVILLE | RD | WHITE BEAR TOWN | NORTH OAKS COMPANY LLC | Y | -0.02 | vacant land |
| 123 | 163022310050 | 0 | ALLENDALE | DR | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 163022320025 | 0 | GREENHAVEN | DR | WHITE BEAR TOWN | WHITE BEAR TOWNSHIP | Y | 0.01 | vacant land |
| 123 | 163022340019 | 0 | ALLENDALE | DR | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.01 | vacant land |
| 123 | 163022340020 | 4600 | STODDART | CIR | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 163022340030 | 0 | MEADOWLANDS | DR | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.02 | vacant land |
| 123 | 163022410006 | 0 | BIRCH LAKE | BLVD | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 173022130007 | 32 | DUCK PASS | RD | NORTH OAKS | BRIAN PENNINGTON | Y | -0.25 | vacant land |

| | | | | | | | 324 | | |
|---|---|---|---|---|---|---|---|---|---|
| COUN | PIN | BLDG_NUM | STREETNAME # | STREE | CITY | OWNER_NAME | Manual Override | | Comments |
| 123 | 173022130009 | 0 | DUCK PASS | RD | NORTH OAKS | BRIAN C BURGESON | Y | -0.01 | vacant land |
| 123 | 173022240009 | 0 | DUCK PASS | RD | NORTH OAKS | FAITH RALSTON TRUSTEE | Y | 0.00 | vacant land |
| 123 | 173022310003 | 0 | EAST GILFILLAN | RD | NORTH OAKS | CHARLES M HOOLEY TRUSTEE JR | Y | -0.01 | vacant land |
| 123 | 173022340005 | 12 | DOVE | LN | NORTH OAKS | MARK A JOHNSON TRUSTEE | Y | 0.04 | vacant land |
| 123 | 173022340007 | 0 | ROBB FARM | RD | NORTH OAKS | JOHN H BURMASTER | Y | 0.03 | vacant land |
| 123 | 173022430014 | 0 | SNIPE | LN | NORTH OAKS | CITY OF NORTH OAKS | Y | 0.00 | vacant land |
| 123 | 173022430015 | 0 | Not supplied | | NORTH OAKS | SCOTT SCHULZE | Y | 0.00 | vacant land |
| 123 | 183022310003 | 0 | EAST PLEASANT LAKE | RD | NORTH OAKS | BOARD OF WATER COMM ST PAUL | Y | -0.01 | vacant land |
| 123 | 183022310004 | 0 | EAST PLEASANT LAKE | RD | NORTH OAKS | BOARD OF WATER COMM ST PAUL | Y | -0.07 | vacant land |
| 123 | 183022310005 | 4 | EAST PLEASANT LAKE | RD | NORTH OAKS | BOARD OF WATER COMM ST PAUL | Y | -0.03 | vacant land |
| 123 | 183022320027 | 0 | UNASSIGNED | | NORTH OAKS | FELIX KYEL ASARE | Y | 0.00 | vacant land |
| 123 | 193022110129 | 0 | MCMENEMY | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.02 | vacant land |
| 123 | 193022210005 | 4500 | RICE | ST | VADNAIS HEIGHTS | CITY OF ST PAUL | Y | 0.06 | vacant land |
| 123 | 193022410014 | 0 | OAK RIDGE | CT | VADNAIS HEIGHTS | RICHARD D VOIGTLANDER | Y | 0.00 | vacant land |
| 123 | 193022410050 | 325 | LILY POND | LN | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.01 | vacant land |
| 123 | 193022420001 | 0 | RICE | ST | VADNAIS HEIGHTS | CITY OF ST PAUL | Y | 0.00 | vacant land |
| 123 | 193022420089 | 0 | MEADOWOOD | LN | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 193022430160 | 0 | F | | VADNAIS HEIGHTS | ST PAUL WATER WORKS CO | Y | 0.07 | vacant land |
| 123 | 203022110032 | 0 | BUR OAK | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.06 | Tax-forfeit for Pay 2014 |
| 123 | 203022120010 | 0 | GREENHAVEN | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 203022120031 | 0 | WESTFIELD | LN | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.05 | vacant land |
| 123 | 203022120050 | 0 | MORNINGSIDE | AVE | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.06 | vacant land |
| 123 | 203022120055 | 575 | MORNINGSIDE | PL | VADNAIS HEIGHTS | DANIEL M JENSEN | Y | 0.01 | vacant land |
| 123 | 203022120056 | 578 | MORNINGSIDE | PL | VADNAIS HEIGHTS | JOHN D FAY | Y | 0.00 | vacant land |
| 123 | 203022120075 | 590 | 96 | | VADNAIS HEIGHTS | NORTHERN STATES POWER CO | Y | 0.01 | Owned by NSP |
| 123 | 203022130063 | 0 | MORNINGSIDE | AVE | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 203022130087 | 0 | GREENHAVEN | CT | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.01 | vacant land |
| 123 | 203022140001 | 0 | BRAMBLEWOOD | AVE | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.10 | vacant land |
| 123 | 203022210001 | 0 | MORNINGSIDE | PL | VADNAIS HEIGHTS | NOREL D FENSTER | Y | -0.01 | vacant land |
| 123 | 203022210004 | 0 | MORNINGSIDE | PL | VADNAIS HEIGHTS | LAURENCE C LENERTZ | Y | 0.00 | vacant land |
| 123 | 203022210020 | 4485 | MORNINGSIDE | AVE | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.05 | vacant land |
| 123 | 203022230030 | 390 | COMMERCE | CT | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.03 | vacant land |
| 123 | 203022240066 | 520 | WESTFIELD | LN | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.02 | vacant land |
| 123 | 203022310005 | 0 | WALKER | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.02 | vacant land |
| 123 | 203022310016 | 0 | OAKCREST | AVE | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 203022310032 | 0 | GREENHAVEN | CT | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.05 | vacant land |
| 123 | 203022330014 | 365 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.11 | vacant land |

| | | | | | | | 324 | | |
|---|---|---|---|---|---|---|---|---|---|
| COUN | PIN | BLDG_NUM | STREETNAME # | STREE | CITY | OWNER_NAME | Manual Override | | Comments |
| 123 | 203022330017 | 4095 | OAK CREST | DR | VADNAIS HEIGHTS | JEREMY J JENSEN | Y | -0.01 | vacant land |
| 123 | 203022340029 | 0 | SOUTH OAK | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.01 | vacant land |
| 123 | 203022340060 | 0 | SOUTH OAK | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.02 | vacant land |
| 123 | 203022340064 | 641 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.42 | vacant land |
| 123 | 203022420029 | 0 | GREENHAVEN | PL | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 203022420038 | 0 | KAITLIN | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 203022440014 | 0 | CLOVER | AVE | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.02 | vacant land |
| 123 | 213022110058 | 1285 | BIRCH LAKE | BLVD | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 213022140005 | 0 | BAMBI | LN | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 213022230156 | 4345 | HERITAGE | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.01 | vacant land |
| 123 | 213022320148 | 0 | CENTERVILLE | RD | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 213022330009 | 843 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.11 | vacant land |
| 123 | 213022330010 | 0 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.10 | vacant land |
| 123 | 213022330017 | 0 | THORNHILL | LN | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 213022330018 | 0 | THORNHILL | LN | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 213022410104 | 0 | UNASSIGNED | | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | -0.08 | vacant land |
| 123 | 213022420026 | 0 | WHITE BEAR | PKWY | VADNAIS HEIGHTS | MARK R SMITH | Y | 0.01 | vacant land |
| 123 | 213022430016 | 0 | 35 | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.15 | vacant land |
| 123 | 213022440013 | 4230 | WHITE BEAR | PKWY | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | -0.37 | vacant land |
| 123 | 223022110001 | 1756 | 96 | | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | -1.40 | vacant land |
| 123 | 223022110075 | 0 | UNASSIGNED | | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.03 | vacant land |
| 123 | 223022130018 | 0 | OTTER LAKE | RD | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.12 | vacant land |
| 123 | 223022140009 | 1596 | WHITAKER | ST | WHITE BEAR TOWN | WATER GREMLIN COMPANY | Y | 0.00 | vacant land |
| 123 | 223022140010 | 0 | WHITAKER | ST | WHITE BEAR TOWN | WATER GREMLIN COMPANY | Y | 0.00 | vacant land |
| 123 | 223022220004 | 0 | BIRCH LAKE | BLVD | WHITE BEAR LAKE | KATHERINE A FROGNER TRUSTEE | Y | 0.00 | vacant land |
| 123 | 223022230052 | 4399 | OAKMEDE | LN | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.02 | vacant land |
| 123 | 223022230073 | 0 | BIRCHCREST | DR | WHITE BEAR TOWN | JUDITH J MARKOE TRUSTEE | Y | 0.00 | vacant land |
| 123 | 223022230076 | 0 | FISHER | LN | WHITE BEAR TOWN | REBECCA L KOHLER | Y | 0.00 | vacant land |
| 123 | 223022230078 | 0 | FISHER | LN | WHITE BEAR TOWN | ADAM WELK | Y | 0.01 | vacant land |
| 123 | 223022230079 | 0 | FISHER | LN | WHITE BEAR TOWN | KARA SOMMERFELD | Y | 0.01 | vacant land |
| 123 | 223022230081 | 0 | FISHER | LN | WHITE BEAR TOWN | ROBERT J KERMES | Y | 0.00 | vacant land |
| 123 | 223022230082 | 0 | FISHER | LN | WHITE BEAR TOWN | MARTHA LOUISE DIETSCH | Y | 0.00 | vacant land |
| 123 | 223022230084 | 0 | FISHER | LN | WHITE BEAR TOWN | CHAD BERGER | Y | 0.00 | vacant land |
| 123 | 223022240003 | 0 | UNASSIGNED | | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.05 | vacant land |
| 123 | 223022310001 | 0 | UNASSIGNED | | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | -34.18 | vacant land |
| 123 | 223022340032 | 0 | WHITE BEAR | PKWY | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | 0.00 | vacant land |
| 123 | 223022410004 | 4276 | OTTER LAKE | RD | WHITE BEAR TOWN | ECONOMIC DEV AUTH TOWN WB | Y | -0.01 | vacant land |

| | | | | | | | 324 | | |
|---|---|---|---|---|---|---|---|---|---|
| COUN | PIN | BLDG_NUM | STREETNAME # | STREE | CITY | OWNER_NAME | Manual Override | | Comments |
| 123 | 223022410030 | 0 | UNASSIGNED | | WHITE BEAR TOWN | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 223022420002 | 4260 | OTTER LAKE | RD | WHITE BEAR TOWN | WHITE BEAR ECONOMIC DEV | Y | -0.01 | vacant land |
| 123 | 223022420012 | 0 | WHITE BEAR | PKWY | WHITE BEAR TOWN | ECONOMIC DEVELOPMENT AUTHC | Y | 0.06 | vacant land |
| 123 | 223022440001 | 0 | UNASSIGNED | | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | -0.01 | vacant land |
| 123 | 233022210065 | 1883 | HINCKLEY | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.02 | vacant land |
| 123 | 233022210099 | 1908 | HINCKLEY | ST | WHITE BEAR LAKE | BENJAMIN T NELSON | Y | 0.00 | vacant land |
| 123 | 233022210102 | 1906 | CLARENCE | ST | WHITE BEAR LAKE | RYAN PONTHAN | Y | 0.00 | vacant land |
| 123 | 233022220054 | 0 | PARK | ST | WHITE BEAR LAKE | TOWN OF WHITE BEAR | Y | 0.02 | vacant land |
| 123 | 233022220060 | 0 | PARK | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 233022220061 | 0 | PARK | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 233022220091 | 0 | HINCKLEY | AVE | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 233022220092 | 0 | HINCKLEY | AVE | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.01 | vacant land |
| 123 | 233022220116 | 0 | 5TH | AVE | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.02 | vacant land |
| 123 | 233022220158 | 1904 | CLARENCE | ST | WHITE BEAR LAKE | ERIC P ALSIDES | Y | 0.00 | vacant land |
| 123 | 233022220160 | 0 | HINCKLEY | AVE | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 233022220166 | 0 | PARK | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 233022220167 | 0 | WHITAKER | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 233022230003 | 0 | UNASSIGNED | | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | -0.07 | vacant land |
| 123 | 233022230005 | 0 | WHITAKER | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.22 | vacant land |
| 123 | 233022310001 | 0 | 61 | | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | -9.00 | vacant land |
| 123 | 233022320002 | 4151 | HOFFMAN | RD | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | -0.12 | vacant land |
| 123 | 233022320004 | 0 | 61 | | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.05 | vacant land |
| 123 | 233022320006 | 0 | HOFFMAN | RD | WHITE BEAR TOWN | QUALITY WOOD TREATING CO INC | Y | -0.10 | vacant land |
| 3 | 253122310007 | | | | LINO LAKES | | Y | 0.00 | Fractional property; HO already pays |
| 3 | 253122310012 | | | | LINO LAKES | | Y | -3.10 | Was TFL; now Municipal Other |
| 3 | 253122310013 | | | | LINO LAKES | | Y | -1.64 | Was TFL; now Municipal Other |
| 3 | 253122420070 | | | | LINO LAKES | | Y | 0.00 | Fractional property; HO already pays |
| 3 | 253122420082 | | | | LINO LAKES | | Y | 0.00 | Fractional property; HO already pays |
| 3 | 253122420085 | | | | LINO LAKES | | Y | 0.00 | Exempt per VLAWMO for P13 |
| 3 | 253122420086 | | | | LINO LAKES | | Y | 0.00 | Exempt per VLAWMO for P13 |
| 3 | 253122430047 | | | | LINO LAKES | | Y | 0.00 | Exempt per VLAWMO for P13 |
| 123 | 263022220014 | 0 | LINDEN | ST | WHITE BEAR LAKE | 1ST ENGLISH EV LUTHERAN CH | Y | 0.00 | vacant land owned by church |
| 123 | 263022230036 | 0 | HILL | AVE | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 263022230052 | 3910 | LINDEN | ST | WHITE BEAR LAKE | CITY OF WHITE BEAR LAKE | Y | 0.00 | vacant land |
| 123 | 273022220022 | 0 | UNASSIGNED | | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | -0.01 | vacant land |
| 123 | 283022110026 | 0 | WHITE BEAR | PKWY | WHITE BEAR TOWN | TOWN OF WHITE BEAR | Y | -0.02 | vacant land |
| 123 | 283022120001 | 0 | UNASSIGNED | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.06 | vacant land |

| | | | | | | | 324 | | |
|---|---|---|---|---|---|---|---|---|---|
| COUN | PIN | BLDG_NUM | STREETNAME # | STREE | CITY | OWNER_NAME | Manual Override | | Comments |
| 123 | 283022130018 | 1110 | GOOSE LAKE | RD | GEM LAKE | KELLY WIMMER | Y | -0.01 | vacant land |
| 123 | 283022210008 | 0 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.08 | vacant land |
| 123 | 283022210015 | 0 | UNASSIGNED | | VADNAIS HEIGHTS | COUNTY OF RAMSEY PUBLIC WOR | Y | -0.02 | Exempt beginning Pay 2014 |
| 123 | 283022210020 | 0 | HORIZON | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 283022210059 | 0 | CENTERVILLE | RD | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 283022230001 | 0 | ARCADE | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.10 | vacant land |
| 123 | 283022320041 | 0 | CENTERVILLE | RD | VADNAIS HEIGHTS | PAUL HENDRICKSON | Y | 0.00 | vacant land |
| 123 | 283022430029 | 0 | E | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | Now a road. Manual Override P17 |
| 123 | 293022110001 | 0 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.05 | vacant land |
| 123 | 293022110002 | 0 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.02 | vacant land |
| 123 | 293022110019 | 0 | STOCKDALE | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.01 | vacant land |
| 123 | 293022110020 | 0 | STOCKDALE | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.03 | vacant land |
| 123 | 293022120032 | 0 | EDGERTON | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.01 | vacant land |
| 123 | 293022140005 | 3892 | ELMWOOD | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 293022210005 | 0 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.04 | vacant land |
| 123 | 293022210006 | 0 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.04 | vacant land |
| 123 | 293022210007 | 0 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.04 | vacant land |
| 123 | 293022210008 | 0 | F | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 293022230007 | 0 | MCMENEMY | ST | VADNAIS HEIGHTS | MILDRED M JOHNSON TRUST | Y | 0.01 | vacant land |
| 123 | 293022230009 | 0 | BEAR | AVE | VADNAIS HEIGHTS | MILDRED M JOHNSON TRUST | Y | 0.00 | vacant land |
| 123 | 293022230052 | 0 | TESSIER | TRL | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 293022240014 | 0 | EDGERTON | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.08 | vacant land |
| 123 | 293022240015 | 0 | BEAR | AVE | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.01 | vacant land |
| 123 | 293022240018 | 465 | BEAR | AVE | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.03 | vacant land |
| 123 | 293022310023 | 0 | KOHLER | RD | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.22 | vacant land |
| 123 | 293022330001 | 0 | KOEHLER | RD | VADNAIS HEIGHTS | CITY OF ST PAUL | Y | 0.17 | vacant land |
| 123 | 293022340008 | 0 | KOEHLER | RD | VADNAIS HEIGHTS | COUNTY OF RAMSEY PUBLIC WOR | Y | -0.01 | vacant land |
| 123 | 293022340064 | 0 | OAK CREEK | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 293022340074 | 485 | OAK CREEK | DR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.04 | vacant land |
| 123 | 293022340080 | 3712 | PINEVIEW | DR | VADNAIS HEIGHTS | DAVID FAUTSCH | Y | -0.03 | vacant land |
| 123 | 293022340089 | 0 | PARK | PL | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 293022340090 | 0 | PARK | PL | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 293022340097 | 549 | FISHER | CIR | VADNAIS HEIGHTS | PETER J HELGESON | Y | 0.00 | vacant land |
| 123 | 293022340100 | 3641 | EDGERTON | ST | VADNAIS HEIGHTS | ZAW W HTUT | Y | 0.00 | vacant land |
| 123 | 293022340101 | 3635 | EDGERTON | ST | VADNAIS HEIGHTS | LANCE D LENARZ | Y | 0.00 | vacant land |
| 123 | 293022410038 | 0 | STOCKDALE | RD | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.41 | vacant land |
| 123 | 293022420052 | 0 | STOCKDALE | RD | VADNAIS HEIGHTS | JERRY PAUGEL | Y | 0.00 | vacant land |

| | | | | | | | 324 | | |
|---|---|---|---|---|---|---|---|---|---|
| COUN | PIN | BLDG_NUM | STREETNAME # | STREE | CITY | OWNER_NAME | Manual Override | | Comments |
| 123 | 293022420053 | 0 | STOCKDALE | RD | VADNAIS HEIGHTS | DAVID H PAUGEL | Y | 0.00 | vacant land |
| 123 | 293022440026 | 0 | CENTERVILLE | RD | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.01 | vacant land |
| 123 | 303022120001 | 0 | F | | VADNAIS HEIGHTS | CITY OF ST PAUL | Y | 13.94 | vacant land |
| 123 | 303022210002 | 0 | F | | VADNAIS HEIGHTS | CITY OF ST PAUL | Y | 3.58 | vacant land |
| 123 | 313022110001 | 0 | MCMENEMY | RD | VADNAIS HEIGHTS | CITY OF ST PAUL | Y | -0.27 | vacant land |
| 123 | 313022130012 | 0 | VADNAIS | BLVD | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.17 | vacant land |
| 123 | 313022140007 | 0 | VADNAIS | BLVD | VADNAIS HEIGHTS | CITY OF ST PAUL | Y | -0.36 | vacant land |
| 123 | 313022220019 | 0 | RICE | ST | VADNAIS HEIGHTS | COUNTY OF RAMSEY PUBLIC WOR | Y | 0.00 | Exempt beginning Pay 2014 |
| 123 | 313022220020 | 0 | RICE | ST | VADNAIS HEIGHTS | COUNTY OF RAMSEY PUBLIC WOR | Y | 0.00 | St. Paul Water Utility Land |
| 123 | 313022220023 | 0 | VADNAIS | BLVD | VADNAIS HEIGHTS | BD OF WATER COMMISSIONERS | Y | 0.00 | vacant land |
| 123 | 323022110044 | 0 | UNASSIGNED | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.72 | vacant land |
| 123 | 323022110059 | 0 | VALENTO | CIR | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.01 | vacant land |
| 123 | 323022130003 | 0 | EDGERTON | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 323022130005 | 0 | CENTERVILLE | RD | VADNAIS HEIGHTS | RAMSEY COUNTY PUBLIC WORKS | Y | 0.06 | vacant land |
| 123 | 323022130059 | 0 | UNASSIGNED | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.01 | vacant land |
| 123 | 323022130068 | 691 | BIBEAU | CT | VADNAIS HEIGHTS | CARSTEN W INGVOLDSTAD | Y | 0.00 | vacant land |
| 123 | 323022130085 | 681 | BIBEAU | CT | VADNAIS HEIGHTS | ROBERT F GUSTIN | Y | 0.00 | vacant land |
| 123 | 323022130086 | 683 | BIBEAU | CT | VADNAIS HEIGHTS | THOMAS W FOELS | Y | 0.00 | vacant land |
| 123 | 323022130087 | 693 | BIBEAU | CT | VADNAIS HEIGHTS | VERA WAGNER | Y | 0.00 | vacant land |
| 123 | 323022130088 | 0 | UNASSIGNED | | VADNAIS HEIGHTS | KETTLER VADNAIS TOWNHOMES L | Y | 0.00 | vacant land |
| 123 | 323022130089 | 0 | UNASSIGNED | | VADNAIS HEIGHTS | KETTLER VADNAIS TOWNHOMES L | Y | 0.00 | vacant land |
| 123 | 323022130090 | 674 | BIBEAU | CT | VADNAIS HEIGHTS | GARY A MOODY | Y | 0.00 | vacant land |
| 123 | 323022130091 | 676 | BIBEAU | CT | VADNAIS HEIGHTS | DIANE C VOGEL | Y | 0.00 | vacant land |
| 123 | 323022130092 | 680 | BIBEAU | CT | VADNAIS HEIGHTS | JAMES AHLBERG | Y | 0.00 | vacant land |
| 123 | 323022130093 | 682 | BIBEAU | CT | VADNAIS HEIGHTS | DAVID F ROWLEY JR | Y | 0.00 | vacant land |
| 123 | 323022130094 | 690 | BIBEAU | CT | VADNAIS HEIGHTS | WESLEY ZABEL TRUSTEE | Y | 0.00 | vacant land |
| 123 | 323022130095 | 692 | BIBEAU | CT | VADNAIS HEIGHTS | DELBERT E BILLINGS | Y | 0.00 | vacant land |
| 123 | 323022140043 | 0 | BERWOOD | AVE | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 323022140081 | 0 | GARCEAU | LN | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 323022140117 | 769 | GARCEAU | LN | VADNAIS HEIGHTS | JACK ZITZER | Y | 0.00 | vacant land |
| 123 | 323022140118 | 771 | GARCEAU | LN | VADNAIS HEIGHTS | REBECCA S OLSON | Y | 0.00 | vacant land |
| 123 | 323022140119 | 777 | GARCEAU | LN | VADNAIS HEIGHTS | DEBRA K WEIDELL | Y | 0.00 | vacant land |
| 123 | 323022140120 | 779 | GARCEAU | LN | VADNAIS HEIGHTS | ROBERT MCCOLLAM | Y | 0.00 | vacant land |
| 123 | 323022140129 | 0 | UNASSIGNED | | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | Was Outlot, now Muni Srvc Other |
| 123 | 323022140155 | 0 | GREENBRIER | ST | VADNAIS HEIGHTS | VADNAIS VIEW TWNHM ASSN | Y | 0.00 | Outlot; Fee removed for P12 |
| 123 | 323022140160 | 0 | GARCEAU | LN | VADNAIS HEIGHTS | VADNAIS VIEW TWNHM ASSN | Y | 0.00 | Outlot; Fee removed for P12 |
| 123 | 323022140196 | 699 | BIBEAU | CT | VADNAIS HEIGHTS | CRAIG N E AFFELDT | Y | 0.00 | vacant land |

| | | | | | | | 324 | | |
|---|---|---|---|---|---|---|---|---|---|
| COUN | PIN | BLDG_NUM | STREETNAME # | STREE | CITY | OWNER_NAME | Manual Override | | Comments |
| 123 | 323022140197 | 701 | BIBEAU | CT | VADNAIS HEIGHTS | DONNA J DISCHINGER | Y | 0.00 | vacant land |
| 123 | 323022140198 | 698 | BIBEAU | CT | VADNAIS HEIGHTS | GERALD J BRELJE | Y | 0.00 | vacant land |
| 123 | 323022140199 | 700 | BIBEAU | CT | VADNAIS HEIGHTS | JOAN M HANSON | Y | 0.00 | vacant land |
| 123 | 323022140200 | 710 | BIBEAU | CT | VADNAIS HEIGHTS | JOSEPH L KAAS | Y | 0.00 | vacant land |
| 123 | 323022140201 | 712 | BIBEAU | CT | VADNAIS HEIGHTS | SHARON TOURVILLE | Y | 0.00 | vacant land |
| 123 | 323022220002 | 0 | EDGERTON | ST | VADNAIS HEIGHTS | CITY OF ST PAUL | Y | -5.85 | vacant land |
| 123 | 323022320002 | 0 | VADNAIS | BLVD | VADNAIS HEIGHTS | CITY OF ST PAUL BOARD OF | Y | -0.02 | vacant land |
| 123 | 333022210029 | | | | VADNAIS HEIGHTS | | Y | 0.00 | Owned by Met Council |
| 123 | 333022210030 | | | | VADNAIS HEIGHTS | | Y | 0.00 | Owned by Met Council |
| 123 | 333022220016 | 0 | ARCADE | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.05 | vacant land |
| 123 | 333022220032 | 0 | ARCADE | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | -0.25 | vacant land |
| 123 | 333022220034 | 0 | ARCADE | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 333022220035 | 3580 | ARCADE | ST | VADNAIS HEIGHTS | MSP VADNAIS LLC | Y | 0.00 | vacant land |
| 123 | 333022220037 | 0 | ARCADE | ST | VADNAIS HEIGHTS | ARCADE MOB PARTNERS LLC | Y | 0.00 | Manual Override - MC Exempt |
| 123 | 333022230055 | 829 | GARCEAU | LN | VADNAIS HEIGHTS | L'S LIFELINE PROPERTIES LLC | Y | 0.00 | vacant land |
| 123 | 333022230056 | 0 | ARCADE | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 123 | 333022230057 | 0 | ARCADE | ST | VADNAIS HEIGHTS | CITY OF VADNAIS HEIGHTS | Y | 0.00 | vacant land |
| 3 | 343122140002 | | | | LINO LAKES | | Y | 0.00 | Exempted beginning Pay 2014 |
| 3 | 343122140004 | | | | LINO LAKES | | Y | 0.00 | Exempted beginning Pay 2014 |
| 3 | 343122410007 | | | | LINO LAKES | | Y | -0.75 | vacant land |
| 3 | 343122430002 | | | | LINO LAKES | | Y | 0.00 | wooded area next to home/yard |
| 3 | 343122430006 | | | | LINO LAKES | | Y | 13.14 | vacant land |
| 3 | 343122430007 | | | | LINO LAKES | | Y | -2.38 | vacant land |
| 3 | 343122430008 | | | | LINO LAKES | | Y | -0.42 | vacant land |
| 3 | 353122130003 | | | | LINO LAKES | | Y | 0.00 | Fractional property; HO already pays |
| 3 | 353122320009 | 6151 | CENTERVILLE | RD | LINO LAKES | | Y | 0.00 | vacant land |
| 3 | 353122340003 | | | | LINO LAKES | | Y | -3.21 | vacant land |
| 3 | 353122340006 | 6102 | CENTERVILLE | RD | LINO LAKES | | Y | 0.00 | |

# Vadnais Lake Area Water Management Organization

# 2021 Proposed Storm Sewer Utility Rates

VLAWMO
Vadnais Lake Area
Water Management Organization

August 26, 2020

Prepared by EHLERS
LEADERS IN PUBLIC FINANCE

# Proposed Rate for Payable 2021

**Pay 2020:**
$50.40/unit
$72.96/acre

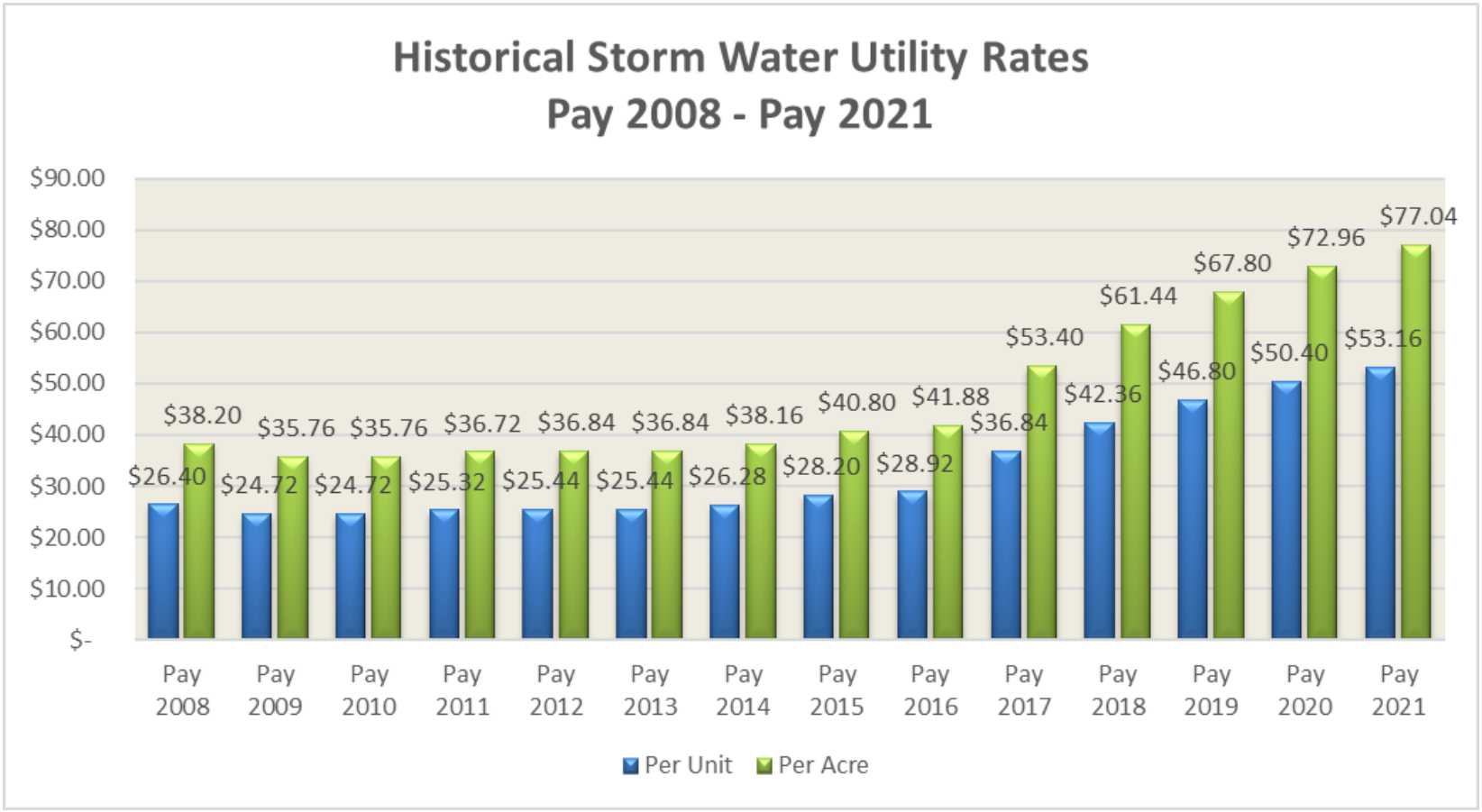
**Pay 2021:**
$53.16/unit
$77.04/acre

**5.50% increase from Pay 2020**

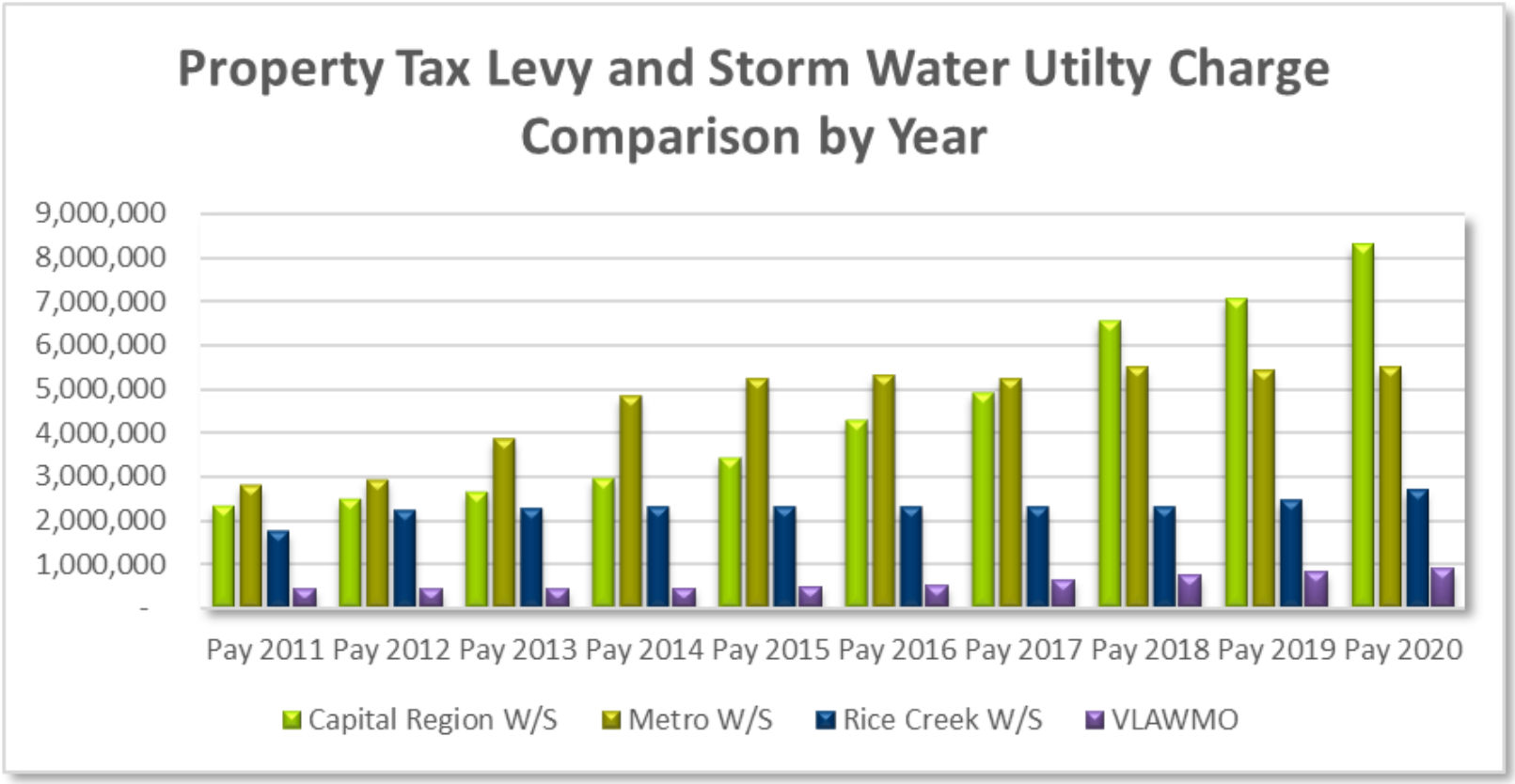
Payable 2021 Certifications

- 11,387 parcels to Ramsey County
- 131 parcels to Anoka County

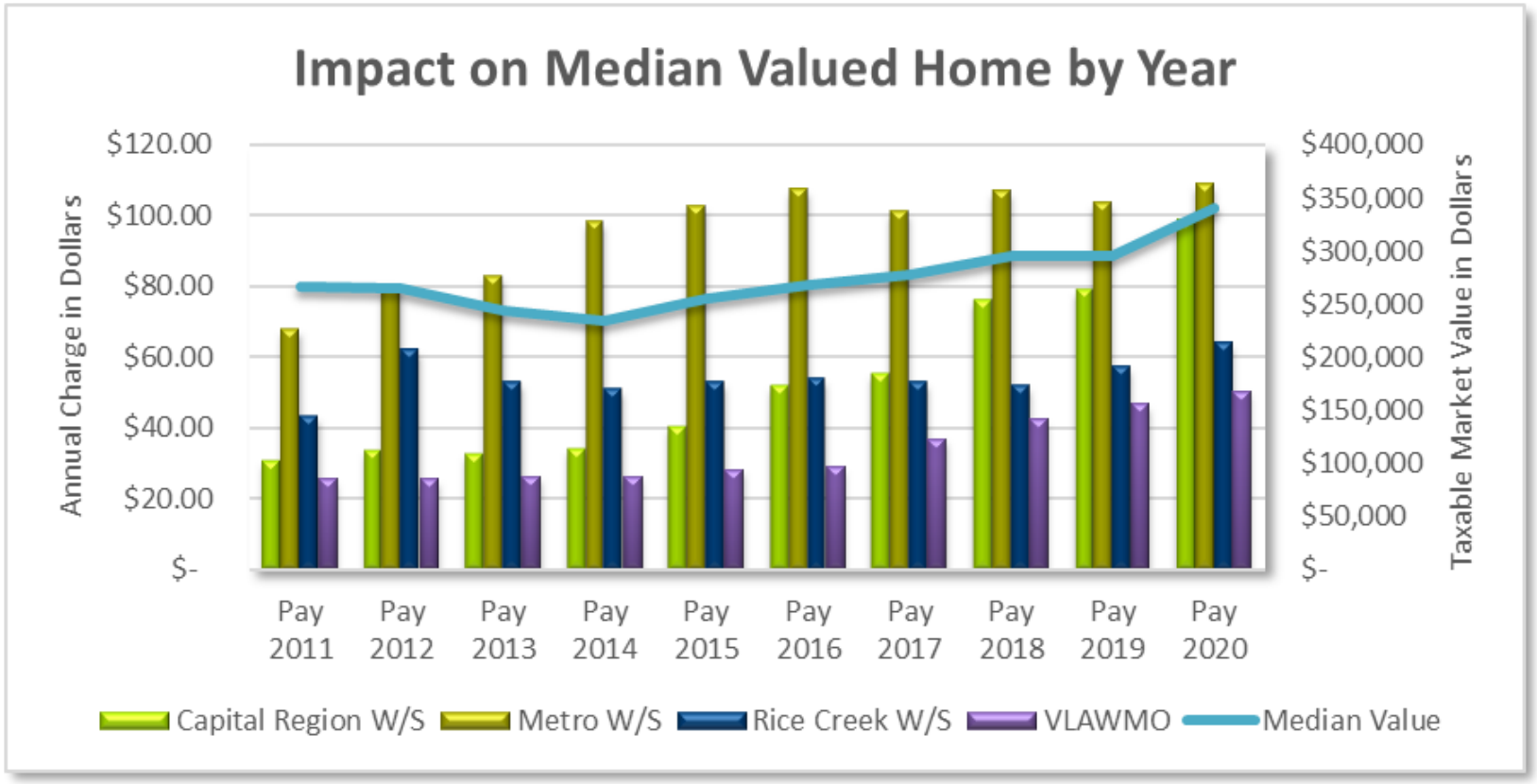
# Historical Storm Water Rates



# Comparable Districts



# Comparable Districts



# Proposed 2021 Storm Sewer Utility Charges By Property Classification

| Classification | Total Amount | R. E. F. | Rate |
|---|---|---|---|
| Residential 1-3 Units | $543,568.08 | 1.00 | $53.16/ Unit |
| Residential 4 or more Units | $36,193.30 | 2.72 | $77.04/ Acre |
| Commercial | $135,527.32 | 4.23 | $77.04/ Acre |
| Industrial | $118,470.93 | 3.30 | $77.04/ Acre |
| Institutional | $77,714.80 | 3.30 | $77.04/ Acre |
| Golf Courses | $12,670.93 | 0.74 | $77.04/ Acre |
| Agricultural | $8,547.83 | 0.25 | $77.04 / Acre |
| Vacant Land | $0 | Exempt | $0.00 |
| Road/Railroad ROW | $0 | Exempt | $0.00 |
| Wetland/Public Waters | $0 | Exempt | $0.00 |
| Other Exempt | $0 | Exempt | $0.00 |
| **Totals** | **$938,693.19** | | |

# Proposed 2021 Storm Sewer Utility Charges By City

| Classification | Total Amount | Parcels |
|---|---|---|
| Gem Lake | $24,744.23 | 215 |
| Lino Lakes | $10,517.33 | 131 |
| North Oaks | $145,353.89 | 2,171 |
| Vadnais Heights | $283,095.32 | 3,911 |
| White Bear Lake | $299,018.10 | 3,378 |
| White Bear Township | $175,964.32 | 1,712 |
| **Totals** | **$938,693.19** | **11,518** |

# Timeline

- ***August 26:*** VLAWMO Board to approve 2021 Storm Sewer Utility Rates.

- ***August – October:*** Staff to work with Ehlers regarding changes to database to accommodate 2021 rates, new reporting layouts to counties, and any additional updates due to property splits.

- ***October 28:*** VLAWMO Board to approve parcels to be certified.

- ***November 30:*** All parcels certified to Ramsey and Anoka County Auditors.

# 2020 Frequently Asked Questions

- Ramsey County provided an extension to pay 1st half property taxes without penalty from May 15th to July 15th for Homesteaded properties only if taxes were NOT escrowed
  - Currently no discussions at Ramsey County regarding 2nd half
- VLAWMO received **100%** of 1st half property taxes in July from Ramsey County.
- Taxes considered "delinquent" if not paid in full by December 31st.

# Questions?

**RESOLUTION 04-2020**
Of the Vadnais Lake Area Water Management Organization (VLAWMO)

**August 26, 2020**

The Board of Directors of the Vadnais Lake Area Water Management Organization met in a regular meeting at the Vadnais Heights City Hall on Wednesday, the 26th day of August, 2020 at 7:00 o'clock p.m.

The following members were present:

The following members were absent:

Resolution 04-2020 was moved by Director _____ and seconded by Director _____:

**RESOLUTION NO. 04-2020**

**A RESOLUTION APPROVING THE STORMSEWER UTILITY RATES FOR 2021.**

WHEREAS, the 2021 Budget of the Vadnais Lake Area Water Management Organization (VLAWMO) has been approved by the VLAWMO Board of Directors and

WHEREAS, Storm Sewer Utility (SSU) Rule of the Vadnais Lake Area Water Management Organization, has been applied to the properties within the boundary,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF THE VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION, The SSU Rates for 2021 will be as follows:

| **Classification** | **Total Amount** | **R.E.F.** | **Rate** |
|---|---|---|---|
| Residential 1- 3 units | $543,568.08 | 1.00 | $53.16/ Unit |
| Residential 4 or more | $36,193.30 | 2.72 | $77.04/ Acre |
| Commercial | $135,527.32 | 4.23 | $77.04/ Acre |
| Industrial | $118,470.93 | 3.30 | $77.04/ Acre |
| Institutional | $77,714.80 | 3.30 | $77.04/ Acre |
| Golf courses | $12,670.93 | 0.74 | $77.04/ Acre |
| Agricultural | 8,547.83 | 0.25 | $77.04/ Acre |
| Vacant/Road/RR/Water | $0 | Exempt | $0.00 |

The resolution was declared passed and adopted.

_____ _____

James Lindner, Chair Date

Attest:

_____ _____

Phil Belfiori, Administrator Date

VLAWMO
Vadnais Lake Area
Water Management Organization

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

**To:** VLAWMO Board **Date:** August 19, 2020

**From:** Phil Belfiori, Administrator

**Subject:** Consider Statement of Concurrence related to RCWD Petition for Boundary Change per MS 103B.215

---

**Background / Discussion**

On July 7, 2020 the VLAWMO received a "Request for Statement of Concurrence on proposed Boundary Change" from Rice Creek Watershed District (RCWD) pursuant to Minnesota Statutes 103B.215. The boundary change is necessary to enable the White Bear Center for the Arts (WBCA) to combined four of its land parcels which in turn is required as part of a planned site development.

The PIDs of the four parcels are as follows (see also the attached map):
14 30 22 11 0049 14 30 22 11 0050
14 30 22 11 0051 14 30 22 11 0052
Currently these four parcels are within the VLAWMO.

The request for a statement of concurrence was accompanied by a draft petition and maps from RCWD which illustrated the proposed boundary corrections. The boundary change will result in the transfer of the above mentioned four parcels currently in the VLAWMO to the Rice Creek Watershed District.

Upon receipt of the request and petition from the RCWD, VLAWMO staff reviewed proposed changes using data from sub-watershed mapping, topographic information and City storm sewer information. Once the RCWD receives concurrence from the VLAWMO (and the City of White Bear Lake and the WBCA), the RCWD will submit the boundary change petition to the BWSR who will provide for public notice and public hearing, if requested in writing, before making its decision in the matter.

**Recommendation**

VLAWMO staff is recommending that the VLAWMO Board concur in the proposed boundary change between the VLAWMO and the RCWD.

**Proposed Motion** - _____ moves that for the reasons stated therein, the Vadnais Lakes Area Watershed Management Organization (VLAWMO) concurs in the petition of the Rice Creek Watershed District, pursuant to Minnesota Statutes §103B.215, to adjust the common boundary between the VLAWMO and RCWD so that the following parcels are moved from the VLAWMO to the RCWD: 14 30 22 11 0049, 14 30 22 11 0050, 14 30 22 11 0051, 14 30 22 11 0052.

**Attached:**
Petition for a Boundary Change per MS 103B.215 from RCWD (including cover memo from RCWD staff, map of proposed changes and letter of concurrence from the WBCA) and map developed by VLAWMO staff to provide technical review of proposed changes.

**PETITION for BOUNDARY CHANGE**
**Pursuant to Minnesota Statutes §103B.215**

**RICE CREEK WATERSHED DISTRICT**

TO: Minnesota Board of Water and Soil Resources
520 Lafayette Road North
Saint Paul, MN 55155

The Rice Creek Watershed District (RCWD) hereby petitions the Minnesota Board of Water and Soil Resources ("Board") for an order adjusting the jurisdictional boundary between the RCWD and the Vadnais Lakes Area Watershed Management Organization (VLAWMO).

1. This petition requests that the Board adjust the jurisdictional boundary between the RCWD and VLAWMO as depicted in Exhibit 1 hereto. White Bear Center for the Arts ("Owner") is the fee owner of five contiguous parcels with PIDs as follows:

14 30 22 11 0049
14 30 22 11 0050
14 30 22 11 0051
14 30 22 11 0052
14 30 22 11 0076

all located within the City of White Bear Lake ("City"). Owner wishes to engage in a development project using a tract formed by four of those parcels. For the City to approve the development, the four parcels must be combined into a single parcel of record. The Anoka County Auditor advises that it cannot assign the combined parcel to a watershed management organization (WMO) for taxation purposes without a boundary adjustment order by the Board that incorporates the parcel into a WMO. Owner would like to incorporate the fifth parcel (14 30 22 11 52), as well, into the same WMO as the other four parcels for ease of taxation administration and incorporation of that parcel into Owner's future site development plans.

2. The memorandum of the RCWD engineer, Exhibit 2 hereto, states that all five parcels, in their entirety, drain into the RCWD. The VLAWMO, the City, and Owner concur in the requested boundary adjustment. Statements of concurrence are Exhibits 3, 4 and 5 hereto.

3. The petitioned adjustment is necessary to allow Owner to make the desired improvements to its property, to establish jurisdiction over Owner's new combined parcel under the Metropolitan Surface Water Management Act, and to conform watershed boundaries most closely to hydrologic boundaries. For these and other reasons, the adjustment is consistent with the purposes and requirements of Minnesota Statutes §§103B.205 to 103B.255.

4. Pursuant to Minnesota Statutes §103B.225, the RCWD represents that none of the five parcels affected by the boundary adjustment is responsible for any outstanding indebtedness, levy or assessment, and that the boundary change will not affect any benefits or damages for previously constructed improvements.

**WHEREFORE**, in accordance with Minnesota Statutes §103B.215 and the rules and procedures of the Board, the RCWD respectfully petitions the Board to order that the political boundary between the RCWD and VLAWMO be adjusted so that the following PIDs are removed from the VLAWMO and incorporated into the RCWD:

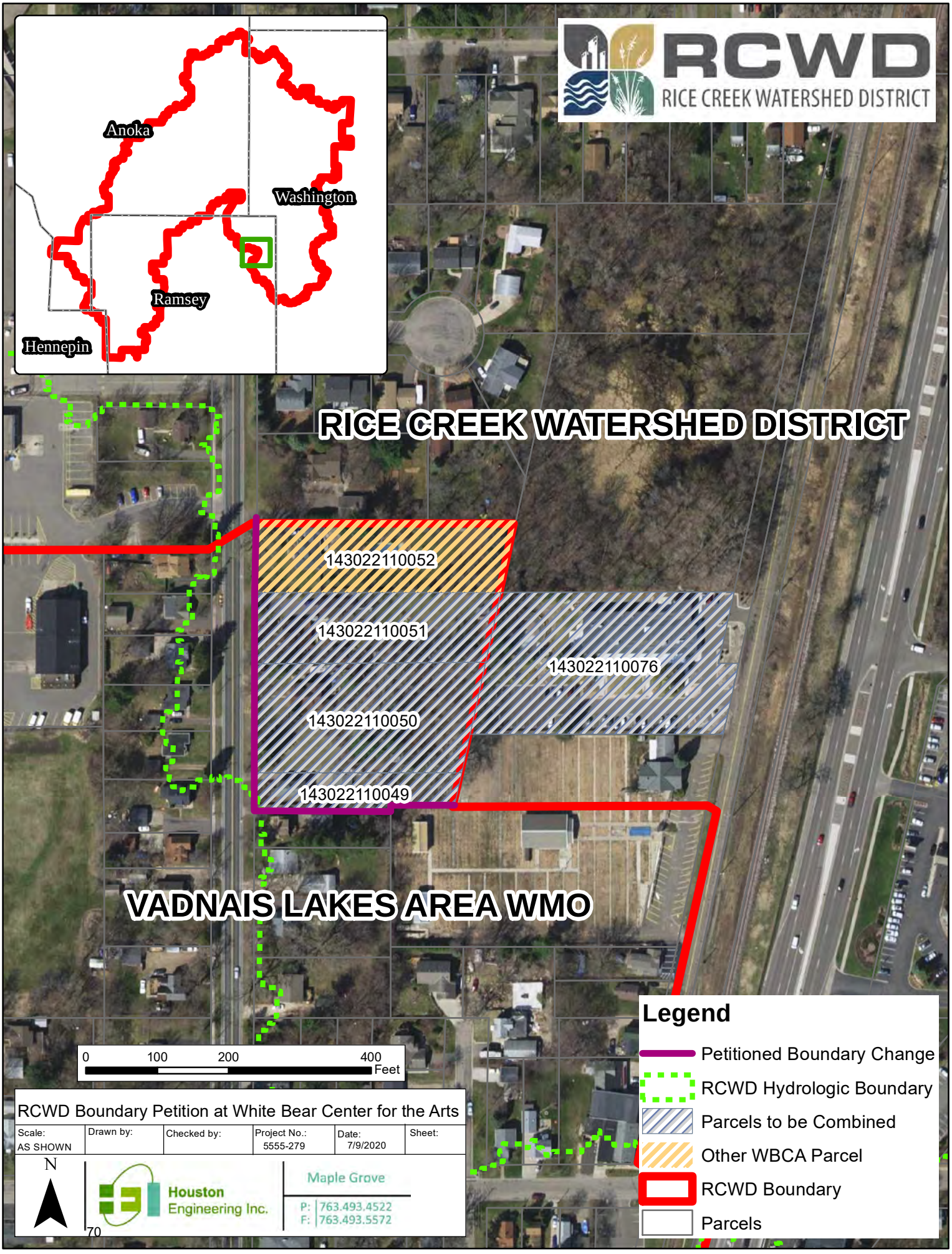
14 30 22 11 0049
14 30 22 11 0050
14 30 22 11 0051
14 30 22 11 0052

**RICE CREEK WATERSHED DISTRICT**

**_____**
**Patricia Preiner, President**

**Date: _____, 2020**

EXHIBIT 1


RCWD
RICE CREEK WATERSHED DISTRICT
Anoka
Washington
Ramsey
Hennepin
RICE CREEK WATERSHED DISTRICT
143022110052
143022110051
143022110076
143022110050
143022110049
VADNAIS LAKES AREA WMO
0
100
200
400
Feet
Legend
Petitioned Boundary Change
RCWD Hydrologic Boundary
Parcels to be Combined
Other WBCA Parcel
RCWD Boundary
Parcels
RCWD Boundary Petition at White Bear Center for the Arts
Scale: AS SHOWN
Drawn by:
Checked by:
Project No.: 5555-279
Date: 7/9/2020
Sheet:
N
Houston Engineering Inc.
Maple Grove
P: 763.493.4522
F: 763.493.5572
70

HoustonEngineering Inc.

# Technical Memorandum

**To:** Nick Tomczik, Administrator
Rice Creek Watershed District

**From:** Chris Otterness PE

**Subject:** White Bear Center for the Arts
Petition for Boundary Change

**Original Date:** July 7, 2020

**Amended Date: July 9, 2020**

**Project #:** R005555-0002

The White Bear Center for the Arts (WBCA) is requesting the Rice Creek Watershed District to petition for a boundary change under Minnesota Statute 103B to the Minnesota Board of Water and Soil resources (BWSR). A boundary change is necessary to enable the WBCA to combine four of its land parcels, which in turn is required as part of a planned site development. The PIDs of the four parcels are as follows (see also the attached map):

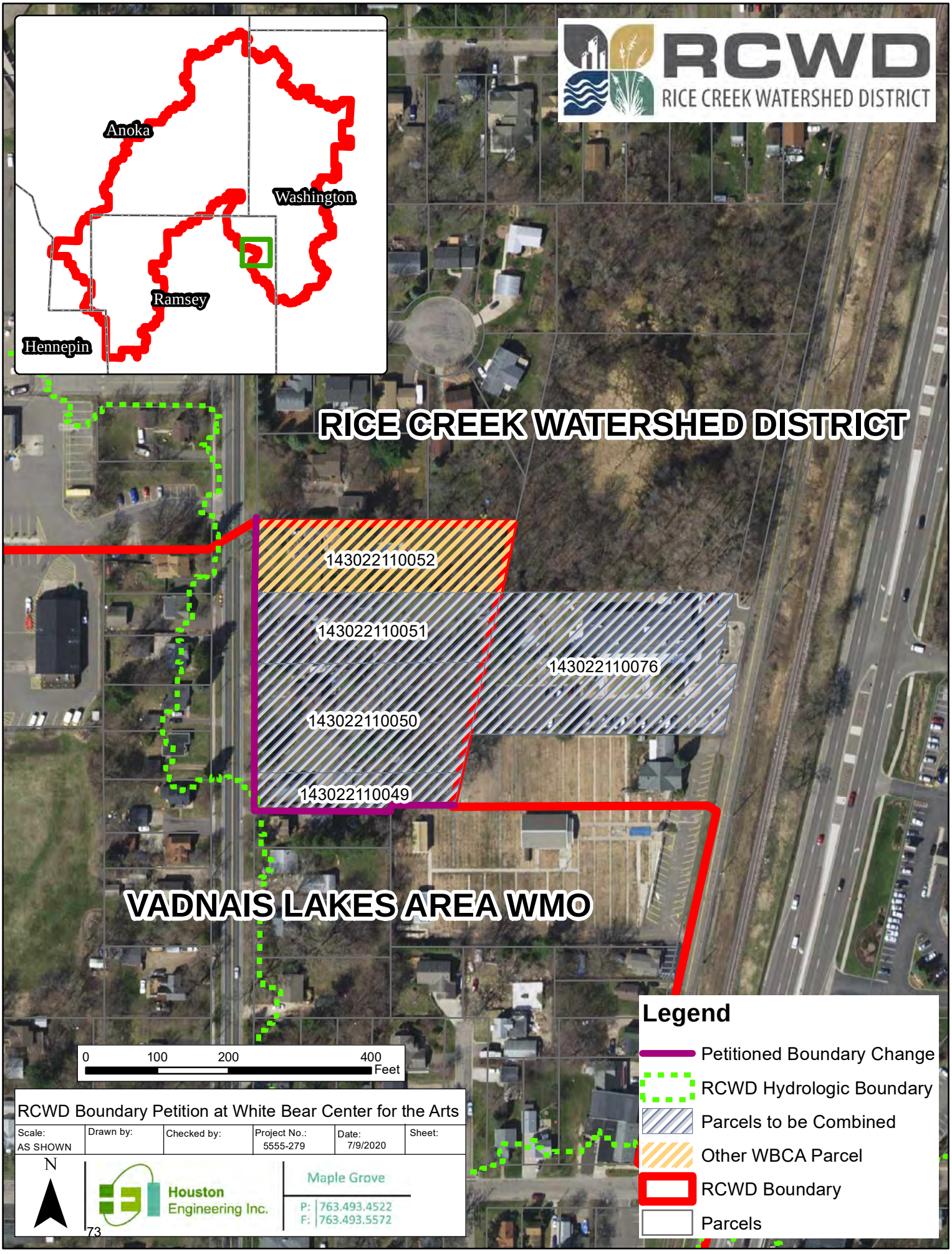
14 30 22 11 0049 14 30 22 11 0050
14 30 22 11 0051 14 30 22 11 0076

Also, the WBCA has requested that an additional parcel owned by the WBCA (PID 14 30 22 11 0052) be considered for reassignment. Currently, four of the WBCA parcels are within the Vadnais Lakes Area Water Management Organization (VLAWMO), and one is within the RCWD.

The District Engineer has reviewed site topography and drainage patterns to determine the hydrologic boundary (i.e. physical watershed) between the RCWD and VLAWMO. Data reviewed includes LiDAR topography (collected in 2009) and available utility data. Based on this information, we have determined the hydrologic boundary between RCWD and VLAWMO (shown at the green, dashed line on the attached map). All five of the WBCA's parcels are within the watershed draining to the RCWD. Therefore, it is appropriate to modify the watershed district/water management organization boundary as shown in the figure, to include each of the five parcels within the RCWD.

Note that there are several other adjacent parcels to the south that in part or in whole drain to the RCWD but are currently within the VLAWMO boundary. This is just one location of many along the boundary between the RCWD and VLAWMO where there are inconsistencies between the hydrologic and political boundaries. While it would be appropriate to initiate investigation and proceedings to correct the entire boundary between the RCWD and VLAWMO, such an endeavor would take many months to complete, which the WBCA had indicated is incompatible with their

project timelines.  For this reason, it is appropriate to proceed with a boundary change only for the WBCA parcels as mapped at this time.


RCWD
RICE CREEK WATERSHED DISTRICT
Anoka
Washington
Ramsey
Hennepin
RICE CREEK WATERSHED DISTRICT
143022110052
143022110051
143022110076
143022110050
143022110049
VADNAIS LAKES AREA WMO
0
100
200
400
Feet
Legend
Petitioned Boundary Change
RCWD Hydrologic Boundary
Parcels to be Combined
Other WBCA Parcel
RCWD Boundary
Parcels
RCWD Boundary Petition at White Bear Center for the Arts
Scale: AS SHOWN
Drawn by:
Checked by:
Project No.: 5555-279
Date: 7/9/2020
Sheet:
N
Houston Engineering Inc.
Maple Grove
P: 763.493.4522
F: 763.493.5572
73

**H.A. KANTRUD, P.A.**
**LAWYERS AND COUNSELORS**
**Post Box 517, Saint Paul, Minnesota 55090**

H. Alan Kantrud, Esq.
hakantrud@protonmail.com

Judy Yang
Personal Assistant

7 July, 2020

Rice Creek Watersned District
Attn: Nick Tomczik, Administrator
4325 Pheasant Ridge Dr. NE #611
Blaine, MN 55449

**Re: Statement of Concurrence for boundary adjustment**

Dear Mr. Tomczik:

We write to provide this statement of concurrence per your request to support the District's Petition for Boundary Adjustment to be presented the Minnesota Board of Water and Soil Resources on July 8, 2020.

The owner of the parcel, the White Bear Center for the Arts (WBCA), has its principal structure on a parcel on Long Avenue that is currently "in" the RCWD and the parcel that it intends to build the extension of the building on is "in" the VLAWMO District. In and of itself this would be manageable except the City of White Bear Lake requires that a contiguous building be on a single parcel of property.

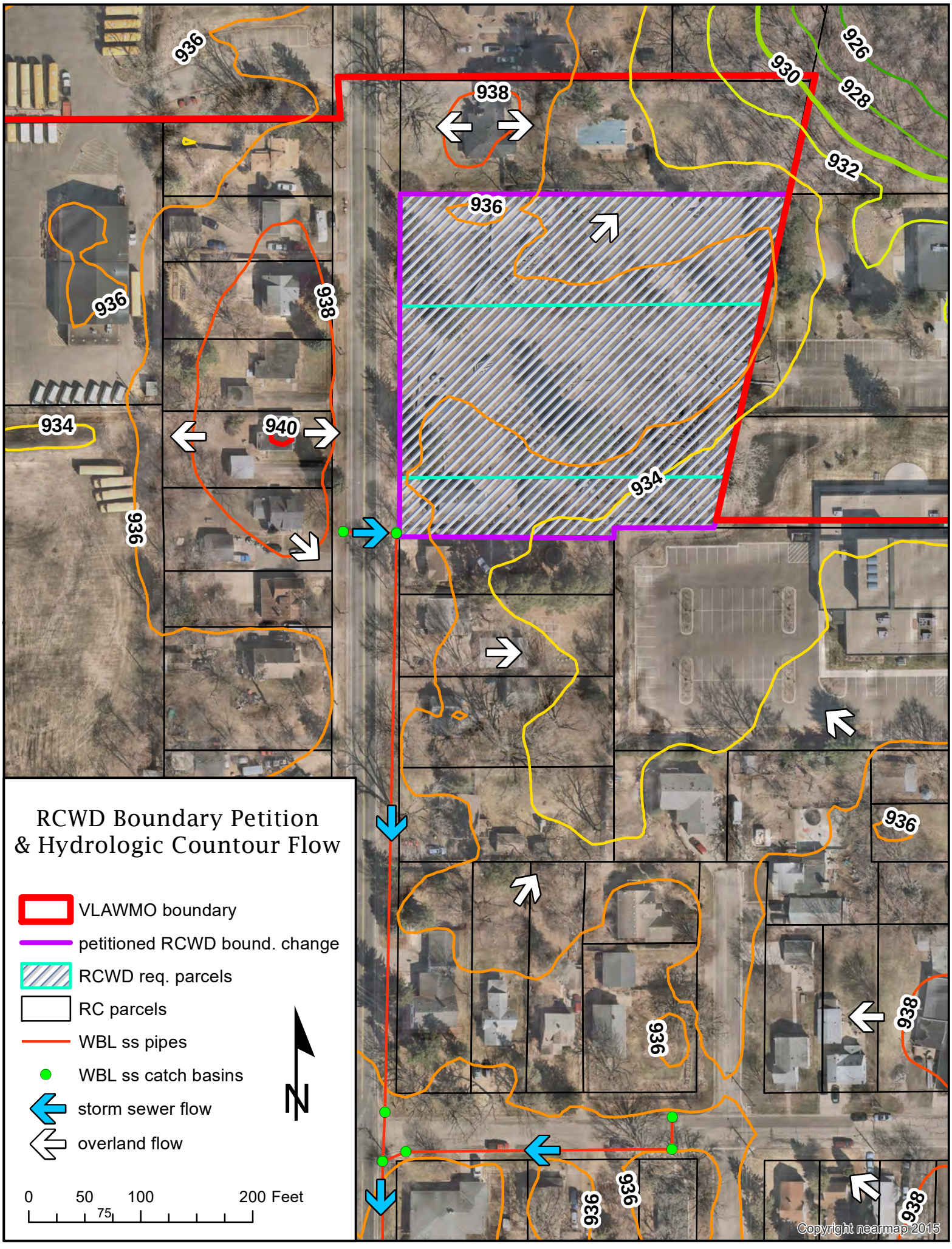
Since the parcels in this matter are in separate watershed districts this problem is not as simple as a lot-combining process with Ramsey County. The parcels need to be in the same watershed district in order to combine the parcels/lots; hence the need to accrete the building expansion parcel into the RCWD.

It is our understanding that the VLAWMO has already agreed to ceding of authority to RCWD for the management of the area(s) in question and is in support of this adjustment as well.

Needless to say with a building expansion project and millions of dollars of financial backing in place for the construction on lots the Art Center has secured in fee title, this is a critical piece to us in moving forward.

Yours very truly,

H. Alan Kantrud
Chair of the Board of WBCA
Suzi Hudson /S/
Executive Director of WBCA


RCWD Boundary Petition
& Hydrologic Countour Flow
VLAWMO boundary
petitioned RCWD bound. change
RCWD req. parcels
RC parcels
WBL ss pipes
WBL ss catch basins
storm sewer flow
overland flow
N
0
50
100
200 Feet
75
936
938
926
930
928
932
934
940
Copyright nearmap 2015

VLAWMO
Vadnais Lake Area
Water Management Organization

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

August 26, 2020

Rice Creek Watershed District
4325 Pheasant Ridge Drive, Suite 611
Blaine, Minnesota, 55449-4539

Subject: Concurrence related to RCWD Petition for Boundary Change

To whom it may concern,

This letter is to inform you that at the August 26, 2020 Vadnais Lakes Area Watershed Management Organization (VLAWMO) Board meeting the Board approved concurrence with the petition of the Rice Creek Watershed District, pursuant to Minnesota Statutes §103B.215, to adjust the common boundary between the VLAWMO and RCWD so that the following parcels are moved from the VLAWMO to the RCWD: 14 30 22 11 0049, 14 30 22 11 0050, 14 30 22 11 0051, 14 30 22 11 0052.

If you have any questions, please do not hesitate to contact VLAWMO Administrator, Phil Belfiori at (651) 204-6073 or Email: Phil.Belfiori@vlawmo.org.

Sincerely,

Jim Lindner

VLAWMO Board Chair

VLAWMO
Vadnais Lake Area
Water Management Organization

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

To: Board of Directors

From: Phil Belfiori, Administrator

Date: August 20, 2020

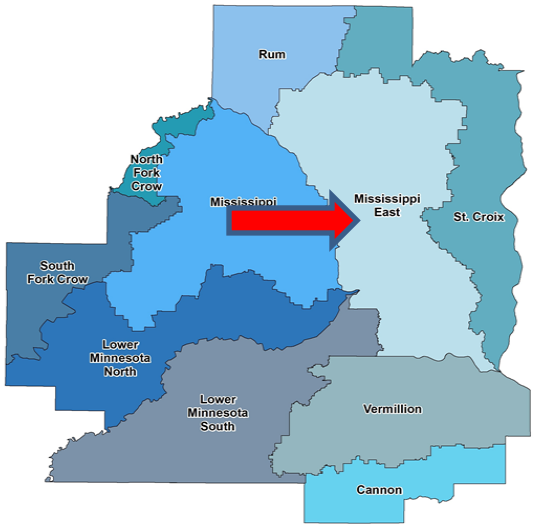
Re: **V. A.3. FY 20/21 BWSR Watershed Based Funding – Mississippi East Collaborative project list**

**Background**

VLAWMO staff have been actively involved in discussion with the other Watersheds/WMOs SWCD's, Counties and Cities located in the Mississippi East watershed (See map below) for the purpose of distributing the Board of Water and Soil Resources (BWSR) Watershed-Based Implementation Funding for FY 2020/21. After much discussions, the Mississippi East watersheds/WMO are recommending to BWSR that the funding be allocated equally among the seven watersheds /WMO's located within the Mississippi East Watershed which would mean apx. $93,000 for implementation of activities in each Watershed's State approved watershed management plan. If this recommendation is ultimately approved by BWSR, VLAWMO staff would anticipate that this grant funding would be targeted to implement activities identified in the Wilkinson Lake Feasibility study or for implementation of projects within the within the Goose Lake subwatershed. The projects identified in the attached table would be submitted to BWSR in the coming months for approval and then followed by subsequent development of the grant agreement and work plan. Timing to spend the grant funding would be 2021- 2023.

Please note that the proposed project listed in the attached Mississippi East Collaborative Project List table have not yet been reviewed / approved by BWSR and are subject to change.

**Twin Cities Metro Area Allocation Map for the Watershed-based Implementation Funding Program**



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

**Recommendation**

Staff recommends that the VLAWMO Board approval the attached Mississippi East Collaborative Project List table and authorize the submittal of the table to the BWSR.

**Proposed Motion**

_____ moves to approval the attached Mississippi East Collaborative Project List table and authorize the submittal of the table to the BWSR with any non –material changes. Seconded by _____.

Attached:

- Watershed Based Implementation Funding Approach summary document
- Proposed Mississippi East Collaborative Project List

## Watershed Based Implementation Funding (WBIF) Approach

1) WBIF should be a locally collaborative process and not a locally competitive process. The process should be consistent with the Local Government Water Roundtable to provide stable and reliable funding. To that end (recognizing a 1W1P is not developed for the East Mississippi Watershed Implementation Partnership), funding should be distributed to partners groups based on the following formula:

    a. 10% for groundwater-centric implementation activities (discussion to be hosted by Washington County while inviting others with groundwater activities in their approved plans to participate or at least submit activities for consideration.)

    b. 30% to SWCDs to implement activities in state-approved plans

    **c. 60% to WDs/WMOs to implement activities in state-approved plans**

2) Partner groups shall convene to:

    a. Determine distribution within their respective groups (County Groundwater Plans or Groundwater Implementation, SWCDs and WDs/WMOs) given the variability of size, scale and projects within in each partner group.

    b. Develop a list of programs and projects that follows BWSR's guidance on being prioritized, targeted, and measurable.

3) To ensure inclusivity and collaboration;

    a. The groundwater group should invite submittal of eligible groundwater implementation activities from implementers throughout the watershed (unless this is just 5% to Washington Co).

    b. SWCD's should work toward coordination with their respective Counties and WDs/WMOs.

    c. WDs/WMO's should consider high priority eligible projects supported by their cities.

Following this process, individual partner group project/program lists will be compiled and the whole partnership will convene to concur on the project/program list. It is anticipated that LGUs with state-approved plans would be the direct recipients of grant funds. Opportunities may emerge from a Partner Group to consolidate grants into fewer, larger grants in a way that simplifies reporting and maximizing implementation flexibility.

# East Mississippi River Collaborative Project List

| Responsible Party/Agency | Name of Activity/Project/Program | Description of Activity/Project/Program | Plan reference | Water Resource(s) | LGU Coordination | Timeframe for implementation | Grant funds requested | Local match funds (minimum 10%) | Total project cost | Measurable Outcomes | Other Notes (if needed) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **CCWD** | | | | | | | | | $ - | | |
| **CRWD** | | | | | | | | | $ - | | |
| **LMRWMO** | | | | | | | | | $ - | | |
| **RCWD** | | | | | | | | | $ - | | |
| **RWMWD** | | | | | | | | | $ - | | |
| **SWWD** | | | | | | | | | $ - | | |
| **VLAWMO** | The Wilkinson Lake Load Assessment Nutrient Mitigation Project (Project) | Identification and development for this Project was initiated as part of a feasibility study conducted in partnership with Ramsey County SWCD and SEH Engineering. The feasibility focuses on identifying BMPs to reduce nutrient loading to Wilkinson Lake, which is impaired for nutrients. Several priority locations were identified with a cross section from the list being explored with feasibility level designs for future implementation. This Project is being pursued in consultation with local partners. We propose to move forward with implementation and construction of this Project in coordination with partners, based on timing of planned local CIPs and the grant timeframe. | P. 50 of Comprehensive Watershed Management Plan 2017-2026; Section 4.4 Gilfillan-Tamarack-Black-Wilkinson-Amelia Subwatershed Targeted Activities: "Conduct load assessment on Wilkinson for nutrient mitigation project development and implementation" and "Offer assistance to the City of North Oaks and North Oaks Company to discuss and review development plans and offer possible partnership for stormwater management opportunities" | Wilkinson Lake, which is part of the Gilfillan-Tamarack-Black-Wilkinson-Amelia subshed. | VLAWMO is coordinating with SEH Engineering, Ramsey County, Anoka County, White Bear Township, and North Oaks Company for development of the feasibility study. In the next phase of development, VLAWMO also anticipates working closely with local cities and stakeholder groups. | Design will begin immediately following BWSR approval, with a target for construction in either summer 2021, 2022 or 2023. | $ 93,042 | $ 10,340 | $ 103,382 | 55-75% Total P removal for the design event | |
| **Anoka CD** | | | | | | | | | $ - | | |
| **Dakota SWCD** | | | | | | | | | $ - | | |
| **Ramsey CD** | | | | | | | | | $ - | | |
| **Washington CD** | | | | | | | | | $ - | | |
| **Washington County** | | | | | | | $ 108,549 | | $ 108,549 | | |
| | | | | | | Totals: | $ 201,591 | $ 10,340 | $ 211,931 | | |

| | | |
|---|---|---|
| | WMOs 60% | $ 651,291 |
| | SWCDs 30% | $ 325,646 |
| | GW 10% | $ 108,549 |
| | | $ 1,085,485 |

# East Mississippi River Collaborative Project List

| Responsible Party/Agency | Name of Activity/Project/Program | Description of Activity/Project/Program | Plan reference | Water Resource(s) | LGU Coordination | Timeframe for implementation | Grant funds requested | Local match funds (minimum 10%) | Total project cost | Measurable Outcomes | Other Notes (if needed) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CCWD | | | | | | | | | $ - | | |
| CRWD | | | | | | | | | $ - | | |
| LMRWMO | | | | | | | | | $ - | | |
| RCWD | | | | | | | | | $ - | | |
| RWMWD | | | | | | | | | $ - | | |
| SWWD | | | | | | | | | $ - | | |
| VLAWMO | The Goose Lake Subwatershed Feasibility Study BMP Project (Project) | Identification and development for this Project was initiated as part of a feasibility study conducted in partnership with the City of White Bear Lake and Barr Engineering. The feasibility study and project identification was funded through the previous BWSR WBF round. The study focused on identifying BMPs to reduce nutrient loading to Goose Lake, which is impaired for nutrients. Several priority locations were identified with a cross section from the list being explored with feasibility level designs for future implementation. This Project is being pursued in consultation with local partners including the City of White Bear Lake. We propose to move forward with implementation and construction of this Project in coordination with partners, based on timing of planned local CIPs and the grant timeframe. | P. 48 of Comprehensive Watershed Management Plan 2017-2026; Section 4.25 Goose Lake (East and West) Subwatershed Targeted Activities: "Implement BMPs to reduce nutrients being delivered to the Lake and reduce internal loading" | Goose Lake, which is part of the Goose Lake (East and West) Subwatershed | VLAWMO has coordinated with Barr Engineering and City of White Bear Lake for development of the feasibility study. In the next phase of development, VLAWMO also anticipates working closely with local cities and stakeholder groups. | Design will begin immediately following BWSR approval, with a target for construction in either summer 2021, 2022 or 2023. | $ 93,042 | $ 10,340 | $ 103,382 | 2-4 pounds of P reduction | |
| Anoka CD | | | | | | | | | $ - | | |
| Dakota SWCD | | | | | | | | | $ - | | |
| Ramsey CD | | | | | | | | | $ - | | |
| Washington CD | | | | | | | | | $ - | | |
| Washington County | | | | | | | $ 108,549 | | $ 108,549 | | |
| | | | | | | Totals: | $ 201,591 | $ 10,340 | $ 211,931 | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | WMOs 60% | $ 651,291 | | | | |
| | | | | | | SWCDs 30% | $ 325,646 | | | | |
| | | | | | | GW 10% | $ 108,549 | | | | |
| | | | | | | | | | | | |
| | | | | | | | $ 1,085,485 | | | | |
| | | | | | | | | | | | |

VLAWMO
Vadnais Lake Area
Water Management Organization

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

**To:** Board of Directors

**From:** Dawn Tanner

**Date:** August 26, 2020

**Re: V. B.1. Lambert Lake Pond Sheetpile Replacement and Meander Construction – authorization for bidding**

Since the June Board meeting, progress has continued as planned. MN DNR and USACE permits have been secured and finalized. Preparation to go out for bid has continued. Final plans and specs have been prepared by SEH. Final plans and sections of the specs are included in the Board packet. Plans have been shared with the Metropolitan Council as per comments received in the EAW and with the City of Vadnais Heights. Troy Gilchrist, VLAWMO's attorney, has reviewed the contract portions of the specs and provided comments to SEH for incorporation.

The bid process has been designed to take into account the unique nature of the project. The Lambert wetland area contains sensitive habitat. As such, tailored design considerations are needed. To ensure that contractors considering bidding on the project are familiar with considerations that will be required for a successful project, SEH and VLAWMO will be hosting a required pre-bid meeting for all interested applicants at Lambert Lake Pond on **Sept. 23 at 2:00 pm**. The City of Vadnais Heights will assist with traffic control if needed, depending upon anticipated attendance. Contractors will sign in to provide evidence of their attendance at the meeting. They will also provide reference projects for sheetpile installation and meander construction to be considered qualified bidders as part of their formal bid.

Bids will be received electronically as a COVID-19 precaution. SEH will receive the bids on behalf of VLAWMO through QuestCDN, which is a standard online submission portal for construction projects. The bid period will remain open until **October 1, 2020, 2:00 pm**. Sealed bids must be received by that time. SEH will conduct the formal bid opening and reading with VLAWMO. The bid opening will also be conducted remotely as a COVID-19 modification.

Substantial completion for the sheetpile replacement and meander construction is expected by **July 1, 2021**. Additional intermediate milestone dates are included in the project specs.

Sections of the project specs are being provided in the Board packet to provide an account of what is included in the full document. Sections that are included are: The introduction, certification page, table of contents, and contract documents. The specs also include general requirements, special provisions, and related site preparation, construction process details, and restoration following completion. If Board members would like to review any additional spec sections, contact staff to receive more information.

Staff anticipates bringing a selected bid/contract forward along with a scope of work for SEH inspection services for approval at the October 28, 2020, Board meeting

Emily Jennings, Engineer of Record for the project from SEH, will be available at the Board meeting to respond to questions.

**Recommendation: Staff requests that the Board ratify Resolution 05-2020 and authorize staff to go out for bid for the Lambert Lake Pond sheetpile replacement and meander construction.**

# VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

# CITY OF

# VADNAIS HEIGHTS, MN

## LAMBERT LAKE IMPROVEMENTS

### EXISTING

- RIGHT OF WAY
- PERMANENT EASEMENT
- PROPERTY LINE
- HORIZONTAL CONTROL POINT
- BENCHMARK
- SURVEY MARKER
- SOIL BORING
- SANITARY SEWER AND MANHOLE
- FORCE MAIN AND LIFT STATION
- SANITARY SEWER SERVICE & CLEANOUT
- WATER MAIN, HYDRANT, VALVE AND MANHOLE
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- GAS MAIN, VALVE, VENT AND METER
- HANDHOLE
- BURIED FIBER OPTIC CABLE AND MANHOLE
- BURIED PHONE CABLE, PEDESTAL AND MANHOLE
- BURIED TV CABLE, PEDESTAL AND MANHOLE
- BURIED ELECTRIC CABLE, PEDESTAL, MANHOLE, TRANSFORMER AND METER
- OVERHEAD WIRE, POLE AND GUY WIRE
- LIGHT POLE
- TRAFFIC SIGNAL
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RAILROAD TRACKS
- DECIDUOUS AND CONIFEROUS TREE
- BUSH / SHRUB AND STUMP
- EDGE OF WOODED AREA
- WETLAND
- BUILDING
- FENCE (UNIDENTIFIED)
- BARBED WIRE FENCE
- CHAIN LINK FENCE
- ELECTRIC WIRE FENCE
- WOOD FENCE
- WOVEN WIRE FENCE
- PLATE BEAM GUARDRAIL
- CABLE GUARDRAIL
- POST / BOLLARD
- RETAINING WALL

### PROPOSED

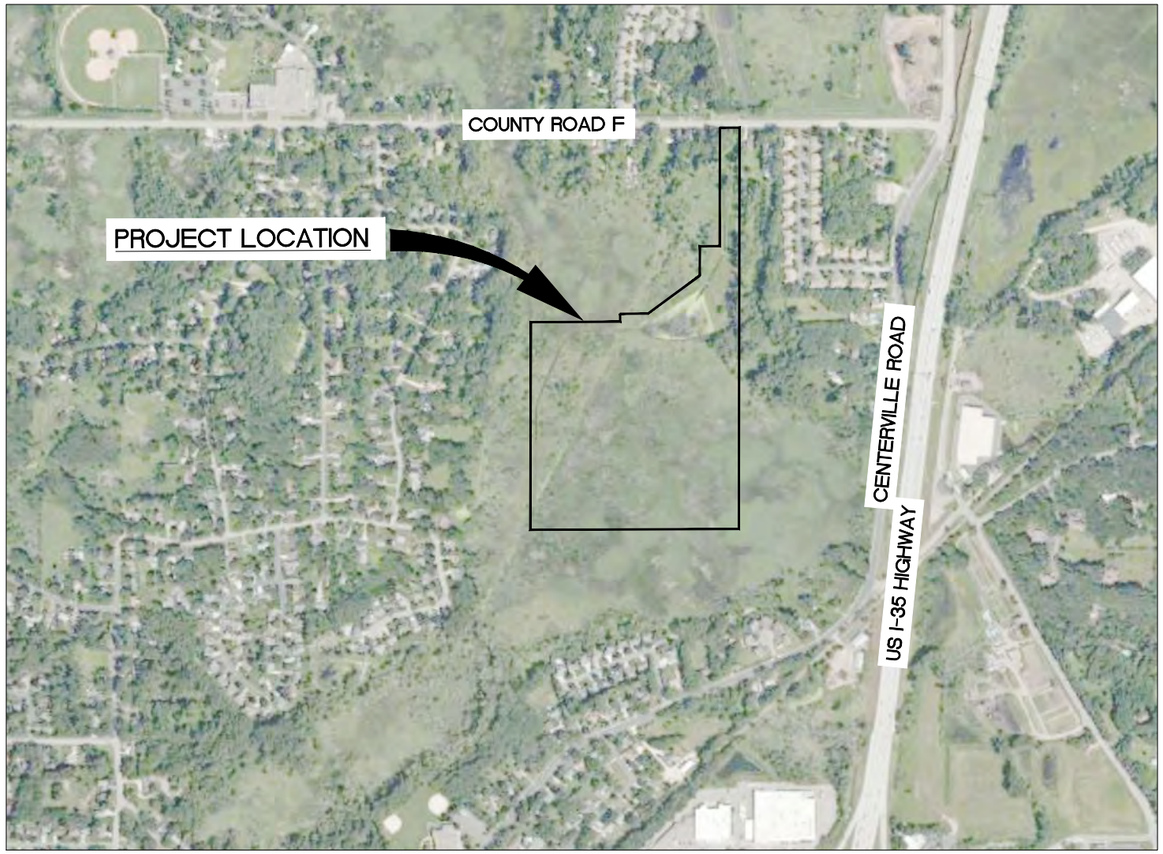
- STREET CENTERLINE
- RIGHT-OF-WAY
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SANITARY SEWER, BULKHEAD AND MANHOLE
- FORCE MAIN
- SANITARY SERVICE AND CLEANOUT
- WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
- WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- DRAIN TILE
- DITCH / SWALE
- RIPRAP
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RETAINING WALL

NOTES:
THE SUBSURFACE UTILITY QUALITY INFORMATION IN THIS PLAN IS LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

THE CONTRACTOR SHALL CALL THE ONE CALL SYSTEM AT 811 BEFORE COMMENCING EXCAVATION.

ELEVATIONS SHOWN ARE IN NAVD88

811 Know what's **below.** **Call** before you dig.




N

N.T.S.

GOVERNING SPECIFICATIONS

THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX



THIS PLAN CONTAINS 10 SHEETS.

PROJECT LOCATION

VADNAIS HEIGHTS
RAMSEY COUNTY

APPROVED:

PHIL BELFIORI, ADMINISTRATOR — DATE

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION (VLAWMO), MINNESOTA


SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com


FILE NO. 153931

Emily Jennings, P.E.
Signature

Date: 08.20.2020 Lic. No. 56622

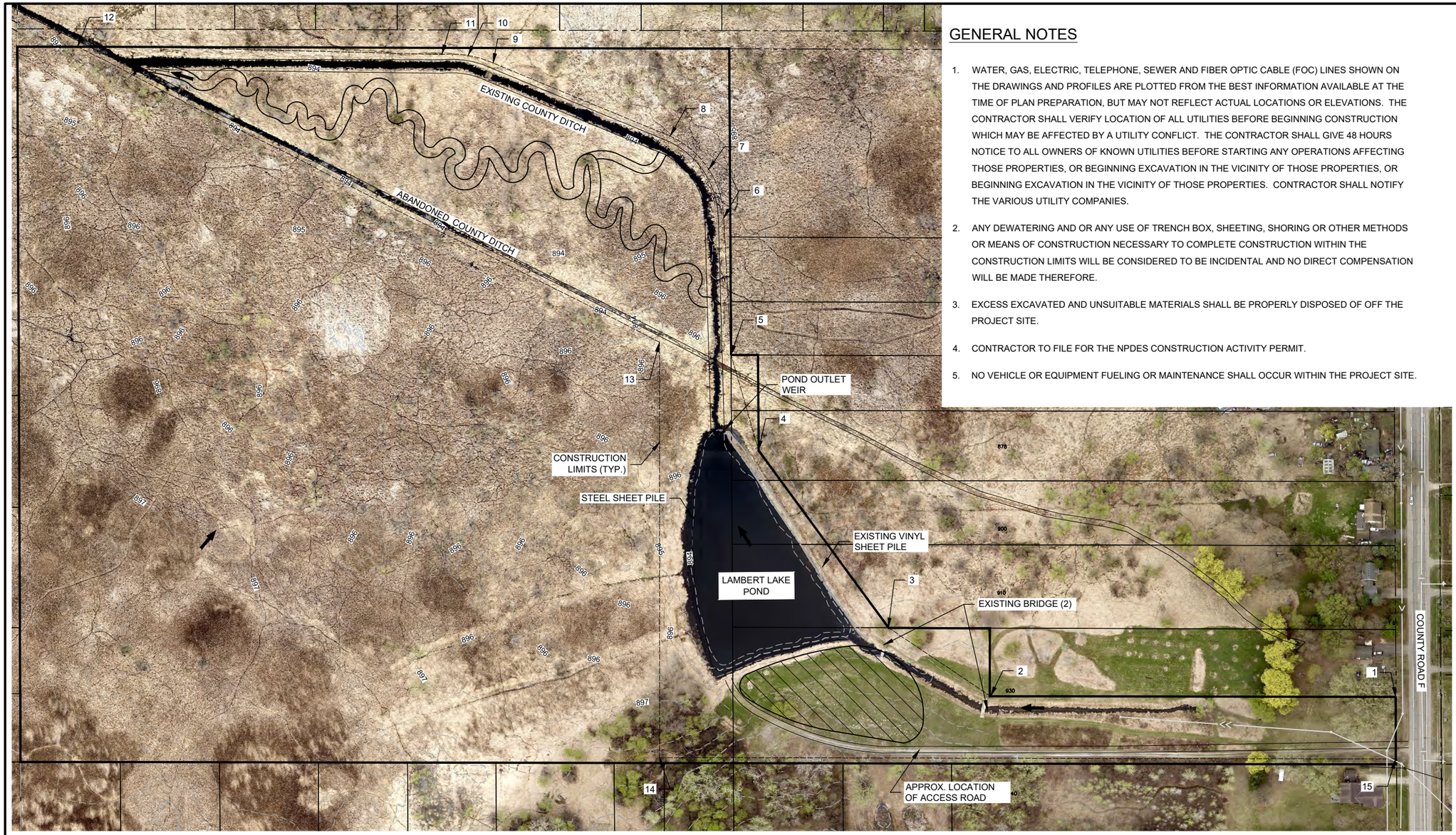
1/10

## GENERAL NOTES

1. WATER, GAS, ELECTRIC, TELEPHONE, SEWER AND FIBER OPTIC CABLE (FOC) LINES SHOWN ON THE DRAWINGS AND PROFILES ARE PLOTTED FROM THE BEST INFORMATION AVAILABLE AT THE TIME OF PLAN PREPARATION, BUT MAY NOT REFLECT ACTUAL LOCATIONS OR ELEVATIONS. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES BEFORE BEGINNING CONSTRUCTION WHICH MAY BE AFFECTED BY A UTILITY CONFLICT. THE CONTRACTOR SHALL GIVE 48 HOURS NOTICE TO ALL OWNERS OF KNOWN UTILITIES BEFORE STARTING ANY OPERATIONS AFFECTING THOSE PROPERTIES, OR BEGINNING EXCAVATION IN THE VICINITY OF THOSE PROPERTIES, OR BEGINNING EXCAVATION IN THE VICINITY OF THOSE PROPERTIES. CONTRACTOR SHALL NOTIFY THE VARIOUS UTILITY COMPANIES.
2. ANY DEWATERING AND OR ANY USE OF TRENCH BOX, SHEETING, SHORING OR OTHER METHODS OR MEANS OF CONSTRUCTION NECESSARY TO COMPLETE CONSTRUCTION WITHIN THE CONSTRUCTION LIMITS WILL BE CONSIDERED TO BE INCIDENTAL AND NO DIRECT COMPENSATION WILL BE MADE THEREFORE.
3. EXCESS EXCAVATED AND UNSUITABLE MATERIALS SHALL BE PROPERLY DISPOSED OF OFF THE PROJECT SITE.
4. CONTRACTOR TO FILE FOR THE NPDES CONSTRUCTION ACTIVITY PERMIT.
5. NO VEHICLE OR EQUIPMENT FUELING OR MAINTENANCE SHALL OCCUR WITHIN THE PROJECT SITE.

N

100 0 100 200
scale 50 feet




### POINT TABLE

| | RAW DESCRIPTION | NORTHING | EASTING |
|---|---|---|---|
| | 1 | 199870.1226 | 583095.7904 |
| | 2 | 199119.4737 | 583094.5913 |
| | 3 | 198930.0569 | 582967.6276 |
| | 4 | 198689.3800 | 582638.9600 |
| | 5 | 198638.3730 | 582462.2939 |
| | 6 | 198624.7669 | 582208.7442 |
| | 7 | 198597.1266 | 582118.4631 |
| | 8 | 198525.4799 | 582056.9700 |
| | 9 | 198197.6474 | 581921.5728 |
| | 10 | 198151.2207 | 581907.4299 |
| | 11 | 198102.7223 | 581905.5948 |
| | 12 | 197427.2106 | 581891.3868 |
| | 13 | 198505.9986 | 582438.7211 |
| | 14 | 198505.9986 | 583208.1582 |
| | 15 | 199870.1421 | 583210.7953 |

NOTES:

1. ALL CONSTRUCTION MATERIALS AND EQUIPMENT SHALL BE KEPT IN THE STAGING AREA.
2. LOCATION OF MATERIAL STOCKPILES SHALL BE APPROVED BY THE ENGINEER.
3. CONTRACTOR SHALL SUBMIT STAGING AND ACCESS PLANS TO THE ENGINEER FOR REVIEW.

LEGEND

- STAGING AREA
- PARCEL BOUNDARIES
- EASEMENT LIMITS
- CONSTRUCTION LIMITS
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING WATER MAIN
- FLOW ARROW

DRAWN BY: HRC
DESIGNER: EKJ
CHECKED BY: EKJ
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com

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

Date: 08.20.2020

Emily K. Jennings, PE
Lic. No. 56622

VADNAIS HEIGHTS, MINNESOTA

**GENERAL SITE PLAN**

**LAMBERT LAKE POND IMPROVEMENTS**

FILE NO. 153931

2/10

NOTES:

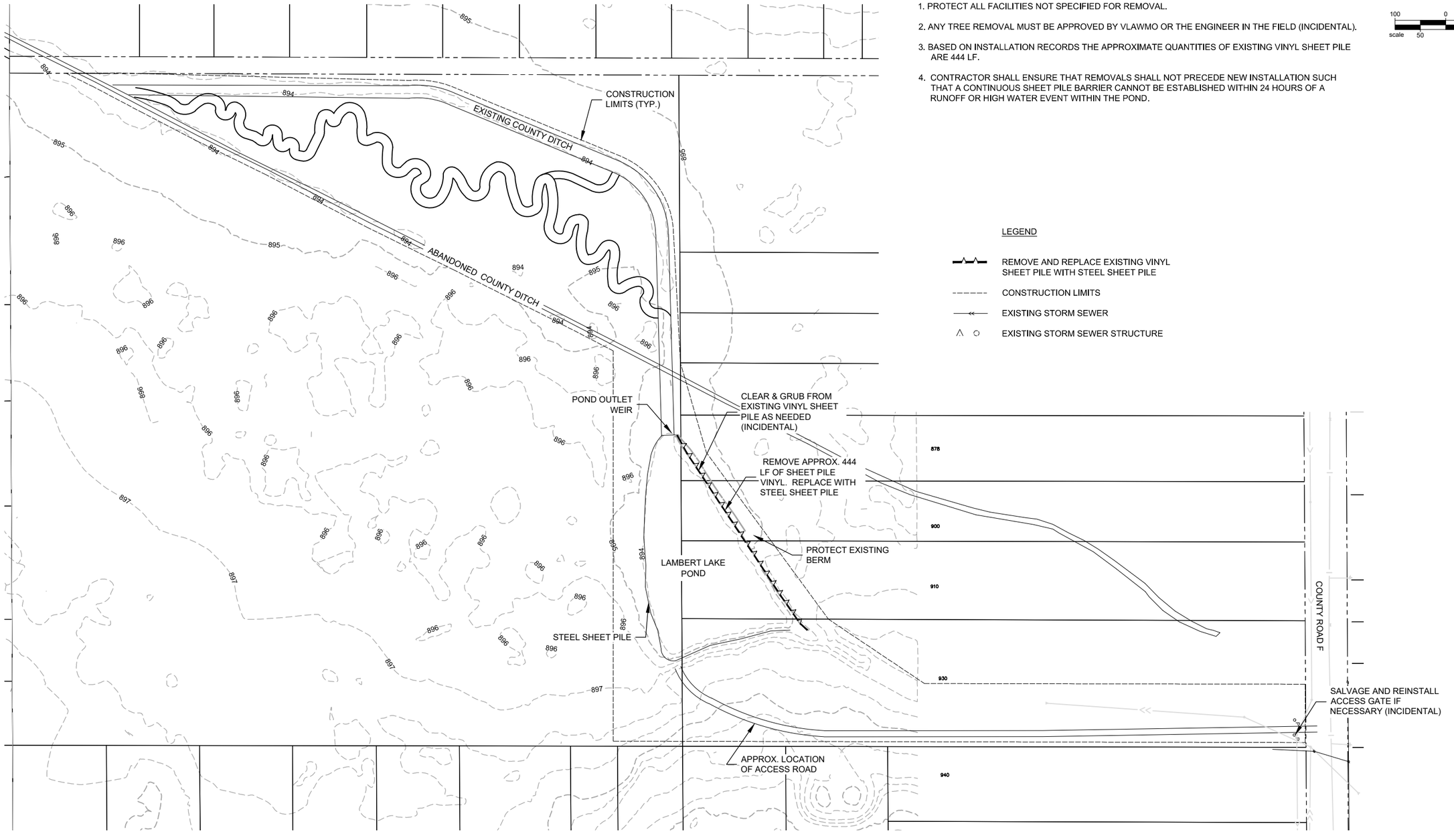
1. PROTECT ALL FACILITIES NOT SPECIFIED FOR REMOVAL.
2. ANY TREE REMOVAL MUST BE APPROVED BY VLAWMO OR THE ENGINEER IN THE FIELD (INCIDENTAL).
3. BASED ON INSTALLATION RECORDS THE APPROXIMATE QUANTITIES OF EXISTING VINYL SHEET PILE ARE 444 LF.
4. CONTRACTOR SHALL ENSURE THAT REMOVALS SHALL NOT PRECEDE NEW INSTALLATION SUCH THAT A CONTINUOUS SHEET PILE BARRIER CANNOT BE ESTABLISHED WITHIN 24 HOURS OF A RUNOFF OR HIGH WATER EVENT WITHIN THE POND.

N

100 0 100 200
scale 50 feet

LEGEND

- REMOVE AND REPLACE EXISTING VINYL SHEET PILE WITH STEEL SHEET PILE
- CONSTRUCTION LIMITS
- EXISTING STORM SEWER
- EXISTING STORM SEWER STRUCTURE




DRAWN BY: HRC
DESIGNER: EKJ
CHECKED BY: EKJ
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com

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

Emily K. Jennings, PE
Date: 08.20.2020 Lic. No. 56622

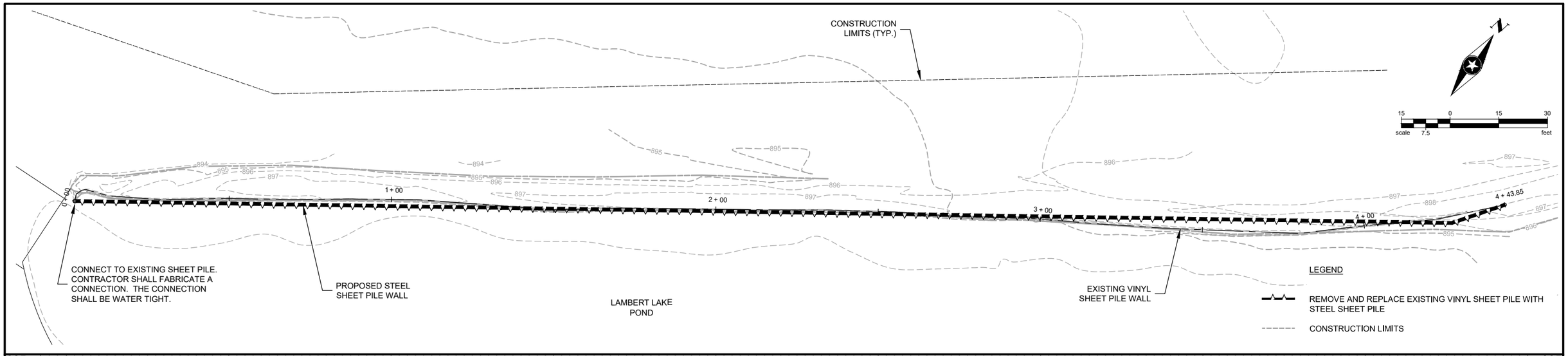
VADNAIS HEIGHTS, MINNESOTA

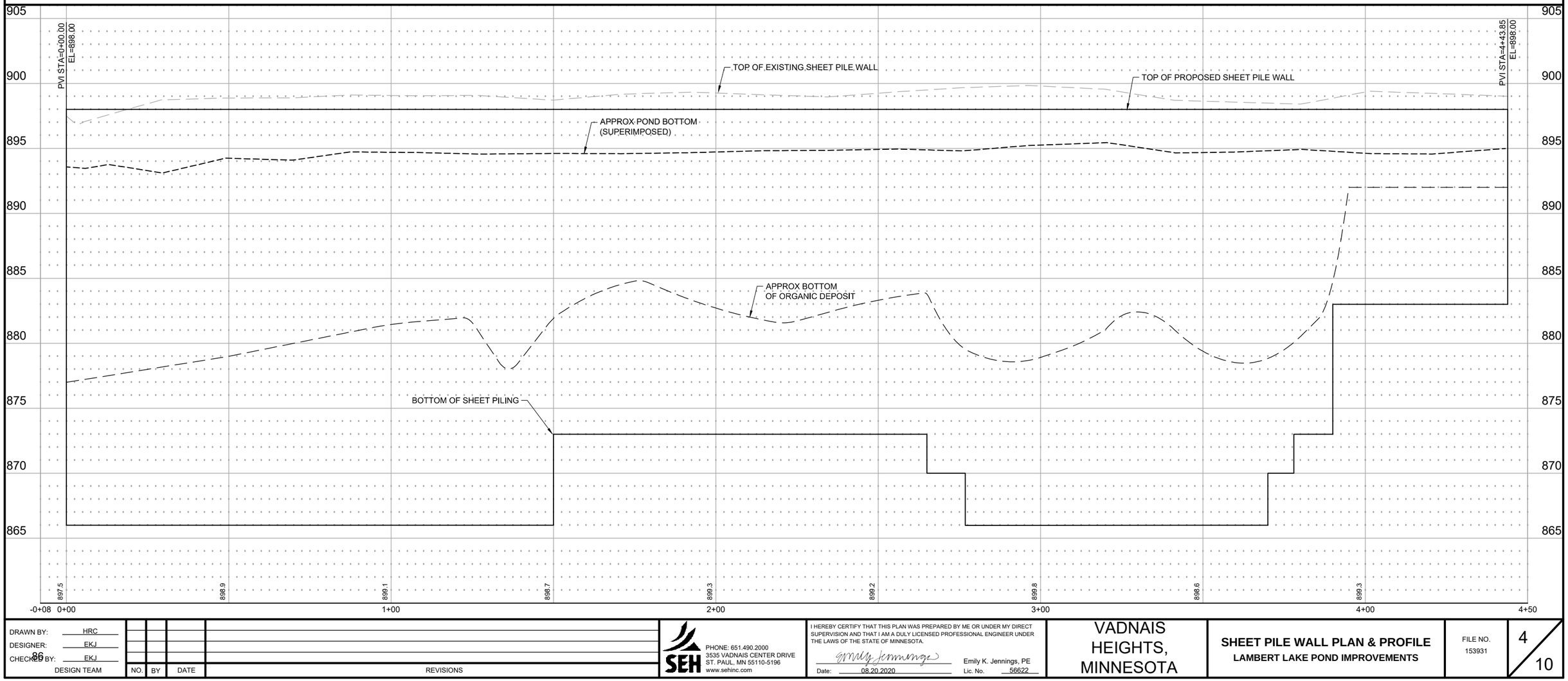
**REMOVAL PLAN**

**LAMBERT LAKE POND IMPROVEMENTS**

FILE NO. 153931

3/10




Save: 4/15/2020 2:42 PM hcunningham Plot: 8/17/2020 12:56 PM s:\UZ\V\VADL\A15393115-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\BERM WORK\VA15021DPP1.dwg

| | | | | | |
|---|---|---|---|---|---|
| DRAWN BY: HRC<br>DESIGNER: EKJ<br>CHECKED BY: EKJ<br>DESIGN TEAM | NO. | BY | DATE | REVISIONS | SEH<br>PHONE: 651.490.2000<br>3535 VADNAIS CENTER DRIVE<br>ST. PAUL, MN 55110-5196<br>www.sehinc.com |

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

Date: 08.20.2020 Emily K. Jennings, PE Lic. No. 56622

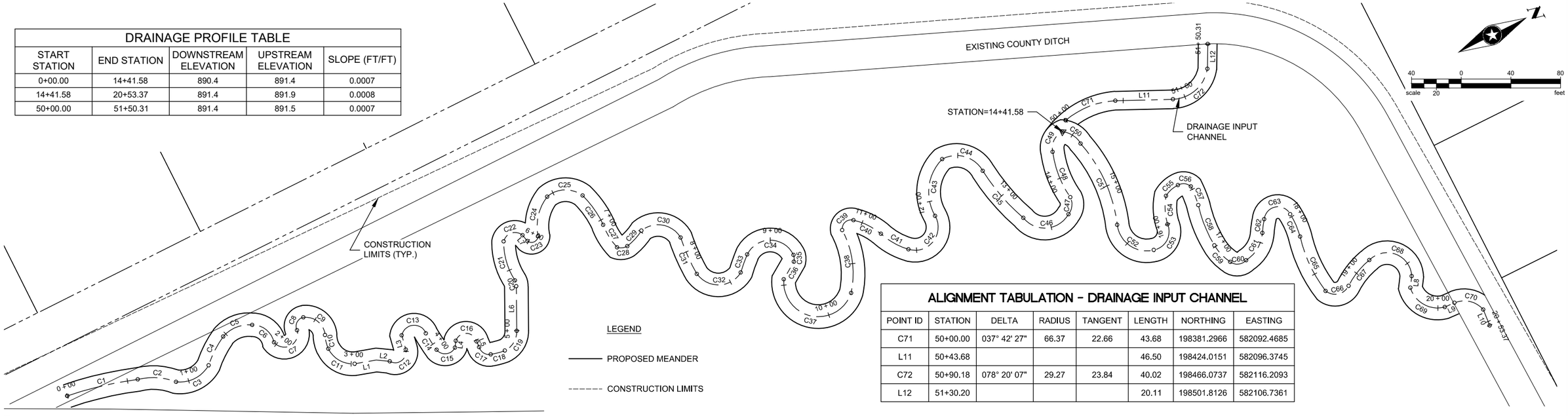
VADNAIS HEIGHTS, MINNESOTA

**SHEET PILE WALL PLAN & PROFILE**
**LAMBERT LAKE POND IMPROVEMENTS**

FILE NO. 153931

4/10

| DRAINAGE PROFILE TABLE | | | | |
|---|---|---|---|---|
| START STATION | END STATION | DOWNSTREAM ELEVATION | UPSTREAM ELEVATION | SLOPE (FT/FT) |
| 0+00.00 | 14+41.58 | 890.4 | 891.4 | 0.0007 |
| 14+41.58 | 20+53.37 | 891.4 | 891.9 | 0.0008 |
| 50+00.00 | 51+50.31 | 891.4 | 891.5 | 0.0007 |




## ALIGNMENT TABULATION - DRAINAGE INPUT CHANNEL

| POINT ID | STATION | DELTA | RADIUS | TANGENT | LENGTH | NORTHING | EASTING |
|---|---|---|---|---|---|---|---|
| C71 | 50+00.00 | 037° 42' 27" | 66.37 | 22.66 | 43.68 | 198381.2966 | 582092.4685 |
| L11 | 50+43.68 | | | | 46.50 | 198424.0151 | 582096.3745 |
| C72 | 50+90.18 | 078° 20' 07" | 29.27 | 23.84 | 40.02 | 198466.0737 | 582116.2093 |
| L12 | 51+30.20 | | | | 20.11 | 198501.8126 | 582106.7361 |

NOTES:

1. LOCATIONS ARE REPORTED IN RAMSEY COUNTY COORDINATES.
2. LOCATIONS WHERE THE MEANDER AND THE DRAINAGE INPUT CHANNEL TIE INTO EXISTING GROUND SHALL MATCH ELEVATIONS TO PRESERVE THE EXISTING DRAINAGE PROFILE.

## ALIGNMENT TABULATION - PROPOSED MEANDER

| POINT ID | STATION | DELTA | RADIUS | TANGENT | LENGTH | NORTHING | EASTING |
|---|---|---|---|---|---|---|---|
| C1 | 0+00.00 | 011° 37' 40" | 287.85 | 29.31 | 58.42 | 197563.1586 | 581929.3191 |
| C2 | 0+58.42 | 035° 10' 49" | 51.14 | 16.21 | 31.40 | 197619.8572 | 581942.9583 |
| C3 | 0+89.82 | 067° 12' 14" | 26.52 | 17.62 | 31.11 | 197646.5723 | 581958.5070 |
| C4 | 1+20.93 | 016° 59' 42" | 88.26 | 13.19 | 26.18 | 197675.9302 | 581958.4497 |
| C5 | 1+47.11 | 055° 07' 21" | 27.12 | 14.15 | 26.09 | 197696.8986 | 581942.9371 |
| C6 | 1+73.20 | 078° 09' 39" | 17.91 | 14.55 | 24.44 | 197721.8973 | 581945.1225 |
| C7 | 1+97.63 | 157° 09' 50" | 10.66 | 52.79 | 29.25 | 197731.3443 | 581965.6371 |
| C8 | 2+26.88 | 106° 16' 58" | 7.23 | 9.64 | 13.41 | 197752.2424 | 581965.2063 |
| C9 | 2+40.29 | 091° 37' 37" | 15.72 | 16.18 | 25.15 | 197761.4750 | 581958.2352 |
| C10 | 2+65.44 | 026° 09' 39" | 25.21 | 5.86 | 11.51 | 197770.7518 | 581978.7908 |
| C11 | 2+76.95 | 069° 04' 37" | 21.49 | 14.79 | 25.91 | 197768.1278 | 581989.8962 |
| L1 | 3+02.86 | | | | 17.65 | 197781.5879 | 582010.2097 |
| L2 | 3+20.51 | | | | 10.87 | 197798.4660 | 582015.3732 |
| C12 | 3+31.37 | 131° 57' 42" | 8.79 | 19.73 | 20.25 | 197807.6669 | 582021.1565 |
| L3 | 3+51.62 | | | | 11.86 | 197823.4994 | 582018.4723 |
| C13 | 3+63.48 | 147° 56' 38" | 10.16 | 35.37 | 26.24 | 197825.7512 | 582006.8308 |
| C14 | 3+89.72 | 006° 12' 12" | 145.89 | 7.91 | 15.80 | 197843.8731 | 582014.1232 |
| C15 | 4+05.51 | 114° 31' 40" | 8.91 | 13.86 | 17.81 | 197845.5642 | 582029.8205 |
| L4 | 4+23.32 | | | | 5.53 | 197859.6666 | 582034.9009 |
| C16 | 4+28.86 | 146° 10' 10" | 8.79 | 28.90 | 22.42 | 197862.6742 | 582030.2568 |
| L5 | 4+51.28 | | | | 4.99 | 197877.4358 | 582038.3169 |
| C17 | 4+56.27 | 081° 35' 46" | 8.43 | 7.28 | 12.01 | 197877.1171 | 582043.3004 |
| C18 | 4+68.29 | 011° 18' 55" | 60.13 | 5.96 | 11.87 | 197882.8187 | 582052.7331 |
| C19 | 4+80.16 | 065° 06' 51" | 17.26 | 11.02 | 19.61 | 197894.4252 | 582055.1491 |
| L6 | 4+99.77 | | | | 36.00 | 197910.1273 | 582045.2285 |
| C20 | 5+35.77 | 034° 51' 01" | 8.03 | 2.52 | 4.88 | 197925.9739 | 582012.9078 |
| C21 | 5+40.65 | 034° 05' 23" | 55.73 | 17.09 | 33.16 | 197927.0224 | 582008.2151 |
| C22 | 5+73.81 | 119° 22' 58" | 9.23 | 15.78 | 19.22 | 197933.1479 | 581976.1247 |

## ALIGNMENT TABULATION - PROPOSED MEANDER

| POINT ID | STATION | DELTA | RADIUS | TANGENT | LENGTH | NORTHING | EASTING |
|---|---|---|---|---|---|---|---|
| L7 | 5+93.03 | | | | 6.08 | 197948.8920 | 581978.5566 |
| C23 | 5+99.11 | 122° 52' 03" | 5.39 | 9.91 | 11.57 | 197950.2868 | 581984.4760 |
| C24 | 6+10.68 | 049° 43' 58" | 38.84 | 18.00 | 33.72 | 197959.7562 | 581984.8134 |
| C25 | 6+44.40 | 078° 44' 50" | 22.50 | 18.46 | 30.92 | 197980.5877 | 581959.6481 |
| C26 | 6+75.32 | 021° 01' 57" | 78.97 | 14.66 | 28.99 | 198006.4532 | 581971.7230 |
| C27 | 7+04.31 | 022° 20' 40" | 54.86 | 10.83 | 21.39 | 198010.6910 | 582000.2361 |
| C28 | 7+25.70 | 046° 55' 36" | 10.51 | 4.56 | 8.61 | 198012.5503 | 582021.4129 |
| C29 | 7+34.32 | 018° 36' 41" | 52.00 | 8.52 | 16.89 | 198020.4060 | 582024.3103 |
| C30 | 7+51.21 | 099° 11' 52" | 21.00 | 24.67 | 36.36 | 198036.0985 | 582018.2662 |
| C31 | 7+87.56 | 011° 16' 34" | 163.71 | 16.16 | 32.22 | 198061.7709 | 582037.3443 |
| C32 | 8+19.78 | 111° 40' 13" | 21.39 | 31.51 | 41.69 | 198060.3000 | 582069.4770 |
| C33 | 8+61.47 | 006° 50' 04" | 129.36 | 7.72 | 15.43 | 198092.4018 | 582084.3855 |
| C34 | 8+76.90 | 129° 04' 58" | 20.66 | 43.40 | 46.55 | 198103.5321 | 582073.7124 |
| C35 | 9+23.45 | 031° 22' 40" | 10.12 | 2.84 | 5.54 | 198136.6973 | 582090.8086 |
| C36 | 9+28.99 | 000° 35' 15" | 1588.66 | 8.15 | 16.29 | 198134.4926 | 582095.8178 |
| C37 | 9+45.28 | 166° 20' 39" | 27.87 | 232.79 | 80.92 | 198120.8849 | 582104.7730 |
| C38 | 10+26.21 | 040° 03' 34" | 74.83 | 27.28 | 52.32 | 198164.3322 | 582139.0686 |
| C39 | 10+78.52 | 112° 38' 59" | 7.25 | 10.87 | 14.25 | 198180.7456 | 582090.5110 |
| C40 | 10+92.77 | 026° 49' 33" | 53.18 | 12.68 | 24.90 | 198192.4194 | 582087.4838 |
| C41 | 11+17.67 | 025° 45' 07" | 56.99 | 13.03 | 25.61 | 198207.2354 | 582107.2122 |
| C42 | 11+43.28 | 136° 16' 34" | 18.55 | 46.25 | 44.13 | 198221.3787 | 582128.3082 |
| C43 | 11+87.41 | 075° 39' 53" | 37.57 | 29.18 | 49.62 | 198252.7175 | 582114.0231 |
| C44 | 12+37.03 | 089° 45' 39" | 24.07 | 23.97 | 37.71 | 198278.3525 | 582075.7178 |
| C45 | 12+74.75 | 016° 34' 48" | 173.66 | 25.30 | 50.25 | 198303.2696 | 582098.8136 |
| C46 | 13+25.00 | 111° 55' 57" | 22.00 | 32.58 | 42.98 | 198315.4406 | 582147.3891 |
| C47 | 13+67.98 | 066° 02' 48" | 12.58 | 8.18 | 14.50 | 198349.2680 | 582161.0118 |
| C48 | 13+82.48 | 027° 19' 11" | 82.98 | 20.17 | 39.57 | 198356.7193 | 582149.5048 |
| C49 | 14+22.05 | 078° 30' 38" | 14.25 | 11.64 | 19.53 | 198360.4646 | 582110.4908 |

## ALIGNMENT TABULATION - PROPOSED MEANDER

| POINT ID | STATION | DELTA | RADIUS | TANGENT | LENGTH | NORTHING | EASTING |
|---|---|---|---|---|---|---|---|
| C50 | 14+41.58 | 055° 58' 03" | 18.54 | 9.85 | 18.11 | 198374.8071 | 582099.5582 |
| C51 | 14+59.69 | 034° 03' 57" | 122.68 | 37.58 | 72.94 | 198383.5865 | 582114.5829 |
| C52 | 15+32.63 | 097° 14' 04" | 23.78 | 26.99 | 40.35 | 198380.4973 | 582186.3877 |
| C53 | 15+72.98 | 102° 10' 53" | 15.11 | 18.71 | 26.94 | 198397.6223 | 582217.6882 |
| C54 | 15+99.92 | 028° 34' 35" | 46.57 | 11.86 | 23.23 | 198416.8885 | 582204.2166 |
| C55 | 16+23.15 | 033° 16' 04" | 22.54 | 6.73 | 13.09 | 198426.1177 | 582183.1628 |
| C56 | 16+36.24 | 072° 26' 38" | 8.85 | 6.48 | 11.18 | 198438.5460 | 582179.6844 |
| C57 | 16+47.42 | 008° 52' 35" | 104.43 | 8.11 | 16.18 | 198447.2967 | 582185.4045 |
| C58 | 16+63.60 | 019° 14' 49" | 104.22 | 17.67 | 35.01 | 198445.9653 | 582201.5116 |
| C59 | 16+98.61 | 026° 08' 40" | 40.88 | 9.49 | 18.65 | 198442.9693 | 582236.2272 |
| C60 | 17+17.26 | 083° 47' 13" | 9.62 | 8.63 | 14.07 | 198448.3375 | 582253.9231 |
| C61 | 17+31.33 | 053° 45' 08" | 28.26 | 14.32 | 26.51 | 198460.3503 | 582258.4846 |
| C62 | 17+57.84 | 009° 42' 18" | 66.65 | 5.66 | 11.29 | 198481.8860 | 582244.7372 |
| C63 | 17+69.13 | 147° 56' 28" | 11.08 | 38.57 | 28.61 | 198488.3115 | 582235.4703 |
| C64 | 17+97.75 | 016° 37' 53" | 67.98 | 9.94 | 19.73 | 198508.7790 | 582241.3737 |
| C65 | 18+17.48 | 024° 27' 47" | 114.25 | 24.77 | 48.78 | 198507.7305 | 582261.0105 |
| C66 | 18+66.26 | 102° 30' 51" | 12.14 | 15.13 | 21.72 | 198506.4387 | 582309.4025 |
| C67 | 18+87.98 | 024° 11' 10" | 63.86 | 13.68 | 26.96 | 198524.7961 | 582314.0653 |
| C68 | 19+14.94 | 132° 37' 39" | 19.94 | 45.46 | 46.16 | 198549.1359 | 582302.9476 |
| L8 | 19+61.10 | | | | 9.39 | 198573.7538 | 582329.9268 |
| C69 | 19+70.50 | 088° 20' 00" | 22.79 | 22.14 | 35.13 | 198568.5802 | 582337.7673 |
| L9 | 20+05.63 | | | | 8.49 | 198586.3265 | 582364.1022 |
| C70 | 20+14.12 | 072° 21' 02" | 20.13 | 14.72 | 25.42 | 198594.8042 | 582364.5588 |
| L10 | 20+39.54 | | | | 13.83 | 198613.0699 | 582379.7634 |

DRAWN BY: HRC
DESIGNER: EKJ
CHECKED BY: EKJ
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com

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

Date: 08.20.2020 Emily K. Jennings, PE Lic. No. 56622

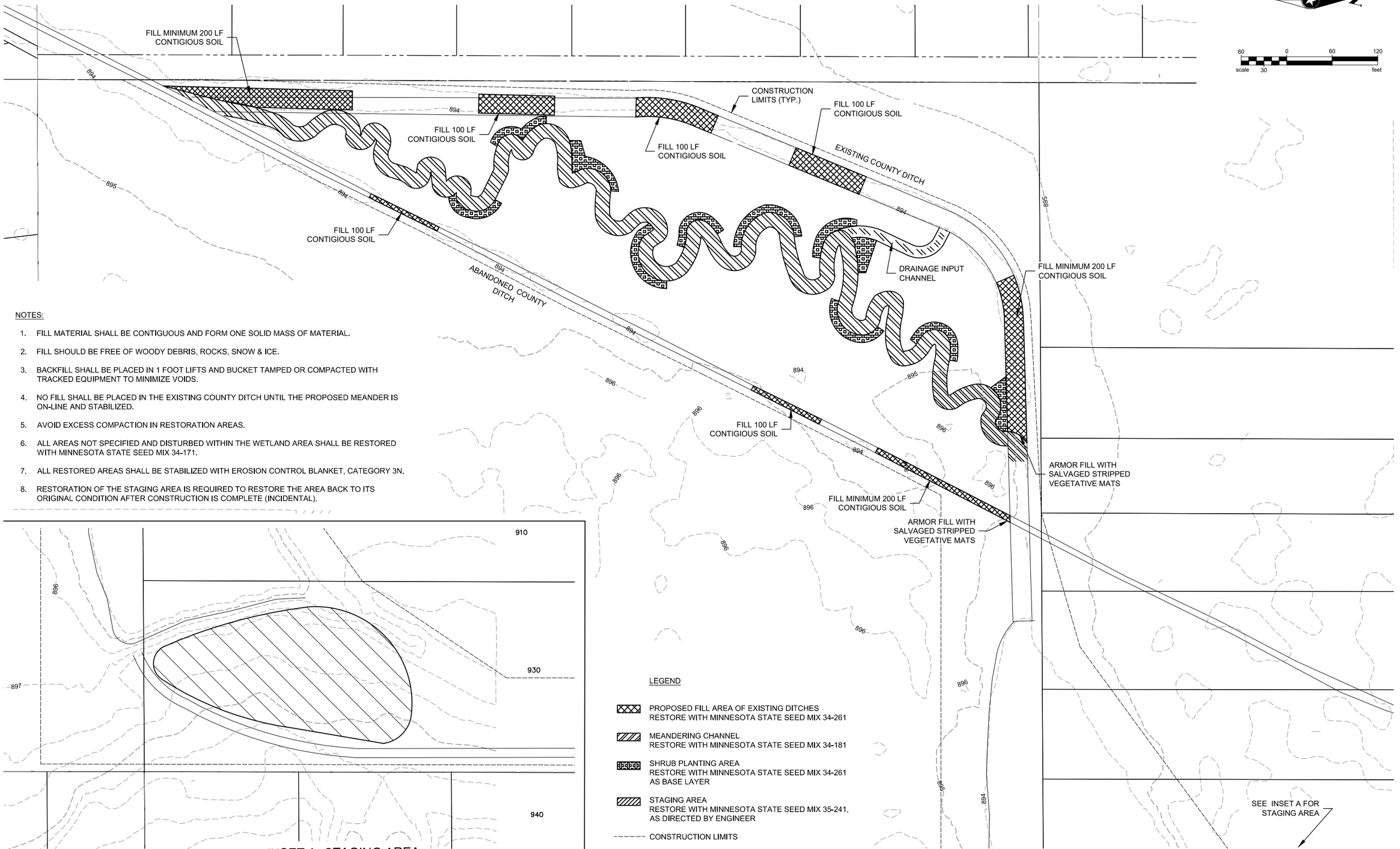
VADNAIS HEIGHTS, MINNESOTA

**MEANDER PLAN**

**LAMBERT LAKE POND IMPROVEMENTS**

FILE NO. 153931

5/10




NOTES:

1. FILL MATERIAL SHALL BE CONTIGUOUS AND FORM ONE SOLID MASS OF MATERIAL.
2. FILL SHOULD BE FREE OF WOODY DEBRIS, ROCKS, SNOW & ICE.
3. BACKFILL SHALL BE PLACED IN 1 FOOT LIFTS AND BUCKET TAMPED OR COMPACTED WITH TRACKED EQUIPMENT TO MINIMIZE VOIDS.
4. NO FILL SHALL BE PLACED IN THE EXISTING COUNTY DITCH UNTIL THE PROPOSED MEANDER IS ON-LINE AND STABILIZED.
5. AVOID EXCESS COMPACTION IN RESTORATION AREAS.
6. ALL AREAS NOT SPECIFIED AND DISTURBED WITHIN THE WETLAND AREA SHALL BE RESTORED WITH MINNESOTA STATE SEED MIX 34-171.
7. ALL RESTORED AREAS SHALL BE STABILIZED WITH EROSION CONTROL BLANKET, CATEGORY 3N.
8. RESTORATION OF THE STAGING AREA IS REQUIRED TO RESTORE THE AREA BACK TO ITS ORIGINAL CONDITION AFTER CONSTRUCTION IS COMPLETE (INCIDENTAL).

INSET A- STAGING AREA

LEGEND

- PROPOSED FILL AREA OF EXISTING DITCHES
  RESTORE WITH MINNESOTA STATE SEED MIX 34-261
- MEANDERING CHANNEL
  RESTORE WITH MINNESOTA STATE SEED MIX 34-181
- SHRUB PLANTING AREA
  RESTORE WITH MINNESOTA STATE SEED MIX 34-261 AS BASE LAYER
- STAGING AREA
  RESTORE WITH MINNESOTA STATE SEED MIX 35-241, AS DIRECTED BY ENGINEER
- CONSTRUCTION LIMITS

DRAWN BY: HRC
DESIGNER: EKJ
CHECKED BY: EKJ
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com

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

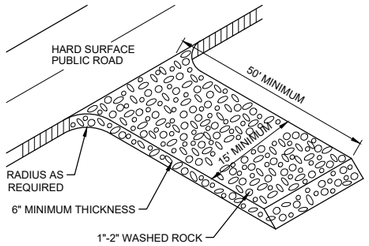
Emily K. Jennings, PE
Date: 08.20.2020 Lic. No. 56622

VADNAIS HEIGHTS, MINNESOTA

**FILL & PERMANENT RESTORATION**
**LAMBERT LAKE POND IMPROVEMENTS**

FILE NO. 153931

6/10

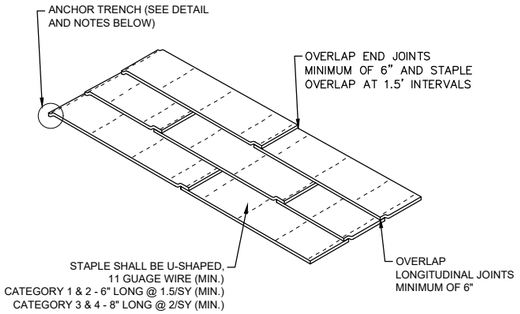



NOTE:
TO PREVENT TRACKING OF MUD ONTO PAVED ROADS, INSTALL ADDITIONAL ROCK OR REMOVE AND REPLACE THE PAD AS REQUIRED

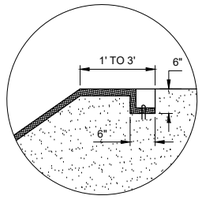
NTS

## ROCK CONSTRUCTION ENTRANCE

Revised: Oct. 2011
SEH Plate No. ERO-35



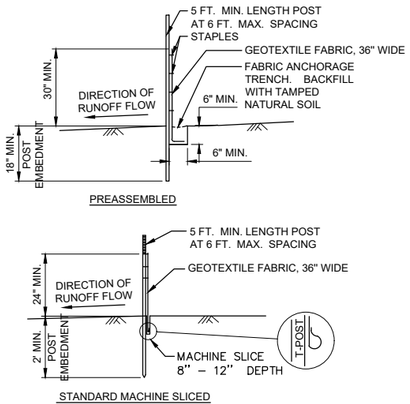

ANCHOR TRENCH
1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT
5. BLANKET LENGTH SHALL NOT EXCEED 100' WITHOUT AN ANCHOR TRENCH




NTS

## EROSION CONTROL BLANKET INSTALLATION

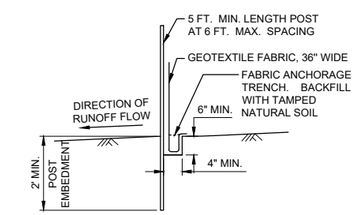
Revised: Oct. 2011
SEH Plate No. ERO-11




PREASSEMBLED




STANDARD MACHINE SLICED



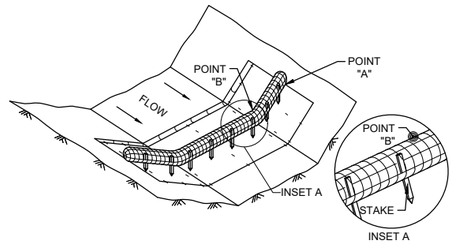

HEAVY DUTY

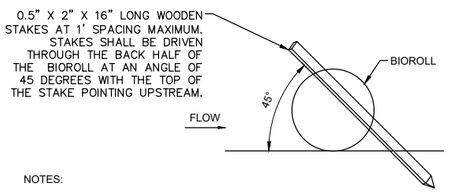
DESIGN GUIDELINES:
(SEE MNDOT SPEC. 2573.3C AND 3886)

NTS

## SILT FENCE

Revised: Jan. 2013
SEH Plate No. ERO-15




NOTES:

SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{SPACING (FT)} = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\text{\% CHANNEL SLOPE}}$$

POINT "A" LABELED ON DETAILS SHALL BE A MIN. OF 6" HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

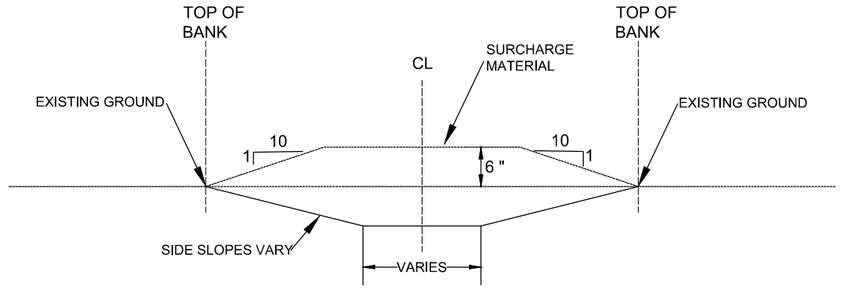
CHECK DAMS AND DIKES SHOULD BE LIMITED IN USE FOR DRAINAGE AREAS OF LESS THAN FIVE ACRES AND IN CHANNELS OF LESS THAT TEN PERCENT SLOPE.

IF IN SERIES, THE TOP OF THE DOWNSTREAM DAM OR DIKE SHOULD ALIGN WITH THE BOTTOM OF THE UPSTREAM.

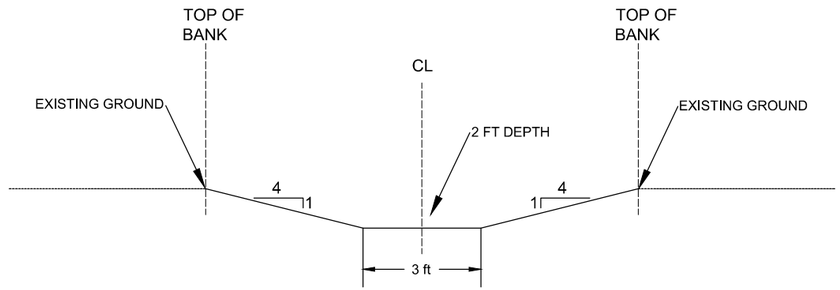
NTS

## BIOROLL STAKING

Revised: Oct. 2011
SEH Plate No. ERO-07

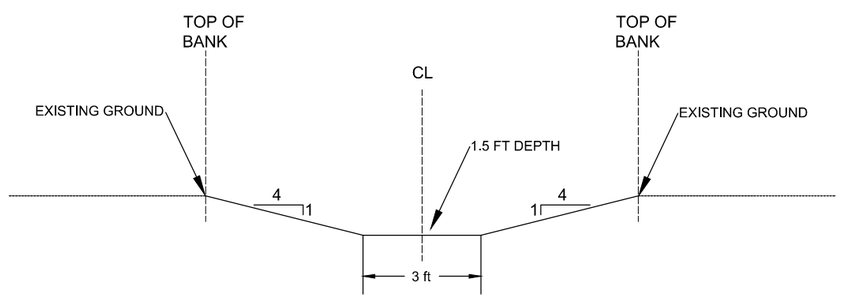



TYPICAL PROPOSED FILL CROSS SECTION FOR EXISTING COUNTY DITCH AND ABANDONED COUNTY DITCH




TYPICAL PROPOSED MEANDER CROSS SECTION

STA. 0+00 TO STA. 20+53.37




TYPICAL PROPOSED DRAINAGE INPUT CHANNEL CROSS SECTION

STA. 50+00 TO STA. 51+50.31

DRAWN BY: HRC
DESIGNER: EKJ
CHECKED BY: EKJ
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com

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

Date: 08.20.2020 Emily K. Jennings, PE Lic. No. 56622

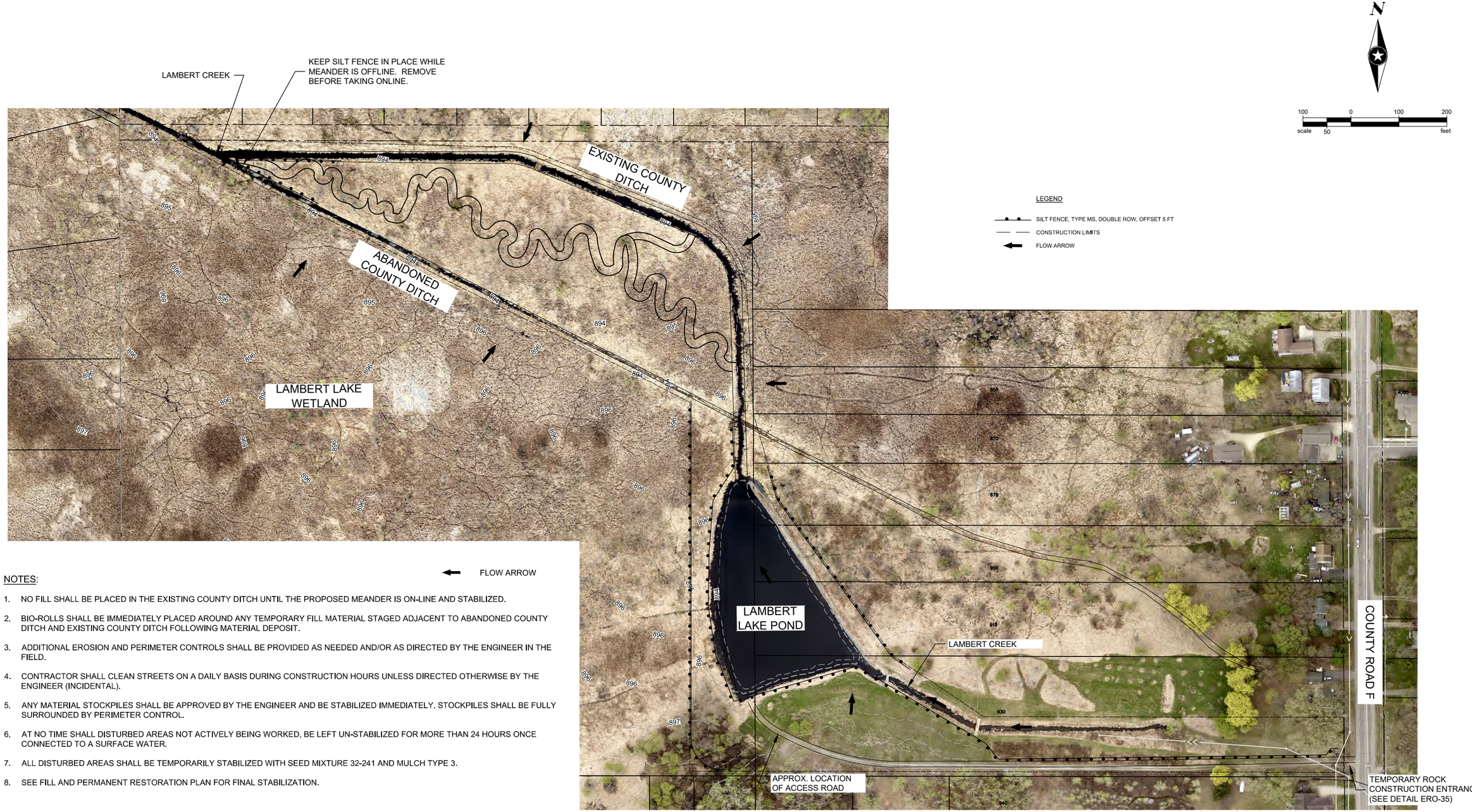
VADNAIS HEIGHTS, MINNESOTA

**DETAILS & TYP. SECTIONS**

**LAMBERT LAKE POND IMPROVEMENTS**

FILE NO. 153931

7 / 10




FLOW ARROW

NOTES:

1. NO FILL SHALL BE PLACED IN THE EXISTING COUNTY DITCH UNTIL THE PROPOSED MEANDER IS ON-LINE AND STABILIZED.
2. BIO-ROLLS SHALL BE IMMEDIATELY PLACED AROUND ANY TEMPORARY FILL MATERIAL STAGED ADJACENT TO ABANDONED COUNTY DITCH AND EXISTING COUNTY DITCH FOLLOWING MATERIAL DEPOSIT.
3. ADDITIONAL EROSION AND PERIMETER CONTROLS SHALL BE PROVIDED AS NEEDED AND/OR AS DIRECTED BY THE ENGINEER IN THE FIELD.
4. CONTRACTOR SHALL CLEAN STREETS ON A DAILY BASIS DURING CONSTRUCTION HOURS UNLESS DIRECTED OTHERWISE BY THE ENGINEER (INCIDENTAL).
5. ANY MATERIAL STOCKPILES SHALL BE APPROVED BY THE ENGINEER AND BE STABILIZED IMMEDIATELY. STOCKPILES SHALL BE FULLY SURROUNDED BY PERIMETER CONTROL.
6. AT NO TIME SHALL DISTURBED AREAS NOT ACTIVELY BEING WORKED, BE LEFT UN-STABILIZED FOR MORE THAN 24 HOURS ONCE CONNECTED TO A SURFACE WATER.
7. ALL DISTURBED AREAS SHALL BE TEMPORARILY STABILIZED WITH SEED MIXTURE 32-241 AND MULCH TYPE 3.
8. SEE FILL AND PERMANENT RESTORATION PLAN FOR FINAL STABILIZATION.



DRAWN BY: HRC
DESIGNER: EKJ
CHECKED BY: EKJ
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com

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

Emily K. Jennings, PE
Date: 08.20.2020 Lic. No. 56622

VADNAIS HEIGHTS, MINNESOTA

**EROSION & SEDIMENT CONTROL**
**LAMBERT LAKE POND IMPROVEMENTS**

FILE NO. 153931

SWPPP SUMMARY/OVERVIEW:
THIS STORM WATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN DEVELOPED TO ADDRESS THE REQUIREMENTS OF NPDES PERMIT MN R100001. THIS SWPPP INCLUDES A COMBINATION OF NARRATIVE AND PLAN SHEETS THAT DESCRIBE THE TEMPORARY AND PERMANENT STORM WATER MANAGEMENT PLAN FOR THE PROJECT.

PROJECT INFORMATION:

| | |
|---|---|
| LOCATION: | LAMBERT LAKE, SW OF THE INTERSECTION OF COUNTY ROAD F E AND CENTERVILLE ROAD |
| LATITUDE/LONGITUDE: | 45.062119, -93.061986 |
| PROJECT DESCRIPTION: | CREEK RESTORATION, SHEET PILE REPLACEMENT |
| SOIL DISTURBING ACTIVITIES: | EXCAVATION, FILL, GRADING, RESTORATION |

CONTACTS:

| | |
|---|---|
| OWNER: | CITY OF VADNAIS HEIGHTS |
| CONTACT: | JESSE FARRELL, PE |
| ADDRESS: | 800 COUNTY RD E EAST, VADNAIS HEIGHTS, MN 55127 |
| PHONE: | 651-204-6050 |
| EMAIL: | JESSE.FARRELL@CITYVADNAISHEIGHTS.COM |

| | |
|---|---|
| ENGINEER: | SHORT ELLIOTT HENDRICKSON INC. (SEH) |
| CONTACT: | EMILY JENNINGS, PE |
| PHONE: | 651-302-7669 |
| EMAIL: | EJENNINGS@SEHINC.COM |
| PROJECT NO.: | VADLA 153931 |

NOTE:
THIS PROJECT IS BEING FUNDED AND LED BY THE VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION (VLAWMO). ADDITIONAL PROJECT CONTACT INCLUDES:

DAWN TANNER
PROGRAM DEVELOPMENT COORDINATOR
651-204-6074
DAWN.TANNER@VLAWMO.ORG

KNOWLEDGEABLE PERSON/CHAIN OF RESPONSIBILITY
THE CONTRACTOR SHALL IDENTIFY A PERSON KNOWLEDGEABLE AND EXPERIENCED IN THE APPLICATION OF EROSION PREVENTION AND SEDIMENT CONTROL BMPS WHO WILL COORDINATE WITH ALL CONTRACTORS, SUBCONTRACTORS, AND OPERATORS ON-SITE TO OVERSEE THE IMPLEMENTATION OF THE SWPPP.

| | |
|---|---|
| CONTRACTOR | X |
| CONTACT | X |
| PHONE | X |
| EMAIL | X |

THE CONTRACTOR SHALL ESTABLISH A CHAIN OF RESPONSIBILITY FOR ALL CONTRACTORS AND SUB-CONTRACTORS ON SITE TO ENSURE THE SWPPP IS BEING PROPERLY IMPLEMENTED AND MAINTAINED. THE CONTRACTOR SHALL PROVIDE THE CHAIN OF RESPONSIBILITY TO THE OWNER AND ATTACH TO THE SWPPP PRIOR TO ANY CONSTRUCTION ACTIVITY.

GENERAL SWPPP RESPONSIBILITIES:
THE CONTRACTOR SHALL KEEP THE SWPPP, INCLUDING ALL AMENDMENTS AND INSPECTION AND MAINTENANCE RECORDS ON SITE DURING CONSTRUCTION.

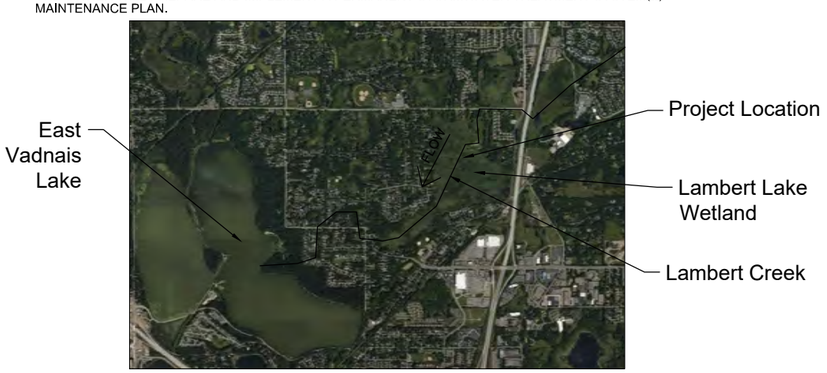
THE SWPPP WILL BE AMENDED AS NEEDED AND/OR AS REQUIRED BY PROVISIONS OF THE PERMIT. PERMITTEES MUST AMEND THE SWPPP TO INCLUDE ADDITIONAL OR MODIFIED BMPS AS NECESSARY TO CORRECT PROBLEMS IDENTIFIED OR ADDRESS SITUATIONS WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, WEATHER OR SEASONAL CONDITIONS HAVING A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS TO SURFACE WATERS OR GROUNDWATER. AMENDMENTS WILL BE APPROVED BY BOTH THE OWNER AND CONTRACTOR AND WILL BE ATTACHED OR OTHERWISE INCLUDED WITH THE SWPPP DOCUMENTS. THE SWPPP AMENDMENTS SHALL BE INITIATED, FACILITATED, AND PROCESSED BY THE CONTRACTOR.

ALL SWPPP CHANGES MUST BE DONE BY AN INDIVIDUAL TRAINED IN ACCORDANCE WITH SECTION 21.4 OR 21.5, CHANGES INVOLVING THE USE OF A LESS STRINGENT BMP MUST INCLUDE A JUSTIFICATION DESCRIBING HOW THE REPLACEMENT BMP IS EFFECTIVE FOR THE SITE CHARACTERISTICS.

BOTH THE OWNER AND CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER TERMINATION AND/OR TRANSFER OF THE PERMIT.

LONG TERM OPERATION AND MAINTENANCE
THE OWNER WILL BE RESPONSIBLE OR WILL OTHERWISE IDENTIFY WHO WILL BE RESPONSIBLE FOR THE LONG TERM OPERATION AND MAINTENANCE OF THE PERMANENT STORMWATER MANAGEMENT SYSTEM(S).

THE OWNER WILL PREPARE AND IMPLEMENT A PERMANENT STORMWATER TREATMENT SYSTEM(S) MAINTENANCE PLAN.




TRAINING DOCUMENTATION:

| | |
|---|---|
| PREPARER/DESIGNER OF SWPPP: | EMILY JENNINGS, PE |
| EMPLOYER: | SHORT ELLIOTT HENDRICKSON INC. (SEH) |
| DATE OBTAINED / REFRESHED | REFRESHED APRIL 2020 |
| INSTRUCTOR(S)/ENTITY PROVIDING TRAINING: | UNIVERSITY OF MINNESOTA EROSION AND STORMWATER MANAGEMENT DESIGN OF CONSTRUCTION SWPPP |

CONTENT OF TRAINING AVAILABLE UPON REQUEST.

THE CONTRACTOR (OPERATOR) SHALL ADD TO THE SWPPP TRAINING RECORDS FOR THE FOLLOWING PERSONNEL:

-INDIVIDUALS OVERSEEING THE IMPLEMENTATION OF, REVISING, AND AMENDING THE SWPPP
-INDIVIDUALS PERFORMING INSPECTIONS
-INDIVIDUALS PERFORMING OR SUPERVISING THE INSTALLATION, MAINTENANCE AND REPAIR OF BMPS

TRAINING MUST RELATE TO THE INDIVIDUAL'S JOB DUTIES AND RESPONSIBILITIES AND SHALL INCLUDE:

1) DATES OF TRAINING
2) NAME OF INSTRUCTORS
3) CONTENT AND ENTITY PROVIDING TRAINING

THE CONTRACTOR SHALL ENSURE THAT THE INDIVIDUALS ARE TRAINED BY LOCAL, STATE, FEDERAL AGENCIES, PROFESSIONAL ORGANIZATIONS, OR OTHER ENTITIES WITH EXPERTISE IN EROSION PREVENTION, SEDIMENT CONTROL, PERMANENT STORMWATER MANAGEMENT AND THE MINNESOTA NPDES/SDS CONSTRUCTION STORMWATER PERMIT.

PROJECT SUMMARY:

| | |
|---|---|
| TOTAL DISTURBED AREA: | 15.1 AC |
| PRE-CONSTRUCTION IMPERVIOUS AREA: | 0.0 AC |
| POST-CONSTRUCTION IMPERVIOUS AREA: | 0.0 AC |
| IMPERVIOUS AREA ADDED: | 0.0 AC |

RECEIVING WATER(S) WITHIN ONE MILE FROM PROJECT BOUNDARIES:
(http://pca-gis02.pca.state.mn.us/CSW/index.html)

| ID | NAME | TYPE | SPECIAL WATER? | IMPAIRED WATER? | CONSTRUCTION RELATED IMPAIRMENT OR SPECIAL WATER CLASSIFICATION | TMDL |
|---|---|---|---|---|---|---|
| 07010206-801 | LAMBERT | CREEK | NO | YES | NON-CONSTRUCTION RELATED | NON-CONSTRUCTION RELATED |
| 62-0030-00 | LAMBERT | LAKE WETLAND | NO | NO | N/A | N/A |
| 62-0038-01 | EAST VADNAIS | LAKE | NO | YES | NON-CONSTRUCTION RELATED | N/A |
| ADDITIONAL BMPS AND/OR ACTIONS REQUIRED: | | | | | | |
| SEE SECTION 23 OF THE PERMIT AND APPLICABLE TMDL WLA'S | | | | | | |

| WATERBODY | NO WORK DURING |
|---|---|
| LAKES | APRIL 1 - JUNE 30 |
| NON-TROUT STREAMS | MARCH 15 - JUNE 15 |
| TROUT STREAMS | SEPTEMBER 1 - APRIL 1 |

SITE SOIL INFORMATION: (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)
(SOIL INFORMATION PROVIDED IS FOR NPDES PERMIT INFORMATION ONLY. SOIL INFORMATION WAS OBTAINED FROM THE USGS WEBSITE. THE CONTRACTOR SHALL NOT RELY ON THIS SOIL INFORMATION FOR CONSTRUCTION PURPOSES.)

| SOIL NAME: | HYDROLOGIC CLASSIFICATION: |
|---|---|
| MUCK | D |
| ANTICIPATED RANGE OF PARTICLE SIZES | LOAMY/FINE SILTS/SANDS |

RELATED REVIEWS & PERMITS:
ENVIRONMENTAL, WETLAND, ENDANGERED OR THREATENED SPECIES, ARCHEOLOGICAL, LOCAL, STATE, AND/OF FEDERAL REVIEWS/PERMITS:

| AGENCY: | TYPE OF PERMIT: |
|---|---|
| DNR PUBLIC WATERS WORK PERMIT | PUBLIC WATER WORKS PERMIT |
| USACE | SECTION 404 PERMIT |
| CITY OF VADNAIS HEIGHTS | CONSTRUCTION AND GRADING PERMIT |

PROJECT SPECIFIC NOTES:
THE PROJECT INCLUDE RESTORING A PORTION OF LAMBERT CREEK TO A MEANDERING STREAM TO BETTER UTILIZE THE LAMBERT LAKE FLOODPLAIN AND IMPROVE WATER QUALITY, HABITAT, AND ECOLOGY. AN EAW WAS PREPARED AND SHOULD BE REVIEWED PRIOR TO CONSTRUCTION.

THE FOLLOWING DOCUMENTS ARE CONSIDERED PART OF THE SWPPP:
GENERAL SITE PLAN: 2
MEANDER PLAN: 5
FILL AND TEMPORARY RESTORATION: 6
DETAILS & TYPICAL SECTIONS: 7
EROSION & SEDIMENT CONTROL: 8
SWPPP NOTE AND DETAIL SHEETS: 9-10
PROJECT SPECIFICATIONS
PROJECT BID FORM

TEMPORARY BMP DESIGN FACTORS:
EROSION PREVENTION AND SEDIMENT CONTROL BMP'S MUST BE DESIGNED TO ACCOUNT FOR:

THE EXPECTED AMOUNT, FREQUENCY, INTENSITY, AND DURATION OF PRECIPITATION

THE NATURE OF STORMWATER RUNOFF AND RON-ON AT THE SITE, INCLUDING FACTORS SUCH AS EXPECTED FLOW FROM IMPERVIOUS SURFACES, SLOPES, AND SITE DRAINAGE FEATURES

THE STORMWATER VOLUME, VELOCITY, AND PEAK FLOW RATES TO MINIMIZE DISCHARGE OF POLLUTANTS IN STORMWATER AND TO MINIMIZE CHANNEL AND STREAMBANK EROSION AND SCOUR IN THE IMMEDIATE VICINITY OF DISCHARGE POINTS

THE RANGE OF SOIL PARTICLE SIZES EXPECTED TO BE PRESENT.

TEMPORARY SEDIMENT BASINS:
THE CONTRACTOR SHALL INSTALL TEMPORARY SEDIMENT BASIN(S) INDICATED ON PLANS AND REQUIRED BY THE NPDES CONSTRUCTION PERMIT.

THE TEMPORARY BASIN MUST PROVIDE LIVE STORAGE FOR A CALCULATED VOLUME OF RUNOFF FROM A TWO (2)-YEAR, 24-HOUR STORM FROM EACH ACRE DRAINED TO THE BASIN OR 1,800 CUBIC FEET OF LIVE STORAGE PER ACRE DRAINED, WHICHEVER IS GREATER.

TEMPORARY SEDIMENT BASIN OUTLETS SHALL BE CONSTRUCTED TO PREVENT SHORT-CIRCUITING AND PREVENT THE DISCHARGE OF FLOATING DEBRIS.

OUTLET STRUCTURES MUST BE DESIGNED TO WITHDRAW WATER FROM THE SURFACE TO MINIMIZE THE DISCHARGE OF POLLUTANTS.

BASINS MUST INCLUDE A STABILIZED EMERGENCY OVERFLOW, WITHDRAW WATER FROM THE SURFACE, AND PROVIDE ENERGY DISSIPATION AT THE OUTLET.

TEMPORARY SEDIMENT BASINS SHALL BE PROVIDED WITH ENERGY DISSIPATION AT ANY BASIN OUTLET TO PREVENT SOIL EROSION.

SEDIMENT BASINS MUST BE SITUATED OUTSIDE OF SURFACE WATERS AND ANY BUFFER ZONES, AND MUST BE DESIGNED TO AVOID THE DRAINING WATER FROM WETLANDS.

IMPLEMENTATION SEQUENCE:
THE CONTRACTOR SHALL COMPLY WITH THE FOLLOWING SEQUENCE.
THE ENGINEER MAY APPROVE ADJUSTMENTS TO THE SEQUENCE AS NEEDED.

| | |
|---|---|
| 1 | INSTALL ROCK CONSTRUCTION ENTRANCE(S) |
| 2 | INSTALL PERIMETER CONTROL AND STABILIZE DOWN GRADIENT BOUNDARIES |
| 3 | ACCESS AND STAGING |
| 4 | EXCAVATE MEANDER OFFLINE OF EXISTING CONVEYANCE, PLACE FILL TEMPORARILY ADJACENT TO EXISTING DITCHES AND INSTALL PERIMETER CONTROL IMMEDIATELY FOLLOWING PLACEMENT |
| 5 | INITIATE RESTORATION AND FINAL STABILIZATION WITHIN MEANDER AREA |
| 6 | PLACE STRATEGIC FILL AND BRING MEANDER ONLINE |
| 7 | COMPLETE FINAL GRADING AND STABILIZE DISTURBED AREAS |
| 8 | AFTER CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, REMOVE ACCUMULATED SEDIMENT, REMOVE BMPS, AND RE-STABILIZE ANY AREAS DISTURBED BY THEIR REMOVAL. |



DRAWN BY: HRC
DESIGNER: EKJ
CHECKED BY: EKJ
DESIGN TEAM

| NO. | BY | DATE | REVISIONS |
|---|---|---|---|

SEH
PHONE: 651.490.2000
3535 VADNAIS CENTER DRIVE
ST. PAUL, MN 55110-5196
www.sehinc.com

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Date: 08.20.2020
Emily K. Jennings, PE
Lic. No. 56622

VADNAIS HEIGHTS, MINNESOTA

**SWPPP**
**LAMBERT LAKE POND IMPROVEMENTS**

FILE NO. 153931

INSPECTION AND MAINTENANCE:
ALL INSPECTIONS, MAINTENANCE, REPAIRS, REPLACEMENTS, AND REMOVAL OF BMPS IS TO BE CONSIDERED INCIDENTAL TO THE BMP BID ITEMS.

THE PERMITTEE(S) IS RESPONSIBLE FOR COMPLETING SITE INSPECTIONS, AND BMP MAINTENANCE TO ENSURE COMPLIANCE WITH THE PERMIT REQUIREMENTS.

THE PERMITTEE(S) SHALL INSPECT THE CONSTRUCTION SITE ONCE EVERY 7 DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS.

THE PERMITTEE(S) SHALL DOCUMENT A WRITTEN SUMMARY OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES CONDUCTED WITHIN 24 HOURS OF OCCURRENCE. RECORDS OF EACH ACTIVITY SHALL INCLUDE THE FOLLOWING:

-DATE AND TIME OF INSPECTIONS;
-NAME OF PERSON(S) CONDUCTING INSPECTION;
-FINDINGS AND RECOMMENDATIONS FOR CORRECTIVE ACTIONS IF NECESSARY;
-CORRECTIVE ACTIONS TAKEN;
-DATE AND AMOUNT OF RAINFALL EVENTS;
-POINTS OF DISCHARGE OBSERVED DURING INSPECTION AND DESCRIPTION OF THE DISCHARGE
-AMENDMENTS MADE TO THE SWPPP.

THE PERMITTEE(S) SHALL SUBMIT A COPY OF THE WRITTEN INSPECTIONS TO THE ENGINEER AND OWNER ON A MONTHLY BASIS. IF MONTHLY INSPECTION REPORTS ARE NOT SUBMITTED, MONTHLY PAYMENTS MAY BE HELD.

THE CONTRACTOR SHALL DOCUMENT AMENDMENTS TO THE SWPPP AS A RESULT OF INSPECTION(S) WITHIN 7 DAYS.

THE CONTRACTOR SHALL KEEP THE SWPPP, ALL INSPECTION REPORTS, AND AMENDMENTS ONSITE. THE CONTRACTOR SHALL DESIGNATE A SPECIFIC ONSITE LOCATION TO KEEP THE RECORDS

THE CONTRACTOR IS RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF TEMPORARY AND PERMANENT WATER QUALITY BMP'S, AS WELL AS EROSION AND SEDIMENT CONTROL BMP'S.

THE CONTRACTOR SHALL INSPECT EROSION PREVENTION AND SEDIMENTATION CONTROL BMPS TO ENSURE INTEGRITY AND EFFECTIVENESS. ALL NONFUNCTIONAL BMPS SHALL BE REPAIRED, REPLACED, OR SUPPLEMENTED WITH FUNCTIONAL BMPS WITHIN 24 HOURS OF FINDING. THE CONTRACTOR SHALL INVESTIGATE AND COMPLY WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS:

PERIMETER CONTROL DEVICES, INCLUDING SILT FENCE SHALL BE REPAIRED, OR REPLACED, WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/2 OF THE DEVICE HEIGHT. THESE REPAIRS SHALL BE MADE WITHIN 24 HOURS OF DISCOVERY.

TEMPORARY AND PERMANENT SEDIMENT BASINS SHALL BE DRAINED AND THE SEDIMENT REMOVED WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES 1/2 THE STORAGE VOLUME. DRAINAGE AND REMOVAL MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY.

SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION. THE CONTRACTOR SHALL REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS. THE CONTRACTOR SHALL RE-STABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL. REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN 7 DAYS OF DISCOVERY, UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL CONSTRAINTS. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL LOCAL, REGIONAL, STATE AND FEDERAL AUTHORITIES AND OBTAIN ANY APPLICABLE PERMITS, PRIOR TO CONDUCTING ANY WORK IN SURFACE WATERS.

CONSTRUCTION SITE VEHICLE EXIT LOCATIONS SHALL BE INSPECTED DAILY FOR EVIDENCE OF SEDIMENT TRACKING ONTO PAVED SURFACES. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES WITHIN 24 HOURS OF DISCOVERY.

IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED IN A MANOR AND AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS.

PERMIT TERMINATION CONDITIONS:
THE CONTRACTOR IS RESPONSIBLE FOR ENSURING FINAL STABILIZATION OF THE ENTIRE SITE. PERMIT TERMINATION CONDITIONS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:

ALL SOIL DISTURBING ACTIVITIES HAVE BEEN COMPLETED.

ALL EXPOSED SOILS HAVE BEEN UNIFORMLY STABILIZED WITH AT LEAST 70% VEGETATION COVERAGE.

PERMANENT STORM WATER MANAGEMENT SYSTEM(S) ARE CONSTRUCTED AND ARE OPERATING AS DESIGNED.

ALL DRAINAGE DITCHES, PONDS, AND ALL STORM WATER CONVEYANCE SYSTEMS HAVE BEEN CLEARED OF SEDIMENT AND STABILIZED WITH PERMANENT COVER TO PRECLUDE EROSION.

ALL TEMPORARY SYNTHETIC BMPS HAVE BEEN REMOVED AND PROPERLY DISPOSED OF.

.

EROSION PREVENTION BMP SUMMARY:
SEE EROSION AND SEDIMENT CONTROL PLAN SHEET AND BID FORM FOR TYPE, LOCATION, AND QUANTITY OF EROSION PREVENTION BMPS.

SEDIMENT CONTROL BMP SUMMARY:
SEE EROSION AND SEDIMENT CONTROL PLAN SHEETS AND BID FORM FOR TYPE, LOCATION, AND QUANTITY OF SEDIMENT CONTROL BMPS.

SEDIMENT CONTROL MEASURES AND TIMING:
THE CONTRACTOR IS RESPONSIBLE FOR ALL SEDIMENT CONTROL MEASURES FOR THE PROJECT.

SEDIMENT CONTROL MEASURES SHOWN ON PLANS ARE THE ABSOLUTE MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL SEDIMENT CONTROL MEASURES AS NECESSARY TO PROPERLY MANAGE THE PROJECT AREA.

THE CONTRACTOR SHALL ENSURE SEDIMENT CONTROL MEASURES ARE ESTABLISHED ON ALL DOWN GRADIENT PERIMETERS BEFORE ANY UPGRADIENT LAND DISTURBING ACTIVITIES BEGIN. THESE MEASURES SHALL REMAIN IN PLACE UNTIL FINAL STABILIZATION HAS BEEN ESTABLISHED.

A FLOATING SILT CURTAIN PLACED IN THE WATER IS NOT A SEDIMENT CONTROL BMP EXCEPT WHEN WORKING ON A SHORELINE OR BELOW THE WATERLINE. IMMEDIATELY AFTER THE SHORT TERM CONSTRUCTION ACTIVITY IS COMPLETE, PERMITTEE(S) MUST INSTALL AN UPLAND PERIMETER CONTROL PRACTICE IF EXPOSED SOILS STILL DRAIN TO A SURFACE WATER.

THE CONTRACTOR SHALL ENSURE SEDIMENT CONTROL PRACTICES REMOVED OR ADJUSTED FOR SHORT-TERM ACTIVITIES BE RE-INSTALLED IMMEDIATELY AFTER THE SHORT-TERM ACTIVITY HAS BEEN COMPLETED. SEDIMENT CONTROL PRACTICES MUST BE REINSTALLED BEFORE THE NEXT PRECIPITATION EVENT EVEN IF THE SHORT-TERM ACTIVITY IS NOT COMPLETE.

THE CONTRACTOR SHALL ENSURE STORM DRAIN INLETS ARE PROTECTED BY APPROPRIATE BMPS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAVE BEEN STABILIZED.

THE CONTRACTOR SHALL PROVIDE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROL AT THE BASE OF THE STOCKPILES.

THE CONTRACTOR SHALL INSTALL PERIMETER CONTROL AROUND ALL STAGING AREAS, BORROW PITS, AND AREAS CONSIDERED ENVIRONMENTALLY SENSITIVE.

THE CONTRACTOR SHALL ENSURE VEHICLE TRACKING BE MINIMIZED WITH EFFECTIVE BMPS. WHERE THE BMPS FAIL TO PREVENT SEDIMENT FROM TRACKING ONTO STREETS THE CONTRACTOR SHALL CONDUCT STREET SWEEPING TO REMOVE ALL TRACKED SEDIMENT.

THE CONTRACTOR SHALL IMPLEMENT CONSTRUCTION PRACTICES TO MINIMIZE SOIL COMPACTION.

THE CONTRACTOR SHALL ENSURE ALL CONSTRUCTION ACTIVITY REMAIN WITHIN PROJECT LIMITS AND THAT ALL IDENTIFIED RECEIVING WATER BUFFERS ARE MAINTAINED.

| RECEIVING WATER | NATURAL BUFFER | IS THE BUFFER BEING ENCROACHED ON? | REASON FOR BUFFER ENCROACHMENT |
|---|---|---|---|
| LAMBERT CREEK | 50 FT | YES | THE PROJECT INCLUDES RESTORING A PORTION OF THE CREEK. |
| LAMBERT LAKE WETLAND | 50 FT | YES | THE PROJECT INCLUDES RESTORING A PORTION OF THE CREEK. |
| EAST VADNAIS LAKE | 50 FT | NO | N/A |

A 50 FOOT NATURAL BUFFER MUST BE PRESERVED OR PROVIDE REDUNDANT (DOUBLE) PERIMETER SEDIMENT CONTROLS IF NATURAL BUFFER IS INFEASIBLE.

THE CONTRACTOR SHALL NOT UTILIZE SEDIMENT CONTROL CHEMICALS ON SITE.

DEWATERING AND BASIN DRAINING ACTIVITIES:
THE CONTRACTOR IS RESPONSIBLE FOR ADHERING TO ALL DEWATERING AND SURFACE DRAINAGE REGULATIONS.

WATER FROM DEWATERING ACTIVITIES SHALL DISCHARGE TO A TEMPORARY AND/OR PERMANENT SEDIMENT BASIN.

IF WATER CANNOT BE DISCHARGED TO A SEDIMENTATION BASIN, IT SHALL BE TREATED WITH OTHER APPROPRIATE BMPS, TO EFFECTIVELY REMOVE SEDIMENT.

DISCHARGE THAT CONTAINS OIL OR GREASE MUST BE TREATED WITH AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE PRIOR TO DISCHARGE.

WATER FROM DEWATERING SHALL BE DISCHARGED IN A MANNER THAN DOES NOT CAUSE NUISANCE CONDITIONS, EROSION, OR INUNDATION OF WETLANDS.

BACKWASH WATER USED FOR FILTERING SHALL BE HAULED AWAY FOR DISPOSAL, RETURNED TO THE BEGINNING OF TREATMENT PROCESS, OR INCORPORATED INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION. THE CONTRACTOR SHALL REPLACE AND CLEAN FILTER MEDIAS USED IN DEWATERING DEVICES WHEN REQUIRED TO MAINTAIN ADEQUATE FUNCTION.

EROSION PREVENTION MEASURES AND TIMING:
THE CONTRACTOR IS RESPONSIBLE FOR ALL EROSION PREVENTION MEASURES FOR THE PROJECT.

EROSION PREVENTION MEASURES SHOWN ON PLANS ARE THE ABSOLUTE MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL IMPLEMENT ADDITIONAL EROSION PREVENTION MEASURES AS NECESSARY TO PROPERLY MANAGE THE PROJECT AREA.

THE CONTRACTOR SHALL PLAN AND IMPLEMENT APPROPRIATE CONSTRUCTION PRACTICES AND CONSTRUCTION PHASING TO MINIMIZE EROSION AND RETAIN VEGETATION WHENEVER POSSIBLE.

THE PERMITTEE SHALL DELINEATE AREAS NOT TO BE DISTURBED. PERMITTEE(S) MUST MINIMIZE THE NEED FOR DISTURBANCE OF PORTIONS OF THE PROJECT WITH STEEP SLOPES. WHEN STEEP SLOPES MUST BE DISTURBED, PERMITTEES MUST USE TECHNIQUES SUCH AS PHASING AND STABILIZATION PRACTICES DESIGNED FOR STEEP SLOPES.

THE CONTRACTOR SHALL STABILIZE OF ALL EXPOSED SOILS IMMEDIATELY TO LIMIT SOIL EROSION. IN NO CASE SHALL ANY EXPOSED AREAS, INCLUDING STOCK PILES, HAVE EXPOSED SOILS FOR MORE THAN 14 DAYS WITHOUT PROVIDING TEMPORARY OR PERMANENT STABILIZATION. STABILIZATION MUST BE COMPLETED WITHIN 14 DAYS AFTER CONSTRUCTION ACTIVITY HAS CEASED. TEMPORARY STOCKPILES WITHOUT SIGNIFICANT CLAY, SILT, OR ORGANIC COMPONENTS DO NOT REQUIRE STABILIZATION.

DRAINAGE PATHS, DITCHES, AND/OR SWALES SHALL HAVE TEMPORARY OR PERMANENT STABILIZATION WITHIN 24 HOURS OF CONNECTING TO A SURFACE WATER OR 24 HOURS AFTER CONSTRUCTION ACTIVITY IN THE DITCH/SWALE HAS TEMPORARILY OR PERMANENTLY CEASED.

THE CONTRACTOR SHALL COMPLETE THE STABILIZATION OF ALL EXPOSED SOILS WITHIN 24 HOURS THAT LIE WITHIN 200 FEET OF PUBLIC WATERS PROMULGATED "WORK IN WATER RESTRICTIONS" BY THE MN DNR DURING SPECIFIED FISH SPAWNING TIMES.

THE CONTRACTOR SHALL IMPLEMENT EROSION CONTROL BMPS AND VELOCITY DISSIPATION DEVICES ALONG CONSTRUCTED STORMWATER CONVEYANCE CHANNELS AND OUTLETS.

THE CONTRACTOR SHALL STABILIZE TEMPORARY AND/OR PERMANENT DRAINAGE DITCHES OR SWALES WITHIN 200 LINEAL FEET FROM PROPERTY EDGE, OR DISCHARGE POINT(S) WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE.

TEMPORARY OR PERMANENT DITCHES OR SWALES USED AS A SEDIMENT CONTAINMENT SYSTEM DURING CONSTRUCTION MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM.

THE CONTRACTOR SHALL NOT UTILIZE HYDROMULCH, TACKIFIER, POLYACRYLAMIDE OR SIMILAR EROSION PREVENTION PRACTICES AS A FORM OF STABILIZATION FOR TEMPORARY OR PERMANENT DRAINAGE DITCHES OR SWALE SECTION WITH A CONTINUOUS SLOPE OF GREATER THAN 2 PERCENT.

THE CONTRACTOR SHALL ENSURE PIPE OUTLETS HAVE TEMPORARY OR PERMANENT ENERGY DISSIPATION WITH IN 24 HOURS OF CONNECTION TO A SURFACE WATER.

THE CONTRACTOR SHALL DIRECT DISCHARGES FROM BMPS TO VEGETATED AREAS TO INCREASE SEDIMENT REMOVAL AND MAXIMIZE STORMWATER INFILTRATION. VELOCITY DISSIPATION DEVICES MUST BE USED TO PREVENT EROSION WHEN DIRECTING STORMWATER TO VEGETATED AREAS.

POLLUTION PREVENTION MANAGEMENT MEASURES:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POLLUTION PREVENTION MANAGEMENT MEASURES.

ALL POLLUTION PREVENTION MEASURES ARE CONSIDERED INCIDENTAL TO THE MOBILIZATION BID ITEM, UNLESS OTHERWISE NOTED.

THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER DISPOSAL, IN COMPLIANCE WITH MPCA DISPOSAL REQUIREMENTS, OF ALL HAZARDOUS MATERIALS, SOLID WASTE, AND PRODUCTS ON-SITE.

THE CONTRACTOR SHALL ENSURE BUILDING PRODUCTS THAT HAVE THE POTENTIAL TO LEAK POLLUTANTS ARE KEPT UNDER COVER TO PREVENT THE DISCHARGE OF POLLUTANTS.

THE CONTRACTOR SHALL ENSURE PESTICIDES, HERBICIDES, INSECTICIDES, FERTILIZERS, TREATMENT CHEMICALS, AND LANDSCAPE MATERIALS ARE COVERED TO PREVENT THE DISCHARGE OF POLLUTANTS.

THE CONTRACTOR SHALL ENSURE HAZARDOUS MATERIALS AND TOXIC WASTE IS PROPERLY STORED IN SEALED CONTAINERS TO PREVENT SPILLS, LEAKS, OR OTHER DISCHARGE. STORAGE AND DISPOSAL OF HAZARDOUS WASTE OR HAZARDOUS MATERIALS MUST BE IN COMPLIANCE WITH MINN. R. CH. 7045 INCLUDING SECONDARY CONTAINMENT AS APPLICABLE.

THE CONTRACTOR SHALL ENSURE ASPHALT SUBSTANCES USED ON-SITE SHALL ARE APPLIED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

THE CONTRACTOR SHALL ENSURE PAINT CONTAINERS AND CURING COMPOUNDS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT AND/OR CURING COMPOUNDS SHALL NOT BE DISCHARGED INTO THE STORM SEWER SYSTEM AND SHALL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURE'S INSTRUCTION.

THE CONTRACTOR SHALL ENSURE SOLID WASTE BE STORED, COLLECTED AND DISPOSED OF PROPERLY IN COMPLIANCE WITH MINN. R. CH. 7035.

THE CONTRACTOR SHALL ENSURE POTABLE TOILETS ARE POSITIONED SO THAT THEY ARE SECURE AND WILL NOT BE TIPPED OR KNOCKED OVER. SANITARY WASTE MUST BE DISPOSED OF PROPERLY IN ACCORDANCE WITH MINN. R, CH. 7041.

THE CONTRACTOR SHALL MONITOR ALL VEHICLES ON-SITE FOR LEAKS AND RECEIVE REGULAR PREVENTION MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE.

THE CONTRACTOR SHALL ENSURE WASHOUT WASTE MUST CONTACT THE GROUND AND BE PROPERLY DISPOSED OF IN COMPLIANCE WITH MPCA RULES.

THE CONTRACTOR SHALL INCLUDE SPILL KITS WITH ALL FUELING SOURCES AND MAINTENANCE ACTIVITIES. SECONDARY CONTAINMENT MEASURES SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR.

THE CONTRACTOR SHALL ENSURE SPILLS ARE CONTAINED AND CLEANED UP IMMEDIATELY UPON DISCOVERY. SPILLS LARGE ENOUGH TO REACH THE STORM WATER CONVEYANCE SYSTEM SHALL BE REPORTED TO THE MINNESOTA DUTY OFFICER AT 1.800.422.0798.

# Project Manual

## *Lambert Lake Improvements*

Vadnais Lake Area Water Management Organization (VLAWMO)
Vadnais Heights, Minnesota

SEH No. VADLA 153931

August 20, 2020

Building a Better World for All of Us®

Engineers | Architects | Planners | Scientists

This Page Left Blank Intentionally

**Lambert Lake Improvements**

**Vadnais Lake Area Water Management Organization (VLAWMO)**
**Vadnais Heights, Minnesota**

**SEH No. VADLA 153931**

**August 20, 2020**

This Page Left Blank Intentionally

**DOCUMENT 00 01 05**

**CERTIFICATION**

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

Emily Jennings, PE

Date: August 20, 2020 Lic. No. 56622

Reviewed By: Jeremy Walgrave

Date: August 20, 2020

This Page Left Blank Intentionally

**DOCUMENT 00 01 10**

**TABLE OF CONTENTS**

**DOCUMENT 00 11 13**

**ADVERTISEMENT FOR BIDS**

**Lambert Lake Improvements**
**Vadnais Lake Area Water Management Organization (VLAWMO)**
**SEH No. VADLA 153931**

Notice is hereby given that sealed Bids will be received by the Vadnais Lake Area Water Management Organization (VLAWMO) until **2:00 p.m. (local time), Thursday, October 1, 2020**, via QuestCDN, for the furnishing of all labor and material for the construction of the Lambert Lake Improvements Project.

The bid opening will be conducted via GoToMeeting, at which time they will be publicly opened and read aloud, GoTo Meeting information will be sent out to bidders closer to the Bid Opening time listed above.

Major components of the Work include:

- Remove 440 lineal feet of existing vinyl sheet pile
- Installation of 12,400 square yards of permanent steel sheet pile
- Excavation of 1,645 cubic yards for stream meander
- Restoration, including 330 deciduous shrubs, native seeding and erosion control

Bids shall be on the form provided for that purpose and according to the Bidding Requirements prepared by Short Elliott Hendrickson Inc. (SEH®) dated August 17, 2020.

The Issuing Office for the Bidding Documents is: **Short Elliott Hendrickson Inc., 3535 Vadnais Center Drive, St. Paul, MN 55110, Emily Jennings, PE, 651.302.7669,** ejennings@sehinc.com.

The Bidding Documents may be viewed for no cost at http://www.sehinc.com by selecting the Project Bid Information link at the bottom of the page and the View Plans option from the menu at the top of the selected project page.

Digital image copies of the Bidding Documents are available at http://www.sehinc.com for a fee of $30. These documents may be downloaded by selecting this project from the BIDDING DOCUMENTS link and by entering eBidDoc™ Number XXXXXXX on the SEARCH PROJECTS page. For assistance and free membership registration, contact QuestCDN at 952.233.1632 or info@questcdn.com.

For this project, bids will **ONLY** be received electronically. Contractors submitting an electronic bid **will** be charged an additional $30 at the time of bid submission via the online electronic bid service QuestCDN.com. To access the electronic bid form, download the project document and click the online bidding button at the top of the advertisement. Prospective bidders must be on the planholders list through QuestCDN for bids to be accepted. Bids shall be completed according to the Bidding Requirements prepared by SEH dated August 17, 2020.

Paper copies of the Bidding Documents may be obtained from Docunet Corp. located at 2435 Xenium Lane North, Plymouth, MN 55441 (763.475.9600) for a fee of $75.00.

A mandatory pre-Bid meeting will be held at 2:00 p.m. on Wednesday, September 23rd, 2020 at the project site. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are required to attend and participate.

Bid security in the amount of 5 percent of the Bid must accompany each Bid in accordance with the Instructions to Bidders.

A Contractor responding to these Bidding Documents must submit to VLAWMO a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in Minnesota Statutes, section 16C.285, subdivision 3.

This Work shall be subject to minimum wages and labor standards in accordance with the Minnesota labor and wage rate requirements.

VLAWMO reserves the right to reject any and all Bids, or portions of Bids, to waive irregularities and informalities therein and to award the Contract, or portions of the contract, in the best interests of VLAWMO.

Dawn Tanner
Program Development Coordinator
VLAWMO

**In addition to the Bid Worksheet electronically completed and submitted online, this BID FORM - DOCUMENT 00 41 00 and the attachments provided must be completed and uploaded to QuestCDN Online prior to the Bid opening time and date.**

# DOCUMENT 00 41 00

# BID FORM

Contractor's Name _____

Telephone _____

**PROJECT IDENTIFICATION:** **Lambert Lake Improvements**
**Vadnais Lake Area Water Management Organization (VLAWMO)**
**SEH No. VADLA 153931**

**BIDS TO BE OPENED:** **Thursday, October 1, 2020, at 2:00 p.m. local time**

## TABLE OF ARTICLES



## ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to **QuestCDN Online**.

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

## ARTICLE 2 – ATTACHMENTS TO THIS BID

2.01 The following documents are attached to and made a condition of this Bid and shall be uploaded via QuestCDN Online:

A. Required Bid security

B. List of Proposed Subcontractors.

C. List of Proposed Suppliers.

D. List of Project References.

E. Affidavit of Non-Collusion.

F. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids.

G. Verification of Compliance with Minnesota Statute 16C.285 Document 00 45 45.

H. Required Bidder Qualification Statement with supporting data.

**ARTICLE 3 – BASIS OF BID**

3.01 Bidder will complete the Work in accordance with the Contract Documents for the prices as indicated on the QuestCDN Online Bid Worksheet. The Bid Worksheet is a part of and appurtenant to the Bid Form and Bid.

**UNIT PRICE BID**

| | | Meander Project | | Sheetpile Project | |
|---|---|---|---|---|---|
| **Item No.** | **Item Description** | **Unit** | **Estimated Quantity** | **Unit** | **Estimated Quantity** |
| 0154.1 | COMMON LABORERS | HOUR | 10.00 | HOUR | 0.00 |
| 0154.2 | CRAWLER MOUNTED BACKHOE | HOUR | 5.00 | HOUR | 0.00 |
| 0154.3 | SKID LOADER | HOUR | 5.00 | HOUR | 0.00 |
| 0155.1 | ACCESS AND STAGING | LS | 1.00 | LS | 1.00 |
| 0171.1 | MOBILIZATION | LS | 1.00 | LS | 1.00 |
| 0171.1 | CONSTRUCTION SURVEYING | LS | 1.00 | LS | 1.00 |
| 0241.1 | REMOVE SHEET PILING | LS | 0.00 | LS | 1.00 |
| 3123.1 | MUCK EXCAVATION (P) | CY | 1645.00 | CY | 0.00 |
| 3123.2 | SALVAGE MATERIAL (P) | CY | 1235.00 | CY | 0.00 |
| 3125.2 | STABILIZED CONSTRUCTION EXIT | LS | 1.00 | LS | 0.00 |
| 3125.3 | SILT FENCE, TYPE MS | LF | 7500.00 | LF | 0.00 |
| 3125.4 | SEDIMENT CONTROL LOG TYPE WOOD FIBER | LF | 880.00 | LF | 0.00 |
| 3125.5 | EROSION CONTROL BLANKET CATEGORY 3N | SQ YD | 12826.00 | SQ YD | 726.00 |
| 3125.6 | MULCH MATERIAL TYPE 3 | TON | 5.30 | TON | 0.30 |
| 3292.1 | SEEDING MIXTURE 32-241 | LB | 100.70 | LB | 5.70 |
| 3292.2 | SEEDING MIXTURE 34-171 | LB | 14.00 | LB | 0.80 |
| 3292.3 | SEEDING MIXTURE 34-181 | LB | 5.00 | LB | 0.00 |
| 3292.4 | SEEDING MIXTURE 34-261 | LB | 23.00 | LB | 0.00 |
| 3293.1 | DECIDUOUS SHRUB NO 2 CONT RED OSIER DOGWOOD | SHRB | 165.00 | SHRB | 0.00 |
| 3293.2 | DECIDUOUS SHRUB NO 2 CONT PUSSY WILLOW | SHRB | 110.00 | SHRB | 0.00 |
| 3293.3 | DECIDUOUS SHRUB NO 2 CONT MEADOWSWEET | SHRB | 55.00 | SHRB | 0.00 |
| 3549.1 | STEEL SHEET PILING (PERMANENT) | SF | 0.00 | SF | 12400.00 |

| | | | | | |
|---|---|---|---|---|---|
| 3549.1 Alt 1 | USED STEEL SHEET PILING (PERMANENT) | | | SF | 12400.00 |

Unit Prices have been computed in accordance with Paragraph 13.03 of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

**ARTICLE 4 – TIME OF COMPLETION**

4.01 Bidder agrees that the Work will be substantially complete on or before June 1, 2021, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before July 1, 2021.

**ARTICLE 5 – BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA**

5.01 Bid Acceptance Period

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. The Bid will remain subject to acceptance

**DOCUMENT 00 52 00**

**STANDARD FORM OF AGREEMENT**
**BETWEEN OWNER AND CONTRACTOR**
**ON THE BASIS OF A STIPULATED PRICE**

**THIS AGREEMENT** is by and between the Vadnais Lake Area Water Management Organization (VLAWMO) (Owner) and _____ (Contractor).

Owner and Contractor hereby agree as follows:

**ARTICLE 1 – WORK**

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **Lambert Lake Improvements**.

**ARTICLE 2 – THE PROJECT**

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Stream meander and sheet pile replacement.

**ARTICLE 3 – ENGINEER**

3.01 The Project has been designed by Short Elliott Hendrickson Inc. (SEH®).

3.02 The Owner has retained SEH (Engineer) to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

**ARTICLE 4 – CONTRACT TIMES**

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

A. No work shall commence on the project prior to notice to proceed from the Engineer.

B. All final grading and earthwork must be completed on or before **March 1, 2021**.

C. Sheet Pile Removal and Installation must be completed on or before **March 1, 2021**.

D. The Work will be substantially completed on or before **June 1, 2021**, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before **July 1, 2021**.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $500 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

**ARTICLE 5 – CONTRACT PRICE**

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the actual quantity of that item as indicated in Contractor's Bid.

The Bid Prices for Unit Price Work set forth as of the Effective Date of the Agreement are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 10.06 of the General Conditions.

**ARTICLE 6 – PAYMENT PROCEDURES**

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

B. Only one payment will be made to the Contractor in any given month.

6.02 *Progress Payments; Retainage*

A. Subject to the provisions of SC-15.01.C, Owner shall make monthly progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications of Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract:

a. 95 percent of Work completed (with the balance being retainage).

b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Within 60 days of Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed; less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions; and less 250 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment. Upon completion or correction and acceptance of said Work, Owner shall pay the amounts withheld within 60 days as recommended by Engineer.

1. After Substantial Completion Owner shall also withhold one percent of the value of the Contract or $500, whichever is greater, pending completion and submission of all “final paperwork” by the Contractor as defined by Minnesota Statutes, section 15.72, subdivision 2.(e)(2). Owner shall pay said amount withheld after Substantial Completion within 60 days of submission of all final paperwork as recommended by Engineer.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

6.04 *Interest*

A. All amounts not paid when due shall bear interest at the rate required by law at the project location.

**ARTICLE 7 – CONTRACT DOCUMENTS**

7.01 *Contents*

A. The Contract Documents consist of the following:

1. Addenda (numbers 00 00 1__ to 00 00 1__, inclusive).
2. This Agreement (pages 00 52 00-1 to 00 52 00-6, inclusive).
3. Performance Bond (Document 00 61 13).
4. Payment Bond (Document 00 61 14).
5. General Conditions (pages 00 72 00-1 to 00 72 00-65, inclusive).
6. Supplementary Conditions (pages 00 73 00-1 to 00 73 00-10, inclusive).
7. Specifications as listed in the table of contents of the Project Manual.
8. Drawings listed in the Index located on Drawing Sheet 1 (Title Sheet), each bearing the following general title: “Lambert Lake Improvements, Vadnais Heights, Minnesota”.
9. Exhibits to this Agreement (enumerated as follows).
    a. Contractor’s Bid (Document 00 41 00).
    b. Documentation submitted by Contractor prior to Notice of Award (pages ___ to ___, inclusive).
    c. Certificate of Insurance.
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Field Order(s).
    c. Work Change Directive(s).
    d. Change Order(s).

B. The documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

## ARTICLE 8 – REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

2. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

5. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

6. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

7. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

8. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

9. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

10. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

## ARTICLE 9 – MISCELLANEOUS

9.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

9.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due

and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

9.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____, _____ (which is the Effective Date of the Contract).

OWNER:
Vadnais Lake Area Water Management Organization (VLAWMO)

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for Giving Notices:
Vadnais Lake Area Water Management Organization (VLAWMO)

800 East County Road E

Vadnais Heights, MN 55127

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Owner-Contractor Agreement).

Designated Representative:

Name: _____

Title: _____

Address: 800 East County Road E

Vadnais Heights, MN 55127

Phone: _____

Facsimile: _____

CONTRACTOR:

_____

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for Giving Notices:

_____

_____

_____

License No. _____
(Where Applicable)

Agent for service of process: _____

_____
(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

Designated Representative:

Name: _____

Title: _____

Address _____

_____

Phone: _____

Facsimile: _____

EST 1983
VLAWMO
Vadnais Lake Area
Water Management Organization

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

# Resolution 05-2020

Of the Vadnais Lake Area Water Management Organization (VLAWMO)

## Order accepting plans and specifications; directing the solicitation of bids, and allowing costs for construction of the Lambert Lake Pond sheetpile replacement and meander construction

Resolution 05-2020 was moved by Director _____ and seconded by Director _____:

**Whereas**, the Board of the Vadnais Lake Area Water Management Organization (the "Board") is proceeding with the Lambert Lake VLAWMO Bacteria, Sediment, and Nutrient Reduction Project as agreed upon in the grant and loan contracts agreed upon and signed with MPCA in 2019;

**Whereas,** the Board approved the Finding of Fact for the Lambert Lake VLAWMO Bacteria, Sediment, and Nutrient Reduction Project Environmental Assessment Worksheet (EAW) with Resolution 03-2020 on June 24, 2020;

**Whereas**, pursuant to the Board's direction, the Project Engineer has prepared plans and specifications, including the full contract section, for the construction of the project;

**Whereas**, the Board's practice is to review and approve the plans and a summary of specifications prior to directing the solicitation of bids for any project;

**Whereas**, the Board has reviewed anticipated project costs as part of the June, 2020, Board meeting; the plans and a summary of specifications in the current/August, 2020, Board packet; and the Engineer's recommendation;

**Whereas**, VLAWMO's attorney has reviewed and approved contract language included in the specifications;

**Whereas**, based upon the Board's review, the Board finds the plans and summary of specifications for the project to be complete and to represent the Board's intent for the Lambert Lake Pond Project;

**Whereas**, in conjunction with the development of plans and specifications, the Board's staff and engineer have worked with various state and federal agencies to secure regulatory approvals for the project;

**Therefore** be it resolved that the VLAWMO Board accepts the plans and specifications from 8/20/2020 for the Lambert Lake Pond sheetpile replacement and meander construction and directs the solicitation of bids according to the Engineer's recommendation for implementation of the project as required by law.

The Board authorizes modifications of the construction plans and specifications by the Engineer, including delay of bidding, contract award or notice to proceed, as may be required during the bid submission timeframe.

The Board further authorizes expenditures for sheetpile replacement and meander construction.

The question was on the adoption of the resolution and there were __ yeas and __ nays as follows:

| | Yea | Nay | Absent |
|---|---|---|---|
| *Dan Jones* | ☐ | ☐ | ☐ |
| *Ed Prudhon* | ☐ | ☐ | ☐ |
| *Rob Rafferty* | ☐ | ☐ | ☐ |
| *Marty Long* | ☐ | ☐ | ☐ |
| *Patricia Youker* | ☐ | ☐ | ☐ |
| *Jim Lindner* | ☐ | ☐ | ☐ |

_____ Board Chair Date

_____ Attest Date

VLAWMO
Vadnais Lake Area
Water Management Organization

800 County Road E East, Vadnais Heights, MN55127
www.vlawmo.org; Office@vlawmo.org

**To:** VLAWMO Board of Directors

**From:** Tyler Thompson

**Date:** August 20, 2020

**Re:** **V. B. 2. Birch Lake 4th & Otter Project - Summary of Project Outcomes and Project Completion Actions**

Staff is excited to announce that construction of the Birch Lake iron-enhanced sand filter (IESF) wrapped up in June. Staff is looking forward to presenting a summary or project benefits and outcomes to the Board at the August 26 meeting. After completion of this presentation, staff will request Board action on the following items:

**A. Authorization of final payment to Blackstone Contractors, LLC**
Construction of the Birch Lake iron-enhanced sand filter (IESF) wrapped up in June, with final punch list items being taken care of and the filter is on-line and treating stormwater, as-designed. The final (and only) bill for construction of the filter was received at the end of July (attached), and Barr Engineering's memo signing off on the project construction, as-builts, and final project cost (attached) was received the first week in August. With the filter complete and functioning as-designed, the total project construction cost totals $114,703.00, an overage of $3,410.75 over their original accepted bid.

Blackstone was the lowest responsible bidder at $111,292.25, and their bid was accepted at the February Board meeting. In Barr's closeout technical memo, there were 4 reasons for the overage. Additional amounts of sediment log for the protection of the surrounding wetland during rain events during construction and additional erosion control blanket were needed for final site seeding and soil stabilization. Also, fill had to be brought in to make the filter's bank berm, as on-site soils were too mucky to hold up over time, and the mucky soil had to be hauled off-site. As part of this muck excavation and removal, more filter sand had to be brought in to account for the soil loss and added filter depth. The original bid price was figured using on-site soils for the filter berm, so the corresponding overage is fairly low given the need for bringing in off-site fill and removal of the existing muck.

From a financial perspective, over the roughly three-year project time span, VLAWMO will have received a total of $127,000 in outside revenue in project partnership and assistance funding from BWSR ($97,000), the City of White Bear Lake ($20,000), and Ramsey County ($10,000). VLAWMO's total project match will be approximately $58,000-$59,000. This VLAWMO project match amount was budgeted within Board approved 2019 and 2020 "working" budgets. The overall project costs were impacted by: 1) going out for a second round of bidding for construction in early 2020, as August 2019 bids came in much higher than the Engineer's estimate, 2) the second (ultimately Board approved) bid in Feb. 2020 again coming in higher than the engineering estimate (but lower than the first bid), 3) partner revisions in plan review outside engineers scope, and 4) authorized changes in the field during construction as identified attached project closeout memo from Barr Engineering. Upon Board approval of payment for construction to Blackstone, staff will proceed with obtaining the agreed upon match funds with the City and the County. Staff will also close out the BWSR grant which includes $48,500 on grant revenue that has yet to be received by VLAWMO.

**Staff is recommending approval of payment to Blackstone Contractors for completion of the Birch 4th & Otter Iron-Enhanced Sand Filter at the total of $114,703.00**

**Proposed Motion:** A motion was made by ___ and seconded by ___ to approve final payment to Blackstone Contractors, LLC in the amount of $114,703.00 for construction and completion of the Birch Lake 4th & Otter Iron-Enhance Sand Filter. Vote:

**Attachments:** Barr Engineering Memo for project completion and Final Payment to Blackstone Contractors, LLC; Birch Lake Iron-Enhanced Sand Filter (IESF) Progress Payment Number 1

**B. Consider Operations & Maintenance Agreement Approval**

As part of accepting the $97,000 in BWSR Clean Water Fund grant funds for construction, it is a requirement that the completed filter must be maintained for 25 years by the grantee (VLAWMO). Staff has been working since 2019 with the City of White Bear Lake and Ramsey County on a joint Operations & Maintenance (O&M) Agreement that meets this requirement and delegates maintenance activities and cost-sharing in incurred expenses (attached). VLAWMO is in for 10% of maintenance costs, the City is in for 85%, and the County is in for 5%, based upon drainage area to the filter. The County and the City have been very generous, not only with their time and help creating and revising the Agreement, but also for their buy-in percentages of future O&M costs. This Agreement does bind VLAWMO to cost sharing of 10% of maintenance costs, if all 3 parties agree maintenance is necessary, for 25 years, and is mandated by BWSR to receive the remaining grant funds for construction, and to close out the grant. As per VLAWMO's executed grant agreement and project work plan with BWSR, the project must be maintained for 25 years, after completion. The Birch Lake Improvement District (BLID), is also named on the Agreement for minor cleaning and maintenance assistance, but is not assigned a maintenance cost-share percentage, and is not bound to contributing to maintenance costs. Included in the packet is a draft version with changes made by and approved by Kennedy & Graven, and VLAWMO & City staff. This final draft Agreement is still under review by Ramsey County attorneys, and is hoped to be approved and returned in time for the 8/26 Board meeting.

**Staff is recommending entering into Agreement, signing, and execution of the Birch Lake 4th & Otter Iron-Enhance Sand Filter Operations & Maintenance Agreement (PW2019-14) with any non-material changes and upon advice of Counsel.**

**Proposed Motion:** A motion was made by ___ and seconded by ___ to enter into Agreement, signing, and execution of the Birch Lake 4th &Otter Iron-Enhance Sand Filter Operations & Maintenance Agreement (PW2019-14) with any non-material changes and upon advice of Counsel. Vote:

**Attachments:** Birch Lake IESF O&M Agreement (attachements)

**C. Consider MAWD Award application**

The Minnesota Association of Watershed Districts (MAWD) has released its application for the annual Project of the Year award that "select[s] and recognize[s] an outstanding project related to water resource enhancement and protection", and is recognized at the annual MAWD conference. Upon completion of the Birch Lake 4th & Otter IESF, staff is asking the Board for consideration for staff to submit an application for the 2020 Project of the Year. This is VLAWMO's first iron-enhanced sand filter, utilizes strong partnership in cooperation and funding with four organizations, protects one of VLAWMO's healthiest lakes, and provides a model and lessons for future projects in VLAWMO and in the metro. The Birch Lake Improvement District (BLID) is a self-organized group of homeowners that is self-taxed with a public board to fund the preservation of VLAWMO's healthiest lake. The project, by far, treats the largest subwatershed flow to Birch Lake, treating 11.7% of the contributing watershed to the Lake. The project illustrates how a smaller metro watershed can implement storm water treatment Capital Improvement Projects, with limited funding and project space, to help protect our surface water resources.

Preliminary nominations are due on August 28th, and the top 3 candidates will be invited to submit a more robust award proposal for final consideration in early October. If the Board agrees this is a worthy submittal, staff would like to submit the Birch Lake 4th & Otter IESF application for the MAWD 2020 Project of the Year. Staff will be have the completed application available at the August 26th meeting.

**Staff is recommending Board consideration and approval to submit the Birch Lake 4th & Otter IESF application for the 2020 MAWD Project of the Year**

Attached: MAWD Project of the Year Application

resourceful. naturally.
engineering and environmental consultants

BARR

August 3, 2020

Phil Belfiori
Administrator
VLAWMO
800 E County Rd E
Vadnais Heights, MN 55127

**Re: Final Payment to Blackstone Contractors LLC**

Dear Phil:

On June 9, 2020, Blackstone crew finished all remaining work for the Birch Lake IESF project. Tyler Thompson (VLAWMO) and Greg Nelson (Barr) were onsite to review the work, provide comments, and make any additional requests to the contractor's superintendent. All punch list items were identified and have been completed.

This letter serves as a notification that the contractor in good faith has completed all the work required under the contract agreement. We recommend that the Owner completes final payment to Blackstone Contractors LLC in the amount of $114,703.00. The final contract amount was above the original contract amount by 3 percent. The change in final quantities that resulted in this amount are shown in the attached table for your reference. The measurement and payment for bid items was on track with a few exceptions, as follows.

1. Sediment Log was used instead of Silt Fence. Additional LF required to protect the wetland and divert flows around the proposed concrete wall and muck excavation runoff during construction.
2. Additional erosion control blanket and seed required to restore wetland area west of IESF.
3. It was determined that on site excavated soil would not be suitable for embankment construction. Additional truckloads of muck hauled off site and appropriate imported soil used in its place.
4. Additional clean washed filter sand and iron aggregate mix was required to establish design elevation of filter once loose muck was removed.

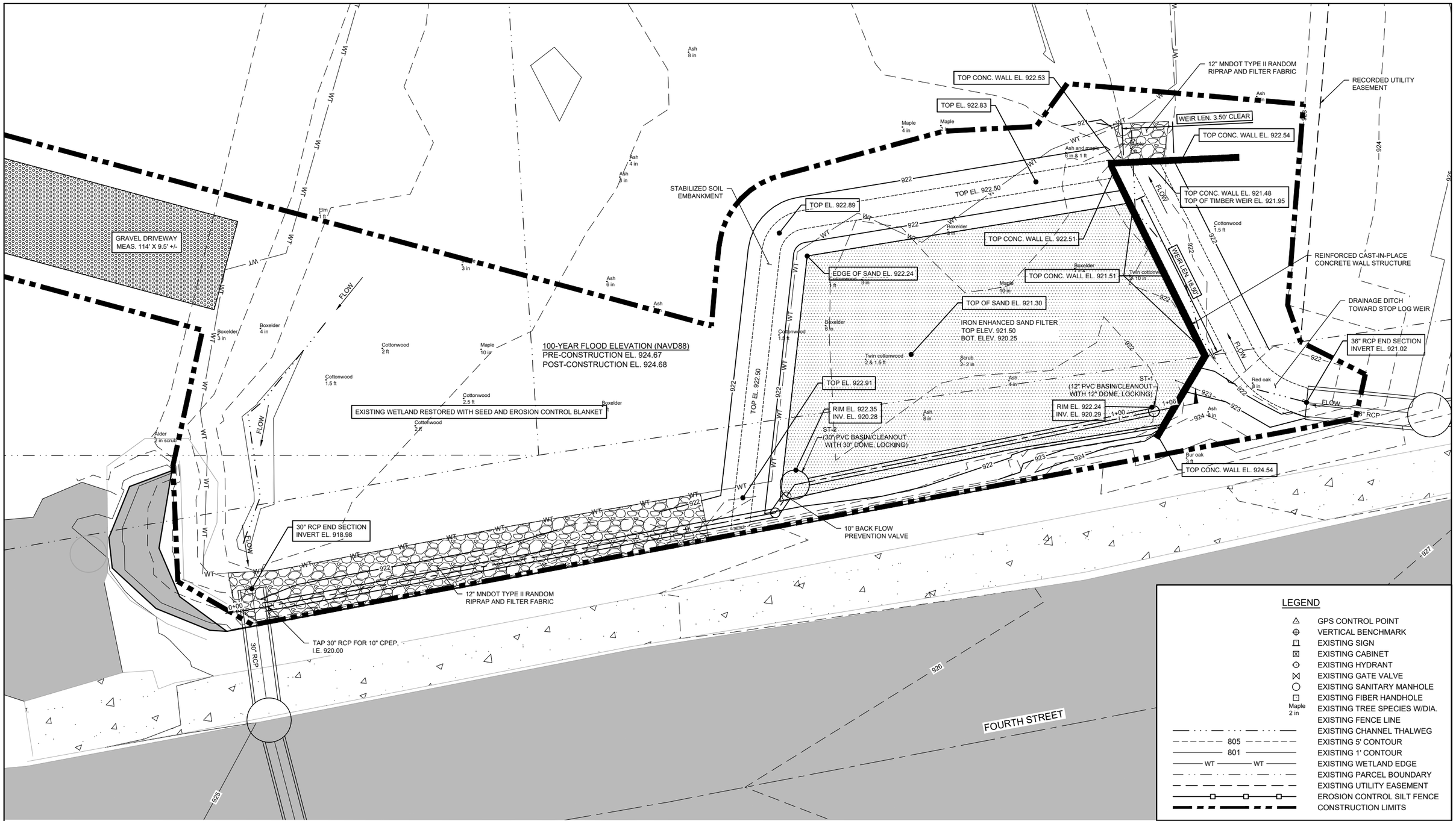
With this letter, I have included a record drawing showing the final elevations for the key features of the project. I have also prepared a thumb drive of our photos during and after construction that I will mail to you USPS. Please let me know if you have any further questions or need additional information. I have contacted Blackstone to inform them of your payment schedule anticipated during the month of August. Thank you for allowing me to be part of the project. Wishing that you all remain safe and well.

Sincerely,

Greg Nelson
Senior Project Designer
Minneapolis, MN office: 952.832.2770
cell: 612.599.8889
gnelson@barr.com

**Birch Lake Iron Enhanced Sand Filter (IESF)**
**Vadnais Lake Area Water Management Organization**
**Final Quantities**

| Item | Description | Unit | Estimated Quantity | Unit Price | Extension | Final Quantity | Final Amount | Contract Change |
|---|---|---|---|---|---|---|---|---|
| 1.04.A | Mobilization/Demobilization | L.S. | 1 | $9,500.00 | $9,500.00 | 1 | $9,500.00 | |
| 1.04.B | Control of Water | L.S. | 1 | $2,500.00 | $2,500.00 | 1 | $2,500.00 | |
| 1.04.C | Traffic Control | L.S. | 1 | $5,500.00 | $5,500.00 | 1 | $5,500.00 | |
| 1.04.D | Construction Entrance (Wood Chip) | EACH | 1 | $2,000.00 | $2,000.00 | 1 | $2,000.00 | |
| 1.04.E | Clear and Grub; Removal of Trees, Brush, and Debris (Disposal Off Site) | L.S. | 1 | $15,000.00 | $15,000.00 | 1 | $15,000.00 | |
| 1.04.F | Silt Fence | L.F. | 416 | $6.00 | $2,496.00 | ~~0~~ | $0.00 | -$2,496.00 |
| 1.04.G | Sediment Log (9-Inch Diameter) | L.F. | 50 | $6.00 | $300.00 | 190 | $1,140.00 | $840.00 |
| 1.04.H | Inlet Protection | EACH | 2 | $200.00 | $400.00 | ~~0~~ | $0.00 | -$400.00 |
| 1.04.I | Erosion Control Blanket | S.Y. | 304 | $4.00 | $1,216.00 | 540 | $2,160.00 | $944.00 |
| 1.04.J | Access Mud Mats Through Wetland | L.S. | 1 | $5,000.00 | $5,000.00 | 1 | $5,000.00 | |
| 1.04.K | Salvage and Replace Existing Top Soil (P) | C.Y. | 25 | $90.00 | $2,250.00 | 25 | $2,250.00 | |
| 1.04.L | Common Excavation (P) | C.Y. | 60 | $45.00 | $2,700.00 | 60 | $2,700.00 | |
| 1.04.M | Construct Control Berm Embankment (P) | C.Y. | 25 | $125.00 | $3,125.00 | 25 | $3,125.00 | |
| 1.04.N | Reinforced Concrete Wall | L.S. | 1 | $12,500.00 | $12,500.00 | 1 | $12,500.00 | |
| 1.04.O | Stop Logs and Rails | L.S. | 1 | $4,000.00 | $4,000.00 | 1 | $4,000.00 | |
| 1.04.P | Disposal of Excess Excavated Materials | C.Y. | 35 | $55.00 | $1,925.00 | 98 | $5,390.00 | $3,465.00 |
| 1.04.Q | Geotextile Fabric Sand Filter Liner, Mn/DOT Type V | S.Y. | 150 | $5.00 | $750.00 | 164 | $820.00 | $70.00 |
| 1.04.R | Iron Aggregate (Filings) | TON | 3.5 | $1,500.00 | $5,250.00 | 3.7 | $5,550.00 | $300.00 |
| 1.04.S | Clean Washed Filter Sand | TON | 70 | $65.00 | $4,550.00 | 87 | $5,655.00 | $1,105.00 |
| 1.04.T | Connect to Existing 30" RCP, Core Drill and Install Inserta-Tee Water Tight Fitting for 10" CPEP | EACH | 1 | $3,500.00 | $3,500.00 | 1 | $3,500.00 | |
| 1.04.U | 10" Dual Wall CPEP-WT with 45 Degree Bend | L.F. | 60 | $30.00 | $1,800.00 | 60 | $1,800.00 | |
| 1.04.V | 8" Slotted PVC Underdrain Pipe | L.F. | 38 | $55.00 | $2,090.00 | 38 | $2,090.00 | |
| 1.04.W | 10" Backflow Preventer | EACH | 1 | $4,000.00 | $4,000.00 | 1 | $4,000.00 | |
| 1.04.X | 30" PVC Nyloplast™ Control Structure with Locking Dome Grate | EACH | 1 | $4,500.00 | $4,500.00 | 1 | $4,500.00 | |
| 1.04.Y | 12" PVC Nyloplast™ Cleanout Structure with Locking Dome Grate | EACH | 1 | $2,000.00 | $2,000.00 | 1 | $2,000.00 | |
| 1.04 Z | Remove and Dispose of Existing Rip Rap | C.Y. | 20 | $75.00 | $1,500.00 | 20 | $1,500.00 | |
| 1.04.AA | Rip Rap Mn/DOT Class III and Filter Materials | TON | 15 | $145.00 | $2,175.00 | 10 | $1,450.00 | -$725.00 |
| 1.04.AA | Rip Rap Mn/DOT Class II and Filter Fabric | TON | 18 | $145.00 | $2,610.00 | 17 | $2,465.00 | -$145.00 |
| 1.04.AB | Gravel Surface Driveway | S.Y. | 122 | $20.00 | $2,440.00 | 120 | $2,400.00 | -$40.00 |
| 1.04.AC | Seed Area | S.Y. | 405 | $3.65 | $1,478.25 | 540 | $1,971.00 | $492.75 |
| 1.04.AD | Wet Prairie, BWSR Seed Mix 34-262 | LBS. | 1.12 | $100.00 | $112.00 | 1.12 | $112.00 | |
| 1.04.AE | Mesic Prairie Southeast, BWSR Seed Mix 35-641 | LBS. | 1.25 | $100.00 | $125.00 | 1.25 | $125.00 | $7,216.75 Over |
| 1.04.AF | Site Restoration and Clean-up | L.S. | 1 | $2,000.00 | $2,000.00 | 1 | $2,000.00 | -$3,806.00 Under |
| | | | | **Total of Extensions** | **$111,292.25** | | **$114,703.00** | **$3,410.75 3%** |




## LEGEND

- GPS CONTROL POINT
- VERTICAL BENCHMARK
- EXISTING SIGN
- EXISTING CABINET
- EXISTING HYDRANT
- EXISTING GATE VALVE
- EXISTING SANITARY MANHOLE
- EXISTING FIBER HANDHOLE
- Maple 2 in — EXISTING TREE SPECIES W/DIA.
- EXISTING FENCE LINE
- EXISTING CHANNEL THALWEG
- 805 — EXISTING 5' CONTOUR
- 801 — EXISTING 1' CONTOUR
- WT — WT — EXISTING WETLAND EDGE
- EXISTING PARCEL BOUNDARY
- EXISTING UTILITY EASEMENT
- EROSION CONTROL SILT FEE
- CONSTRUCTION LIMITS

1 - PLAN
0 5 10
SCALE IN FEET

N

RECORD ELEVATIONS
AS OF AUGUST, 2020

*RECORD DRAWING*

CAD ID: USER: Greg Nelson FILE: M:\DESIGN\23621274.00\23621274.00_RECORD PLAN.DWG PLOT SCALE: 1:2 PLOT DATE: 8/5/2020 1:14 PM

| NO. | BY | CHK. | APP. | DATE | REVISION DESCRIPTION |
|---|---|---|---|---|---|

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

PRINTED NAME GREGORY J. WILSON

SIGNATURE

DATE 8/5/2020 LICENSE # 25782

| | APR2018 | JUN2019 | | JAN2020 | | | |
|---|---|---|---|---|---|---|---|
| CLIENT | | | | | | | |
| BID | | | | | | | |
| CONSTRUCTION | | | | | | | |
| RECORD | | | | | AUG2020 | | |
| RELEASED TO/FOR | A | B | C | 0 | 1 | 2 | 3 |
| | DATE RELEASED | | | | | | |

BARR

Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

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

| | |
|---|---|
| Scale | AS SHOWN |
| Date | 4/1/2018 |
| Drawn | GGN |
| Checked | GJW |
| Designed | GGN |
| Approved | GJW |

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

SITE GRADING
AND STORM SEWER

BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No.
DWG. No. RECORD
REV. No. 1

**Birch Lake Iron Enhanced Sand Filter (IESF)**
**Progress Payment Number 1**

| | | | | |
|---|---|---|---|---|
| 1.0 | Total Completed Through This Period: | $114,703.00 | | |
| 2.0 | Total Completed Previously Completed: | | $0.00 | |
| 3.0 | Total Completed This Period: | | | $114,703.00 |
| 4.0 | Amount Previously Retained: | | $0.00 | |
| 5.0 | Amount Retained This Period (See Note 1): | | | $0.00 |
| 6.0 | Total Amount Retained (See Note 2): | | $0.00 | |
| 7.0 | Retainage Released Through This Period: | | | $0.00 |
| 8.0 | Total Retainage Remaining: | | $0.00 | |
| 9.0 | Amounts Previously Paid: | $0.00 | | |
| 10.0 | Amount Due This Estimate: | | | $114,703.00 |

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

SUBMITTED BY:

Name: Bruce Karvonen Date: 07/23/2020

Title: Vice President

Contractor: Blackstone Contractors, LCC.

Signature: Bruce Karvonen

RECOMMENDED BY:

Name: Greg Wilson Date: 7/27/2020

Title: District Engineer

Engineer: Barr Engineering Company

Signature:

APPROVED BY:

Name: Phil Belfiori Date:

Title: WMO Administrator

Owner: Vadnais Lake Area Water Management Organization

Signature:

**Birch Lake Iron Enhanced Sand Filter (IESF)**
**Vadnais Lake Area Water Management Organization**
**Summary of Work Completed Through June 8, 2020 for Progress Payment Number 1**

| | | | | | | (1) Total Completed Through This Period | | (2) Total Completed Previous Period | | (3) Total Completed This Period | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | Description | Unit | Estimated Quantity | Unit Price | Extension | Quantity | Amount | Quantity | Amount | Quantity | Amount |
| 1.04.A | Mobilization/Demobilization | L.S. | 1 | 9,500.00 | 9,500.00 | 1 | $9,500.00 | 0 | $0.00 | 1 | $9,500.00 |
| 1.04.B | Control of Water | L.S. | 1 | 2,500.00 | 2,500.00 | 1 | $2,500.00 | 0 | $0.00 | 1 | $2,500.00 |
| 1.04.C | Traffic Control | L.S. | 1 | 5,500.00 | 5,500.00 | 1 | $5,500.00 | 0 | $0.00 | 1 | $5,500.00 |
| 1.04.D | Construction Entrance (Wood Chip) | EACH | 1 | 2,000.00 | 2,000.00 | 1 | $2,000.00 | 0 | $0.00 | 1 | $2,000.00 |
| 1.04.E | Clear and Grub; Removal of Trees, Brush, and Debris (Disposal Off Site) | L.S. | 1 | 15,000.00 | 15,000.00 | 1 | $15,000.00 | 0 | $0.00 | 1 | $15,000.00 |
| 1.04.F | Silt Fence | L.F. | 416 | 6.00 | 2,496.00 | 0 | $0.00 | 0 | $0.00 | 0 | $0.00 |
| 1.04.G | Sediment Log (9-Inch Diameter) | L.F. | 50 | 6.00 | 300.00 | 190 | $1,140.00 | 0 | $0.00 | 190 | $1,140.00 |
| 1.04.H | Inlet Protection | EACH | 2 | 200.00 | 400.00 | 0 | $0.00 | 0 | $0.00 | 0 | $0.00 |
| 1.04.I | Erosion Control Blanket | S.Y. | 304 | 4.00 | 1,216.00 | 540 | $2,160.00 | 0 | $0.00 | 540 | $2,160.00 |
| 1.04.J | Access Mud Mats Through Wetland | L.S. | 1 | 5,000.00 | 5,000.00 | 1 | $5,000.00 | 0 | $0.00 | 1 | $5,000.00 |
| 1.04.K | Salvage and Replace Existing Top Soil (P) | C.Y. | 25 | 90.00 | 2,250.00 | 25 | $2,250.00 | 0 | $0.00 | 25 | $2,250.00 |
| 1.04.L | Common Excavation (P) | C.Y. | 60 | 45.00 | 2,700.00 | 60 | $2,700.00 | 0 | $0.00 | 60 | $2,700.00 |
| 1.04.M | Construct Control Berm Embankment (P) | C.Y. | 25 | 125.00 | 3,125.00 | 25 | $3,125.00 | 0 | $0.00 | 25 | $3,125.00 |
| 1.04.N | Reinforced Concrete Wall | L.S. | 1 | 12,500.00 | 12,500.00 | 1 | $12,500.00 | 0 | $0.00 | 1 | $12,500.00 |
| 1.04.O | Stop Logs and Rails | L.S. | 1 | 4,000.00 | 4,000.00 | 1 | $4,000.00 | | $0.00 | 1 | $4,000.00 |
| 1.04.P | Disposal of Excess Excavated Materials | C.Y. | 35 | 55.00 | 1,925.00 | 98 | $5,390.00 | 0 | $0.00 | 98 | $5,390.00 |
| 1.04.Q | Geotextile Fabric Sand Filter Liner, Mn/DOT Type V | S.Y. | 150 | 5.00 | 750.00 | 164 | $820.00 | 0 | $0.00 | 164 | $820.00 |
| 1.04.R | Iron Aggregate (Filings) | TON | 3.5 | 1,500.00 | 5,250.00 | 3.7 | $5,550.00 | 0.0 | $0.00 | 3.7 | $5,550.00 |
| 1.04.S | Clean Washed Filter Sand | TON | 70 | 65.00 | 4,550.00 | 87 | $5,655.00 | 0 | $0.00 | 87 | $5,655.00 |
| 1.04.T | Connect to Existing 30" RCP, Core Drill and Install Inserta-Tee Water Tight Fitting for 10" CPEP | EACH | 1 | 3,500.00 | 3,500.00 | 1 | $3,500.00 | 0 | $0.00 | 1 | $3,500.00 |
| 1.04.U | 10" Dual Wall CPEP-WT with 45 Degree Bend | L.F. | 60 | 30.00 | 1,800.00 | 60 | $1,800.00 | 0 | $0.00 | 60 | $1,800.00 |
| 1.04.V | 8" Slotted PVC Underdrain Pipe | L.F. | 38 | 55.00 | 2,090.00 | 38 | $2,090.00 | 0 | $0.00 | 38 | $2,090.00 |
| 1.04.W | 10" Backflow Preventer | EACH | 1 | 4,000.00 | 4,000.00 | 1 | $4,000.00 | 0 | $0.00 | 1 | $4,000.00 |
| 1.04.X | 30" PVC Nyloplast™ Control Structure with Locking Dome Grate | EACH | 1 | 4,500.00 | 4,500.00 | 1 | $4,500.00 | 0 | $0.00 | 1 | $4,500.00 |
| 1.04.Y | 12" PVC Nyloplast™ Cleanout Structure with Locking Dome Grate | EACH | 1 | 2,000.00 | 2,000.00 | 1 | $2,000.00 | 0 | $0.00 | 1 | $2,000.00 |
| 1.04 Z | Remove and Dispose of Existing Rip Rap | C.Y. | 20 | 75.00 | 1,500.00 | 20 | $1,500.00 | 0 | $0.00 | 20 | $1,500.00 |
| 1.04.AA | Rip Rap Mn/DOT Class III and Filter Materials | TON | 15 | 145.00 | 2,175.00 | 10 | $1,450.00 | 0 | $0.00 | 10 | $1,450.00 |
| 1.04.AA | Rip Rap Mn/DOT Class II and Filter Fabric | TON | 18 | 145.00 | 2,610.00 | 17 | $2,465.00 | 0 | $0.00 | 17 | $2,465.00 |
| 1.04.AB | Gravel Surface Driveway | S.Y. | 122 | 20.00 | 2,440.00 | 120 | $2,400.00 | 0 | $0.00 | 120 | $2,400.00 |
| 1.04.AC | Seed Area | S.Y. | 405 | 3.65 | 1,478.25 | 540 | $1,971.00 | 0 | $0.00 | 540 | $1,971.00 |
| 1.04.AD | Wet Prairie, BWSR Seed Mix 34-262 | LBS. | 1.12 | 100.00 | 112.00 | 1.12 | $112.00 | 0.00 | $0.00 | 1.12 | $112.00 |
| 1.04.AE | Mesic Prairie Southeast, BWSR Seed Mix 35-641 | LBS. | 1.25 | 100.00 | 125.00 | 1.25 | $125.00 | 0.00 | $0.00 | 1.25 | $125.00 |
| 1.04.AF | Site Restoration and Clean-up | L.S. | 1 | 2,000.00 | 2,000.00 | 1 | $2,000.00 | 0 | $0.00 | 1 | $2,000.00 |
| | | | | **Total of Extensions** | **$111,292.25** | | **$114,703.00** | | **$0.00** | | **$114,703.00** |

**RAMSEY COUNTY**
**CONSTRUCTION AND MAINTENANCE AGREEMENT**
**WITH THE VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION, CITY OF WHITE BEAR LAKE, AND BIRCH LAKE IMPROVEMENT DISTRICT FOR**
**Construction of Stormwater Treatment Facility**
**on Otter Lake Road and 4th Street**

Total Project Cost: $111,292.25
VLAWMO Cost: $ 81,192.25
City of White Bear Lake Cost: $20,000.00
Ramsey County Cost: $10,000.00
BLID Cost: $100.00

Attachments:
A – Project Location Map
B – Parcel Exhibit
C – Birch Lake Pump Site No. 8 Description
D – Engineer's Estimate
E – Storm Sewer Ownership
F – Inspection and Maintenance Plan

This Construction and Maintenance Agreement ("Agreement") is by and among Vadnais Lake Area Water Management Organization ("VLAWMO"), Birch Lake Improvement District ("BLID"), the City of White Bear Lake, a municipal corporation ("City"), and Ramsey County, a political subdivision of the State of Minnesota, ("County") for the construction of a stormwater treatment facility northeasterly of Otter Lake Road and 4th Street in White Bear Lake, MN ("Project"). The VLAWMO, BLID, City, and County may hereinafter be referred to individually as a "Stakeholder" or collectively as the "Stakeholders."

## RECITALS

1. The Project is located on the northeast quadrant of Otter Lake Road and 4th Street as shown in Attachment A.

2. The Project is identified in the Vadnais Lake Area Water Management Organization's Comprehensive Watershed Management Plan 2017-2026, Section 4.3.

3. Otter Lake Road, in the area affected by construction, is designated County State Aid Highway (CSAH) 60.

4. The Project has been designated by the Minnesota Board of Water & Soil Resources (BWSR) as eligible for Clean Water Funds (CWF) through the 2018 Competitive Grants Program.

5. The subject road segment is located within the City and within the boundaries of the VLAWMO.

6. The Project location receives stormwater from a total watershed of 85 acres, of which 95% is City and 5% is County contributing drainage area.

7. VLAWMO has convened meetings with the County, City, and BLID to identify Project cost participation and maintenance responsibilities.

8. VLAWMO has been awarded CWF grant funding of $97,000 to cover engineering and construction costs for the Project.

9. Stakeholders agreed that Project construction costs will be split between VLAWMO, the City, and the County according to cost participation identified in this Agreement. The BLID will contribute a one-time payment of $100.00 to the Project costs to establish stakeholder status.

10. Stakeholders agreed that the cost distribution for future routine and major maintenance is 85% City, 10% VLAWMO, and 5% County.

11. This Agreement has been prepared to establish the cost participation and responsibilities of the County, City, VLAWMO, and BLID for the Project construction, maintenance activities, and associated elements.

## AGREEMENTS

1. Responsibility for Design Engineering

   1.1. VLAWMO shall prepare plans, specifications, and proposals and distribute these documents for review to the designated project representative from each Stakeholder.

2. Responsibility for the Easement Plan and Property Acquisition

   2.1. VLAWMO will prepare plans showing easements and other property interests required for construction of the Project and will provide copies to Stakeholders for their review.

   2.2. The City will manage and perform property acquisition services for PID 153022420114. The parcel is shown in Attachment B.

   2.3. The County will issue the VLAWMO a County Right-of-Way permit for access in perpetuity through the parcel on the northeast quadrant of Otter Lake Road and 4$^{th}$ Street. The parcel is shown as Attachment C Birch Lake Pump Site #8 Description Exhibit.

3. Procurement and Award of Contract

3.1. VLAWMO shall advertise and receive construction bids for the Project.

3.2. VLAWMO shall distribute a summary of construction bids received, and recommendation for contract award, to each of the Stakeholders for review and comment. VLAWMO shall consider comments from the Stakeholders and shall award the construction contract in accordance with applicable laws.

4. Responsibility for Construction Administration

4.1. VLAWMO shall administer the construction contract for the Project, including authorization to begin work, construction inspection, approval of change orders, certification of work completed and partial and final payments to the contractor.

5. Project Construction Costs

5.1. VLAWMO will assume costs for design engineering. The City, County, and BLID will contribute to construction costs as identified in this Agreement. VLAWMO will assume the remaining construction costs less the Stakeholders' contributions.

5.2. Design Engineering Costs

5.2.1. VLAWMO assume the costs for design engineering of the Project.

5.3. Property Acquisition and Easement Costs

5.3.1. Property acquisition costs including payment to owners, appraisal fees, and other related costs of acquiring property and easements for the Project will be shared by VLAWMO and the City in such amounts as VLAWMO and the City agree to outside of this Agreement.

5.4 Project Construction Contributions

5.4.1. The Stakeholders agree to contribute the following amounts to the construction of the Project ("Construction Contribution"). The Stakeholders shall make their contributions to VLAWMO as provided herein. VLAWMO shall be responsible for paying the contractor as part of administering the Project contract.

- BLID will contribute $100.00.
- City will contribute $20,000.00.
- County will contribute $10,000.00.
- VLAWMO will contribute $81,192.25.

5.4.2 The Project construction costs are shown in Attachment D Engineer's Estimate.

6. Payment Schedule

6.1. VLAWMO shall prepare and submit invoices to the Stakeholders for the total amount of their Construction Contribution at the time of contract award.

6.2. Stakeholders shall remit final payment of their Construction Contribution to VLAWMO within 30 days of receipt of the invoice.

7. Ownership and Maintenance Responsibility for Project Elements

7.1. VLAWMO shall be responsible for the inspection of the Project facility. Inspection activities and frequency of inspections are shown in Attachment F Inspection and Maintenance Plan. VLAWMO shall keep inspection records and provide a copy of the inspection records to the other Stakeholder representatives for review annually. The records shall also identify any needed routine maintenance or major maintenance work.

7.2. Routine maintenance of the Project facility is referenced in Attachment F Inspection and Maintenance Plans. The lead Stakeholder responsible for the identified routine maintenance activity shall estimate all costs associated with routine maintenance activities to be completed and distribute to each Stakeholder for review.
Eligible costs include contractor bids, inspection, maintenance or construction personnel, equipment, equipment rental, laboratory analysis, and materials. All Stakeholders required to contribute to maintenance costs shall agree upon the need for the identified routine maintenance work. The total cost of routine maintenance work shall be divided as follows: City 85%, VLAWMO 10%, and County 5%. The lead Stakeholder initiating the routine maintenance work shall prepare invoices according to this cost-share distribution and submit them to the remaining Stakeholders. The lead Stakeholder shall keep routine maintenance records and provide to other Stakeholders upon request.

7.3. Major maintenance work of the Project facility is referenced in Attachment F Inspection and Maintenance Plans. The Stakeholders shall coordinate major maintenance work for the Project facility. The Stakeholder identifying a major maintenance need shall convene a meeting of the remaining Stakeholders to discuss the effectiveness and operating condition of the Project facility. All Stakeholders required to contribute toward maintenance costs shall agree upon the need and scheduling for major maintenance work. The total cost of major maintenance work shall be divided as follows: City 85%, VLAWMO 10%, and County 5%. The lead Stakeholder initiating the major maintenance work shall prepare invoices according to this cost-share distribution and submit them to the

remaining Stakeholders. The lead Stakeholder shall keep major maintenance records and provide to other Stakeholders upon request.

7.4. Stakeholders who have received invoices shall remit payment to the lead Stakeholder within 30 days of receipt of the invoice.

7.5. The City and County shall own the Project elements, as identified in Attachment E Storm Sewer Ownership. The City and County, as the property owners, grant to each other and VLAWMO all necessary access to the Project facility and associated elements for performance of inspection and maintenance activity.

7.6. Stakeholders may update Attachment F Inspection and Maintenance Plan periodically. All Stakeholders shall approve of any changes.

7.7. In the event Otter Lake Road is turned back to the City, the County will no longer be a Project Stakeholder, and its ongoing obligations under this agreement shall discontinue, and shall be assumed by the City.

8. The City and the County grant VLAWMO temporary construction permits over all City and County owned rights-of-way and property within the limits of the Project for use during construction at no cost.

9. The City, County, and VLAWMO shall indemnify, defend, and hold each other harmless against any and all liability, losses, costs, damages, expenses, claims, or actions, including attorney's fees, which the indemnified party, its officials, agents, or employees may hereafter sustain, incur, or be required to pay, arising out of or by reason of any act or omission of the indemnifying party, its officials, agents**,** or employees, in the execution, performance, or failure to adequately perform the indemnifying party's obligation pursuant to this Agreement. Nothing in this Agreement shall constitute a waiver by the County, City, or VLAWMO of any statutory or common law immunities, limits, or exceptions on liability.

10. This Agreement, including the recitals and attachments which are incorporated herein, shall remain in full force and effect until the year 2045. No amendment to this Agreement is effective unless: (a) prior to completion of Project construction it is executed by the Stakeholders; or (b) after Project construction it is executed by the City, County, and VLAWMO.

THE REMAINDER OF THIS PAGE IN INTENTIONALLY BLANK.

**RAMSEY COUNTY, MINNESOTA**

_____ Date: _____
Ryan O'Connor, County Manager

Approval recommended:

_____
Ted Schoenecker, Director
Public Works Department

Approved as to form:

_____
Assistant County Attorney

**VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION**

_____ Date: _____
Jim Lindner, Chair

_____ Date: _____
Phil Belfiori, Administrator

**CITY OF WHITE BEAR LAKE, MN**

_____ Date: _____
Jo Emerson, Mayor

_____ Date: _____
Ellen Hiniker, City Manager

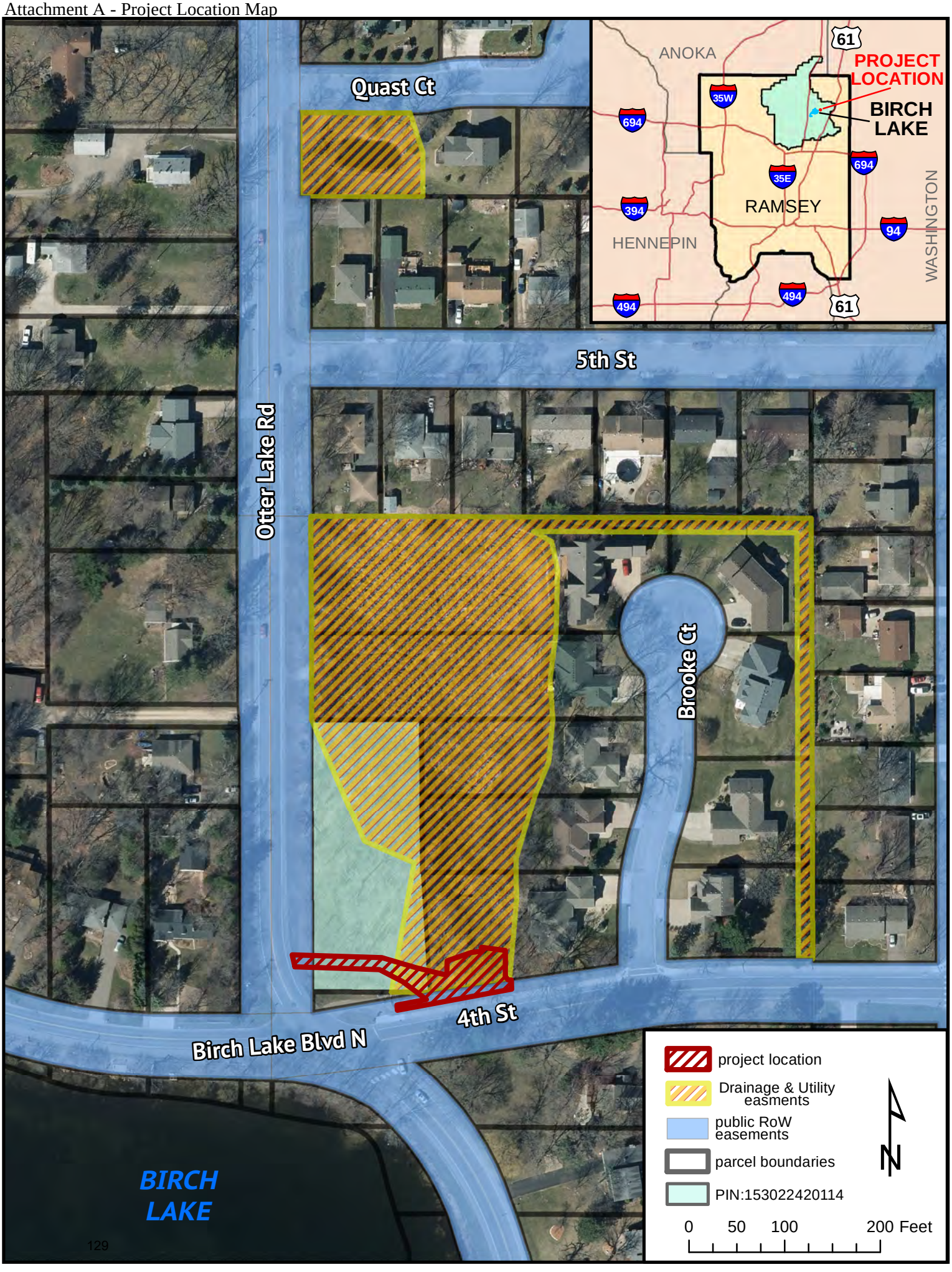
RECOMMENDED FOR APPROVAL:

_____ Date: _____
Paul Kauppi, City Engineer

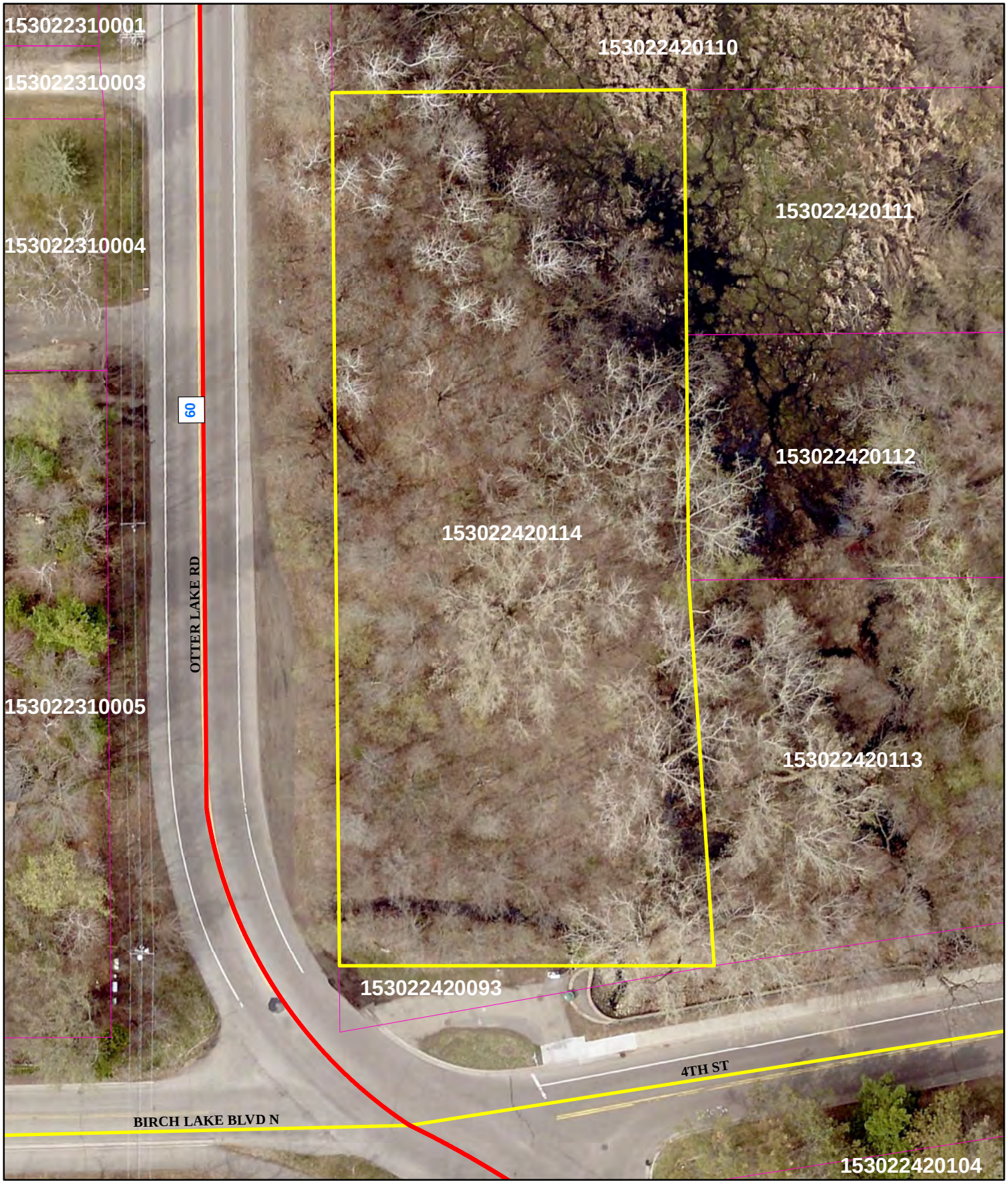
**BIRCH LAKE IMPROVEMENT DISTRICT**
BOARD OF DIRECTORS

_____ Date: _____
Steve Laliberte, Chairman

Attachment A - Project Location Map



# Attachment B - Parcel Exhibit

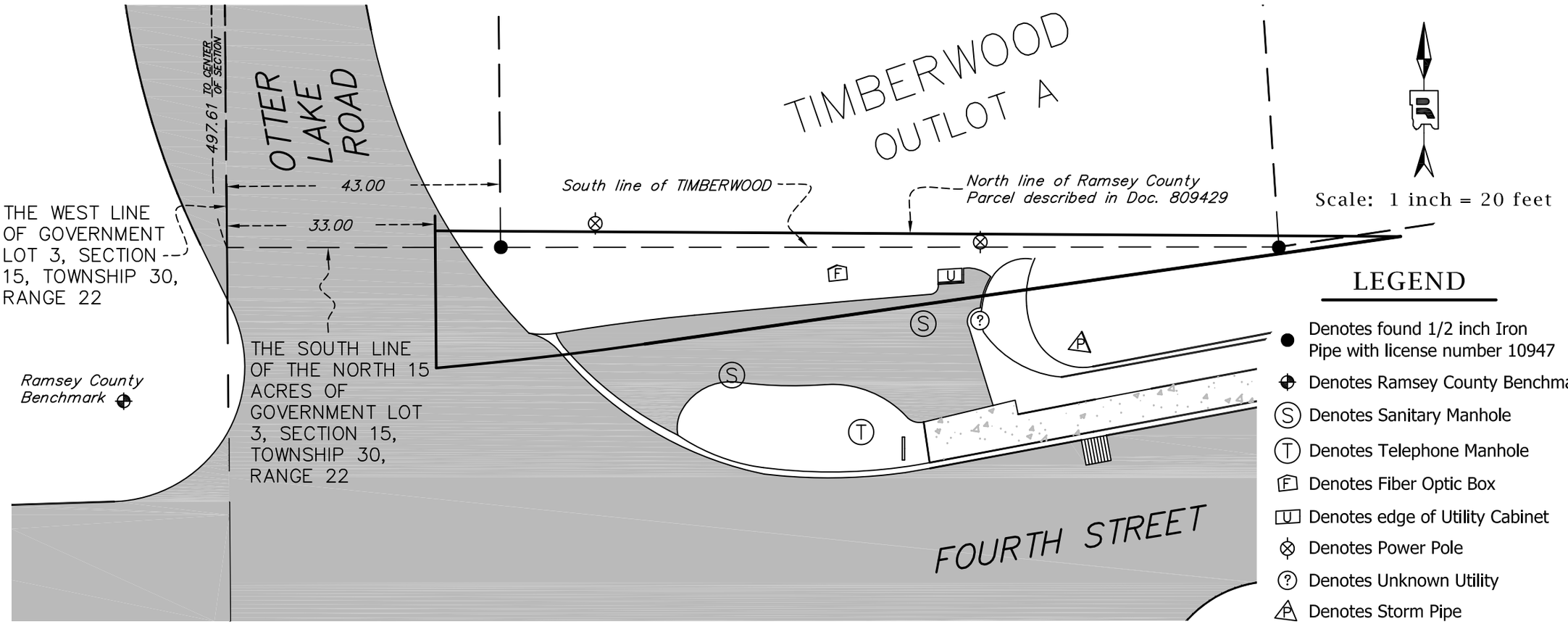



3/12/2020

Attachment C

# Description Exhibit

## Birch Lake Pump Site #8




## LEGEND

- Denotes found 1/2 inch Iron Pipe with license number 10947
- Denotes Ramsey County Benchmark
- Denotes Sanitary Manhole
- Denotes Telephone Manhole
- Denotes Fiber Optic Box
- Denotes edge of Utility Cabinet
- Denotes Power Pole
- Denotes Unknown Utility
- Denotes Storm Pipe
- Denotes Sign
- Denotes Catch Basin

I hereby certify that this survey, plan or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Craig W. Hinzman, L.S. Date
Ramsey County Surveyor
Minnesota License No. 20261

*Project No. 2018-017*
*Prepared By: Chris Johnson*

## Description

A parcel of land in the S.E. 1/4 of Sec. 15, Twp. 30N., Rge. 22W., more specifically described as follows: Beginning at a point which is 495.00 feet south and 33.00 feet east of the center of Sec. 15, Twp. 30N., Rge. 22W.; thence south 89°40' east a distance of 151.40 feet; thence south 81°54' west a distance of 119.95 feet; thence southwesterly following a curve right (with a radius of 604.27 feet and a central angle of 9°02') a distance of 32.95 feet; thence north a distance of 23.90 feet to the point of beginning, and containing 0.043 acres.


RAMSEY COUNTY PUBLIC WORKS
LAND SURVEY DIVISION
1425 PAUL KIRKWOLD DRIVE
ARDEN HILLS, MN 55112-3933
651-266-7100

# Attachment D

**Birch Lake Iron Enhanced Sand Filter (IESF)**
**Vadnais Lake Area Water Management Organization**
**Bid Opening: Thursday, January 30, 2020 at 10:00 a.m. CDT**

| | | | | Engineer's Estimate | | | Blackstone Contractors LLC | | Minger Construction Co., Inc. | | Lametti & Sons, Inc. | | G.F. Jedlicki, Inc. | | Meyer Contracting, Inc. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Item | Description | Unit | Estimated Quantity | Unit Price | Extension | Average Unit Prices | Unit Price | Extension | Unit Price | Extension | Unit Price | Extension | Unit Price | Extension | Unit Price | Extension |
| 1.04.A | Mobilization/Demobilization | L.S. | 1 | 10,000.00 | 10,000.00 | 20,404.10 | 9,500.00 | 9,500.00 | 6,000.00 | 6,000.00 | 5,000.00 | 5,000.00 | 2,500.00 | 2,500.00 | 7,000.00 | 7,000.00 |
| 1.04.B | Control of Water | L.S. | 1 | 5,500.00 | 5,500.00 | 12,699.20 | 2,500.00 | 2,500.00 | 3,750.00 | 3,750.00 | 14,000.00 | 14,000.00 | 3,450.00 | 3,450.00 | 6,610.00 | 6,610.00 |
| 1.04.C | Traffic Control | L.S. | 1 | 2,500.00 | 2,500.00 | 4,380.80 | 5,500.00 | 5,500.00 | 5,000.00 | 5,000.00 | 2,500.00 | 2,500.00 | 2,700.00 | 2,700.00 | 4,500.00 | 4,500.00 |
| 1.04.D | Construction Entrance (Wood Chip) | EACH | 1 | 2,500.00 | 2,500.00 | 3,279.20 | 2,000.00 | 2,000.00 | 1,900.00 | 1,900.00 | 8,000.00 | 8,000.00 | 3,000.00 | 3,000.00 | 2,842.00 | 2,842.00 |
| 1.04.E | Clear and Grub; Removal of Trees, Brush, and Debris (Disposal Off Site) | L.S. | 1 | 10,000.00 | 10,000.00 | 15,091.20 | 15,000.00 | 15,000.00 | 11,000.00 | 11,000.00 | 13,000.00 | 13,000.00 | 11,500.00 | 11,500.00 | 9,000.00 | 9,000.00 |
| 1.04.F | Silt Fence | L.F. | 416 | 4.00 | 1,664.00 | 3.98 | 6.00 | 2,496.00 | 3.25 | 1,352.00 | 5.00 | 2,080.00 | 4.00 | 1,664.00 | 2.50 | 1,040.00 |
| 1.04.G | Sediment Log (9-Inch Diameter) | L.F. | 50 | 5.50 | 275.00 | 5.80 | 6.00 | 300.00 | 3.25 | 162.50 | 6.00 | 300.00 | 6.00 | 300.00 | 4.00 | 200.00 |
| 1.04.H | Inlet Protection | EACH | 2 | 350.00 | 700.00 | 214.00 | 200.00 | 400.00 | 165.00 | 330.00 | 300.00 | 600.00 | 215.00 | 430.00 | 125.00 | 250.00 |
| 1.04.I | Erosion Control Blanket | S.Y. | 304 | 3.50 | 1,064.00 | 3.91 | 4.00 | 1,216.00 | 3.25 | 988.00 | 8.00 | 2,432.00 | 4.55 | 1,383.20 | 2.00 | 608.00 |
| 1.04.J | Access Mud Mats Through Wetland | L.S. | 1 | 2,300.00 | 2,300.00 | 8,088.00 | 5,000.00 | 5,000.00 | 2,900.00 | 2,900.00 | 4,500.00 | 4,500.00 | 11,400.00 | 11,400.00 | 12,305.00 | 12,305.00 |
| 1.04.K | Salvage and Replace Existing Top Soil (P) | C.Y. | 25 | 35.00 | 875.00 | 101.68 | 90.00 | 2,250.00 | 215.00 | 5,375.00 | 250.00 | 6,250.00 | 18.00 | 450.00 | 99.00 | 2,475.00 |
| 1.04.L | Common Excavation (P) | C.Y. | 60 | 30.00 | 1,800.00 | 53.37 | 45.00 | 2,700.00 | 28.00 | 1,680.00 | 50.00 | 3,000.00 | 44.00 | 2,640.00 | 47.25 | 2,835.00 |
| 1.04.M | Construct Control Berm Embankment (P) | C.Y. | 25 | 50.00 | 1,250.00 | 75.39 | 125.00 | 3,125.00 | 78.00 | 1,950.00 | 80.00 | 2,000.00 | 12.00 | 300.00 | 86.50 | 2,162.50 |
| 1.04.N | Reinforced Concrete Wall | L.S. | 1 | 20,000.00 | 20,000.00 | 26,554.10 | 12,500.00 | 12,500.00 | 17,500.00 | 17,500.00 | 20,000.00 | 20,000.00 | 31,020.00 | 31,020.00 | 23,021.00 | 23,021.00 |
| 1.04.O | Stop Logs and Rails | L.S. | 1 | 4,000.00 | 4,000.00 | 4,640.10 | 4,000.00 | 4,000.00 | 2,600.00 | 2,600.00 | 2,000.00 | 2,000.00 | 4,500.00 | 4,500.00 | 2,815.00 | 2,815.00 |
| 1.04.P | Disposal of Excess Excavated Materials | C.Y. | 35 | 65.00 | 2,275.00 | 54.86 | 55.00 | 1,925.00 | 35.00 | 1,225.00 | 30.00 | 1,050.00 | 65.00 | 2,275.00 | 76.00 | 2,660.00 |
| 1.04.Q | Geotextile Fabric Sand Filter Liner, Mn/DOT Type V | S.Y. | 150 | 4.50 | 675.00 | 5.35 | 5.00 | 750.00 | 1.75 | 262.50 | 13.00 | 1,950.00 | 5.00 | 750.00 | 2.80 | 420.00 |
| 1.04.R | Iron Aggregate (Filings) | TON | 3.5 | 1,040.00 | 3,640.00 | 1,264.50 | 1,500.00 | 5,250.00 | 1.00 | 3.50 | 2,000.00 | 7,000.00 | 600.00 | 2,100.00 | 1,370.00 | 4,795.00 |
| 1.04.S | Clean Washed Filter Sand | TON | 70 | 80.00 | 5,600.00 | 106.28 | 65.00 | 4,550.00 | 236.00 | 16,520.00 | 80.00 | 5,600.00 | 185.00 | 12,950.00 | 194.00 | 13,580.00 |
| 1.04.T | Connect to Existing 30" RCP, Core Drill and Install Inserta-Tee Water Tight Fitting for 10" CPEP | EACH | 1 | 2,750.00 | 2,750.00 | 3,763.20 | 3,500.00 | 3,500.00 | 3,800.00 | 3,800.00 | 1,500.00 | 1,500.00 | 3,650.00 | 3,650.00 | 4,064.00 | 4,064.00 |
| 1.04.U | 10" Dual Wall CPEP-WT with 45 Degree Bend | L.F. | 60 | 70.00 | 4,200.00 | 68.38 | 30.00 | 1,800.00 | 69.00 | 4,140.00 | 35.00 | 2,100.00 | 58.00 | 3,480.00 | 68.00 | 4,080.00 |
| 1.04.V | 8" Slotted PVC Underdrain Pipe | L.F. | 38 | 60.00 | 2,280.00 | 64.08 | 55.00 | 2,090.00 | 40.50 | 1,539.00 | 45.00 | 1,710.00 | 47.00 | 1,786.00 | 88.75 | 3,372.50 |
| 1.04.W | 10" Backflow Preventer | EACH | 1 | 5,000.00 | 5,000.00 | 5,318.10 | 4,000.00 | 4,000.00 | 4,600.00 | 4,600.00 | 5,000.00 | 5,000.00 | 5,330.00 | 5,330.00 | 6,731.00 | 6,731.00 |
| 1.04.X | 30" PVC Nyloplast™ Control Structure with Locking Dome Grate | EACH | 1 | 3,500.00 | 3,500.00 | 3,671.90 | 4,500.00 | 4,500.00 | 2,810.00 | 2,810.00 | 2,600.00 | 2,600.00 | 3,350.00 | 3,350.00 | 4,054.00 | 4,054.00 |
| 1.04.Y | 12" PVC Nyloplast™ Cleanout Structure with Locking Dome Grate | EACH | 1 | 1,500.00 | 1,500.00 | 1,853.80 | 2,000.00 | 2,000.00 | 1,115.00 | 1,115.00 | 1,200.00 | 1,200.00 | 2,800.00 | 2,800.00 | 1,257.00 | 1,257.00 |
| 1.04 Z | Remove and Dispose of Existing Rip Rap | C.Y. | 20 | 65.00 | 1,300.00 | 61.39 | 75.00 | 1,500.00 | 45.00 | 900.00 | 60.00 | 1,200.00 | 38.00 | 760.00 | 118.50 | 2,370.00 |
| 1.04.AA | Rip Rap Mn/DOT Class III and Filter Materials | TON | 15 | 125.00 | 1,875.00 | 128.75 | 145.00 | 2,175.00 | 105.00 | 1,575.00 | 100.00 | 1,500.00 | 150.00 | 2,250.00 | 166.50 | 2,497.50 |
| 1.04.AA | Rip Rap Mn/DOT Class II and Filter Fabric | TON | 18 | 125.00 | 2,250.00 | 125.50 | 145.00 | 2,610.00 | 97.00 | 1,746.00 | 100.00 | 1,800.00 | 150.00 | 2,700.00 | 168.00 | 3,024.00 |
| 1.04.AB | Gravel Surface Driveway | S.Y. | 122 | 25.00 | 3,050.00 | 26.38 | 20.00 | 2,440.00 | 45.00 | 5,490.00 | 32.00 | 3,904.00 | 17.50 | 2,135.00 | 18.75 | 2,287.50 |
| 1.04.AC | Seed Area | S.Y. | 405 | 3.50 | 1,417.50 | 3.70 | 3.65 | 1,478.25 | 1.10 | 445.50 | 2.00 | 810.00 | 2.00 | 810.00 | 3.00 | 1,215.00 |
| 1.04.AD | Wet Prairie, BWSR Seed Mix 34-262 | LBS. | 1.12 | 90.00 | 100.80 | 152.90 | 100.00 | 112.00 | 168.00 | 188.16 | 85.00 | 95.20 | 80.00 | 89.60 | 100.00 | 112.00 |
| 1.04.AE | Mesic Prairie Southeast, BWSR Seed Mix 35-641 | LBS. | 1.25 | 90.00 | 112.50 | 139.10 | 100.00 | 125.00 | 168.00 | 210.00 | 80.00 | 100.00 | 80.00 | 100.00 | 50.00 | 62.50 |
| 1.04.AF | Site Restoration and Clean-up | L.S. | 1 | 4,000.00 | 4,000.00 | 4,604.10 | 2,000.00 | 2,000.00 | 4,000.00 | 4,000.00 | 2,000.00 | 2,000.00 | 3,900.00 | 3,900.00 | 6,600.00 | 6,600.00 |
| | | | **TOTAL BASE BID** | | **109,953.80** | | | **111,292.25** | | **113,057.16** | | **126,781.20** | | **128,452.80** | | **140,845.50** |

**Bid Form reads:**
**Actual:**
**Difference:**

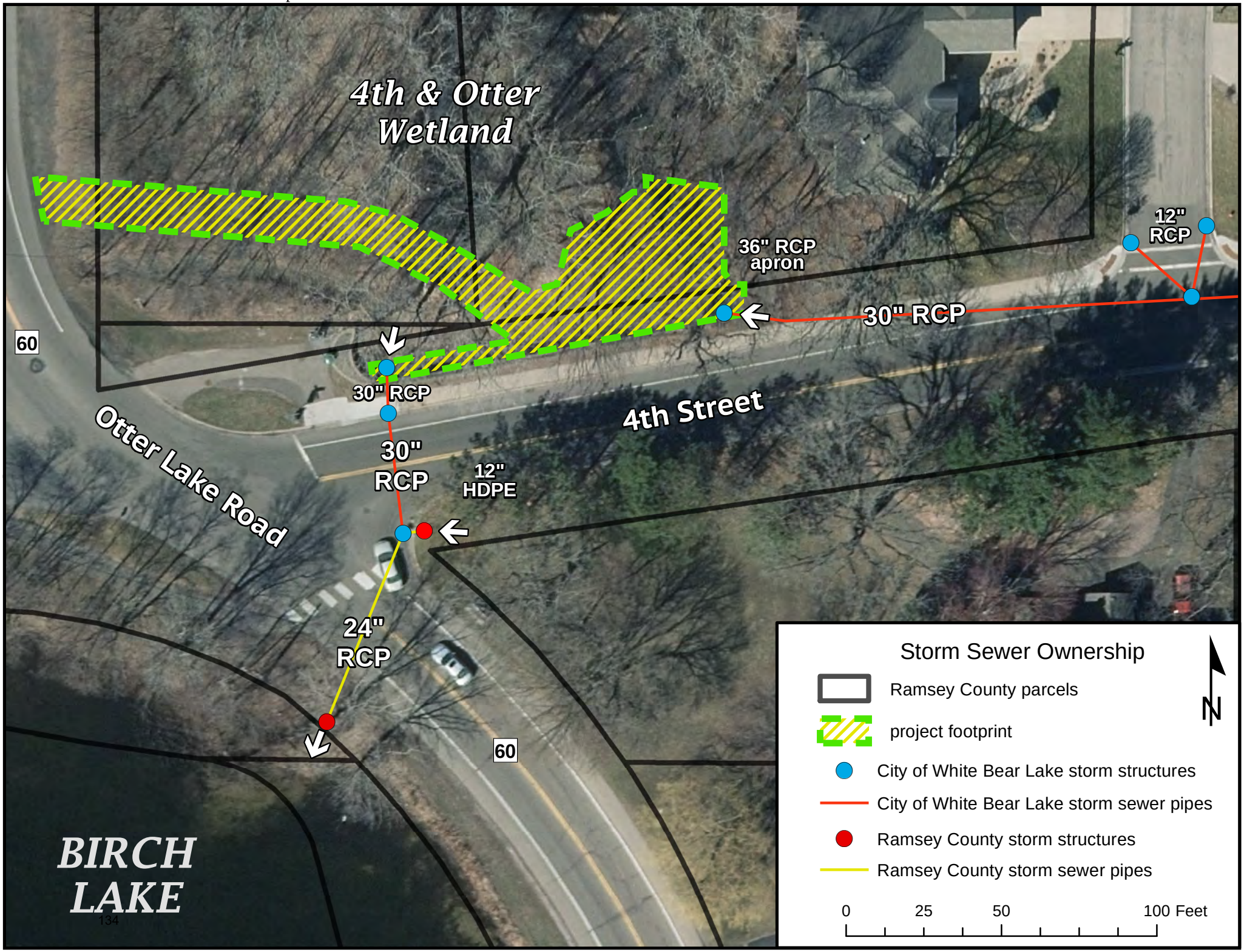
# Attachment D

**Birch Lake Iron Enhanced Sand Filter (IESF)**
**Vadnais Lake Area Water Management Organization**
**Bid Opening: Thursday, January 30, 2020 at 10:00 a.m. CDT**

| | | | | Peterson Companies, Inc. | | Urban Companies | | Veit & Company | | Vinco, Inc. | | Rosti Construction | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item** | **Description** | **Unit** | **Estimated Quantity** | **Unit Price** | **Extension** | **Unit Price** | **Extension** | **Unit Price** | **Extension** | **Unit Price** | **Extension** | **Unit Price** | **Extension** |
| 1.04.A | Mobilization/Demobilization | L.S. | 1 | 7,791.00 | 7,791.00 | 33,000.00 | 33,000.00 | 49,250.00 | 49,250.00 | 9,000.00 | 9,000.00 | 75,000.00 | 75,000.00 |
| 1.04.B | Control of Water | L.S. | 1 | 3,682.00 | 3,682.00 | 2,000.00 | 2,000.00 | 16,000.00 | 16,000.00 | 20,000.00 | 20,000.00 | 55,000.00 | 55,000.00 |
| 1.04.C | Traffic Control | L.S. | 1 | 7,108.00 | 7,108.00 | 2,000.00 | 2,000.00 | 5,000.00 | 5,000.00 | 6,000.00 | 6,000.00 | 3,500.00 | 3,500.00 |
| 1.04.D | Construction Entrance (Wood Chip) | EACH | 1 | 1,650.00 | 1,650.00 | 2,500.00 | 2,500.00 | 3,600.00 | 3,600.00 | 5,300.00 | 5,300.00 | 2,000.00 | 2,000.00 |
| 1.04.E | Clear and Grub; Removal of Trees, Brush, and Debris (Disposal Off Site) | L.S. | 1 | 11,812.00 | 11,812.00 | 20,000.00 | 20,000.00 | 14,600.00 | 14,600.00 | 40,000.00 | 40,000.00 | 5,000.00 | 5,000.00 |
| 1.04.F | Silt Fence | L.F. | 416 | 5.50 | 2,288.00 | 7.00 | 2,912.00 | 1.50 | 624.00 | 2.00 | 832.00 | 3.00 | 1,248.00 |
| 1.04.G | Sediment Log (9-Inch Diameter) | L.F. | 50 | 7.74 | 387.00 | 10.00 | 500.00 | 6.00 | 300.00 | 5.00 | 250.00 | 4.00 | 200.00 |
| 1.04.H | Inlet Protection | EACH | 2 | 165.00 | 330.00 | 400.00 | 800.00 | 170.00 | 340.00 | 150.00 | 300.00 | 250.00 | 500.00 |
| 1.04.I | Erosion Control Blanket | S.Y. | 304 | 5.00 | 1,520.00 | 5.00 | 1,520.00 | 2.25 | 684.00 | 2.00 | 608.00 | 3.00 | 912.00 |
| 1.04.J | Access Mud Mats Through Wetland | L.S. | 1 | 2,775.00 | 2,775.00 | 2,500.00 | 2,500.00 | 9,500.00 | 9,500.00 | 15,000.00 | 15,000.00 | 15,000.00 | 15,000.00 |
| 1.04.K | Salvage and Replace Existing Top Soil (P) | C.Y. | 25 | 84.80 | 2,120.00 | 60.00 | 1,500.00 | 150.00 | 3,750.00 | 15.00 | 375.00 | 35.00 | 875.00 |
| 1.04.L | Common Excavation (P) | C.Y. | 60 | 86.40 | 5,184.00 | 100.00 | 6,000.00 | 23.00 | 1,380.00 | 15.00 | 900.00 | 95.00 | 5,700.00 |
| 1.04.M | Construct Control Berm Embankment (P) | C.Y. | 25 | 42.40 | 1,060.00 | 65.00 | 1,625.00 | 190.00 | 4,750.00 | 20.00 | 500.00 | 55.00 | 1,375.00 |
| 1.04.N | Reinforced Concrete Wall | L.S. | 1 | 54,900.00 | 54,900.00 | 35,000.00 | 35,000.00 | 16,600.00 | 16,600.00 | 30,000.00 | 30,000.00 | 25,000.00 | 25,000.00 |
| 1.04.O | Stop Logs and Rails | L.S. | 1 | 1,386.00 | 1,386.00 | 7,000.00 | 7,000.00 | 6,100.00 | 6,100.00 | 1,000.00 | 1,000.00 | 15,000.00 | 15,000.00 |
| 1.04.P | Disposal of Excess Excavated Materials | C.Y. | 35 | 59.60 | 2,086.00 | 60.00 | 2,100.00 | 28.00 | 980.00 | 15.00 | 525.00 | 125.00 | 4,375.00 |
| 1.04.Q | Geotextile Fabric Sand Filter Liner, Mn/DOT Type V | S.Y. | 150 | 3.90 | 585.00 | 10.00 | 1,500.00 | 5.00 | 750.00 | 2.00 | 300.00 | 5.00 | 750.00 |
| 1.04.R | Iron Aggregate (Filings) | TON | 3.5 | 2,524.00 | 8,834.00 | 1,600.00 | 5,600.00 | 1,050.00 | 3,675.00 | 1,500.00 | 5,250.00 | 500.00 | 1,750.00 |
| 1.04.S | Clean Washed Filter Sand | TON | 70 | 65.80 | 4,606.00 | 45.00 | 3,150.00 | 67.00 | 4,690.00 | 70.00 | 4,900.00 | 55.00 | 3,850.00 |
| 1.04.T | Connect to Existing 30” RCP, Core Drill and Install Inserta-Tee Water Tight Fitting for 10” CPEP | EACH | 1 | 1,818.00 | 1,818.00 | 4,000.00 | 4,000.00 | 5,800.00 | 5,800.00 | 2,000.00 | 2,000.00 | 7,500.00 | 7,500.00 |
| 1.04.U | 10” Dual Wall CPEP-WT with 45 Degree Bend | L.F. | 60 | 25.75 | 1,545.00 | 60.00 | 3,600.00 | 93.00 | 5,580.00 | 150.00 | 9,000.00 | 95.00 | 5,700.00 |
| 1.04.V | 8” Slotted PVC Underdrain Pipe | L.F. | 38 | 42.50 | 1,615.00 | 100.00 | 3,800.00 | 62.00 | 2,356.00 | 115.00 | 4,370.00 | 45.00 | 1,710.00 |
| 1.04.W | 10” Backflow Preventer | EACH | 1 | 4,700.00 | 4,700.00 | 7,500.00 | 7,500.00 | 8,820.00 | 8,820.00 | 4,000.00 | 4,000.00 | 2,500.00 | 2,500.00 |
| 1.04.X | 30” PVC Nyloplast™ Control Structure with Locking Dome Grate | EACH | 1 | 3,365.00 | 3,365.00 | 6,000.00 | 6,000.00 | 4,540.00 | 4,540.00 | 3,000.00 | 3,000.00 | 2,500.00 | 2,500.00 |
| 1.04.Y | 12” PVC Nyloplast™ Cleanout Structure with Locking Dome Grate | EACH | 1 | 1,466.00 | 1,466.00 | 2,500.00 | 2,500.00 | 2,200.00 | 2,200.00 | 1,500.00 | 1,500.00 | 2,500.00 | 2,500.00 |
| 1.04 Z | Remove and Dispose of Existing Rip Rap | C.Y. | 20 | 72.40 | 1,448.00 | 60.00 | 1,200.00 | 75.00 | 1,500.00 | 15.00 | 300.00 | 55.00 | 1,100.00 |
| 1.04.AA | Rip Rap Mn/DOT Class III and Filter Materials | TON | 15 | 88.00 | 1,320.00 | 150.00 | 2,250.00 | 123.00 | 1,845.00 | 110.00 | 1,650.00 | 150.00 | 2,250.00 |
| 1.04.AA | Rip Rap Mn/DOT Class II and Filter Fabric | TON | 18 | 71.00 | 1,278.00 | 150.00 | 2,700.00 | 114.00 | 2,052.00 | 110.00 | 1,980.00 | 150.00 | 2,700.00 |
| 1.04.AB | Gravel Surface Driveway | S.Y. | 122 | 23.50 | 2,867.00 | 17.00 | 2,074.00 | 25.00 | 3,050.00 | 20.00 | 2,440.00 | 45.00 | 5,490.00 |
| 1.04.AC | Seed Area | S.Y. | 405 | 10.00 | 4,050.00 | 5.00 | 2,025.00 | 2.25 | 911.25 | 3.00 | 1,215.00 | 5.00 | 2,025.00 |
| 1.04.AD | Wet Prairie, BWSR Seed Mix 34-262 | LBS. | 1.12 | 175.00 | 196.00 | 500.00 | 560.00 | 166.00 | 185.92 | 100.00 | 112.00 | 55.00 | 61.60 |
| 1.04.AE | Mesic Prairie Southeast, BWSR Seed Mix 35-641 | LBS. | 1.25 | 92.00 | 115.00 | 500.00 | 625.00 | 166.00 | 207.50 | 100.00 | 125.00 | 55.00 | 68.75 |
| 1.04.AF | Site Restoration and Clean-up | L.S. | 1 | 2,541.00 | 2,541.00 | 3,000.00 | 3,000.00 | 2,500.00 | 2,500.00 | 15,000.00 | 15,000.00 | 4,500.00 | 4,500.00 |
| | | | **TOTAL BASE BID** | | **148,428.00** | | **173,041.00** | | **184,120.67** | | **187,732.00** | | **257,640.35** |

| | | |
|---|---|---|
| **Bid Form reads:** | 188,732.00 | 257,633.48 |
| **Actual:** | 187,732.00 | 257,640.35 |
| **Difference:** | 1,000.00 | -6.87 |

Attachment E - Storm Sewer Ownership



## Attachment F: Inspections and Maintenance Plan

| Inspections | Lead Agency |
|---|---|
| **Monthly** | |
| Check that the project site is stabilized and vegetation is established. | VLAWMO |
| Check that the surface of the IESF is not clogged with sediment, trash, or debris. | VLAWMO |
| Check that the inlet weir, stop log, cleanout structure ST-1, 6-inch PVC underdrain, 10-inch CPEP underdrain, outlet manhole structure ST-2, and 30-inch RCP outlet pipe for damage and sediment, trash, and debris accumulation. | VLAWMO |
| Check for soil erosion at the project site, including the storm sewer outfall swale, filter sand media, berm, and downstream of the stop log. | VLAWMO |
| Check for noticeable odors (may be an indication of an illicit discharge). | VLAWMO |
| **When in the area:** Check for illicit discharges in the contributing drainage area. Report illicit discharges to the applicable MS4 for enforcement (City or County) | All |
| **Annually** | |
| Check the depth of sediment in cleanout structures ST-1 and ST-2. | VLAWMO |
| Check the concrete wall, manholes, and other concrete structures for evidence of deterioration, spalling or cracking. | VLAWMO |
| Conduct a post rainfall inspection after a 1" or great storm event. Check to ensure that flow is not bypassing the IESF, normal pool level is retained, and the structures do not leak. | VLAWMO |
| **Maintenance [(1)]** | **Lead Agency** |
| **Routine, as needed** | |
| 3-year initial native vegetation establishment [(2)]. | VLAWMO & CITY |
| Ongoing native vegetation maintenance (after the 3-year establishment period)[(2)]. | VLAWMO & CITY |
| Remove minor trash and debris from the surface of the IESF. | VLAWMO primary |
| Remove sediment from sump manholes when accumulated. | City |
| Remove sediment, trash, and debris from inlet weir, stop log, cleanout structure ST-1, underdrains, outlet manhole structure ST-2, and outlet pipe[(3)]. | City |
| **Major, as needed** | |
| If surface of the filter bed is clogged or partially clogged, remove top few inches of media, roto-till/cultivate media surface, and replace media. | County |
| Stabilize any eroded areas. | TBD |
| Repair or replace any damaged structural parts. | TBD |
| **Every 3 to 5 years:** Remove & replace the top 2-5 inches of media for low sediment applications - sooner for areas of high sediment, or high oil & grease yield. Replace geotextile fabric if needed. | County |

Notes:

(1) Costs for routine and major maintenance work shall be divided as follows (unless noted otherwise): City 85%, VLAWMO 10%, County 5%

(2) Costs for routine vegetation establishment and long term vegetation maintenance shall be divided as follows: City 50%, VLAWMO 50%

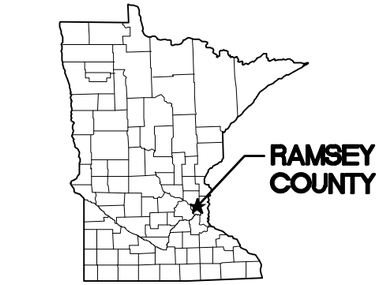
(3) Storm sewer outfall inspection and maintenance activities are completed as part of the City's MS4 Permit.

*Revised:March 12, 2020*

# VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

## BIRCH LAKE IRON ENHANCED SAND FILTER

## WHITE BEAR LAKE, MINNESOTA




LOCATION MAP


VICINITY MAP

LIMITS OF SECTION CUT
SECTION IDENTIFIER
SECTION REFERENCES
SHEET SECTION IS LOCATED ON

SECTION VIEW CALL OUT

SECTION IDENTIFIER (TYP.)
SECTION: GRAPHICS STANDARDS
SCALE: 1=1
SECTION REFERENCES (TYP.)
SHEET SECTION IS CALLED-OUT ON

SECTION VIEW TITLE

DETAIL IDENTIFIER
DETAIL REFERENCES
SHEET DETAIL IS LOCATED ON

DETAIL VIEW CALL OUT

DETAIL IDENTIFIER (TYP.)
DETAIL: GRAPHICS STANDARDS
SCALE: 1=1
DETAIL REFERENCES (TYP.)
SHEET DETAIL IS CALLED-OUT ON

DETAIL VIEW TITLE

| SHEET NO. | TITLE |
|---|---|
| | GENERAL DRAWINGS |
| G-01 | COVER SHEET AND DRAWING INDEX |
| | CIVIL DRAWINGS |
| C-01 | EXISTING CONDITIONS AND EROSION CONTROL |
| C-02 | EROSION CONTROL DETAILS |
| C-03 | SITE GRADING AND STORM SEWER |
| C-04 | SITE GRADING AND WALL SECTIONS |
| C-05 | STORM AND DRIVEWAY SECTIONS & DETAILS |
| | STRUCTURAL DRAWINGS |
| S-01 | REINFORCED CONCRETE WALL SECTIONS |

ABBREVIATIONS:

| | |
|---|---|
| CJ | CONTROL JOINT |
| CONC | CONCRETE |
| CMP | CORRUGATED METAL PIPE |
| CPEP | CORRUGATED POLYETHYLENE PIPE |
| DIA | DIAMETER |
| DS | DOWNSTREAM |
| DTR | DECIDUOUS TREE |
| EL | ELEVATION |
| GALV | GALVANIZED |
| GPM | GALLONS PER MINUTE |
| HDPE | HIGH DENSITY POLYETHYLENE |
| NWL | NORMAL WATER LEVEL |
| HWL | HIGH WATER LEVEL |
| ID | IDENTIFIER |
| INV | INVERT |
| RCP | REINFORCED CONCRETE PIPE |
| TO | TOP OF |
| TYP | TYPICAL |
| US | UPSTREAM |

PROJECT COORDINATE SYSTEM

HORIZONTAL: MnDOT RAMSEY COUNTY, US FOOT, NAD83 DATUM
VERTICAL: NAVD88 DATUM

*RELEASED FOR BID*

| NO. | BY | CHK. | APP. | DATE | REVISION DESCRIPTION |
|---|---|---|---|---|---|
| | | | | | |

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

PRINTED NAME GREGORY J. WILSON
SIGNATURE
DATE 8/9/2019 LICENSE # 25782

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CLIENT | 4/19 | 6/20 | | | | | | |
| BID | | | | 8/9 | 12/20 | | | |
| CONSTRUCTION | | | | | | | | |
| | | | | | | | | |
| RELEASED TO/FOR | A | B | C | 0 | 1 | 2 | 3 | |
| | DATE RELEASED | | | | | | | |


BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

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


| | |
|---|---|
| Scale | AS SHOWN |
| Date | 4/1/2018 |
| Drawn | GGN |
| Checked | GJW |
| Designed | GGN |
| Approved | GJW |

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

COVER SHEET AND DRAWING INDEX

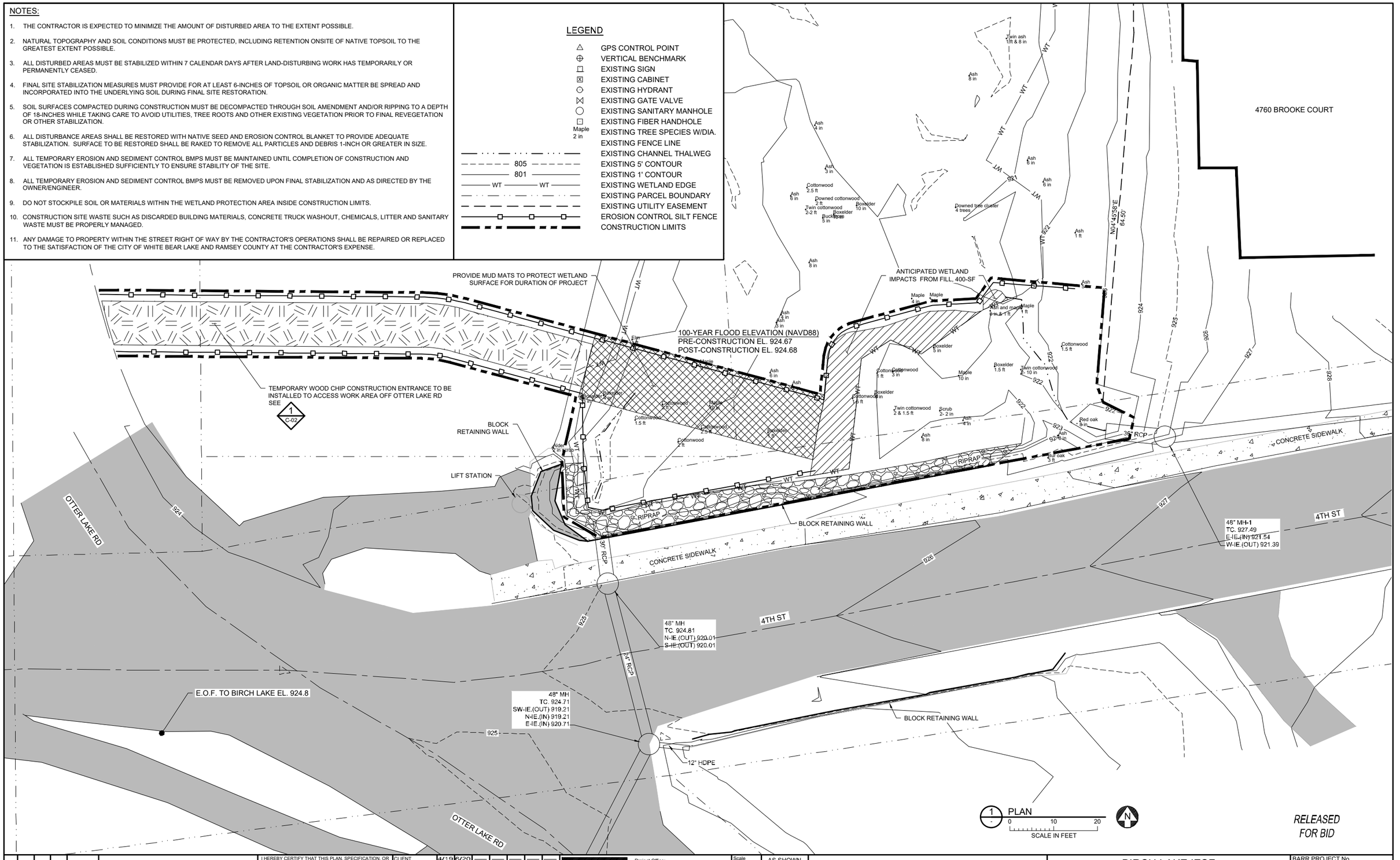
BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No. -
DWG. No. G-01
REV. No. 1

NOTES:

1. THE CONTRACTOR IS EXPECTED TO MINIMIZE THE AMOUNT OF DISTURBED AREA TO THE EXTENT POSSIBLE.
2. NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED, INCLUDING RETENTION ONSITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE.
3. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED.
4. FINAL SITE STABILIZATION MEASURES MUST PROVIDE FOR AT LEAST 6-INCHES OF TOPSOIL OR ORGANIC MATTER BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL DURING FINAL SITE RESTORATION.
5. SOIL SURFACES COMPACTED DURING CONSTRUCTION MUST BE DECOMPACTED THROUGH SOIL AMENDMENT AND/OR RIPPING TO A DEPTH OF 18-INCHES WHILE TAKING CARE TO AVOID UTILITIES, TREE ROOTS AND OTHER EXISTING VEGETATION PRIOR TO FINAL REVEGETATION OR OTHER STABILIZATION.
6. ALL DISTURBANCE AREAS SHALL BE RESTORED WITH NATIVE SEED AND EROSION CONTROL BLANKET TO PROVIDE ADEQUATE STABILIZATION. SURFACE TO BE RESTORED SHALL BE RAKED TO REMOVE ALL PARTICLES AND DEBRIS 1-INCH OR GREATER IN SIZE.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATION IS ESTABLISHED SUFFICIENTLY TO ENSURE STABILITY OF THE SITE.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE REMOVED UPON FINAL STABILIZATION AND AS DIRECTED BY THE OWNER/ENGINEER.
9. DO NOT STOCKPILE SOIL OR MATERIALS WITHIN THE WETLAND PROTECTION AREA INSIDE CONSTRUCTION LIMITS.
10. CONSTRUCTION SITE WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER AND SANITARY WASTE MUST BE PROPERLY MANAGED.
11. ANY DAMAGE TO PROPERTY WITHIN THE STREET RIGHT OF WAY BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE CITY OF WHITE BEAR LAKE AND RAMSEY COUNTY AT THE CONTRACTOR'S EXPENSE.

LEGEND

- GPS CONTROL POINT
- VERTICAL BENCHMARK
- EXISTING SIGN
- EXISTING CABINET
- EXISTING HYDRANT
- EXISTING GATE VALVE
- EXISTING SANITARY MANHOLE
- EXISTING FIBER HANDHOLE
- Maple 2 in — EXISTING TREE SPECIES W/DIA.
- EXISTING FENCE LINE
- EXISTING CHANNEL THALWEG
- 805 — EXISTING 5' CONTOUR
- 801 — EXISTING 1' CONTOUR
- WT — WT — EXISTING WETLAND EDGE
- EXISTING PARCEL BOUNDARY
- EXISTING UTILITY EASEMENT
- EROSION CONTROL SILT FENCE
- CONSTRUCTION LIMITS




1 PLAN
0 10 20
SCALE IN FEET

RELEASED FOR BID

| NO. | BY | CHK | APP. | DATE | REVISION DESCRIPTION |
|---|---|---|---|---|---|

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

PRINTED NAME GREGORY J. WILSON

SIGNATURE

DATE 8/9/2019 LICENSE # 25782

| | A | B | C | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| CLIENT | 4/19 | 6/20 | | | | | |
| BID | | | | 8/9 | 12/20 | | |
| CONSTRUCTION | | | | | | | |
| RELEASED TO/FOR | | | | | | | |
| DATE RELEASED | | | | | | | |


BARR

Corporate Headquarters: Minneapolis, Minnesota Ph: 1-800-632-2277

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

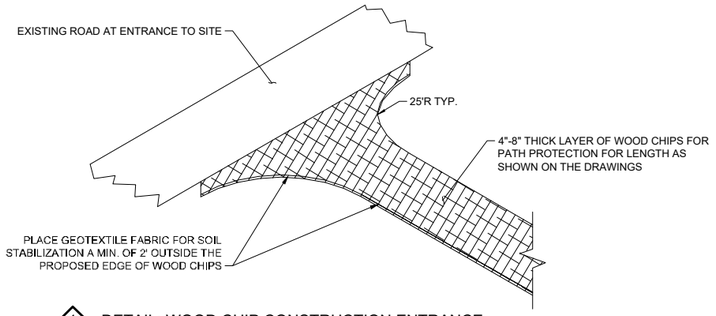

| | |
|---|---|
| Scale | AS SHOWN |
| Date | 4/1/2018 |
| Drawn | GGN |
| Checked | GJW |
| Designed | GGN |
| Approved | GJW |

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

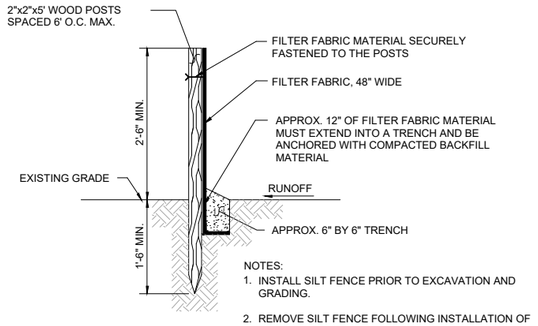
BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

EXISTING CONDITIONS AND EROSION CONTROL

| BARR PROJECT No. | |
|---|---|
| 23/62-1274.00 | |
| CLIENT PROJECT No. | |
| - | |
| DWG. No. | REV. No. |
| C-01 | 1 |

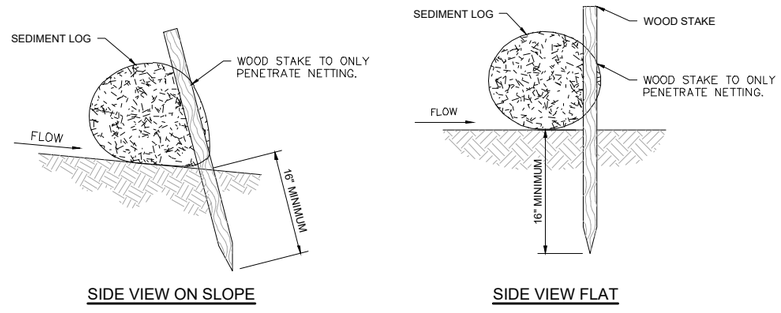



1 DETAIL: WOOD CHIP CONSTRUCTION ENTRANCE
NOT TO SCALE




NOTES:
1. INSTALL SILT FENCE PRIOR TO EXCAVATION AND GRADING.
2. REMOVE SILT FENCE FOLLOWING INSTALLATION OF EROSION CONTROL BLANKET.

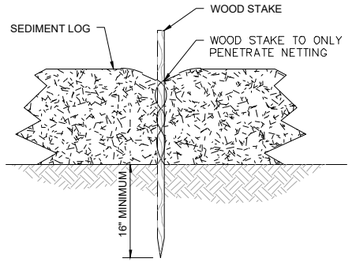
3 DETAIL: SILT FENCE
NOT TO SCALE



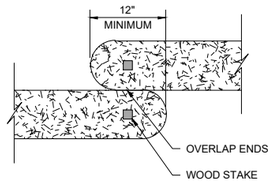

SIDE VIEW ON SLOPE




SIDE VIEW FLAT




FRONT VIEW

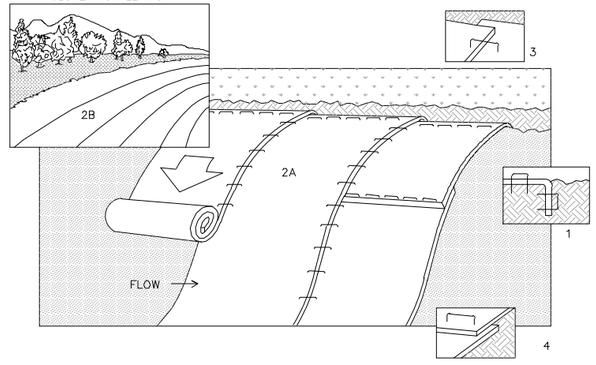



TOP VIEW

NOTES:

1. INSTALL SEDIMENT LOG ALONG CONTOURS (CONSTANT ELEVATION).
2. NO GAPS SHALL BE PRESENT UNDER SEDIMENT LOG. PREPARE AREA AS NEEDED TO SMOOTH SURFACE OR REMOVE DEBRIS.
3. REMOVE ACCUMULATED SEDIMENT WHEN REACHING 1/3 OF LOG HEIGHT.
4. MAINTAIN SEDIMENT LOG THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIR OR REPLACED AS REQUIRED.

2 DETAIL: SEDIMENT LOG - STAKING
NOT TO SCALE




NOTE: REFER TO GENERAL STAPLE PATTERN GUIDE FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

1. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
2. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE.
3. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 6" OVERLAP, WITH THE UPHILL BLANKET ON TOP.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART.

4 DETAIL: TEMPORARY EROSION CONTROL BLANKET
NOT TO SCALE

*RELEASED FOR BID*

| NO. | BY | CHK | APP. | DATE | REVISION DESCRIPTION |
|---|---|---|---|---|---|
| 138 | | | | | |

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

PRINTED NAME GREGORY J. WILSON
SIGNATURE
DATE 8/9/2019 LICENSE # 25782

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CLIENT | 4/19 | 6/20 | | | | | | |
| BID | | | | 8/9 | 12/20 | | | |
| CONSTRUCTION | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| RELEASED TO/FOR | A | B | C | 0 | 1 | 2 | 3 | |
| | DATE RELEASED | | | | | | | |

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

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

| | |
|---|---|
| Scale | AS SHOWN |
| Date | 4/1/2018 |
| Drawn | GGN |
| Checked | GJW |
| Designed | GGN |
| Approved | GJW |

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

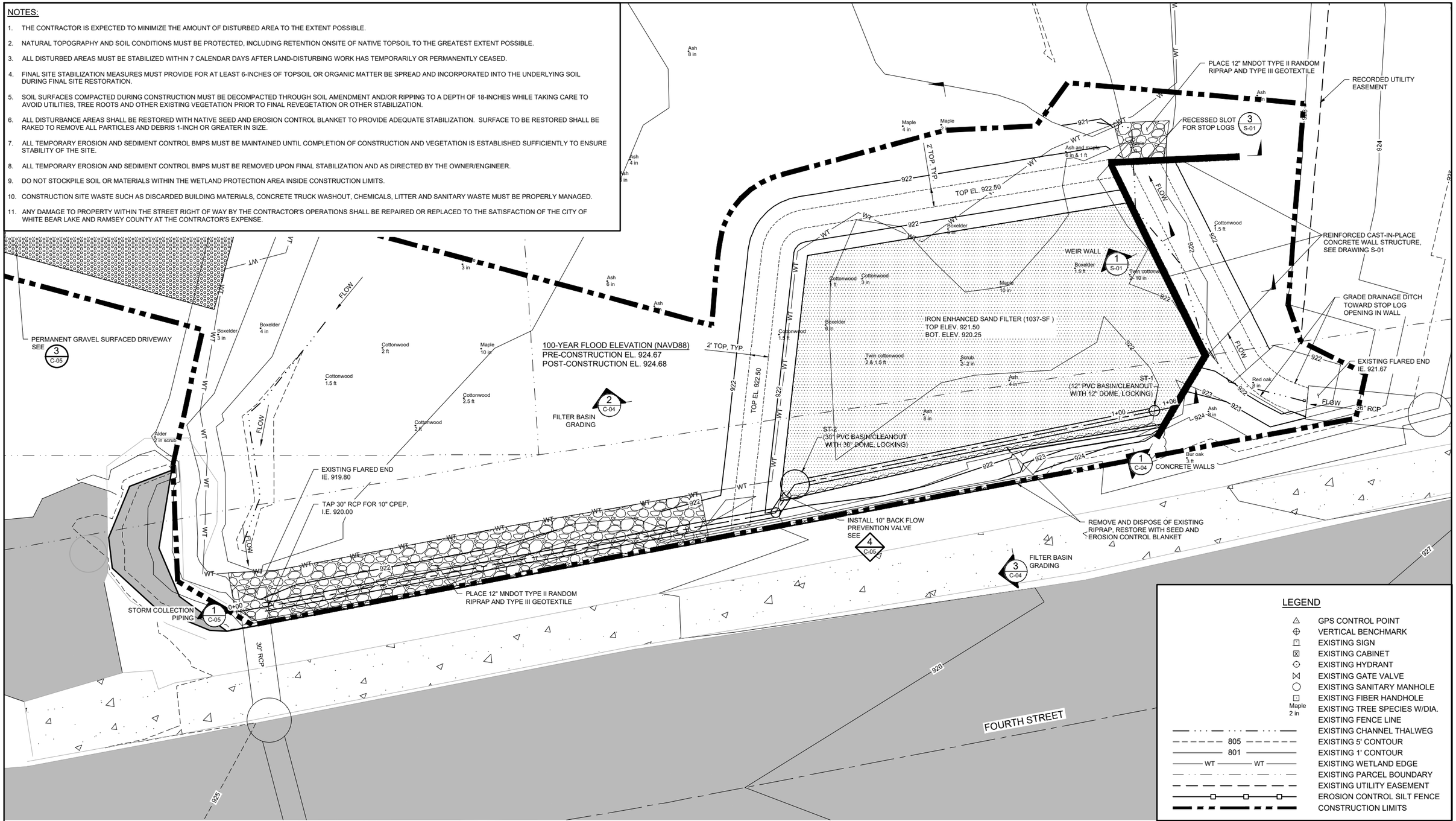
BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

EROSION CONTROL DETAILS

| | |
|---|---|
| BARR PROJECT No. | 23/62-1274.00 |
| CLIENT PROJECT No. | |
| DWG. No. | C-02 |
| REV. No. | 1 |

NOTES:

1. THE CONTRACTOR IS EXPECTED TO MINIMIZE THE AMOUNT OF DISTURBED AREA TO THE EXTENT POSSIBLE.
2. NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED, INCLUDING RETENTION ONSITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE.
3. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED.
4. FINAL SITE STABILIZATION MEASURES MUST PROVIDE FOR AT LEAST 6-INCHES OF TOPSOIL OR ORGANIC MATTER BE SPREAD AND INCORPORATED INTO THE UNDERLYING SOIL DURING FINAL SITE RESTORATION.
5. SOIL SURFACES COMPACTED DURING CONSTRUCTION MUST BE DECOMPACTED THROUGH SOIL AMENDMENT AND/OR RIPPING TO A DEPTH OF 18-INCHES WHILE TAKING CARE TO AVOID UTILITIES, TREE ROOTS AND OTHER EXISTING VEGETATION PRIOR TO FINAL REVEGETATION OR OTHER STABILIZATION.
6. ALL DISTURBANCE AREAS SHALL BE RESTORED WITH NATIVE SEED AND EROSION CONTROL BLANKET TO PROVIDE ADEQUATE STABILIZATION. SURFACE TO BE RESTORED SHALL BE RAKED TO REMOVE ALL PARTICLES AND DEBRIS 1-INCH OR GREATER IN SIZE.
7. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE MAINTAINED UNTIL COMPLETION OF CONSTRUCTION AND VEGETATION IS ESTABLISHED SUFFICIENTLY TO ENSURE STABILITY OF THE SITE.
8. ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPS MUST BE REMOVED UPON FINAL STABILIZATION AND AS DIRECTED BY THE OWNER/ENGINEER.
9. DO NOT STOCKPILE SOIL OR MATERIALS WITHIN THE WETLAND PROTECTION AREA INSIDE CONSTRUCTION LIMITS.
10. CONSTRUCTION SITE WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER AND SANITARY WASTE MUST BE PROPERLY MANAGED.
11. ANY DAMAGE TO PROPERTY WITHIN THE STREET RIGHT OF WAY BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE CITY OF WHITE BEAR LAKE AND RAMSEY COUNTY AT THE CONTRACTOR'S EXPENSE.




LEGEND

- GPS CONTROL POINT
- VERTICAL BENCHMARK
- EXISTING SIGN
- EXISTING CABINET
- EXISTING HYDRANT
- EXISTING GATE VALVE
- EXISTING SANITARY MANHOLE
- EXISTING FIBER HANDHOLE
- EXISTING TREE SPECIES W/DIA. (Maple 2 in)
- EXISTING FENCE LINE
- EXISTING CHANNEL THALWEG
- EXISTING 5' CONTOUR (805)
- EXISTING 1' CONTOUR (801)
- EXISTING WETLAND EDGE (WT)
- EXISTING PARCEL BOUNDARY
- EXISTING UTILITY EASEMENT
- EROSION CONTROL SILT FENCE
- CONSTRUCTION LIMITS

1 PLAN
0 5 10
SCALE IN FEET

*RELEASED FOR BID*

| NO. | BY | CHK | APP. | DATE | REVISION DESCRIPTION |
|---|---|---|---|---|---|

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINTED NAME GREGORY J. WILSON
SIGNATURE
DATE 8/9/2019 LICENSE # 25782

| | A | B | C | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| CLIENT | 4/19/20 | | | | | | |
| BID | | | | 8/9/12/20 | | | |
| CONSTRUCTION | | | | | | | |
| RELEASED TO/FOR | DATE RELEASED | | | | | | |


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

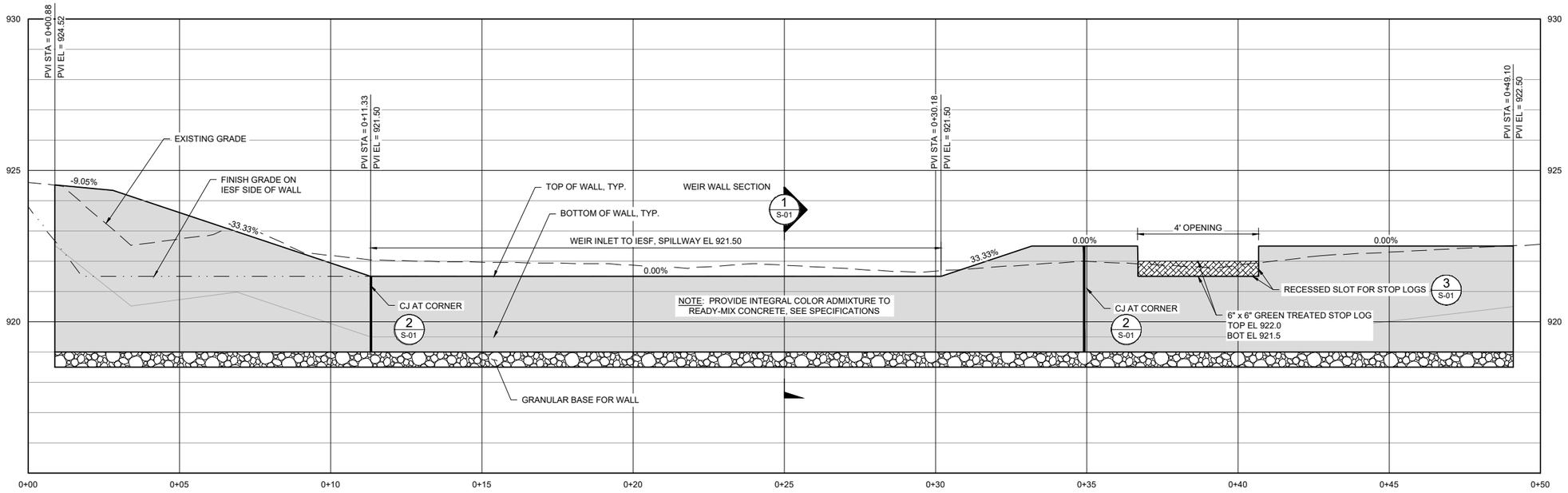

| | |
|---|---|
| Scale | AS SHOWN |
| Date | 4/1/2018 |
| Drawn | GGN |
| Checked | GJW |
| Designed | GGN |
| Approved | GJW |

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

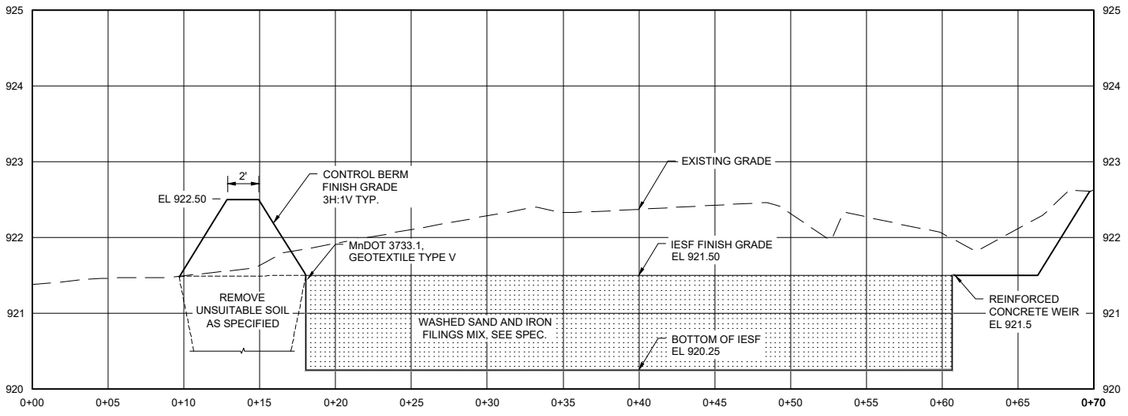
SITE GRADING AND STORM SEWER

| BARR PROJECT No. | |
|---|---|
| 23/62-1274.00 | |
| CLIENT PROJECT No. | |
| DWG. No. | REV. No. |
| C-03 | 1 |



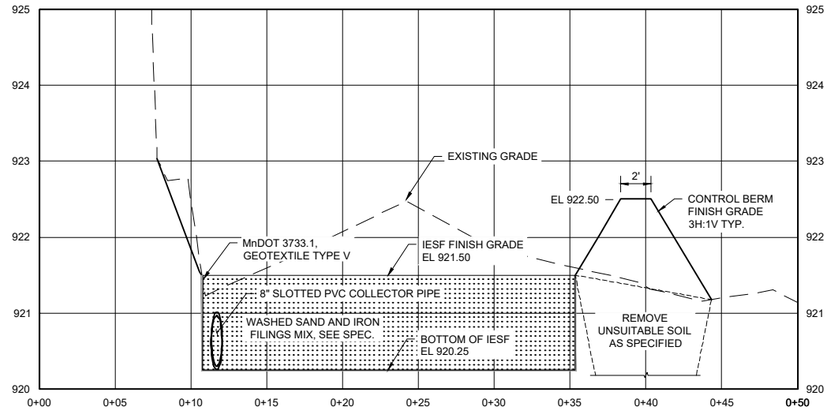

1 - SECTION: CONCRETE WALLS

0 1 2 3 4
SCALE IN FEET




2 - SECTION: FILTER BASIN GRADING

0 5 10 HORIZONTAL SCALE IN FEET
0 1 2 VERTICAL SCALE IN FEET




3 - SECTION: FILTER BASIN GRADING

0 5 10 HORIZONTAL SCALE IN FEET
0 1 2 VERTICAL SCALE IN FEET

*RELEASED FOR BID*

| NO. | BY | CHK | APP. | DATE | REVISION DESCRIPTION |
|---|---|---|---|---|---|
| | | | | | |

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

PRINTED NAME GREGORY J. WILSON

SIGNATURE

DATE 8/9/2019 LICENSE # 25782

| | A | B | C | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| CLIENT | 4/19 | 6/20 | | | | | |
| BID | | | | 8/9 | 12/20 | | |
| CONSTRUCTION | | | | | | | |
| RELEASED TO/FOR | | | | | | | |
| DATE RELEASED | | | | | | | |


BARR

Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

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

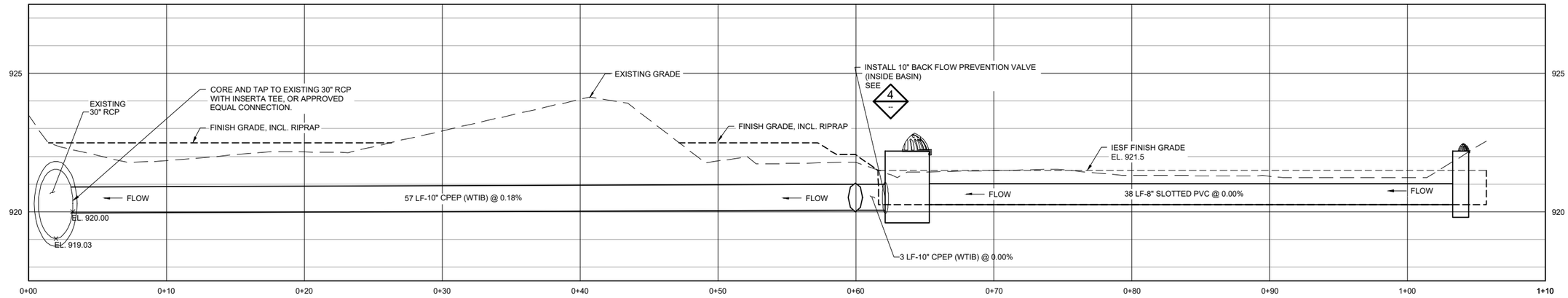

| | |
|---|---|
| Scale | AS SHOWN |
| Date | 4/1/2018 |
| Drawn | GGN |
| Checked | GJW |
| Designed | GGN |
| Approved | GJW |

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

SITE GRADING AND WALL SECTIONS

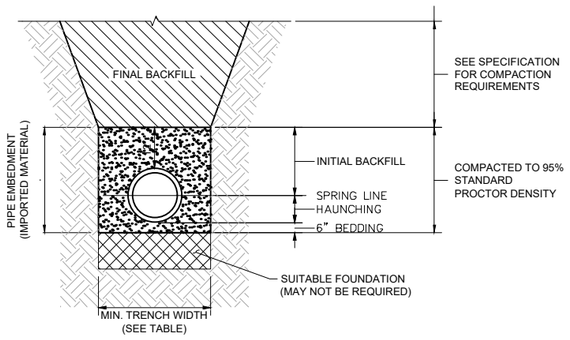
BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No.
DWG. No. C-04
REV. No. 1




1 PROFILE: STORM COLLECTION PIPING

HORIZONTAL SCALE IN FEET 0 2 4 6 8

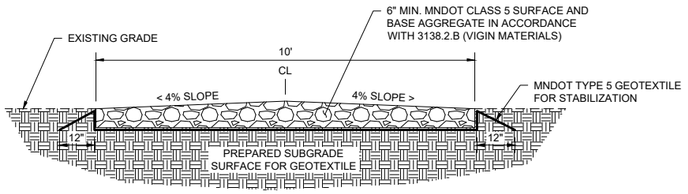
VERTICAL SCALE IN FEET 0 1 2 3 4




1. IMPORTED PIPE EMBEDMENT MATERIAL PER MnDOT SPEC. 3149.2F GRANULAR BEDDING, 100% PASSING THE 1" SIEVE AND NOT MORE THAN 10.5% WILL PASS THE #200 SIEVE.
2. IMPORTED PIPE EMBEDMENT MATERIAL SHALL BE COMPACTED IN UNIFORM LIFTS, 8" OR LESS IN DEPTH, LOOSE MEASURE, TO 95% STANDARD PROCTOR DENSITY FROM THE BEDDING TO A MINIMUM DEPTH OF AT LEAST 12" ABOVE THE CROWN OF THE PIPE.

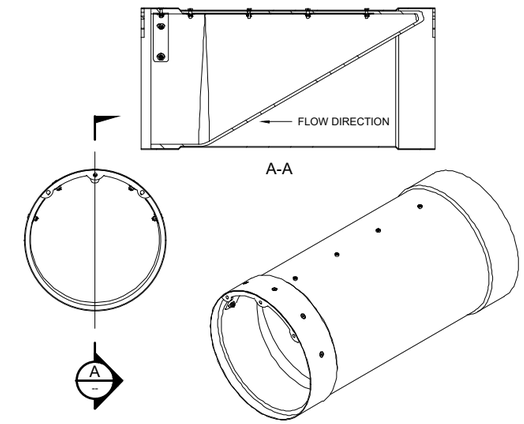
| PIPE DIA. | MIN. TRENCH WIDTH |
|---|---|
| INCHES | INCHES |
| 4 | 21 |
| 6 | 23 |
| 8 | 26 |
| 10 | 28 |
| 12 | 30 |

2 DETAIL: NON-RIGID STORM SEWER TRENCH
NOT TO SCALE




3 SECTION: GRAVEL SURFACED DRIVEWAY

SCALE IN FEET 0 1 2 3 4




4 DETAIL: INLINE BACKFLOW PREVENTION VALVE
NOT TO SCALE

*RELEASED FOR BID*

| NO. | BY | CHK | APP. | DATE | REVISION DESCRIPTION |
|---|---|---|---|---|---|
| | | | | | |

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

PRINTED NAME GREGORY J. WILSON

SIGNATURE

DATE 8/9/2019 LICENSE # 25782

| | A | B | C | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| CLIENT | | | | 4/19 | 6/20 | | |
| BID | | | | | | 8/9 | 12/20 |
| CONSTRUCTION | | | | | | | |
| RELEASED TO/FOR | | | | | | | |
| DATE RELEASED | | | | | | | |


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

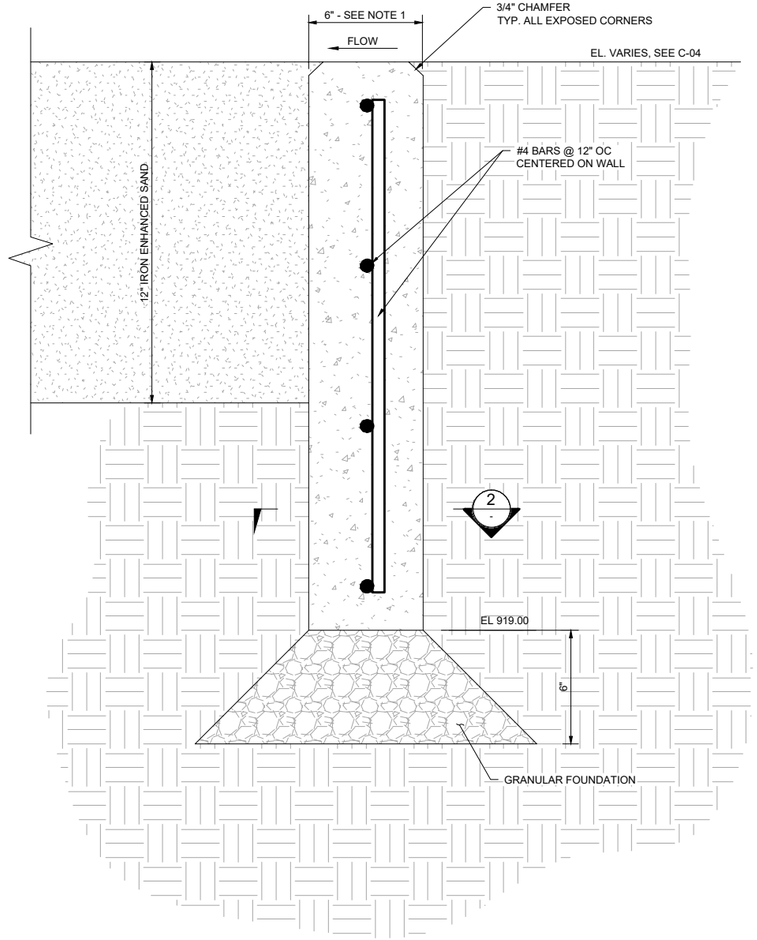

| | |
|---|---|
| Scale | AS SHOWN |
| Date | 4/1/2018 |
| Drawn | GGN |
| Checked | GJW |
| Designed | GGN |
| Approved | GJW |

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

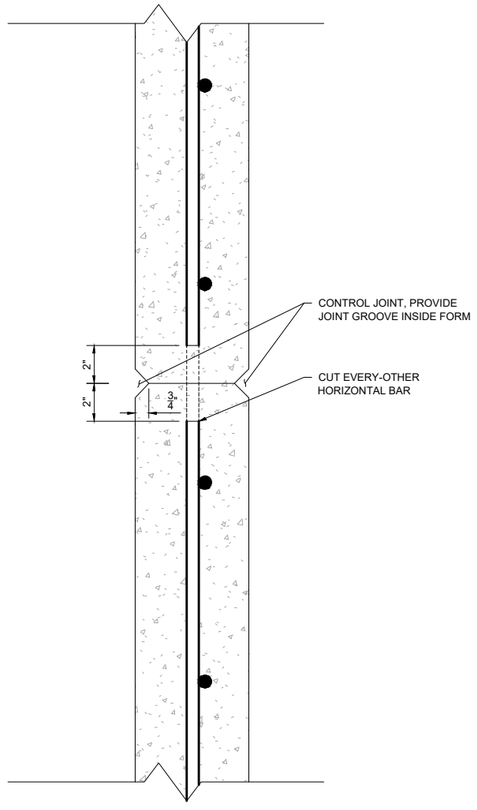
BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

STORM AND DRIVEWAY SECTIONS & DETAILS

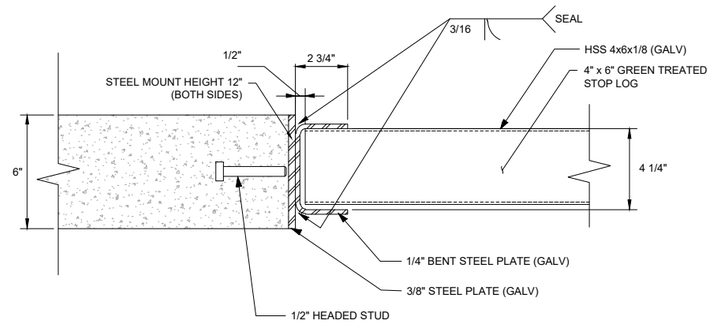
| | |
|---|---|
| BARR PROJECT No. | 23/62-1274.00 |
| CLIENT PROJECT No. | |
| DWG. No. | C-05 |
| REV. No. | 1 |




1 SECTION: WEIR WALL
3" = 1'-0"




2 SECTION: CONTROL JOINT
3" = 1'-0"




3 SECTION: GALVANIZED STEEL STOP LOG MOUNT
3" = 1'-0"

*RELEASED FOR BID*

| NO. | BY | CHK | APP. | DATE | REVISION DESCRIPTION |
|---|---|---|---|---|---|
| | | | | | |

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

PRINTED NAME BRIAN SILJENBERG

SIGNATURE

DATE 8/14/2019 LICENSE # 50033

| | A | B | C | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| CLIENT | 4/19 | 6/20 | | | 8/9 | 12/20 | |
| BID | | | | | | | |
| CONSTRUCTION | | | | | | | |
| RELEASED TO/FOR | | | | | | | |
| DATE RELEASED | | | | | | | |

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

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

| | |
|---|---|
| Scale | AS SHOWN |
| Date | 4/1/2018 |
| Drawn | GGN |
| Checked | GJW |
| Designed | GGN |
| Approved | GJW |

VADNAIS LAKE AREA WATER MANAGEMENT ORGANIZATION

BIRCH LAKE IESF
WHITE BEAR LAKE, MINNESOTA

REINFORCED CONCRETE WALL SECTIONS

BARR PROJECT No. 23/62-1274.00
CLIENT PROJECT No.
DWG. No. S-01
REV. No. 1

**2020 MAWD AWARDS PROGRAM ANNOUNCEMENT**
**Program of the Year/Project of the Year**

**Purpose:** The Minnesota Association of Watershed Districts will recognize outstanding work in both projects and programs led by its member watershed districts and watershed management organizations around the state of Minnesota.

**Program Objectives:**

- Project of the Year - Select and recognize an outstanding project related to water resource enhancement and protection, including restoration or preservation, projects that have been substantially completed by the submittal date.
- Program of the Year - Select and recognize an outstanding program related to water resource enhancement and protection, including watershed planning efforts, monitoring programs, or education and outreach strategies that are ongoing, with both short and long-term outcomes.

**Process:**

1. **Preliminary Nominations Due (due August 28, 2020):** submitted projects and programs are ranked based on criteria to identify the top three candidates. The top three candidates will then be invited to submit a full proposal for final consideration.

2. **Finalist Nomination Forms (due October 6, 2020):** Finalists in both projects and programs are scored based on weighted criteria to determine recipients of the Program of the Year and Project of the Year award.

**Judging Criteria and Application Requirements:**

- Clearly defined need (5%): A clearly defined Statement of Need is provided along with supporting information that indicates the project or program is fulfilling some type of water resource monitoring, protection, enhancement, or community engagement need within the watershed.

- Creative partnerships (15%): Information is provided indicating the role and benefits of both public-public or public-private partnerships in developing and implementing the stated project or program, with emphasis on new and/or unique partners who wouldn't normally be involved.

- Innovative financing (20%): A description of how project or program financial stability was achieved.

- Resourceful solutions (20%): Information is provided on the use of innovative or cutting edge solutions in the areas of planning, design, and implementation of projects and programs to reach watershed management and protection goals.

- Success at meeting project or program goal (30%): A description of both short and long-term outputs and outcomes is provided that address the original goal of the project or program.

- Public value (10%): Information is provided indicating how the project or program benefits society and the common good.

**Qualifying project/programs:**
Eligible nominations can be any project or program where the watershed has involvement through funding, management, or as a partner. There is no project start or completion date requirement. Past projects are acceptable. Projects or programs that do not receive an award this year may be resubmitted in following years. Only two total nominations are allowed per member. When determining the finalists, the Awards Committee will consider: clearly defined need, creative partnerships, innovative financing, resourceful solutions, success at meeting goals, and public value.

**Who can nominate:**
We encourage members to nominate their own programs and projects. However, any other agency, local unit of government, or organization may also nominate. No priority is assigned to the source of the nomination.

**Instructions:**
1. Use the "editable" PDF form for submitting your nominations. Use a separate form for each program or project nomination. Do not send additional reports or information.
4. Include a project or program summary of no more than 250 words. Up to four photos may be included with your preliminary nomination form.
5. Completed forms must be received by August 28, 2020.
6. Send nominations via email to:
   Karen Kill, Administrator
   Brown's Creek Watershed District
   Email: kkill@mnwcd.org
7. Questions can be directed to Karen Kill at 651-331-8316 or kkill@mnwcd.org

**Key Dates**

| | |
|---|---|
| 2020 MAWD Awards Program Announced | July 24, 2020 |
| **Preliminary Nominations Due** | **August 28, 2020** |
| Awards Committee Review of Preliminary Nominations due | September 15, 2020 |
| Finalists Announced | September 18, 2020 |
| **Finalists Nomination forms due** | **October 6, 2020** |
| Awards Committee Review of Finalists Nominations due | October 27, 2020 |
| Award Winners notified | November 2, 2020 |
| MAWD Awards Presentation | December 4, 2020 |

**2020 MAWD Project & Program of the Year**

**Preliminary Nomination Form**

The MAWD Awards Committee is now accepting **Preliminary Nominations for Program or Project of the Year**. This simple, one-page **Preliminary Nomination Form** must be submitted by August 28 2020. When determining the finalists, the Awards Committee will consider: clearly defined need, creative partnerships, innovative financing, resourceful solutions, success at meeting goal, and public value. Finalists, in each category will be asked to complete a full nomination form. The Preliminary Nomination form only requires a project/program description up to 250 words.

**Award Category** (check one)

☐ Project ☐ Program

**MAWD Region**:

☐ One ☐ Two ☐ Three

**Watershed District or Watershed Management Organization:**

**Project/program name:**

**Nominator (if different from above)**

**Project/Program Summary (Up to 250 words).**

| |
|---|
| |

**Project/Program Contact***:* *Name:*

*Phone:*

*Email:*

**Photos (Optional)**

You may include up to four (4) photos of your project or program.

Submit nomination materials to Karen Kill, kkill@mnwcd.org by August 28, 2020.

VLAWMO
Vadnais Lake Area
Water Management Organization

800 County Road E East, Vadnais Heights, MN55127
www.vlawmo.org; Office@vlawmo.org

**To:** VLAWMO Board of Directors

**From:** Tyler Thompson

**Date:** August 20, 2020

**Re:** **V. B. 3. Consider Appointment of Subcommittee to Update Cost Share Program Policy**

**Cost Share Program policy review, revise, and update proposed Subcommittee**
At the June 2020 Board meeting, several Board members identified the need to review the current VLAWMO cost share policy and related program budget. Since the June Board meeting, VLAWMO staff have reviewed the current Cost Share Program policy and reviewed other nearby watershed cost share policies.

Staff believes the most efficient way to review and recommend changes in the Program policy is to establish a special Subcommittee of the Board and TEC to: 1) review current policy and review and discuss possible policy changes, and 2) make recommendations on possible policy updates to the Board. The overall goal is for this effort is to consider options for maximize program efficiency, find the most efficient use of program budget, achieving water quality goals, and continue strong community support and Program momentum.

Staff would recommend the Board assign 2-3 Directors to this subcommittee. Staff also recommends to the Board that they involve TEC Commissioners in this subcommittee process, given their regular review of the cost projects and program policy knowledge and history. At the August TEC meeting, the Commission agreed this is a suitable chance to review Program policy updating, and received confirmation from 3 Commissioners of their interest in joining the Subcommittee. Staff is looking for 2-3 Boards Directors to comprise an official Subcommittee for input and recommendations. Staff recommends the Board make formal action for Subcommittee creation and member appointments. After the August 26th VLAWMO Board meeting and all subcommittee members have committed, a meeting date and time will be selected for September, and recommended policy updates and changes are anticipated to be brought for recommendation and approval at the October 2020 TEC & Board meetings. Staff greatly appreciates TEC and Board involvement in this process.

**Staff is recommending the Board authorize the Cost Share Program Policy Review & Update Subcommittee creation and member appointment for meeting in September 2020**

Proposed motion: A motion was made by ___ and seconded by ___ for the authorization, creation, and appointment of members to the Cost Share Program Policy Review & Update Subcommittee including: . Vote:

VLAWMO
Vadnais Lake Area
Water Management Organization

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

**To:** VLAWMO Board of Directors

**From:** Brian Corcoran

**Date:** August 26, 2020

**Re:** **VI. 1. Whitaker Wetland Report Summary**

**VI. 1. Whitaker Wetland Report Summary**

The multi-year construction and sampling of the LCCMR funded Whitaker Treatment Wetland Project in White Bear Township at Columbia Park is wrapping up. Two years of sampling data (2018 & 2019) from both VLAWMO staff and the University of Minnesota has been analyzed and a final report generated.

This was a research project in which VLAWMO worked with Burns & McDonald along with the University of Minnesota to study the effectiveness of an upflow treatment wetland system at removing bacteria, nutrients and pathogens from stormwater. Staff will run through a summary of the findings at the August 26, 2020 Board meeting. Below is the conclusion from the sampling.

"The main objective of this Project was to assess the effectiveness of the subsurface constructed wetland in removing pollutants commonly found in urban stormwater. The results of the assessment clearly show that all three of the experimental cells were very effective in removing *E. coli* (a member of the fecal coliform group and a common fecal indicator bacteria) and nutrients (total phosphorus and nitrate) from stormwater in Lambert Creek. One of the most striking observations of the Project was the dramatic reduction in *E. coli* concentrations. During the three storm events monitored in 2019, *E. coli* concentrations were reduced two to three orders of magnitude (95 to 100%) when compared to stormwater samples collected from Whitaker Pond. These results were similar to Pathogen Analyses conducted by the University of Minnesota (Section 5.2), which suggested that the treatment wetland reduced *E. coli* levels by at least 95%. Concentrations were reduced in the first layer of treatment (the gravel layer at the bottom of each of the three cells) to less than 10 MPN/100 mL in the first two storm events and to less than 100 MPN/100 mL in storm event 3. In general, E. *coli* concentrations remained low throughout the remainder of the treatment train as the stormwater passed through subsequent treatment layers (sand, growth media, and post-treatment, which included a layer of iron-enhanced sand). The effluent of the treatment wetland was discharged to groundwater through an additional layer of gravel, which very likely decreased *E. coli* concentrations even further.

The treatment wetland was also very effective in reducing concentrations of nutrients in urban stormwater. Although nutrient reductions were not as dramatic as those observed for *E. coli*, reductions were still substantial and were observed from the first layer of treatment (gravel). Total phosphorus concentrations were reduced dramatically (76% to 98% across all three storm events) in the gravel layer and concentrations remained low throughout the remainder of each of the wetland cells as stormwater flowed up through the

subsequent treatment layers. The results were most obvious in storm event 3, where TP concentrations were reduced nearly two orders of magnitude (100-fold) from pre-treatment stormwater levels.

Large reductions in nitrate concentrations were also observed during the first two storm events monitored over the course of the Project, where concentrations in stormwater were reduced nearly 10-fold after treatment in the gravel layer and remained low throughout the subsequent layers of treatment. The results were most dramatic in the media layer where concentrations were reduced to non-detect levels in nearly all samples, presumably due to the exposure of nitrate to the root zone within the media layer and uptake of the nutrient by the native plants growing on the top of each cell. This pattern in the media layer was also observed during storm event 3, but the overall pattern of nitrate removal during this storm event was inconsistent with those observed in storm events 1 and 2.

The Project clearly demonstrated that the unique design of the Lambert Creek treatment wetland design is effective at removing *E. coli* and nutrients from stormwater and is a viable BMP for improving water quality in urbanized watersheds to meet TMDL compliance targets and other regulatory goals."

# Lambert Creek Treatment Wetland Pilot Project

# Final Report

**Vadnais Lake Area Water Management Organization**

**Project No. 97161**

**7/28/2020**

# Lambert Creek Treatment Wetland Pilot Project

# Final Report

**prepared for**

## Vadnais Lake Area Water Management Organization

**Vadnais Heights, MN**

**Project No. 97161**

**7/28/2020**

**prepared by**


## Burns & McDonnell Engineering Company, Inc.
**La Jolla, CA 92037**

# TABLE OF CONTENTS

**Page No.**

# LIST OF TABLES

**Page No.**

# LIST OF FIGURES

**Page No.**

# LIST OF ABBREVIATIONS

| Abbreviation | Term/Phrase/Name |
|---|---|
| BACI | Before, After, Control, Impact |
| BMP | Best Management Practice |
| Burns & McDonnell | Burns & McDonnell Engineering, Inc. |
| °C | degrees Celsius |
| COC | Chain of Custody |
| DNA | deoxyribonucleic acid |
| FCSV | final concentrated sample volume |
| gpm | gallons per minute |
| HRT | hydraulic residence time |
| M | Molar |
| mL | milliliter |
| MPCA | Minnesota Pollution Control Agency |
| Project | Treatment Wetland Pilot Project |
| QA/QC | Quality Assurance/Quality Control |
| qPCR | polymerase chain reaction |
| SSCS | subsurface constructed wetland |
| TMDL | Total Maximum Daily Load |
| Township | White Bear Township |
| µg | microgram |
| µL | microliter |
| VFB | vertical flow bed |

| Abbreviation | Term/Phrase/Name |
|---|---|
| VLAWMO | Vadnais Lake Area Water Management Organization |
| WLCS | water level control structure |

# 1.0 INTRODUCTION

Lambert Creek is located in the northeast Twin Cities Metropolitan Area of Minnesota in the Upper Mississippi River Basin. The Lambert Creek Watershed covers an area of approximately 25 square miles and includes portions of the Cities of North Oaks, White Bear Lake, Gem Lake, Vadnais Heights, Lino Lakes, and White Bear Township (Township), Minnesota. The watershed falls within the jurisdiction of the Vadnais Lake Area Water Management Organization (VLAWMO) and consists of a mix of urban, open space, parks, and agricultural land uses.

Lambert Creek does not currently meet Minnesota state standards for the indicator bacteria *Escherichia coli* (*E. coli*) and has been placed on the state's 303(d) List of Impaired Water Bodies. As a result, in August 2013, the Minnesota Pollution Control Agency (MPCA) developed a Total Maximum Daily Load (TMDL) for *E. coli* in Lambert Creek (Wenck, 2013), which is the total amount of a pollutant that a water body can assimilate without exceeding the established water quality standard for that pollutant. In response to the TMDL, VLAWMO contracted Burns and McDonnell Engineering, Inc. (Burns & McDonnell) to conduct a bacterial source identification study to identify the sources of *E. coli* in the Lambert Creek Watershed and recommend best management practices (BMPs) that can be implemented to meet the load reduction requirements of the TMDL.

Reducing concentrations of fecal indicator bacteria (e.g., *E. coli*) in streams has proven to be very difficult in urban settings and common engineering solutions (e.g., ultraviolet or reverse osmosis systems) are often prohibitively expensive. Thus, there is an urgent need for cost-effective, innovative bacterial reduction BMPs. One of the BMPs that has been implemented as a result of the source identification study is a Treatment Wetland Pilot Project (Project) that has been constructed adjacent to Lambert Creek in Columbia Park, within the jurisdictional boundaries of White Bear Township (Figure 1-1). Design, construction, and monitoring of the Project is a joint effort between the Township, VLAWMO, Burns & McDonnell, the University of Minnesota, and Belair Sitework Services. Funding for the Project was provided by the state of Minnesota through the Environment and Natural Resources Trust Fund. Construction of the treatment wetland was completed in July 2018 and effectiveness monitoring was conducted in the summers of 2018 and 2019.

This report summarizes the results of the monitoring program, which focused on assessing the effectiveness of the treatment wetland in reducing concentrations of *E. coli*, a suite of pollutants typically found in stormwater runoff, and several pathogens that have been identified in stormwater samples collected throughout Minnesota. A map of the study area is shown in Figure 1-1.

**Figure 1-1: Map of Project Area**

## 1.1 Project Objectives

The goals of the Project are to test the pollutant-reduction effectiveness of three experimental treatment cells within a subsurface constructed wetland (SSCW). Each cell contains varying treatment media and upland wetland vegetation to remove the most problematic pollutants from stormwater. The specific objectives of the project are:

- Determine the most effective SSCW design for removing *E. coli*, nutrients (phosphorus and nitrate), and other pollutants from stormwater.
- Assess the potential for implementing SSCW technology in removing the most common pollutants from urban waterbodies in other areas of the state.
- Provide educational signage installed at the site to disseminate information on the Project and how it improves water quality in Lambert Creek.
- Provide a report detailing the findings of the research Project.

## 1.2 Project Team

This Project was conducted by a team of scientists and water quality experts. Team members and their responsibilities are listed below.

- VLAWMO
  - Responsible for maintenance of SSCW, collection of field samples during monitoring events, and coordination with the laboratories and other team members.
- Burns & McDonnell
  - Responsible for overall project coordination, monitoring plan preparation, data analysis, and report preparation.
- University of Minnesota (Dr. Timothy Lapara)
  - Responsible for monitoring design, sample analysis, data analysis, and reporting of stormwater pathogens.
- RMB Environmental Laboratories
  - Responsible for analyzing non-pathogen related water samples and associated reporting.

# 2.0 TREATMENT WETLAND DESCRIPTION AND STUDY DESIGN

This Chapter describes the design of the SSCW as well as the study deign used to test its effectiveness in reducing pollutant concentrations in stormwater.

## 2.1 SSCW Description

The Project is located in Columbia Park on a vacant lot adjacent to a soccer field, just east of Whittaker Pond in White Bear Township, Minnesota (Figure 1-1). Whitaker Pond captures approximately 640 acres of the primarily urban upper Lambert Creek Watershed (this reach of Lambert Creek is currently impaired by *E.coli* and total phosphorus) and is typical of many urban streams throughout Minnesota.

The SSCW consists of three experimental vertical flow bed (VFB) cells, with each cell consisting of (from the bottom up) an impermeable liner, a layer of gravel, a layer of sand, a layer of sorption media (engineered soil), and a layer of growth media. A schematic of a single VFB cell showing the direction of water flow is provided on Figure 2-1. A cross-section of the three VFB cells in the SSCW are provided on Figure 2-2. Each VFB cell is approximately three feet deep, 19 feet wide (at the top, 13 feet wide at the bottom) and 54 feet long. The sorption media in each of the three VFB cells contains different combinations of sorptive materials that have been shown in other studies to reduce concentrations of fecal indicator bacteria and other constituents. Stormwater from Whitaker Pond enters the bottom of each of the cells, flows up through the filter media layers, then across the growth media at the top of the SSCW and out the far end.

**Figure 2-1: Schematic of Stormwater Flow Through a VFB Cell**

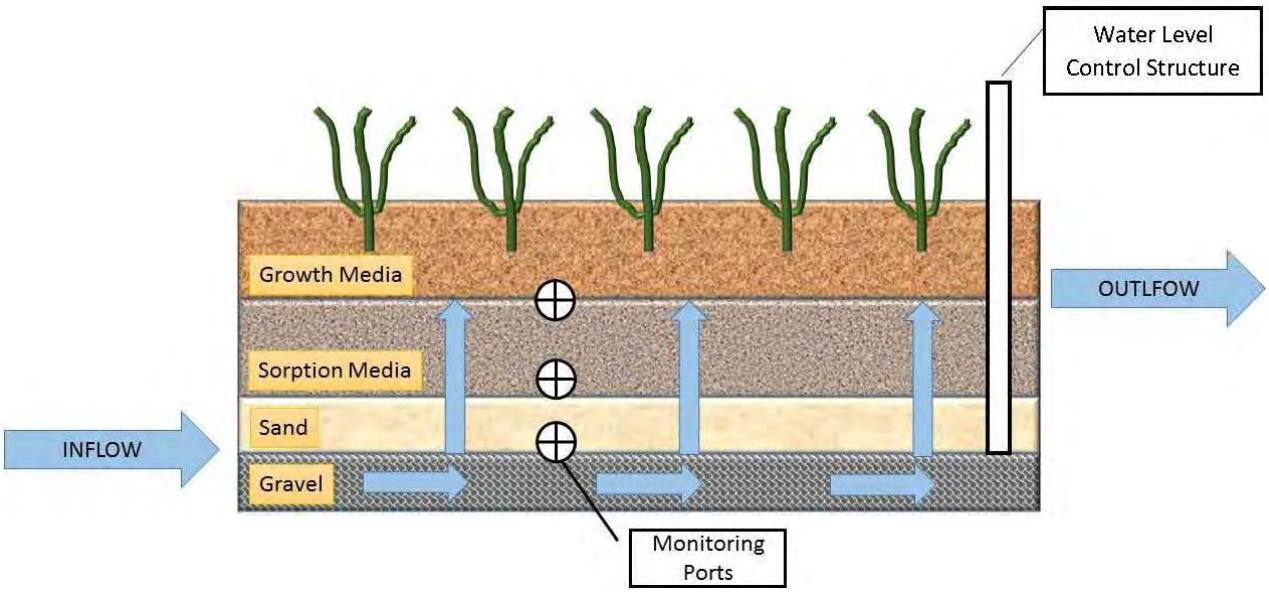
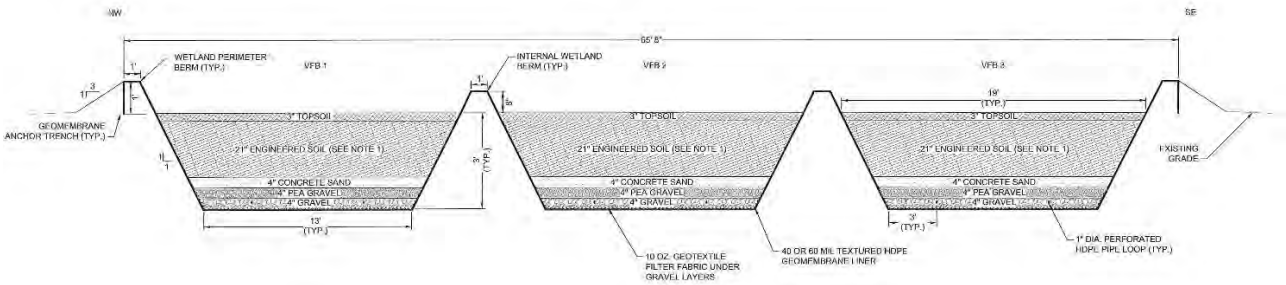
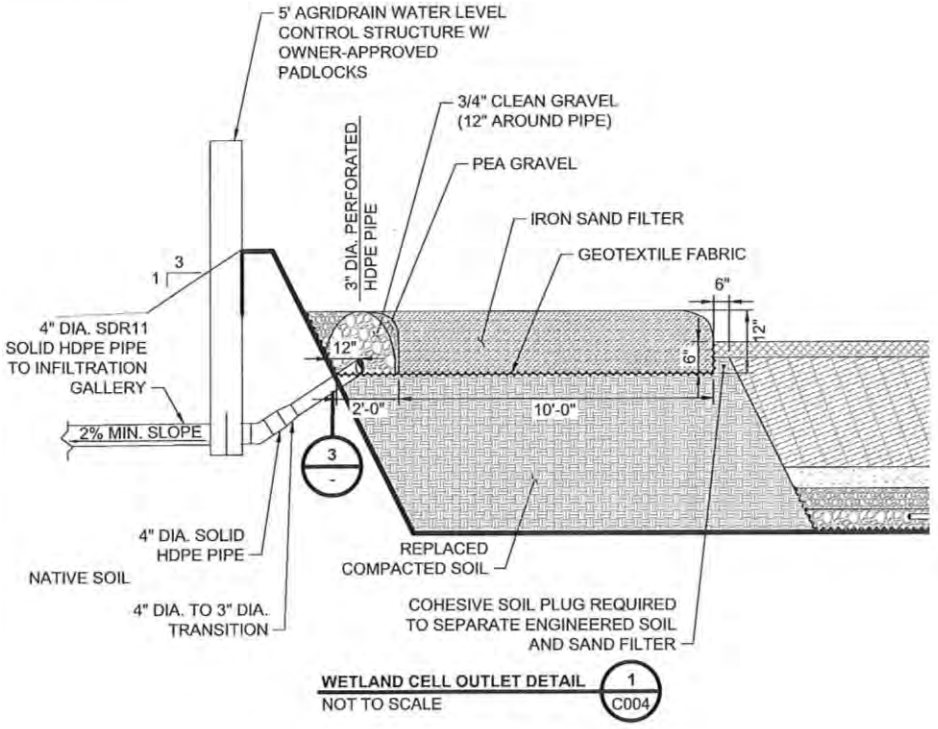


**Figure 2-2: Cross Section of the Three VFB Cells**




The far end of each cell contains a final layer of iron-enhanced sand, approximately 12 feet long by 12 inches deep, as depicted on Figure 2-3. After passing through the media layers in each VFB cell, treated water passes horizontally through the iron enhanced sand layer, then leaves the cell through a final collection pipe. Treated water in the pipe flows through the bottom of an inline water level control structure (WLCS) – a stainless steel metal box fitted with stoplogs that control the water level in each of the cells. After passing through the bottom of the WLCS, the treated water is discharged to an infiltration gallery (consisting of an unlined gravel trench over native soils), where the water will infiltrate to groundwater. The top of the SSCW is planted with native plants, which are irrigated with the treated stormwater from the SSCW. The unique vertical up-flow pattern in the VFB cells maximizes pollutant removal while maintaining wetted conditions in the growth media to promote plant growth.

**Figure 2-3: Schematic of Final Iron Sand Filter and WLCS**



Because the surface elevation of Whittaker Pond is roughly 10-15 feet lower than the location of the SSCW in Columbia Park, a packaged solar powered pump system was installed inside a pump house at the near end of the SSCW to move water from the pond to the VFB cells. The pump moves stormwater at a rate of approximately 5 gallons per minute (gpm) through a three-inch diameter pipe submerged in the pond to a distribution manifold at the SSCW site. The distribution manifold delivers pollutant-laden stormwater to each of the three VFB cells through a three-inch diameter perforated distribution pipe placed on top of the liner at the bottom of each VFB cell.

In order to test pollutant-removal effectiveness, a series of monitoring ports were installed at the interfaces between the media layers in each VFB cell to determine the effectiveness of the media layer (as well as the overall effectiveness of each VFB cell) in removing *E. coli* and other pollutants from stormwater. Each port consists of a 2-inch diameter PVC pipe inserted vertically into the SSCW at the interface of the various media layers (the top of the monitoring ports are capped to prevent surface contamination and the bottom of the ports are surrounded by a mesh material to prevent clogging). During construction, the monitoring ports were placed in a series of monitoring arrays. Each array consists of three PVC pipes installed at three locations within each VFB cell: top of gravel layer, top of sand layer, and top of sorption media layer (See Figure 2-1). There are three arrays placed at the upstream, middle, and downstream ends of each VFB cell. In this way, each of the three VFB cells has nine monitoring ports (27 monitoring ports overall for the project).

**Figure 2-4: Photograph of Three Sampling Ports of a Monitoring Array Used to Collect Treated Water from Gravel (G), Sand (S), and Sorption Media (M) Layers in VFB Cell 1**

## 2.2 Study Design

The Study Design for the Project is based on a BACI (Before, After, Control, Impact) design used for assessing BMP effectiveness in reducing pollutant concentrations before and after stormwater is pumped through the various layers of the SSCW. In addition to assessing the overall effectiveness of the SSCW, the design allows for an assessment of each of the three VFB cells and each of the three media layers within each cell (gravel, sand, and sorption media).

To achieve this goal, samples were collected from the sampling locations listed in Table 2-1.

**Table 2-1: Sampling Designations, Locations, and Labels**

| Sample Designation | Location | Label (number of replicates) [a] |
|---|---|---|
| Pre-treatment | Pump spigot located in pump house | Pre-# (six) |
| Monitoring ports within each of the VFB Cells | VFB Cell 1 | VFB1-A-M-# (one)<br>VFB1-B-M-# (one)<br>VFB1-C-M-# (one)<br>VFB1-C-G-# (one)<br>VFB1-C-S-# (one) |
| | VFB Cell 2 | VFB2-A-M-# (one)<br>VFB2-B-M-# (one)<br>VFB2-C-M-# (one)<br>VFB2-C-G-# (one)<br>VFB2-C-S-# (one) |
| | VFB Cell 3 | VFB3-A-M-# (one)<br>VFB3-B-M-# (one)<br>VFB3-C-M-# (one)<br>VFB3-C-G-# (one)<br>VFB3-C-S-# (one) |
| Post-treatment | Bottom of WLCS located at the end of each VFB Cell | Post-VFB1-# (three)<br>Post-VFB2-# (three)<br>Post-VFB3-# (three) |
| QA/AC [b] | **Duplicates:** Either sampling port used above and/or WLCS – 2. separate ports/drains should be used | VFB1-Dup<br>VFB2-Dup |
| | **Blanks:** Using blank water from the lab, fill two bottle sets with blank water in the field using same techniques | TW-Blk-1<br>TW-Blk-2 |

(a) # refers to the replicate number
(b) Quality Assurance / Quality Control

For this Project, a batch-flow design was used, where effectiveness was determined by treating a single batch of stormwater at a time (as opposed to continuous treatment). Thus, the protocols described below were used to treat water from a single, discrete storm event, with multiple events treated over the course of a year. The frequency and timing of sample collection is important to properly characterize the pre- and post-treatment pollutant concentrations and assure the appropriate hydraulic residence time (HRT) for pollutant removal. Initial flow monitoring determined that the maximum flow rate of 1.4 gpm yielded an HRT of 48 hours (2 days). Therefore, a flow rate of 0.7 gpm (the initial design specifications) yielded an HRT of 4 days and a flow rate of 1.05 gpm yielded an HRT of 3 days.

Based on these values, the sampling protocol outlined below was used to achieve an HRT of 3 days:

- **Pre-storm assessment**
    - Check to see that the all three VFB cells have been drained of any water and that the wetland drain pipe is closed.
- **Pump Start up**
    - At least one hour after the onset of rain, open the intake and pump valves and turn the pump on at a flow rate of 1.05 gpm for all three VFB cells. The goal is to make sure that the water being collected and tested for the pre-treatment samples represents stormwater conditions in Lambert Creek. One hour should be sufficient to allow the upstream drainage to "flush" and produce water in the basin that is representative of storm conditions in the creek (i.e., turbid water with elevated pollutant levels). However, due to the high variability of pollutant levels in urban creeks during storm events, the operator should use discretion in determining the appropriate length of time after the onset of rain needed to achieve these conditions.
- **Pre-treatment sample collection**
    - After the pump has been turned on, collect 6 sample sets (a suite of bottles for the pollutants to be analyzed) from the pump spigot and label the bottles in each set as described in Table 2-1 (e.g., all the bottles in bottle set 1 will be labelled Pre-1). Collect a total of six bottle sets from the pump spigot at this time.
- **Post-treatment sample collection**

- Run the pump continuously for a period of at least 3 days (72 hours), then check to see if the VFB cells are full and water is flowing out through the WLCSs.
- Once flow has been determined, collect a single sample set (suite of bottles) from each of sampling ports in VFB-1 as follows:
  - VFB1-A-M,
  - VFB1-B-M
  - VFB1-C-M
  - VFB1-C-G
  - VFB1-C-S
- Collect three sample sets from the WLCSs at the end of the VFB1 cell.
- Label the bottles in each sample set as described in Table 2-1.
- Repeat the sequence above for VFB-2 and then VFB-3.

- **QA/AC**
  - Using the same techniques as above, collect two duplicate samples from either the monitoring ports, or the WLCSs and label the bottles in each sample set as described in Table 2-1.
  - Using the same techniques as above, fill two sample sets with blank water from the laboratory and label the bottles in each sample set as described in Table 2-1.

- **Post-storm assessment**
  - After all the sample sets have been collected, increase the flow to the maximum flow rate in all three cells and flush the system with “clean” water (water in the basin after the storm has passed) for 2 days.
  - Close the valve at the intake, then close the valve at the pump and turn the pump off.
  - Open the wetland drain valve and drain the system.

# 3.0 SAMPLING AND ANALYSIS PROCEDURES

This Chapter describes the techniques used to collect and analyze samples for the Project.

## 3.1 Sample Collection for Water Quality Analyses

Water samples from each of the sites described in Section 2.2, were collected by field technicians wearing sterile latex gloves. Four types of samples were collected: Pre-treatment, VFB Cell, Post-treatment, and QA/QC. The sampling technique for each sample type is described below.

- **Pre-treatment samples** were collected directly from the spicket in the pump house as unfiltered stormwater was pumped from Whitaker Pond to the VFB cells. The field technician opened the spicket and directly filled the suite of pre-labelled sample bottles, as described above.

- **VFB Cell samples** were collected from each of the sampling ports as described in Table 2-1. Samples were collected by removing the sampling port cap and inserting a sterile, disposable, polyethylene bailer into the sampling port. When the bailer was full, water from the port was decanted into the pre-labelled sample bottles for that sampling port. When all the bottles from that sampling port were full, the sampling port cap was replaced and the bailer was properly disposed of.

- **Post-treatment samples** were collected directly from the WLCS at the end of each VFB Cell. Samples were collected by removing the WLCS lid and inserting a sterile, disposable, polyethylene bailer into the bottom of the WLCS. Once the bailer was filled, it was retrieved and the water was decanted into pre-labelled sample bottles as described in Table 2-1.

- **QA/QC samples** were collected as described above for two types of QA/QC samples: duplicates and blanks. Duplicate samples were collected either from one of the sampling ports or from WLCS-2, immediately after the original sample from that location was collected. Blank samples were collected by decanting sterile, blank water provided by the laboratory into a suite of sample bottles. Two duplicate samples and two blank samples were collected for each round of sampling (e.g., two duplicates and two blank samples for each storm event to be monitored). Duplicate and blank samples were labelled as described in Table 2-1.

## 3.2 Sample Bottle Identification

Each sample collected over the course of the study received a unique alphanumeric code (sample I.D. number) for tracking as described in Table 2-1. All sample bottles were labeled with the following information:

- Project name
- Sample I.D. number
- Date
- Time
- Preservative
- Collector's initials
- Analyte(s) to be analyzed

Immediately after collection, each sample bottle was stored on ice in the dark in a closed cooler from the time of sample collection until delivery to the analytical laboratory. All samples were delivered to RMB Environmental Laboratories in Detroit Lakes, Minnesota within the required holding time. The samples were transferred to the laboratory using standard chain of custody (COC) procedures discussed in Chapter 4. The cooler and sampling equipment were cleaned with biodegradable soap prior to use.

## 3.3 Field Observation Form

During each sampling event (e.g., storm event), a Field Observation Form was filled out by the field technician conducting the sampling. The Field Observation Form was to document conditions during the sampling event. Information documented on the Field Observation Form included the date and time of collection, physical conditions during the sampling event (e.g., weather conditions), water quality data collected at the time of sampling (temperature, pH, dissolved oxygen levels, etc.), any observations made during the sampling event that have the potential to affect results (e.g., debris in the sampling port), and a recording of any photographs taken during sample collection.

## 3.4 Sample Collection for Stormwater Pathogen Analyses

Sample collection and analysis of pathogens was conducted by the University of Minnesota under the direction of Dr. Timothy LaPara, Department of Civil, Environmental, and Geo- Engineering. Samples were collected over the course of five storm events during the summer of 2019. During each event, a single pre-treatment stormwater sample was collected from the pump spigot located inside the pump house. Stormwater was moved through each of the three treatment wetland cells for a period of approximately three days (as described above), then a single sample of treated water was collected from

the bottom of the WLCS at the far end of each of the three cells. A total of 20 samples were collected over the course of the monitoring period, including five pre-treatment samples from the pump house spigot and five post-treatment samples from each of the WLCSs.

Microorganisms were captured from each sample location using REXEED 25S ultrafiltration membrane cartridges (Asahi Kasei, Tokyo, Japan) as described by Smith and Hill (2009). The total volume of sample was determined empirically based on water quality. Membrane cartridges were transported from the field on ice to the laboratory at the University of Minnesota for subsequent backflushing and concentration of microorganisms. Method blank ultrafilter samples were collected by backflushing fresh, unused ultrafilter cartridges.

## 3.5 Laboratory Analyses for Water Quality Samples

All samples collected as part of the Project were delivered to RMB Environmental Laboratories and analyzed in the lab following the parameters identified in Table 3-1.

**Table 3-1: Analytes and Corresponding Analytical Parameters**

| Analyte | Method | Reporting Limit | Sample Volume | Container (Size, Type) | Preservation | Holding Time |
|---|---|---|---|---|---|---|
| *Escherichia coli* | SM 9223-2004 | 1.0 MPN/ 100 mL | 100 mL | sterile,100-mL plastic | None | 6 hours |
| Phosphorus, Total as P (TP) | SM 4500-P B/E | 0.003 mg/l | 50 mL | 250-mL glass | $H_2SO_4$ | 28 days |
| Orthophosphate, as P (OP/SRP) | SM 4500-P B/E EPA 300.0 | 0.003 mg/l | 50 mL | 125-mL HDPE | None | 48 hours |
| Nitrogen, Ammonia as N ($NH_3$) | SM 4500-$NH_3$ B/C | 0.04 mg/l | 500 mL | 1-L Amber glass | $H_2SO_4$ | 28 days |
| Nitrogen, Nitrate and Nitrite (N+N) | SM 4500-$NO_3$ E / SM-4500-$NO_2$ B | 0.01-0.03 mg/l | 100 mL | 125-mL HDPE | $H_2SO_4$ | 28 days |
| Total Suspended Solids, (TSS) | SM-2540-D | 5.0 | 1 L | 1-L HDPE | None | 7 days |

(a) °C = degrees Celsius

## 3.6 Laboratory Analyses for Pathogen Samples

Samples for pathogen analyses and method blank ultrafilters were backflushed using 500 mL of a sterile solution containing 0.5% Tween-80, 0.01% sodium hexametaphosphate, and 0.001% Y-30 anti-emulsion. The microbial cells were collected from the backflush solution via coagulation with a solution containing

0.2 Molar (M) sodium chloride, 8% (w/v) polyethylene glycol, and 1% beef extract, settling for 24 hours, and finally centrifugation at 12,000 × g for 45 minutes. The supernatant was decanted and the remaining pellet was resuspended using 1- 5 mL of 10× TE buffer. The resulting final concentrated sample volumes (FCSVs) were stored at – 20°C prior to deoxyribonucleic acid (DNA) extraction. Concentration factors using this method have been ~$10^3$ to $10^4$-fold.

DNA was extracted from the FCSVs using the FastDNA™ SPIN Kit (MP Biomedicals, Santa Ana, CA). Lysis buffer (5% m/v SDS, 120 mM sodium phosphate buffer, pH 8.0) was added to a 300 µL aliquot of concentrated samples, which were subjected to three freeze-thaw cycles, followed by a 90-minute incubation at 70°C. DNA was stored at -20 °C until further use.

Quantitative polymerase chain reaction (qPCR) was performed on DNA extracted/purified from each sample and target 8 genes specific to bacterial pathogens as well as the 16S rRNA gene for quantifying total biomass. The targeted organisms included *Campylobacter* spp. (2 genes) and *E. coli*-like organisms (6 genes). Assays were performed using a CFX Connect™ Real-Time PCR Detection System (Bio-Rad, Hercules, CA). Final reaction mixtures were 20 µL and consisted of nuclease-free water, 10 µL SsoAdvanced™ Universal Probes Supermix (EvaGreen for the 16S rRNA gene assay), 20 µg bovine serum albinum, 1 µL template DNA, and varying concentrations of primers and probes depending on the assay (Table 3-2). Methods for all taxonomic targets were taken from Ishii et al. (2013), except for All Bacteria (Muyzer et al., 1993) and Adenovirus (Lambertini et al., 2012).

**Table 3-2: qPCR gene targets, primer and probe sequences, and references**

| Taxonomic Target | Target Gene Name | Gene Product | Primer[(a)] & Probe[(b)] (5'-3' sequence) |
|---|---|---|---|
| *Campylobacter jenjuni* | *cadF* | Fibronectin-binding protein | F: TGC TAT TAA AGG TAT TGA TGT RGG TGA |
| | | | R: GCA GCA TTT GAA AAA TCY TCA T |
| | | | P: UPL 039 |
| *Campylobacter jenjuni* | *ciaB* | Invasion antigen B | F: GCG TTT TGT GAA AAA GAT GAA GAT AG |
| | | | R: GGT GAT TTT ACT TTC ATC CAA GC |
| | | | P: UPL 137 |
| | | | R: GCA ACC ACT ATC CAA TAC TCA AAC AC |
| | | | P: CCG TGT GGA GTC CCT CCA TCT TGG |
| *E. coli* | *ftsZ* | Cell division protein | F: CTG GTG ACC AAT AAG CAG GTT |
| | | | R: CAT CCC ATG CTG CTG GTA G |
| | | | P: UPL 071 |
| *E. coli* | *uidA* | Beta-D-glucuronidase | F: CCC TTA CGC TGA AGA GAT GC |
| | | | R: TTC ATC AAT CAC CAC GAT GC |
| | | | P: UPL 113 |
| | *eaeA* | Intimin | F: GGC GAA TAC TGG CGA GAC TA |
| | | | R: GGC GCT CAT CAT AGT CTT TCT T |

| | | | |
|---|---|---|---|
| Enterohemorrhagic *E. coli* (EHEC) | | | P: UPL 028 |
| Enterohemorrhagic *E. coli* (EHEC) | *stx1* | Shiga toxin 1 subunit A | F: TGT AAT GAC TGC TGA AGA TGT TGA T |
| | | | R: TCC ATG ATA RTC AGG CAG GA |
| | | | P: UPL 060 |
| Enterohemorrhagic *E. coli* (EHEC) | *stx2* | Shiga toxin 2 subunit A | F: TCT GGC GTT AAT GGA GTT YAG |
| | | | R: GTG ACA GTG ACA AAA CGC AGA |
| | | | P: UPL 126 |
| *Shigella* spp. and enteroinvasive *E. coli* | *virA* | Secreted VirG-processing protein | F: GGC AAT CTC TTC ACA TCA CG |
| | | | R: TTC GGA CAT AAT TTG GGC ATA |
| | | | P: UPL 006 |
| All Bacteria | 16S rRNA | Small subunit, ribosomal RNA | F: ACT CCT ACG GGA GGC AGC AG |
| | | | R: ATT ACC GCG GCT GCT GG |
| | | | |
| Adenovirus | *hex* | Hexon protein for capsid coat | F: GGA CGC CTC GGA GTA CCT GA |
| | | | R: CGC TGI GAC CIG TCT GTG G |
| | | | P: CAC CGA TAC GTA CTT CAG CCT GGG T |

(a) Forward and reverse primer sequences are preceded by the letters ‘F’ and ‘R’, respectively.
(b) Probe sequences are preceded by the letter ‘P’. Items containing "UPL" followed by a number represent proprietary probe sequences from the Universal ProbeLibrary® (Roche Molecular Systems. Inc, Pleasanton, CA)

# 4.0 SAMPLE HANDLING AND TRACKING

Samples were kept properly chilled and transferred to the analytical laboratory within holding times to achieve the highest quality data possible. To ensure proper tracking and handling of the samples, documentation accompanied the samples from the initial pickup to the final extractions and analysis. This documentation was in the form of COC forms (provided by VLAWMO and/or participating laboratories.

Completed COC forms were placed in a plastic envelope and kept inside the container containing the samples. Once delivered to the laboratory, the COC form was signed by the person receiving the samples. The condition of the samples was noted and recorded by the receiver. COC records were included in the final reports prepared by the analytical laboratories.

Upon delivery to the laboratory, the laboratory manager inspected the condition of the samples and reconciled the label information to the COC form. The time of sample delivery was noted and the samples were stored at the appropriate temperature until analysis began, always within the holding times identified in Table 3-1.

Upon completion of analyses, any remaining sample material was stored until the holding time expired, at which point the samples were disposed of.

# 5.0 RESULTS

## 5.1 Results of 2018 Water Quality Analyses

Three storm events were monitored in 2018: August 20 (storm event 1), September 4 (storm event 2), September 20 (storm event 3). Pollutant concentrations are presented graphically by storm event for 2018 on Figure 5-1 for *E. coli*, TSS, and ammonia and on Figure 5-2 for TP, orthophosphate, and nitrate. Analytical data summary tables are provided in Attachment 1.

### 5.1.1 *E. coli*

The mean *E. coli* concentration in the pre-treated stormwater during storm event 1 was 9,195 MPN/100 mL (mean of six stormwater samples from Whitaker Pond) (Figure 5-1). The mean concentration at the top of the gravel layer was 359 MPN/100 mL, representing a 96.1% decrease in *E. coli* concentrations and similar reductions were observed at the top of the sand layer. Further reductions were observed at the top of the media layer with mean *E. coli* concentrations of 25 MPN/100 mL in cells 1 and 2 and 280 MPN/100 mL in cell 3 (reductions of 99.7%, 99.7% and 97.0%, respectively compared to pre-treatment concentrations). During storm event 1, *E. coli* concentrations in post-treatment samples were below detection limit in five of the nine samples collected from the three cells and 1 to 2 MPN/100 mL in the others, representing a mean reduction of 100%.

During storm 2, pre-treatment *E. coli* concentrations in Whitaker Pond were much lower than those measured in storm event 1 and storm event 3, with a mean concentration of 2,233 MPN/100 mL (Figure 5-1). *E. coli* concentrations were reduced 99.7% and 99.9% in the gravel and sand layers, (mean *E. coli* concentrations of 8 and 5 MPN/100 mL, respectively). Similar reductions were observed in the media layers of the three cells. Mean post-treatment *E. coli* concentrations were 131, 53, and 3 MPN/100 mL for cells 1, 2, and 3, respectively, representing slight increases in concentrations from the previous treatment layers, but still showing an overall mean decrease of 97.2% compared to pre-treatment concentrations during storm event 2.

The mean pre-treatment *E. coli* concentration from Whitaker Pond during storm event 3 (9,655 MPN/100 mL) was similar to that during storm event 1 (Figure 5-1). Concentrations decreased an average of 99.7% in the gravel layers and 98.0% in the sand layers of the three cells. Concentrations increased in the media layers of all three cells, particularly cell 1, which actually increased substantially from the sand layer. Among the three storm events in 2018, storm event 3 had the lowest overall *E. coli* removal efficiency with a mean reduction of 94.1% when the mean post-treatment concentration is compared to the mean pre-treatment concentration.

**Figure 5-1: Graphs of Treatment Wetland Reduction Efficiencies for *E. coli*, Total Suspended Solids (TSS), and Ammonia ($NH_3$) from Three Storms Monitored in 2018**

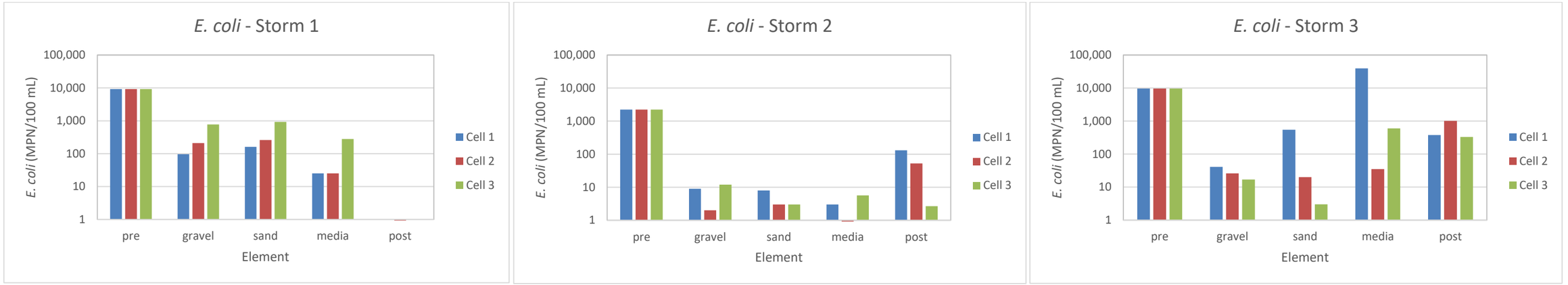
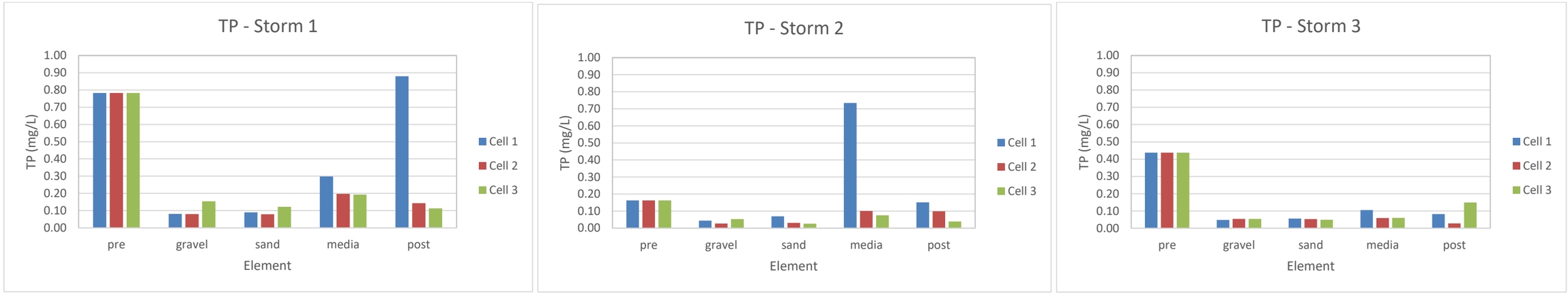


**Figure 5-2: Graphs of Treatment Wetland Reduction Efficiencies for Total Phosphorus (TP), Orthophosphate, and Nitrate ($NO_3$) from Three Storms Monitored in 2018**



### 5.1.2 TSS

During storm event 1, the mean pre-treatment TSS concentration from samples collected from Whitaker Pond was 54.3 (mg/L) (Figure 5-1). At the top of the gravel layer, the mean concentration was 20.8 mg/L, representing a 61.8% reduction. TSS concentration in the sand and media layers were similar to those in gravel, except for cell 1, where the TSS concentration (233.4 mg/L) increased dramatically from the mean pre-treatment concentration due to a very high value in one of the replicate samples. The mean post-treatment concentration of TSS was 48.2 mg/L, representing an average decrease of 11.0% compared to the mean pre-treatment concentration.

During storm event 2, the mean pre-treatment TSS concentration was 23.9 mg/L, less than half that observed in storm event 1 (Figure 5-1). TSS concentrations were reduced to a mean of 8.1 mg/L at the top of the gravel layer (66.0% reduction). Further TSS removal was marginal in the sand layer (mean of 55.8%) and the media layers for cells 2 and 3. As with storm event 1, the mean TSS concentration was particularly high (320 and 230 mg/L in replicates 1 and 2 of cell 1). Mean post-treatment TSS concentrations were slightly greater than those observed in the gravel layer, with a mean reduction of 16.0% compared to pre-treatment levels.

During storm event 3, the mean pre-treatment TSS concentration was 126.6 mg/L, much greater than that observed in the first two storm events monitored in 2018 (Figure 5-1). The mean TSS concentration decreased 91.6% at the top of the gravel layer (mean concentration of 10.6 mg/L). TSS concentrations remained low throughout the remainder of the treatment layers in all three cells (less than 20 mg/L in all but two samples) except for the media layer in cell 1, which had a mean TSS concentration of 263 mg/L. This pattern was similar to that observed in storm event 1 and 2.

### 5.1.3 Ammonia

During storm event 1, the mean pre-treatment ammonia concentration collected from Whitaker Pond was 1.50 mg/L (Figure 5-1). The mean concentration at the top of the gravel layer was 0.10 mg/L, representing a 93.3% decrease in ammonia concentrations. Mean ammonia concentrations remained low in samples collected from the other media layers in each of the three cells. In the post-treatment samples, ammonia concentrations were below the detection limit from all samples collected in cells 2 and 3, but had increased slightly in cell 1.

During storm event 2, ammonia concentrations were much more variable than those observed during storm event 1 and the pre-treatment concentration was over ten times lower (0.108 mg/L) (Figure 5-1). Ammonia concentrations were below the detection limit in several samples collected from the gravel,

sand, and post-treatment locations; however, concentrations were close to the pre-treatment concentrations in some samples and there was no discernable pattern associated with treatment.

During storm event 3, the mean ammonia pre-treatment concentration was 0.425 mg/L (Figure 5-1). The mean concentration had decreased to 0.034 mg/L at the top of the gravel layer (a 92.0 % reduction). Ammonia concentrations in all samples collected from the top of the sand layer were below detection limit. Concentrations increased slightly in the media layer and post-treatment samples, especially in cell 3.

### 5.1.4 Total Phosphorus

The mean concentration of total phosphorus collected from Whitaker Pond during storm event 1 was 0.783 mg/L (Figure 5-2). Concentrations decreased dramatically after treatment in the gravel layer, with a mean concentration of 0.105 mg/L (an 86.6% reduction). Concentrations remained relatively low in samples collected from the subsequent locations in the treatment cells, except for the post-treatment sample collected from cell 1, which spiked to a value greater than pre-treatment levels (mean of 0.880 mg/L).

During storm event 2, the pre-treatment TP concentration (mean of 0.163 mg/L) was much lower than that observed in storm event 1 (Figure 5-2). The mean concentrations were reduced 74.6% after treatment in the gravel layer (mean concentration of 0.041 mg/L) and concentrations remained low throughout the rest of the treatment process, except for the media layer in cell 1, which had much greater TP values in two of the three samples collected (mean concentration of 0.734 mg/L).

The largest, most consistent reductions in TP occurred during storm event 3 (Figure 5-2). The mean pre-treatment concentration during storm event 3 was 0.44 mg/L, which had dropped to 0.052 mg/L after treatment in the gravel layer. TP concentrations remained low in all subsequent samples collected from all three cells.

### 5.1.5 Orthophosphate

During storm event 1 in 2018, the mean orthophosphate concentration was 0.105 mg/L (Figure 5-2). The mean concentration decreased to 0.036 mg/L after treatment in the gravel layer (a 65.4% decrease) and concentrations remained at the level through the subsequent treatment layers before increasing slightly in the post-treatment samples (mean of 0.080 mg/L). During storm event 2, the pre-treatment orthophosphate concentration (mean of 0.065 mg/L) was much lower than that observed during storm events 1 and 3. The relative reduction after gravel treatment, however, was similar to that observed during storm event 1 (reduction of 60.3%). Orthophosphate concentrations remained low throughout the

subsequent treatment layers (< 0.040 mg/L), but increased in the post-treatment samples in cells 1 and 2. The pattern of reduction in orthophosphate concentrations during storm event 3 was similar to those observed for storm events 1 and 2.

### 5.1.6 Nitrate

During storm event 1 of 2018, the mean nitrate concentration was 1.85 mg/L (Figure 5-2). After treatment in the gravel layer, the concentration had been decreased to 0.190 mg/L (an 89.7% reduction). Nitrate concentrations continued to decrease through the media layers in all three cells and were reduced to non-detect levels in the media layer (100% removal). However, spikes in nitrate concentrations were observed in cells 1 and 2 in the post-treatment samples.

During storm event 2, the mean pre-treatment nitrate concentration was 0.577 mg/L (Figure 5-2). Concentrations did not decrease substantially or increased in the gravel and sand layers. However, similar to storm event 1, nitrate concentrations in the media layer were below the detection limit (100% removal). Post-treatment samples did have detectable levels of nitrate, although relatively low.

During storm event 3, the pre-treatment nitrate concentration was 0.285 mg/L (Figure 5-2). Concentrations increased substantially in both the gravel and sand layers, but decreased to levels below the detection limit in the media layer (100% removal, similar to storm events 1 and 2). Concentrations increased in the post-treatment samples during storm event 3 as well.

## 5.2 Results of 2019 Water Quality Analyses

Three storm events were monitored in 2019: June 27 (storm event 1), August 5 (storm event 2), September 11 (storm event 3). Pollutant concentrations are presented graphically by storm event for 2019 on Figure 5-3 for *E. coli*, TSS, and ammonia and on Figure 5-4 for TP, orthophosphate, and nitrate. Analytical data summary tables are provided in Attachment 1.

### 5.2.1 *E. coli*

The mean *E. coli* concentration in the pre-treated stormwater during storm event 1 was 12,200 MPN/100 mL (mean of six stormwater samples from Whitaker Pond) (Figure 5-3). The mean concentration at the top of the gravel layer was 7 MPN/100 mL, representing a 99.9% decrease in *E. coli* concentrations and similar reductions were observed at the top of the sand layer. *E. coli* concentrations increased slightly in the media layer (mean concentrations of 3, 15, and 75 for cells 1, 2, and 3, respectively), but were below 10 MPN/100 mL in the post-treatment samples, representing a mean reduction of 100 % compared to pre-treatment concentrations.

**Figure 5-3: Graphs of Treatment Wetland Reduction Efficiencies for *E. coli*, Total Suspended Solids (TSS), and Ammonia ($NH_3$) from Three Storms Monitored in 2019**

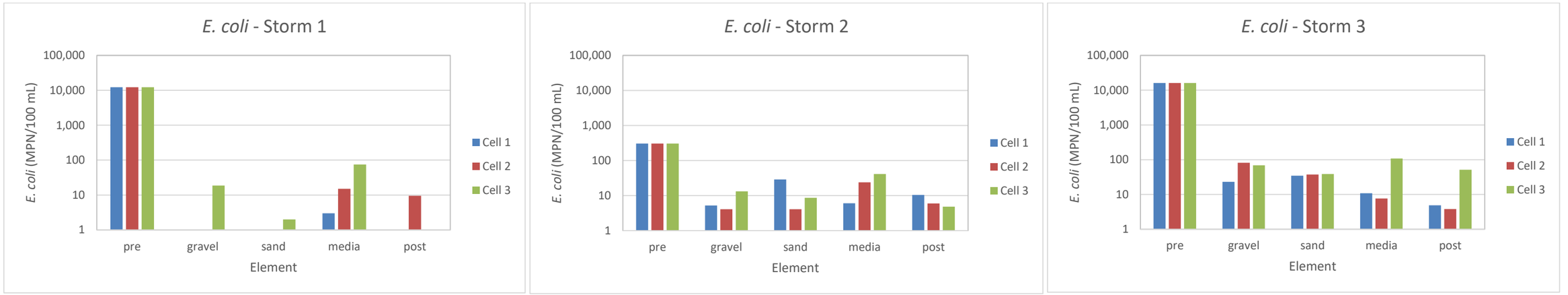
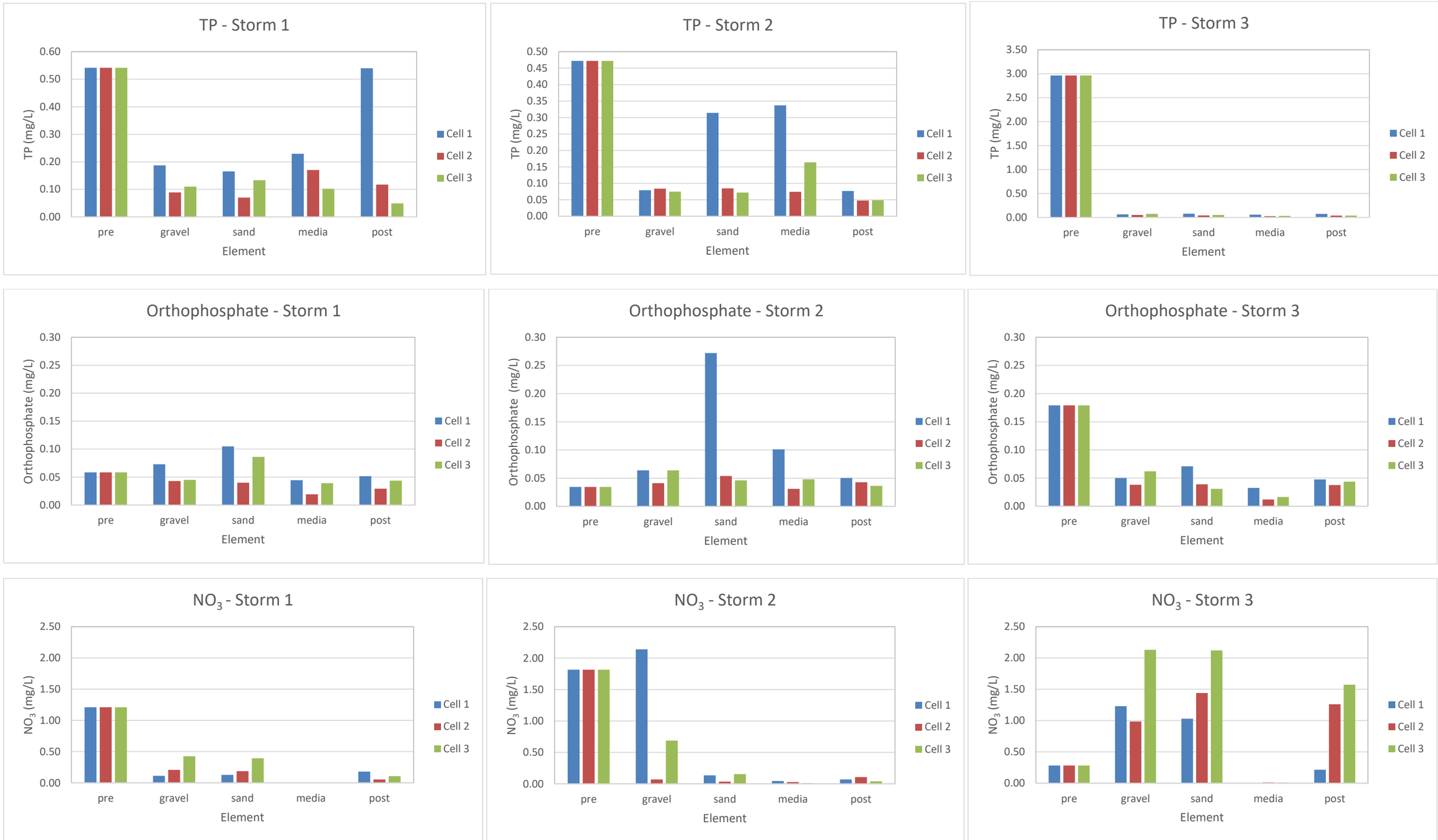


**Figure 5-4: Graphs of Treatment Wetland Reduction Efficiencies for Total Phosphorus (TP), Orthophosphate, and Nitrate ($NO_3$) from Three Storms Monitored in 2019**



During storm 2, pre-treatment *E. coli* concentrations in Whitaker Pond were substantially lower than those measured in storm event 1, with a mean concentration of 307 MPN/100 mL (Figure 5-3). Pollutant reduction was less than that observed during storm event 1, with mean reduction values of 97.6% reduction in the gravel layer compared to pre-treatment values, 95.5% in the sand layer, and 87 to 98% in the media layer. Mean post-treatment *E. coli* concentrations decreased 97.7% compared to pre-treatment concentrations during storm event 2.

Mean pre-treatment *E. coli* concentrations from Whitaker Pond were greatest during storm event 3, with a mean concentration of 16,165 MPN/100 mL (Figure 5-3). Reductions in concentrations were similar to those observed during storm events 1 and 2 with mean reduction values of 99.6% reduction in the gravel layer compared to pre-treatment values, 99.8% in the sand layer, and 99.3 to 100% in the media layer. Mean post-treatment *E. coli* concentrations decreased 99.9% compared to pre-treatment concentrations during storm event 3. Although the percent reduction was substantial during storm event 3, *E. coli* concentrations after each layer of treatment were slightly greater than those observed during the other two storm events.

### 5.2.2 TSS

The mean TSS concentration in the pre-treated stormwater during storm event 1 was 81.8 mg/L (mean of six stormwater samples from Whitaker Pond) (Figure 5-3), which is fairly low for stormwater samples. The mean concentration at the top of the gravel layer was 16.2 mg/L, representing a 80.2% decrease in TSS concentrations. TSS concentrations remained low throughout the remainder of the treatment layers.

The pattern for TSS reduction during storm event 2 was similar to that observed in storm event 1 (Figure 5-3). The mean pre-treatment TSS concentration during storm event 2 was also low (75.0 mg/L) and was reduced substantially in the gravel layer (90% reduction) and remained low throughout the remainder of the treatment system.

During storm event 3, pre-treatment stormwater samples were much greater (mean of 642.5 mg/L) than those observed during storm events 1 and 2 (Figure 5-3). A dramatic reduction in mean TSS concentration was observed from samples collected at the top of the gravel layer, where the mean concentration was 8.63 mg/L, a reduction of 98.7% from pre-treatment samples. TSS concentrations remained very low (< 10 mg/L) throughout the remainder of the treatment system.

### 5.2.3 Ammonia

During storm event 1 in 2019, the mean ammonia concentration was 1.22 mg/L (Figure 5-3). At the top of the gravel layer, the mean concentration was 0.211 mg/L (an 82.7% reduction from pre-treatment samples). Ammonia concentrations remained consistently low throughout the remainder of the treatment layers and were below detection limit in six of the nine post-treatment samples.

During storm event 2, a very similar pattern was produced (Figure 5-3). The mean ammonia concentration in the pre-treatment stormwater sample (1.40 mg/L) was reduced to 0.036mg/L at the top of the gravel layer (a 97.5 % reduction). Concentrations remained low throughout the remainder of the treatment cell and ammonia concentrations in all nine of the post-treatment samples were below detection limit (100 % removal).

Ammonia removal was most dramatic during storm event 3 (Figure 5-3). During this storm event, pre-treatment ammonia concentrations (mean of 6.33 mg/L) were much greater than those observed during storm event 1 and 2; however ammonia concentrations in subsequent samples taken from the various layers in all three cells were below the detection limit, representing 100 % removal.

### 5.2.4 Total Phosphorus

The mean total phosphorus concentration (represented as TP on Figure 5-4 in the pre-treated stormwater during storm event 1 was 0.542 mg/L (mean of six stormwater samples from Whitaker Pond). The mean concentration at the top of the gravel layer (all three cells) was 0.129 mg/L, representing a 76.2% decrease in TP concentrations in the first media layer. Similar post-treatment reductions in TP were observed in the sand and media layers as well as the post-treatment mean concentration, except for cell 1 during the first storm event, where TP concentrations spiked to near pre-treatment levels. This spike corresponded with similar spikes in TSS concentrations in cell 1, suggesting that sediment in the sample from this cell may have influenced TP concentrations.

Similar reductions in TP concentrations were observed during storm event 2 (Figure 5-4). The mean pre-treatment TP concentrations in Whitaker Pond during storm event 2 was 0.472 mg/L. The mean TP concentration decreased 83.2% in the gravel layer (0.079 mg/L) and mean concentrations remained at similar levels through subsequent layers of the treatment train and final post-treatment samples. TP concentrations in the sand and media layers of cell 1 appeared to be higher than the other cells and corresponded with elevated TSS levels (similar to storm event 1).

For the third storm event, the mean TP concentration in the pre-treatment samples (2.96 mg/L) was substantially greater than the that observed during the first two storm events (Figure 5-4), which corresponded with a mean TSS concentration during storm event 3 that was nearly ten times greater than mean pre-treatment concentrations observed in the first two storm events. TP concentration reductions were greatest in storm event 3, with a 97.9% reduction in the mean concentration after treatment in the gravel layer, 98.1% after the sand layer, 98.9% after the media layer, and 98.3% in the post-treatment samples.

### 5.2.5 Orthophosphate

Removal of orthophosphate by the treatment wetland cells in 2019 was less pronounced than that observed for TP (Figure 5-4). During storm 1, the mean orthophosphate concentration in pre-treatment samples was

0.058 mg/L. At the top of the gravel layer, the mean concentration was 0.054 mg/L, representing an 8.0 % reduction. Concentrations were further reduced in the sand, media, and post-treatment samples, with mean reductions of 32.0 %, 33.1 %, and 28.8 %, respectively.

During storm event 2 (Figure 5-4), orthophosphate removal by the treatment wetland cells was not observed. The mean pre-treatment orthophosphate concentration of 0.035 mg/L increased in all subsequent layers of all three cells as well as the post-treatment samples.

The largest removal of orthophosphate was observed during storm event 3, which had a much greater pre-treatment concentration (0.179 mg/L) than storm event 1 and 2 (Figure 5-4). Orthophosphate removal was observed during storm event 3, with a mean concentration at the top o the gravel layer of 0.050 mg/L (a 72.1 % reduction from pre-treatment concentrations). Orthophosphate concentrations remained close to this level in all subsequent samples with minimal further reductions in concentrations.

### 5.2.6 Nitrate

During storm event 1, the mean nitrate concentration (represented as $NO_3$ on Figure 5-4) was 1.21 mg/L in the pre-treated stormwater samples from Whitaker Pond. Nitrate concentration decreased dramatically in the gravel layer of each cell with a mean reduction from pre-treatment concentrations of 79.5%. Nitrate concentrations remained low in all three cells throughout the subsequent treatment layers, with mean reductions of 80.6% in the sand layer, 100% in the media layer (nitrate concentrations in all samples from all three cells were below the detection limit), and 90.6% in the post-treatment samples.

The results for nitrate reduction during storm event 2 were similar to those observed during storm event 1. The mean pre-treatment nitrate concentrations during storm event 1 was 1.82 mg/L (Figure 5-4). At the top of the gravel layer, the mean nitrate concentration was 0.970 mg/L (which was driven largely by a very high concentration (2.14 mg/L) in cell 1. Concentration decreased substantially at the top of the sand layer to a mean of 0.110 mg/L and concentrations were below detection limit or close to it in both the media and the post-treatment samples.

Nitrate concentration patterns during storm event 3 were quite different than those observed in the first two storm events of 2019 (Figure 5-4). Nitrate concentrations in the pre-treatment samples during storm event 3 were ten times less than those observed in the previous two storms (mean of 0.28 mg/L), but concentrations increased dramatically in the gravel layer (mean of 1.45 mg/L) and sand layer (mean of 1.53 mg/L). Similar to the first two storm events, concentrations in the media layer during storm event 3 were below detection limit; however, concentrations increased sharply in the post-treatment samples in this final storm of the season.

## 5.3 Results of Pathogen Analyses

Four storm events were monitored in 2019 for pathogens: July 9 (storm event A), August 5 (storm event B), August 20 (storm event C), and September 11 (storm event D). Storm events B and D coincided with previously discussed water quality analyses (storm events 2 and 3). Samples were analyzed for total Bacteria (16S rRNA genes), *E. coli* (*uidA* and *ftsZ*), enterohemorrhagic *E. coli* (*eaeA* and *stx1*), and *Campylobacter jejuni* (*cadF* and *ciaB*). All samples (both pre-treatment and post-treatment) were negative for enterhemorrhagic *E. coli* (*eaeA*; *stx1*) and for *Campylobacter jejuni* (*cadF*; *ciaB*). Pathogen data summary tables are provided in Attachment 2.

Total bacteria were quantified in all samples. In the samples collected prior to treatment, the concentration of bacteria ranged from $10^{9.0}$ to $10^{9.7}$ gene copies per liter (mean = $10^{9.3\pm0.3}$), which is typical of surface waters based on our prior experience (in contrast, drinking water typically has $10^{5.0}$ to $10^{8.0}$ gene copies per liter). The post-treatment samples contained $10^{8.2}$ to $10^{9.0}$ copies per liter (mean = $10^{8.6\pm0.3}$); that is, treatment resulted in an average reduction in the concentration of total bacteria of about 80% during treatment.

*E. coli* (*uidA*; *ftsZ*) was quantified in the water prior to treatment during three of the four storm events (exception = storm event C). The mean concentration of *uidA* was $10^{5.2\pm0.1}$ gene copies per liter and the concentration of *ftsZ* was $10^{5.3\pm0.3}$ gene copies per liter. In contrast, neither *uidA* nor *ftsZ* were detected in the treated water.The detection limit for each of these assays was $10^{3.9\pm0.2}$, suggesting that treatment removed *E. coli* by at least 95%.

# 6.0 CONCLUSIONS

The main objective of this Project was to assess the effectiveness of the subsurface constructed wetland in removing pollutants commonly found in urban stormwater. The results of the assessment clearly show that all three of the experimental cells were very effective in removing *E. coli* (a member of the fecal coliform group and a common fecal indicator bacteria) and nutrients (total phosphorus and nitrate) from stormwater in Lambert Creek. One of the most striking observations of the Project was the dramatic reduction in *E. coli* concentrations. During the three storm events monitored in 2019, *E. coli* concentrations were reduced two to three orders of magnitude (95 to 100%) when compared to stormwater samples collected from Whitaker Pond. These results were similar to Pathogen Analyses conducted by the University of Minnesota (Section 5.2), which suggested that the treatment wetland reduced *E. coli* levels by at least 95%. Concentrations were reduced in the first layer of treatment (the gravel layer at the bottom of each of the three cells) to less than 10 MPN/100 mL in the first two storm events and to less than 100 MPN/100 mL in storm event 3. In general, E. *coli* concentrations remained low throughout the remainder of the treatment train as the stormwater passed through subsequent treatment layers (sand, growth media, and post-treatment, which included a layer of iron-enhanced sand). The effluent of the treatment wetland was discharged to groundwater through an additional layer of gravel, which very likely decreased *E. coli* concentrations even further.

The treatment wetland was also very effective in reducing concentrations of nutrients in urban stormwater. Although nutrient reductions were not as dramatic as those observed for *E. coli*, reductions were still substantial and were observed from the first layer of treatment (gravel). Total phosphorus concentrations were reduced dramatically (76% to 98% across all three storm events) in the gravel layer and concentrations remained low throughout the remainder of each of the wetland cells as stormwater flowed up through the subsequent treatment layers. The results were most obvious in storm event 3, where TP concentrations were reduced nearly two orders of magnitude (100-fold) from pre-treatment stormwater levels.

Large reductions in nitrate concentrations were also observed during the first two storm events monitored over the course of the Project, where concentrations in stormwater were reduced nearly 10-fold after treatment in the gravel layer and remained low throughout the subsequent layers of treatment. The results were most dramatic in the media layer where concentrations were reduced to non-detect levels in nearly all samples, presumably due to the exposure of nitrate to the root zone within the media layer and uptake of the nutrient by the native plants growing on the top of each cell. This pattern in the media layer was

also observed during storm event 3, but the overall pattern of nitrate removal during this storm event was inconsistent with those observed in storm events 1 and 2.

The Project clearly demonstrated that the unique design of the Lambert Creek treatment wetland design is effective at removing *E. coli* and nutrients from stormwater and is a viable BMP for improving water quality in urbanized watersheds to meet TMDL compliance targets and other regulatory goals.

# 7.0 LITERATURE CITED

Ishii, S. *et al.* Simultaneous quantification of multiple food- and waterborne pathogens by use of microfluidic quantitative PCR. *Appl. Environ. Microbiol.* **79,** 2891–2898 (2013).

Lambertini, E. *et al.* Risk of viral acute gastrointestinal illness from nondisinfected drinking water distribution systems. *Environ. Sci. Technol.* **46,** 9299–9307 (2012).

Muyzer, G. *et al.* Profiling of complex microbial populations by denaturing gradient gel electrophoresis analysis of polymerase chain reaction-amplified genes coding for 16S rRNA. *Appl. Environ. Microbiol.* **59,** 695–700 (1993).

Smith, C. M. *& Hill, V. R.* Dead-end hollow-fiber ultrafiltration for recovery of diverse microbes from water. *Appl. Environ. Microbiol.* **75,** 5284–5289 (2009).

Wenck, 2013. Vadnais Lake Area WMO Total Maximum Daily Load (TMDL) and Protection Study. Prepared by Wenck Associates, Inc. for Vadnais Lake Area Water Management Organization (VLAWMO).

# ATTACHMENT 1 - ANALYTICAL DATA SUMMARY

**VLAWMO Treatment Wetland Pilot Project**

**Summary of Pollutant Reduction Effectiveness from Three Storm Events in 2018**

| STORM 1 - 8/20 - 8/27 2018 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site | Date | Time | TP (mg/L) | Ortho, SRP (mg/L) | TKN (mg/L) | Total Nitogen (mg/L) | N,NH3 (mg/L) | NO2+NO3 mg/L | TSS (mg/L) | *E.coli* (MPN/ 100 ml) |
| pre-1 | 8/20/2018 | 2:50 | 0.776 | 0.149 | 4.78 | 6.6 | 1.77 | 1.82 | 51 | 6,870 |
| pre-2 | 8/20/2018 | 2:50 | 0.74 | 0.136 | 4.83 | 6.73 | 1.49 | 1.9 | 55 | 9,800 |
| pre-3 | 8/20/2018 | 2:53 | 0.774 | 0.141 | 4.93 | 6.77 | 1.5 | 1.84 | 53 | 7,700 |
| pre-4 | 8/20/2018 | 2:54 | 0.824 | 0.042 | 5.32 | 7.12 | 1.55 | 1.8 | 60 | 11,200 |
| pre-5 | 8/20/2018 | 2:55 | 0.77 | 0.09 | 5.35 | 7.23 | 1.28 | 1.88 | 53 | 9,800 |
| pre-6 | 8/20/2018 | 2:56 | 0.815 | 0.072 | 5.56 | 7.4 | 1.42 | 1.84 | 54 | 9,800 |
| | | | **0.783** | **0.105** | **5.128** | **6.975** | **1.502** | **1.847** | **54.333** | **9,195** |
| | | | | | | | | | | |
| vfb1-a-m | 8/27/2018 | 12:30 | 0.335 | 0.031 | 2.62 | 2.62 | 0.071 | 0 | 522 | 3 |
| vfb1-b-m | 8/27/2018 | 12:30 | 0.281 | 0.036 | 1.77 | 1.77 | 0.128 | 0 | 150 | 57 |
| vfb1-c-m | 8/27/2018 | 12:30 | 0.279 | 0.11 | 1.99 | 1.99 | 0.214 | 0 | 28.3 | 16 |
| | | | **0.298** | **0.059** | **2.127** | **2.127** | **0.138** | **0.000** | **233.433** | **25** |
| **Percent change from Pre:** | | | **-61.9%** | **-43.8%** | **-58.5%** | **-69.5%** | **-90.8%** | **-100.0%** | **329.6%** | **-99.7%** |
| | | | | | | | | | | |
| vfb2-a-m | 8/27/2018 | 12:45 | 0.157 | 0.012 | 1.45 | 1.45 | 0.09 | 0 | 14.3 | 3 |
| vfb2-b-m | 8/27/2018 | 12:45 | 0.194 | 0.019 | 1.61 | 1.61 | 0.059 | 0 | 42 | 57 |
| vfb2-c-m | 8/27/2018 | 12:45 | 0.24 | 0.015 | 2.11 | 2.11 | 0.067 | 0 | 15.1 | 16 |
| | | | **0.197** | **0.015** | **1.723** | **1.723** | **0.072** | **0.000** | **23.800** | **25** |
| **Percent change from Pre:** | | | **-74.8%** | **-85.4%** | **-66.4%** | **-75.3%** | **-95.2%** | **-100.0%** | **-56.2%** | **-99.7%** |
| | | | | | | | | | | |
| vfb3-a-m | 8/27/2018 | 1:00 | 0.202 | 0.029 | 1.79 | 1.79 | 0.065 | 0 | 30 | 186 |
| vfb3-b-m | 8/27/2018 | 1:00 | 0.213 | 0.034 | 1.7 | 1.7 | 0.098 | 0 | 29.3 | 649 |
| vfb3-c-m | 8/27/2018 | 1:00 | 0.166 | 0.02 | 1.57 | 1.57 | 0.075 | 0 | 54.4 | 5 |
| | | | **0.194** | **0.028** | **1.687** | **1.687** | **0.079** | **0.000** | **37.900** | **280** |
| **Percent change from Pre:** | | | **-75.3%** | **-73.7%** | **-67.1%** | **-75.8%** | **-94.7%** | **-100.0%** | **-30.2%** | **-97.0%** |
| | | | | | | | | | | |
| vfb1-c-s | 8/27/2018 | 12:30 | 0.09 | 0.036 | 0.569 | 0.634 | 0.124 | 0.065 | 36.4 | 162 |
| vfb2-c-s | 8/27/2018 | 12:45 | 0.079 | 0.02 | 0.647 | 0.647 | 0.08 | 0 | 46 | 261 |
| vfb3-c-s | 8/27/2018 | 1:00 | 0.122 | 0.034 | 0.645 | 0.679 | 0.068 | 0.034 | 21.8 | 921 |
| | | | **0.097** | **0.030** | **0.620** | **0.653** | **0.091** | **0.033** | **34.733** | **448** |
| **Percent change from Pre:** | | | **-87.6%** | **-71.4%** | **-87.9%** | **-90.6%** | **-94.0%** | **-98.2%** | **-36.1%** | **-95.1%** |
| | | | | | | | | | | |
| vfb1-c-g | 8/27/2018 | 12:30 | 0.081 | 0.048 | 0.55 | 0.737 | 0.116 | 0.187 | 15.1 | 96 |
| vfb2-c-g | 8/27/2018 | 12:45 | 0.08 | 0.018 | 0.703 | 0.823 | 0.106 | 0.12 | 23.8 | 210 |
| vfb3-c-g | 8/27/2018 | 1:00 | 0.154 | 0.043 | 0.699 | 0.963 | 0.079 | 0.264 | 23.4 | 770 |
| | | | **0.105** | **0.036** | **0.651** | **0.841** | **0.100** | **0.190** | **20.767** | **359** |
| **Percent change from Pre:** | | | **-86.6%** | **-65.4%** | **-87.3%** | **-87.9%** | **-93.3%** | **-89.7%** | **-61.8%** | **-96.1%** |
| | | | | | | | | | | |
| vfb1-post-1 | 8/27/2018 | 12:30 | 0.991 | 0.092 | 1.7 | 2.69 | 0.392 | 0.989 | 47.7 | 1 |
| vfb1-post-2 | 8/27/2018 | 12:30 | 0.974 | 0.088 | 1.79 | 1.79 | 0.38 | 1 | 32 | 0 |
| vfb1-post-3 | 8/27/2018 | 12:30 | 0.674 | 0.086 | 1.46 | 1.47 | 0.391 | 1.01 | 48.4 | 2 |
| vfb2-post-1 | 8/27/2018 | 12:45 | 0.13 | 0.087 | 0.584 | 2.55 | 0 | 1.97 | 66.9 | 1 |
| vfb2-post-2 | 8/27/2018 | 12:45 | 0.129 | 0.089 | 0.549 | 2.63 | 0 | 2.08 | 92.7 | 1 |
| vfb2-post-3 | 8/27/2018 | 12:45 | 0.172 | 0.098 | 0.579 | 2.71 | 0 | 2.13 | 9.6 | 0 |
| vfb3-post-1 | 8/27/2018 | 1:00 | 0.139 | 0.06 | 0.798 | 3.05 | 0 | 2.25 | 71 | 0 |
| vfb3-post-2 | 8/27/2018 | 1:00 | 0.11 | 0.064 | 0.717 | 2.98 | 0 | 2.26 | 44 | 0 |
| vfb3-post-3 | 8/27/2018 | 1:00 | 0.091 | 0.06 | 0.544 | 2.82 | 0 | 2.28 | 22 | 0 |
| | | | **0.379** | **0.080** | **0.969** | **2.521** | **0.129** | **1.774** | **48.256** | **0.556** |
| **Percent change from Pre:** | | | **-51.6%** | **-23.4%** | **-81.1%** | **-63.9%** | **-91.4%** | **-3.9%** | **-11.2%** | **-100.0%** |

**VLAWMO Treatment Wetland Pilot Project**

**Summary of Pollutant Reduction Effectiveness from Three Storm Events in 2018**

| STORM 2 - 9/4 - 9/10 2018 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site | Date | Time | TP (mg/L) | Ortho, SRP (mg/L) | TKN (mg/L) | Nitogen | N,NH3 (mg/L) | NO2+NO3 mg/L | TSS (mg/L) | *E.coli* (MPN/ 100 ml) |
| pre-1 | 9/4/2018 | 11:00 | 0.144 | 0.064 | 0.751 | 1.32 | 0.096 | 0.574 | 11.3 | 1,986 |
| pre-2 | 9/4/2018 | 11:01 | 0.151 | 0.061 | 0.842 | 1.43 | 0.086 | 0.591 | 10.8 | 2,419 |
| pre-3 | 9/4/2018 | 11:02 | 0.137 | 0.058 | 0.722 | 1.33 | 0.068 | 0.604 | 12.2 | 2,419 |
| pre-4 | 9/4/2018 | 11:03 | 0.173 | 0.066 | 0.862 | 1.43 | 0.106 | 0.569 | 13.8 | 2,419 |
| pre-5 | 9/4/2018 | 11:04 | 0.204 | 0.068 | 0.981 | 1.54 | 0.128 | 0.562 | 31.3 | 1,733 |
| pre-6 | 9/4/2018 | 11:05 | 0.168 | 0.071 | 0.84 | 1.4 | 0.165 | 0.56 | 64 | 2,419 |
| | | | **0.163** | **0.065** | **0.833** | **1.408** | **0.108** | **0.577** | **23.900** | **2,233** |
| | | | | | | | | | | |
| vfb1-a-m | 9/10/2018 | 10:00 | 1.23 | 0.013 | 6.46 | 6.46 | 0.126 | 0 | 320 | 0 |
| vfb1-b-m | 9/10/2018 | 10:00 | 0.876 | 0.018 | 3.8 | 3.8 | 0.112 | 0 | 230 | 0 |
| vfb1-c-m | 9/10/2018 | 10:00 | 0.097 | 0.035 | 0.71 | 0.71 | 0.044 | 0 | 24.4 | 9 |
| | | | **0.734** | **0.022** | **3.657** | **3.657** | **0.094** | **0.000** | **191.467** | **3** |
| **Percent change from Pre:** | | | **351.0%** | **-66.0%** | **339.0%** | **159.6%** | **-13.1%** | **-100.0%** | **701.1%** | **-99.9%** |
| | | | | | | | | | | |
| vfb2-a-m | 9/10/2018 | 10:15 | 0.078 | 0.013 | 0.779 | 0.779 | 0.046 | 0 | 31.3 | 2 |
| vfb2-b-m | 9/10/2018 | 10:15 | 0.122 | 0.027 | 1 | 1 | 0 | 0 | 21.8 | 0 |
| vfb2-c-m | 9/10/2018 | 10:15 | 0.102 | 0.017 | 1.12 | 1.12 | 0.088 | 0 | 10.7 | 0 |
| | | | **0.101** | **0.019** | **0.966** | **0.966** | **0.045** | **0.000** | **21.267** | **1** |
| **Percent change from Pre:** | | | **-38.2%** | **-70.6%** | **16.0%** | **-31.4%** | **-58.7%** | **-100.0%** | **-11.0%** | **-100.0%** |
| | | | | | | | | | | |
| vfb3-a-m | 9/10/2018 | 10:30 | 0.08 | 0.028 | 0.95 | 0.95 | 0 | 0 | 21.1 | 5 |
| vfb3-b-m | 9/10/2018 | 10:30 | 0.083 | 0.027 | 0.743 | 0.777 | 0.069 | 0.034 | 6.7 | 12 |
| vfb3-c-m | 9/10/2018 | 10:30 | 0.063 | 0.021 | 0.639 | 0.639 | 0.054 | 0 | 8 | 0 |
| | | | **0.075** | **0.025** | **0.777** | **0.789** | **0.041** | **0.011** | **11.933** | **6** |
| **Percent change from Pre:** | | | **-53.7%** | **-60.8%** | **-6.7%** | **-44.0%** | **-62.1%** | **-98.0%** | **-50.1%** | **-99.7%** |
| | | | | | | | | | | |
| vfb1-c-s | 9/10/2018 | 10:00 | 0.07 | 0.035 | 0.384 | 0.752 | 0.054 | 0.368 | 9.4 | 8 |
| vfb2-c-s | 9/10/2018 | 10:15 | 0.031 | 0.024 | 0.372 | 0.919 | 0.069 | 0.547 | 10.7 | 3 |
| vfb3-c-s | 9/10/2018 | 10:30 | 0.026 | 0.028 | 0.565 | 1.82 | 0 | 1.26 | 11.6 | 3 |
| | | | **0.042** | **0.029** | **0.440** | **1.164** | **0.041** | **0.725** | **10.567** | **5** |
| **Percent change from Pre:** | | | **-74.0%** | **-55.2%** | **-47.1%** | **-17.4%** | **-62.1%** | **25.7%** | **-55.8%** | **-99.8%** |
| | | | | | | | | | | |
| vfb1-c-g | 9/10/2018 | 10:00 | 0.044 | 0.028 | 0.355 | 1.07 | 0 | 0.716 | 6.8 | 9 |
| vfb2-c-g | 9/10/2018 | 10:15 | 0.027 | 0.017 | 0.422 | 1.01 | 0.09 | 0.591 | 13.6 | 2 |
| vfb3-c-g | 9/10/2018 | 10:30 | 0.053 | 0.032 | 0.658 | 2.23 | 0 | 1.57 | 4 | 12 |
| | | | **0.041** | **0.026** | **0.478** | **1.437** | **0.030** | **0.959** | **8.133** | **8** |
| **Percent change from Pre:** | | | **-74.6%** | **-60.3%** | **-42.6%** | **2.0%** | **-72.3%** | **66.3%** | **-66.0%** | **-99.7%** |
| | | | | | | | | | | |
| vfb1-post-1 | 9/10/2018 | 10:00 | 0.102 | 0.087 | 0.716 | 1.07 | 0.092 | 0.353 | 16.4 | 147 |
| vfb1-post-2 | 9/10/2018 | 10:00 | 0.16 | 0.093 | 0.784 | 1.11 | 0.156 | 0.329 | 5.6 | 115 |
| vfb1-post-3 | 9/10/2018 | 10:00 | 0.192 | 0.075 | 0.755 | 1.09 | 0.09 | 0.339 | 54.8 | 132 |
| vfb2-post-1 | 9/10/2018 | 10:15 | 0.086 | 0.049 | 0.455 | 1.02 | 0 | 0.565 | 10.7 | 109 |
| vfb2-post-2 | 9/10/2018 | 10:15 | 0.138 | 0.05 | 0.521 | 1.09 | 0 | 0.573 | 17.8 | 4 |
| vfb2-post-3 | 9/10/2018 | 10:15 | 0.072 | 0.053 | 0.369 | 0.943 | 0 | 0.574 | 20 | 45 |
| vfb3-post-1 | 9/10/2018 | 10:30 | 0.041 | 0.022 | 0.518 | 0.693 | 0 | 0.175 | 5.8 | 6 |
| vfb3-post-2 | 9/10/2018 | 10:30 | 0.042 | 0.02 | 0.536 | 0.727 | 0 | 0.191 | 10.4 | 1 |
| vfb3-post-3 | 9/10/2018 | 10:30 | 0.036 | 0.027 | 0.46 | 0.65 | 0 | 0.19 | 2.9 | 1 |
| | | | **0.097** | **0.053** | **0.568** | **0.933** | **0.038** | **0.365** | **16.044** | **62** |
| **Percent change from Pre:** | | | **-40.7%** | **-18.2%** | **-31.8%** | **-33.8%** | **-65.3%** | **-36.6%** | **-32.9%** | **-97.2%** |

**VLAWMO Treatment Wetland Pilot Project**

**Summary of Pollutant Reduction Effectiveness from Three Storm Events in 2018**

| STORM 3 - 9/20 - 9/26 2018 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site | Date | Time | TP (mg/L) | Ortho, SRP (mg/L) | TKN (mg/L) | Nitogen | N,NH3 (mg/L) | NO2+NO3 mg/L | TSS (mg/L) | *E.coli* (MPN/ 100 ml) |
| pre-1 | 9/20/2018 | 2:00 | 0.354 | 0.113 | 1.98 | 2.37 | 0.13 | 0.39 | 52.7 | 9,210 |
| pre-2 | 9/20/2018 | 2:00 | 0.269 | 0.101 | 1.55 | 1.94 | 0.567 | 0.388 | 82.5 | 13,000 |
| pre-3 | 9/20/2018 | 2:00 | 0.312 | 0.094 | 1.94 | 2.21 | 0.53 | 0.27 | 98.7 | 8,160 |
| pre-4 | 9/20/2018 | 2:00 | 0.3 | 0.09 | 1.74 | 1.96 | 0.465 | 0.222 | 96 | 7,700 |
| pre-5 | 9/20/2018 | 2:00 | 0.353 | 0.091 | 1.96 | 2.18 | 0.395 | 0.224 | 156 | 11,200 |
| pre-6 | 9/20/2018 | 2:00 | 1.04 | 0.07 | 7.05 | 7.26 | 0.46 | 0.214 | 274 | 8,660 |
| | | | **0.438** | **0.093** | **2.703** | **2.987** | **0.425** | **0.285** | **126.650** | **9,655** |
| | | | | | | | | | | |
| vfb1-a-m | 9/26/2018 | 12 | 0.149 | 0.02 | 0.895 | 0.895 | 0.083 | 0 | 384 | 112,000 |
| vfb1-b-m | 9/26/2018 | 12 | 0.089 | 0.022 | 0.702 | 0.76 | 0.1 | 0.058 | 362 | 5,170 |
| vfb1-c-m | 9/26/2018 | 12 | 0.076 | 0.029 | 0.502 | 0.502 | 0.071 | 0 | 44.5 | 770 |
| | | | **0.105** | **0.024** | **0.700** | **0.719** | **0.085** | **0.019** | **263.500** | **39,313** |
| **Percent change from Pre:** | | | **-76.1%** | **-74.6%** | **-74.1%** | **-75.9%** | **-80.1%** | **-93.2%** | **108.1%** | **307.2%** |
| | | | | | | | | | | |
| vfb2-a-m | 9/26/2018 | 12:15 | 0.052 | 0.016 | 0.402 | 0.402 | 0 | 0 | 5.3 | 83 |
| vfb2-b-m | 9/26/2018 | 12:15 | 0.056 | 0.009 | 0.566 | 0.566 | 0.064 | 0 | 8.5 | 11 |
| vfb2-c-m | 9/26/2018 | 12:15 | 0.07 | 0.005 | 0.552 | 0.552 | 0.055 | 0 | 3.8 | 11 |
| | | | **0.059** | **0.010** | **0.507** | **0.507** | **0.040** | **0.000** | **5.867** | **35** |
| **Percent change from Pre:** | | | **-86.5%** | **-89.3%** | **-81.3%** | **-83.0%** | **-90.7%** | **-100.0%** | **-95.4%** | **-99.6%** |
| | | | | | | | | | | |
| vfb3-a-m | 9/26/2018 | 12:30 | 0.072 | 0.016 | 0.471 | 0.471 | 0.048 | 0 | 28 | 29 |
| vfb3-b-m | 9/26/2018 | 12:30 | 0.053 | 0.026 | 0.392 | 0.392 | 0.072 | 0 | 10.7 | 1,733 |
| vfb3-c-m | 9/26/2018 | 12:30 | 0.054 | 0.017 | 0.405 | 0.405 | 0 | 0 | 7.5 | 46 |
| | | | **0.060** | **0.020** | **0.423** | **0.423** | **0.040** | **0.000** | **15.400** | **603** |
| **Percent change from Pre:** | | | **-86.4%** | **-78.9%** | **-84.4%** | **-85.8%** | **-90.6%** | **-100.0%** | **-87.8%** | **-93.8%** |
| | | | | | | | | | | |
| vfb1-c-s | 9/26/2018 | 12 | 0.056 | 0.034 | 0.379 | 0.976 | 0 | 0.597 | 16 | 548 |
| vfb2-c-s | 9/26/2018 | 12:15 | 0.053 | 0.04 | 0.392 | 1.572 | 0 | 1.18 | 8.5 | 20 |
| vfb3-c-s | 9/26/2018 | 12:30 | 0.049 | 0.036 | 0 | 0.939 | 0 | 0.939 | 29.6 | 3 |
| | | | **0.053** | **0.037** | **0.257** | **1.162** | **0.000** | **0.905** | **18.033** | **190** |
| **Percent change from Pre:** | | | **-88.0%** | **-60.6%** | **-90.5%** | **-61.1%** | **-100.0%** | **218.0%** | **-85.8%** | **-98.0%** |
| | | | | | | | | | | |
| vfb1-c-g | 9/26/2018 | 12 | 0.048 | 0.033 | 0 | 0.989 | 0.06 | 0.989 | 8.2 | 41 |
| vfb2-c-g | 9/26/2018 | 12:15 | 0.054 | 0.039 | 0.41 | 1.63 | 0 | 1.22 | 11.3 | 26 |
| vfb3-c-g | 9/26/2018 | 12:30 | 0.054 | 0.032 | 0 | 1.18 | 0.042 | 1.18 | 12.4 | 17 |
| | | | **0.052** | **0.035** | **0.137** | **1.266** | **0.034** | **1.130** | **10.633** | **28** |
| **Percent change from Pre:** | | | **-88.1%** | **-62.8%** | **-94.9%** | **-57.6%** | **-92.0%** | **296.8%** | **-91.6%** | **-99.7%** |
| | | | | | | | | | | |
| vfb1-post-1 | 9/26/2018 | 12 | 0.064 | 0.051 | 0.321 | 0.626 | 0.04 | 0.305 | 4.8 | 411 |
| vfb1-post-2 | 9/26/2018 | 12 | 0.067 | 0.054 | 0.339 | 0.646 | 0 | 0.307 | 3 | 326 |
| vfb1-post-3 | 9/26/2018 | 12 | 0.116 | 0.049 | 0.421 | 0.729 | 0.056 | 0.308 | 10.6 | 387 |
| vfb2-post-1 | 9/26/2018 | 12:15 | 0.029 | 0.027 | 0 | 0.418 | 0 | 0.418 | 10.4 | 1,203 |
| vfb2-post-2 | 9/26/2018 | 12:15 | 0.028 | 0.027 | 2 | 2.414 | 0 | 0.414 | 4 | 866 |
| vfb2-post-3 | 9/26/2018 | 12:15 | 0.029 | 0.026 | 0 | 0.411 | 0 | 0.411 | 1.4 | 980 |
| vfb3-post-1 | 9/26/2018 | 12:30 | 0.246 | 0.055 | 2.15 | 3.67 | 0.397 | 1.52 | 28.7 | 201 |
| vfb3-post-2 | 9/26/2018 | 12:30 | 0.074 | 0.072 | 0.338 | 1.838 | 0.095 | 1.5 | 55 | 101 |
| vfb3-post-3 | 9/26/2018 | 12:30 | 0.128 | 0.056 | 0.771 | 0.958 | 0.187 | 1.52 | 7.1 | 687 |
| | | | **0.087** | **0.046** | **0.704** | **1.301** | **0.086** | **0.745** | **13.889** | **574** |
| **Percent change from Pre:** | | | **-80.2%** | **-50.3%** | **-73.9%** | **-56.4%** | **-79.7%** | **161.6%** | **-89.0%** | **-94.1%** |

**VLAWMO Treatment Wetland Pilot Project**

**Summary of Pollutant Reduction Effectiveness from Three Storm Events in 2019**

| STORM 1 - 6/27 - 7/8 2019 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site | Date | Time | TP (mg/L) | Ortho, SRP (mg/L) | TKN (mg/L) | Total Nitogen (mg/L) | N,NH3 (mg/L) | NO2+NO3 mg/L | TSS (mg/L) | *E.coli* (MPN/ 100 ml) |
| pre-1 | 6/27/2019 | 10:25 | 0.411 | 0.09 | 3.52 | 5.24 | 1 | 1.72 | 79 | 22800 |
| pre-2 | 6/27/2019 | 10:25 | 0.632 | 0.07 | 4.53 | 5.92 | 1.61 | 1.39 | 75.5 | 9100 |
| pre-3 | 6/27/2019 | 10:25 | 0.597 | 0.064 | 3.87 | 5.1 | 0.813 | 1.23 | 76.7 | 14100 |
| pre-4 | 6/27/2019 | 10:25 | 0.497 | 0.058 | 3.85 | 4.91 | 1.46 | 1.06 | 77.3 | 6100 |
| pre-5 | 6/27/2019 | 10:25 | 0.581 | 0.036 | 3.63 | 4.61 | 1.25 | 0.977 | 86 | 5800 |
| pre-6 | 6/27/2019 | 10:25 | 0.531 | 0.032 | 3.5 | 4.38 | 1.18 | 0.883 | 96 | 15300 |
| | | | **0.542** | **0.058** | **3.817** | **5.027** | **1.219** | **1.210** | **81.750** | **12,200** |
| | | | | | | | | | | |
| vfb1-a-m | 7/8/2019 | 10:00 | 0.314 | 0.023 | 1.61 | 1.61 | 0.171 | 0 | 95.3 | 5 |
| vfb1-b-m | 7/8/2019 | 10:00 | 0.123 | 0.062 | 1.48 | 1.48 | 0 | 0 | 84.4 | 1 |
| vfb1-c-m | 7/8/2019 | 10:00 | 0.251 | 0.048 | 1.52 | 1.52 | 0.117 | 0 | 30.8 | 3 |
| | | | **0.229** | **0.044** | **1.537** | **1.537** | **0.096** | **0.000** | 70.167 | **3** |
| **Percent change from Pre:** | | | **-57.6%** | **-24.0%** | **-59.7%** | **-69.4%** | **-92.1%** | **-100.0%** | **-14.2%** | **-100.0%** |
| | | | | | | | | | | |
| vfb2-a-m | 7/8/2019 | 10:15 | 0.216 | 0.032 | 1.74 | 1.74 | 0 | 0 | 10 | 34.5 |
| vfb2-b-m | 7/8/2019 | 10:15 | 0.157 | 0.011 | 1.87 | 1.87 | 0.236 | 0 | 16.6 | 9.8 |
| vfb2-c-m | 7/8/2019 | 10:15 | 0.137 | 0.015 | 1.34 | 1.34 | 0.103 | 0 | 10.4 | 1 |
| | | | **0.170** | **0.019** | **1.650** | **1.650** | **0.113** | **0.000** | **12.333** | **15** |
| **Percent change from Pre:** | | | **-68.6%** | **-66.9%** | **-56.8%** | **-67.2%** | **-90.7%** | **-100.0%** | **-84.9%** | **-99.9%** |
| | | | | | | | | | | |
| vfb3-a-m | 7/8/2019 | 10:30 | 0.146 | 0.066 | 1.61 | 1.61 | 0.153 | 0 | 25.6 | 214.3 |
| vfb3-b-m | 7/8/2019 | 10:30 | 0.082 | 0.028 | 1.14 | 1.14 | 0.14 | 0 | 5.3 | 9.7 |
| vfb3-c-m | 7/8/2019 | 10:30 | 0.077 | 0.023 | 1.26 | 1.26 | 0.122 | 0 | 9.1 | 0 |
| | | | **0.102** | **0.039** | **1.337** | **1.337** | **0.138** | **0.000** | **13.333** | **75** |
| **Percent change from Pre:** | | | **-81.2%** | **-33.1%** | **-65.0%** | **-73.4%** | **-88.7%** | **-100.0%** | **-83.7%** | **-99.4%** |
| | | | | | | | | | | |
| vfb1-c-s | 7/8/2019 | 10:00 | 0.165 | 0.105 | 0.673 | 0.801 | 0.209 | 0.128 | 18.2 | 1 |
| vfb2-c-s | 7/8/2019 | 10:15 | 0.07 | 0.04 | 0.416 | 0.602 | 0.147 | 0.186 | 23.8 | 0 |
| vfb3-c-s | 7/8/2019 | 10:30 | 0.133 | 0.086 | 0.384 | 0.776 | 0.066 | 0.392 | 36.2 | 2 |
| | | | **0.123** | **0.077** | **0.491** | **0.726** | **0.141** | **0.235** | **26.067** | **1** |
| **Percent change from Pre:** | | | **-77.3%** | **32.0%** | **-87.1%** | **-85.6%** | **-88.5%** | **-80.6%** | **-68.1%** | **-100.0%** |
| | | | | | | | | | | |
| vfb1-c-g | 7/8/2019 | 10:00 | 0.187 | 0.073 | 0.728 | 0.84 | 0.319 | 0.112 | 20.7 | 1 |
| vfb2-c-g | 7/8/2019 | 10:15 | 0.089 | 0.043 | 0.413 | 0.619 | 0.136 | 0.206 | 24.4 | 1 |
| vfb3-c-g | 7/8/2019 | 10:30 | 0.11 | 0.045 | 0.554 | 0.98 | 0.178 | 0.426 | 3.5 | 18.7 |
| | | | **0.129** | **0.054** | **0.565** | **0.813** | **0.211** | **0.248** | **16.200** | **7** |
| **Percent change from Pre:** | | | **-76.2%** | **-8.0%** | **-85.2%** | **-83.8%** | **-82.7%** | **-79.5%** | **-80.2%** | **-99.9%** |
| | | | | | | | | | | |
| vfb1-post-1 | 7/8/2019 | 10:45 | 0.207 | 0.052 | 0.543 | 0.72 | 0.074 | 0.177 | 70 | 0 |
| vfb1-post-2 | 7/8/2019 | 10:45 | 0.173 | 0.051 | 0.487 | 0.662 | 0.108 | 0.175 | 36.7 | 0 |
| vfb1-post-3 | 7/8/2019 | 10:45 | 1.24 | 0.052 | 0.655 | 0.839 | 0.163 | 0.184 | 55.1 | 0 |
| vfb2-post-1 | 7/8/2019 | 11:00 | 0.113 | 0.029 | 0 | 0 | 0 | 0.054 | 37.3 | 0 |
| vfb2-post-2 | 7/8/2019 | 11:00 | 0.128 | 0.03 | 0 | 0 | 0 | 0.056 | 13.2 | 1 |
| vfb2-post-3 | 7/8/2019 | 11:00 | 0.11 | 0.029 | 0.44 | 0.312 | 0 | 0.056 | 10.9 | 27.5 |
| vfb3-post-1 | 7/8/2019 | 11:15 | 0.05 | 0.043 | 0 | 0 | 0 | 0.102 | 1.8 | 0 |
| vfb3-post-2 | 7/8/2019 | 11:15 | 0.047 | 0.044 | 0 | 0.323 | 0 | 0.124 | 1.1 | 0 |
| vfb3-post-3 | 7/8/2019 | 11:15 | 0.05 | 0.044 | 0 | 0.301 | 0 | 0.098 | 1.3 | 0 |
| | | | **0.235** | **0.042** | **0.236** | **0.351** | **0.038** | **0.114** | **25.267** | **3.167** |
| **Percent change from Pre:** | | | **-56.5%** | **-28.8%** | **-93.8%** | **-93.0%** | **-96.9%** | **-90.6%** | **-69.1%** | **-100.0%** |

**VLAWMO Treatment Wetland Pilot Project**

**Summary of Pollutant Reduction Effectiveness from Three Storm Events in 2019**

| STORM 2 - 8/5 - 8/19 2019 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Site** | **Date** | **Time** | **TP (mg/L)** | **Ortho, SRP (mg/L)** | **TKN (mg/L)** | **Nitogen** | **N,NH3 (mg/L)** | **NO2+NO3 mg/L** | **TSS (mg/L)** | ***E.coli* (MPN/ 100 ml)** |
| pre-1 | 8/5/2019 | 1:30 | 0.788 | 0.033 | 5.46 | 8.11 | 2.74 | 2.65 | 104 | 248 |
| pre-2 | 8/5/2019 | 1:30 | 0.508 | 0.051 | 3.29 | 5.36 | 1.23 | 2.07 | 69.6 | 144 |
| pre-3 | 8/5/2019 | 1:30 | 0.244 | 0.064 | 2.83 | 4.76 | 1.06 | 1.93 | 62 | 99 |
| pre-4 | 8/5/2019 | 1:30 | 0.403 | 0.03 | 3.21 | 4.86 | 1.13 | 1.65 | 64.3 | 121 |
| pre-5 | 8/5/2019 | 1:30 | 0.418 | 0.013 | 3.53 | 4.91 | 1.13 | 1.38 | 80.5 | 1120 |
| pre-6 | 8/5/2019 | 1:30 | 0.472 | 0.016 | 3.6 | 4.81 | 1.11 | 1.21 | 69.6 | 110 |
| | | | **0.472** | **0.035** | **3.653** | **5.468** | **1.400** | **1.815** | **75.000** | **307** |
| | | | | | | | | | | |
| vfb1-a-m | 8/19/2019 | 11:00 | 0.309 | 0.079 | 1.8 | 1.84 | 0 | 0.042 | 14.9 | 10.9 |
| vfb1-b-m | 8/19/2019 | 11:00 | 0.438 | 0.092 | 1.55 | 1.58 | 0 | 0.033 | 62 | 2 |
| vfb1-c-m | 8/19/2019 | 11:00 | 0.264 | 0.132 | 1.16 | 1.22 | 0 | 0.061 | 8.6 | 5.2 |
| | | | **0.337** | **0.101** | **1.503** | **1.547** | **0.000** | **0.045** | **28.500** | **6** |
| **Percent change from Pre:** | | | **-28.6%** | **192.8%** | **-58.9%** | **-71.7%** | **-100.0%** | **-97.5%** | **-62.0%** | **-98.0%** |
| | | | | | | | | | | |
| vfb2-a-m | 8/19/2019 | 11:15 | 0.101 | 0.036 | 0.744 | 0.791 | 0 | 0.047 | 7.2 | 24.1 |
| vfb2-b-m | 8/19/2019 | 11:15 | 0.05 | 0.02 | 1.21 | 1.21 | 0.084 | 0 | 4.2 | 46.4 |
| vfb2-c-m | 8/19/2019 | 11:15 | 0.072 | 0.037 | 1.15 | 1.18 | 0.145 | 0.031 | 6.7 | 1 |
| | | | **0.074** | **0.031** | **1.035** | **1.060** | **0.076** | **0.026** | **6.033** | **24** |
| **Percent change from Pre:** | | | **-84.3%** | **-10.1%** | **-71.7%** | **-80.6%** | **-94.5%** | **-98.6%** | **-92.0%** | **-92.2%** |
| | | | | | | | | | | |
| vfb3-a-m | 8/19/2019 | 11:30 | 0.23 | 0.085 | 1.02 | 1.05 | 0 | 0.032 | 12.8 | 2 |
| vfb3-b-m | 8/19/2019 | 11:30 | 0.126 | 0.035 | 1.21 | 1.21 | 0.24 | 0 | 6.8 | 81.3 |
| vfb3-c-m | 8/19/2019 | 11:30 | 0.135 | 0.024 | 1.16 | 1.16 | 0.062 | 0 | 7.2 | 40.4 |
| | | | **0.164** | **0.048** | **1.130** | **1.140** | **0.101** | **0.011** | **8.933** | **41** |
| **Percent change from Pre:** | | | **-65.3%** | **39.1%** | **-69.1%** | **-79.2%** | **-92.8%** | **-99.4%** | **-88.1%** | **-86.6%** |
| | | | | | | | | | | |
| vfb1-c-s | 8/19/2019 | 11:00 | 0.314 | 0.272 | 0.842 | 0.975 | 0 | 0.133 | 8.5 | 28.8 |
| vfb2-c-s | 8/19/2019 | 11:15 | 0.085 | 0.054 | 0 | 0 | 0.083 | 0.035 | 5.6 | 4.1 |
| vfb3-c-s | 8/19/2019 | 11:30 | 0.072 | 0.046 | 0.468 | 0.623 | 0.214 | 0.155 | 12.6 | 8.6 |
| | | | **0.157** | **0.124** | **0.437** | **0.533** | **0.099** | **0.108** | **8.900** | **14** |
| **Percent change from Pre:** | | | **-66.7%** | **259.4%** | **-88.0%** | **-90.3%** | **-92.9%** | **-94.1%** | **-88.1%** | **-95.5%** |
| | | | | | | | | | | |
| vfb1-c-g | 8/19/2019 | 11:00 | 0.079 | 0.064 | 0 | 2.29 | 0 | 2.14 | 6 | 5.2 |
| vfb2-c-g | 8/19/2019 | 11:15 | 0.084 | 0.041 | 0 | 0 | 0.107 | 0.07 | 11.8 | 4.1 |
| vfb3-c-g | 8/19/2019 | 11:30 | 0.075 | 0.064 | 0 | 0.836 | 0 | 0.687 | 4.6 | 13.2 |
| | | | **0.079** | **0.056** | **0.000** | **1.042** | **0.036** | **0.966** | **7.467** | **8** |
| **Percent change from Pre:** | | | **-83.2%** | **63.3%** | **-100.0%** | **-80.9%** | **-97.5%** | **-46.8%** | **-90.0%** | **-97.6%** |
| | | | | | | | | | | |
| vfb1-post-1 | 8/19/2019 | 11:00 | 0.084 | 0.05 | 0.46 | 0.531 | 0 | 0.071 | 1.6 | 13.2 |
| vfb1-post-2 | 8/19/2019 | 11:00 | 0.073 | 0.05 | 0.852 | 0.919 | 0 | 0.067 | 1.4 | 8.5 |
| vfb1-post-3 | 8/19/2019 | 11:00 | 0.073 | 0.051 | 0.491 | 0.563 | 0 | 0.072 | 1.5 | 9.8 |
| vfb2-post-1 | 8/19/2019 | 11:15 | 0.048 | 0.043 | 0 | 0 | 0 | 0.104 | 1.2 | 5.2 |
| vfb2-post-2 | 8/19/2019 | 11:15 | 0.048 | 0.043 | 0 | 0 | 0 | 0.109 | 0 | 8.6 |
| vfb2-post-3 | 8/19/2019 | 11:15 | 0.047 | 0.042 | 0 | 0 | 0 | 0.105 | 1.2 | 4.1 |
| vfb3-post-1 | 8/19/2019 | 11:30 | 0.049 | 0.034 | 0 | 0 | 0 | 0.037 | 2.8 | 5.2 |
| vfb3-post-2 | 8/19/2019 | 11:30 | 0.05 | 0.037 | 0 | 0 | 0 | 0.042 | 1.5 | 5.2 |
| vfb3-post-3 | 8/19/2019 | 11:30 | 0.047 | 0.038 | 0 | 0 | 0 | 0.037 | 0 | 4.1 |
| | | | **0.058** | **0.043** | **0.200** | **0.224** | **0.000** | **0.072** | **1.244** | **7** |
| **Percent change from Pre:** | | | **-87.8%** | **25.0%** | **-94.5%** | **-95.9%** | **-100.0%** | **-96.1%** | **-98.3%** | **-97.7%** |

**VLAWMO Treatment Wetland Pilot Project**

**Summary of Pollutant Reduction Effectiveness from Three Storm Events in 2019**

| STORM 3 - 9/11 - 9/19 2019 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site | Date | Time | TP (mg/L) | Ortho, SRP (mg/L) | TKN (mg/L) | Nitogen | N,NH3 (mg/L) | NO2+NO3 mg/L | TSS (mg/L) | *E.coli* (MPN/ 100 ml) |
| pre-1 | 9/11/2019 | 5:00 | 4.37 | 0.117 | 17.2 | 17.5 | 7.13 | 0.31 | 905 | 34480 |
| pre-2 | 9/11/2019 | 5:00 | 9.42 | 0.316 | 39.9 | 40.1 | 22.8 | 0.222 | 1840 | 12033 |
| pre-3 | 9/11/2019 | 5:00 | 1.88 | 0.224 | 8.8 | 9.11 | 3.27 | 0.308 | 407 | 9804 |
| pre-4 | 9/11/2019 | 5:00 | 0.973 | 0.168 | 5.14 | 5.43 | 1.9 | 0.286 | 447 | 17329 |
| pre-5 | 9/11/2019 | 5:00 | 0.616 | 0.13 | 3.65 | 3.94 | 1.59 | 0.285 | 117 | 14136 |
| pre-6 | 9/11/2019 | 5:00 | 0.525 | 0.12 | 2.77 | 3.05 | 1.29 | 0.28 | 139 | 9208 |
| | | | **2.964** | **0.179** | **12.910** | **13.188** | **6.330** | **0.282** | **642.500** | **16,165** |
| | | | | | | | | | | |
| vfb1-a-m | 9/19/2019 | 9:30 | 0.058 | 0.024 | 0.849 | 0.849 | 0 | 0 | 9.2 | 31.5 |
| vfb1-b-m | 9/19/2019 | 9:30 | 0.053 | 0.033 | 0.849 | 0.849 | 0 | 0 | 4.5 | 0 |
| vfb1-c-m | 9/19/2019 | 9:30 | 0.061 | 0.041 | 0.994 | 0.994 | 0 | 0 | 12.2 | 1 |
| | | | **0.057** | **0.033** | **0.897** | **0.897** | **0.000** | **0.000** | **8.633** | **11** |
| **Percent change from Pre:** | | | **-98.1%** | **-81.8%** | **-93.0%** | **-93.2%** | **-100.0%** | **-100.0%** | **-98.7%** | **-99.9%** |
| | | | | | | | | | | |
| vfb2-a-m | 9/19/2019 | 9:45 | 0.02 | 0.012 | 0.551 | 0.551 | 0 | 0 | 2.8 | 16.9 |
| vfb2-b-m | 9/19/2019 | 9:45 | 0.034 | 0.011 | 0.836 | 0.836 | 0 | 0 | 2.1 | 2 |
| vfb2-c-m | 9/19/2019 | 9:45 | 0.024 | 0.013 | 0.918 | 0.958 | 0 | 0.04 | 1.8 | 4.1 |
| | | | **0.026** | **0.012** | **0.768** | **0.782** | **0.000** | **0.013** | **2.233** | **8** |
| **Percent change from Pre:** | | | **-99.1%** | **-93.3%** | **-94.0%** | **-94.1%** | **-100.0%** | **-95.3%** | **-99.7%** | **-100.0%** |
| | | | | | | | | | | |
| vfb3-a-m | 9/19/2019 | 10:00 | 0.031 | 0.019 | 0.677 | 0.677 | 0 | 0 | 5.4 | 290.9 |
| vfb3-b-m | 9/19/2019 | 10:00 | 0.039 | 0.014 | 0.822 | 0.822 | 0 | 0.03 | 8.1 | 30.1 |
| vfb3-c-m | 9/19/2019 | 10:00 | 0.024 | 0.016 | 0.934 | 0.934 | 0 | 0 | 1 | 2 |
| | | | **0.031** | **0.016** | **0.811** | **0.811** | **0.000** | **0.010** | **4.833** | **108** |
| **Percent change from Pre:** | | | **-98.9%** | **-90.9%** | **-93.7%** | **-93.9%** | **-100.0%** | **-96.5%** | **-99.2%** | **-99.3%** |
| | | | | | | | | | | |
| vfb1-c-s | 9/19/2019 | 9:30 | 0.079 | 0.071 | 0.866 | 1.9 | 0 | 1.03 | 12.7 | 34.5 |
| vfb2-c-s | 9/19/2019 | 9:45 | 0.041 | 0.039 | 0.741 | 2.28 | 0 | 1.44 | 7.7 | 37.3 |
| vfb3-c-s | 9/19/2019 | 10:00 | 0.052 | 0.031 | 0.558 | 2.68 | 0 | 2.12 | 3.9 | 38.9 |
| | | | **0.057** | **0.047** | **0.722** | **2.287** | **0.000** | **1.530** | **8.100** | **37** |
| **Percent change from Pre:** | | | **-98.1%** | **-73.8%** | **-94.4%** | **-82.7%** | **-100.0%** | **442.9%** | **-98.7%** | **-99.8%** |
| | | | | | | | | | | |
| vfb1-c-g | 9/19/2019 | 9:30 | 0.066 | 0.05 | 0.552 | 1.78 | 0 | 1.23 | 13.4 | 23.1 |
| vfb2-c-g | 9/19/2019 | 9:45 | 0.05 | 0.038 | 0.693 | 1.68 | 0 | 0.985 | 2.4 | 81.3 |
| vfb3-c-g | 9/19/2019 | 10:00 | 0.073 | 0.062 | 0.394 | 2.52 | 0 | 2.13 | 10.1 | 69.1 |
| | | | **0.063** | **0.050** | **0.546** | **1.993** | **0.000** | **1.448** | **8.633** | **58** |
| **Percent change from Pre:** | | | **-97.9%** | **-72.1%** | **-95.8%** | **-84.9%** | **-100.0%** | **413.9%** | **-98.7%** | **-99.6%** |
| | | | | | | | | | | |
| vfb1-post-1 | 9/19/2019 | 9:30 | 0.078 | 0.046 | 1.55 | 1.76 | 0 | 0.215 | 21.9 | 6.3 |
| vfb1-post-2 | 9/19/2019 | 9:30 | 0.067 | 0.048 | 0.667 | 0.884 | 0 | 0.217 | 6.1 | 6.3 |
| vfb1-post-3 | 9/19/2019 | 9:30 | 0.075 | 0.049 | 0.591 | 0.804 | 0 | 0.213 | 11.3 | 2 |
| vfb2-post-1 | 9/19/2019 | 9:45 | 0.054 | 0.039 | 0.526 | 1.8 | 0 | 1.27 | 8.2 | 9.4 |
| vfb2-post-2 | 9/19/2019 | 9:45 | 0.034 | 0.037 | 0.434 | 1.67 | 0 | 1.24 | 1 | 1 |
| vfb2-post-3 | 9/19/2019 | 9:45 | 0.032 | 0.037 | 0.477 | 1.75 | 0 | 1.27 | 0 | 1 |
| vfb3-post-1 | 9/19/2019 | 10:00 | 0.04 | 0.043 | 0.461 | 2.03 | 0 | 1.57 | 1.2 | 26.2 |
| vfb3-post-2 | 9/19/2019 | 10:00 | 0.04 | 0.044 | 0.547 | 2.13 | 0 | 1.58 | 0 | 54.6 |
| vfb3-post-3 | 9/19/2019 | 10:00 | 0.036 | 0.044 | 0.503 | 2.07 | 0 | 1.57 | 0 | 73.3 |
| | | | **0.051** | **0.043** | **0.640** | **1.655** | **0.000** | **1.016** | **5.522** | **20** |
| **Percent change from Pre:** | | | **-98.3%** | **-76.0%** | **-95.0%** | **-87.4%** | **-100.0%** | **260.5%** | **-99.1%** | **-99.9%** |

# ATTACHMENT 2 - PATHOGEN DATA SUMMARY

| | | 16S | | uidA | | eaeA | | cadF | | ftsZ | | stx1 | | ciaB | | virA | | hex | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Well | Influent | Effluent | Influent | Effluent | Influent | Effluent | Influent | Effluent | Influent | Effluent | Influent | Effluent | Influent | Effluent | Influent | Effluent | Influent | Effluent |
| 7/9 and 7/15 | 1 | 9.2 | 9.0 | 5.2 | 3.9 | | | | | 5.1 | 3.9 | | | | | | | | |
| | 2 | | 8.7 | | 3.8 | | | | | | 3.8 | | | | | | | | |
| | 3 | | 9.0 | | 4.0 | | | | | | 4.0 | | | | | | | | |
| 8/5 and 8/13 | 1 | 9.7 | 8.2 | 5.2 | 3.6 | | | | | 5.3 | 3.6 | | | | | | | | |
| | 2 | | 8.6 | | 3.7 | | | | | | 3.7 | | | | | | | | |
| | 3 | | 9.1 | | 4.1 | | | | | | 4.1 | | | | | | | | |
| 8/20 and 8/27 | 1 | 9.0 | 8.3 | | | | | | | | | | | | | | | | |
| | 2 | | 8.6 | | | | | | | | | | | | | | | | |
| | 3 | | 8.6 | | | | | | | | | | | | | | | | |
| 9/11 and 9/19 | 1 | 9.4 | 8.2 | 5.1 | 3.7 | | | | | 5.6 | 3.7 | | | | | | | | |
| | 2 | | 8.2 | | 3.9 | | | | | | 3.9 | | | | | | | | |
| | 3 | | 8.4 | | 4.0 | | | | | | 4.0 | | | | | | | | |
| Target organism | | ALL BACTERIA | | All E. coli | | Enterohemorrhagic E. coli | | Campylobacter jejuni | | All E. coli | | Enterohemorrhagic E. coli | | Campylobacter jejuni | | | | | |
| General Commentary | | all look good | | Yellow = detection limit | | all are below detection | | all are below detection | | | | all are below detection | | all are below detection | | assay failed | | assay failed | |

YELLOW = detection limit for the assay

All data are log(10) of gene copies per liter. Example#1: 9.0 = 9 billion per liter, Example#2: 5.0 = 100,000 per liter vir

BURNS McDONNELL

CREATE AMAZING.

Burns & McDonnell World Headquarters
9400 Ward Parkway
Kansas City, MO 64114
**O** 816-333-9400
**F** 816-333-3690
www.burnsmcd.com

# MEMORANDUM

DATE: July 1, 2020

TO: MAWD Members

FROM: Sherry Davis White, Resolutions Committee Chair

**RE: 2020 REQUEST FOR MAWD RESOLUTIONS**

---

It is that time of year for MAWD members to submit their policy recommendations through our resolutions process. Here are the next steps and timeline:

| | |
|---|---|
| **July / August** | Members discuss and approve resolutions at their local WD/WMO meetings |
| **September 1** | Administrators submit resolutions and background information documents to the MAWD office at emily@mnwatershed.org by September 1 |
| **September / October** | Resolutions Committee will review resolutions, gather further information when deemed necessary, discuss and make recommendations on their passage to the members |
| **October 31** | Resolutions (with committee feedback) will be emailed to each district by Oct. 31 |
| **November** | Members should discuss the resolutions at their November meetings and decide who will be voting on their behalf at the annual meeting (2 voting members allowed per watershed organization) |
| **December** | Delegates discuss and vote on resolutions at the annual meeting |
| **December / January** | Legislative Committee will review existing and new resolutions and make a recommendation to the MAWD Board of Directors for the 2021 legislative platform |
| **January 2021** | MAWD Board of Directors will finalize the 2021 legislative platform |
| **January 5, 2021** | First day of the 92nd legislative biennium |

Resolutions passed by the membership at the annual meeting will remain MAWD policy for five years. After five years resolutions will sunset and if desired, will need to be resubmitted and passed at the annual meeting to keep those issues active.

See the enclosed lists for resolutions that are active and those that will sunset at the end of the year.

Please feel free to contact me at sherrywhite@mediacombb.net or our Executive Director Emily Javens if you have any questions at emily@mnwatershed.org or (651) 440-9407.

***THANK YOU FOR YOUR EFFORTS IN OUR POLICY DEVELOPMENT!***

# Background Information
## 2020 MAWD Resolution

Proposing District: _____

Contact Name: _____

Phone Number: _____

Email Address: _____

Resolution Title: _____

_____

Background that led to the submission of this resolution:

Ideas for how this issue could be solved:

Anticipated support or opposition from other governmental units?

(Check one) This issue is of importance to:

Only our district _____
Only our region _____
The entire state _____



MN Association of Watershed Districts, Inc. | 595 Aldine Street | St. Paul MN 55104
www.mnwatershed.org | 651.440.9407

# Active MAWD Resolutions

July 1, 2020

## FINANCE ISSUES

### 2018-02 Increase the $250k General Fund Tax Levy Limit

MAWD supports legislation to increase or remove the $250,000 general fund ad valorem tax levy limit set in MN statute 103D.905 subd. 3. If the limit is raised to a new dollar amount, MAWD supports an inflationary adjustment be added to statute.

### 2017-05 Middle Fork Crow River Watershed District General Operating Levy Adjustment

MAWD supports the efforts of Middle Fork Crow River Watershed District to draft and advance special legislation affecting a change in its general fund levy cap.

### 2019-08: Heron Lake Watershed District General Operating Levy Adjustment

MAWD supports an increase in Heron Lake Watershed District's general operating levy cap from $250,000 to an amount not to exceed $500,000.

### 2019-09: Shell Rock River Watershed District General Operating Levy Adjustment

MAWD supports an increase in Shell Rock River Watershed District's general operating levy cap from $250,000 to an amount not to exceed $500,000.

### 2019-10: Pelican River Watershed District General Operating Levy Adjustment

MAWD supports an increase in Pelican River Watershed District's general operating levy cap from $250,000 to an amount not to exceed $500,000.

### 2019-11: Buffalo Red River Watershed District General Operating Levy Adjustment

MAWD supports an increase in Buffalo Red River Watershed District's general operating levy cap from $250,000 to an amount not to exceed $500,000.

### 2019-06: Oppose Legislation that Forces Spending on Political Boundaries.

MAWD opposes legislation that establishes spending requirements or restricts watershed district spending by political regions or boundaries.

### 2017-06 Obtain Stable Funding for the Flood Damage Reduction Program

MAWD supports stable funding (as opposed to the current even year bonding process) for the DNR's Flood Damage Reduction Program. A suggested sustainable level of funding is $25 million per year for the next 10 years.

### 2016-03 Tax Law Treatment of Conservation Easements

MAWD pursue a legislative initiative to define "riparian buffer" for purposes of conservation easements in state tax code and to establish an administrative procedure whereby a watershed organization would certify, for purposes of section 273.117, a conservation easement or restriction as meeting the water quantity and quality purposes cited in the tax law and therefore be eligible for a reduction in estimated market value.

## URBAN STORMWATER

### 017-04 Limited Liability for Certified Commercial Salt Applicators

MAWD supports passage and enactment of state law that provides a limited liability exemption to commercial salt applicators and property owners using salt applicators who are certified through the established salt applicator certification program who follow best management practices.

### 2017-07 Creation of a Stormwater Reuse Task Force

MAWD pursue legislation requiring creation of a Stormwater Reuse Task Force with membership from Watershed Districts, Cities, Counties, State Agencies and other Stormwater Reuse implementers; and that the Stormwater Reuse Task Force should be charged with developing recommendations that further clarify and/or replace the information in the Water Reuse Report that relates to stormwater reuse best management practices.

## PUBLIC DRAINAGE LAW

### 2019-04: Clarify County Financing Obligations and/or Authorize Watershed District General Obligation Bonding for Public Drainage Projects.

MAWD supports legislation to achieve one or both of the following:

a) To clarify that an affected county must finance a watershed district drainage project on project establishment and request of the watershed district; and
b) To authorize watershed districts to finance drainage project establishment and construction by issuance of bonds payable from assessments and backed by the full faith and credit of the watershed district; and further provide for adequate tax levy authority to assure the watershed district's credit capacity.

### 2019-02: Add a Classification for Public Drainage Systems that are Artificial Watercourses

MAWD supports removal of the default Class 2 categorization for public drainage systems that are artificial watercourses and supports a default Class 7 categorization for public drainage systems that are artificial watercourses.

### 2018-08 Reinforce Existing Rights to Maintain/Repair 103E Drainage Systems

MAWD supports legislation modeled after House File 2687 and Senate File 2419 of the ninetieth legislature (2017-2018) reinforcing that the DNR cannot restrict existing rights to maintain and repair 103E public drainage systems.

## AQUATIC INVASIVE SPECIES

### 2017-02 Temporary Lake Quarantine Authorization to Control the Spread of AIS

MAWD supports legislation granting to watershed districts, independently or under DNR oversight, the authority, after public hearing and technical findings, to impose a public access quarantine, for a defined period of time in conjunction with determining and instituting an AIS management response to an infestation.

### 2019-07: Chinese Mystery Snail Designation Change and Research Needs.

MAWD supports Chinese Mystery Snail prevention and control research and to change the Chinese Mystery Snail designated status in Minnesota as a regulated species to a prohibited species.

## LOCAL and STATE WATERSHED MANAGEMENT COORDINATION / REPRESENTATION

### 2019-01 Streamline the DNR permitting process

MAWD supports legislation, rules, and/or agency policies to streamline the DNR permitting process by increasing responsiveness, decreasing the amount of time it takes to approve permits, providing a detailed fee schedule prior to application, and conducting water level management practices that result in the DNR reacting more quickly to serious, changing climate conditions.

### 2019-03: Support for Managing Water Flows in the Minnesota River Basin Through Increased Water Storage and Other Strategies and Practices.

MAWD supports efforts to manage the flow of water in the Minnesota River Basin and the Minnesota River Congress in its efforts to increase water storage on the landscape; and

MAWD supports the Minnesota River Congress in its efforts to secure state and federal programs targeted specifically to increase surface water storage in the Minnesota River Watershed.

### 2019-05: Watershed District Membership on Wetland Technical Evaluation Panels.

MAWD supports legislation to allow technical representatives of watershed districts to be official members of wetland technical evaluation panels (TEPs).

### 2018-04 Require Watershed District Permits for the DNR

MAWD supports an amendment to the MN Statute § 103D.315, subd. 5, to include the MN Department of Natural Resources as a state agency required to get permits from watershed districts when applicable**.**

### 2018-06 Ensure Timely Updates to Wildlife Management Area (WMA) Plans

MAWD supports that Wildlife Management Area (WMA) operation and maintenance plans and/or management plans are either drafted or brought current in a timely fashion, with input from local governmental entities, to ensure their consideration in future One Watershed One Plan efforts.

### 2018-03 Require Timely Appointments to the BWSR Board

MAWD supports legislation that requires the Governor to make BWSR board appointments within 90 days of a vacancy or board member term expiration.

### 2018-09 Clean Water Council Appointments

MAWD may ask the representative of the Clean Water Council to resign when they lose their direct association to a watershed district; and that MAWD will recommend to the Governor's office that managers and/or administrators in good standing with MAWD be appointed to the Clean Water Council.

## WATERSHED OFFICE OPERATIONS

### 2016-01 Making Human Resources Expertise Available to Districts through MAWD

MAWD research potential options of making human resources expertise available to districts and make every effort to assure districts have access to the expertise they need to effectively manage their organizations.

# Resolutions to Sunset

## Effective December 31, 2020

In accordance with MAWD's Sunset Policy, the following resolutions will be archived at the end of the year and will no longer be considered for future legislative and administrative platforms. The Sunset Policy says that resolutions older than five years old shall be removed from the books. If your watershed feels any of these issues should continue to be actively pursued with MAWD resources, then your watershed board needs to write up a new resolution and the issue will need to be voted on and renewed by the membership at the next annual meeting to be held in December.

### 2015-01 Encourage DNR to Permit Storing Water on DNR Land

MAWD supports the temporary storage of water on existing DNR-controlled wetlands in the times of major flood events.

### 2015-02 Road Raises for Cities with Levees

MAWD supports the State of Minnesota providing financial support through the MN DNR Flood Damage Reduction Program to cost share with local, state, and federal road authorities to provide road raises as an additional feature of flood control levee projects.

### 2015-05 Improvements in Process with Permitting Authorities for Water Quality Improvement Projects

MAWD supports all permitting authorities:

1. Identify all regulatory requirements and applicable standards that have been developed, formalized, and codified into applicable laws, statutes, and rules that apply to proposed water quality improvement projects within 30 days of receiving a permit application;
2. Coordinate with permit applicants on proposed water quality improvement projects as part of the technical advisory committee process;
3. Consider the development of internal technical advisory/evaluation committees within each authority to review proposed water quality improvement projects; and
4. Allow permit applicants to address all members of each authority's organization that are offering comments and concerns on a proposed water quality improvement project early on through the technical advisory committee process, instead of trying to go through one contact person at each authority.

### 2015-06 Establishment of Minnesota River Basin Commission

MAWD supports the legislative establishment of a MN River Basin Commission to provide effective and efficient proactive comprehensive basin planning; administration; project development; implementation; construction and maintenance or water resource projects and programs of benefit to the MN River Basin with a focus on water quantity and water quality management.

### 2015-07 Review Commitment to Clean Water Council Process for Recommendations to Governor and Legislature on Spending Priorities of the Clean Water Fund

MAWD supports a review of our commitment to the present Clean Water Council funding recommendation process and make a recommendation to the membership at our 2016 Annual Meeting on our continued participation in that process.

### 2015-08 Protect the Integrity of the Clean Water Council Appointments

MAWD supports legislation to protect the integrity of Clean Water Council appointments by supporting legislation similar to the BWSR appointment process for local government appointments, and that any state agency influence on the appointment process for local government representatives or any other specific represented groups on the Clean Water Council not be tolerated.

# Background Information
## 2020 MAWD Resolution

Proposing District: _____

Contact Name: _____

Phone Number: _____

Email Address: _____

Resolution Title: _____

_____

Background that led to the submission of this resolution:

Ideas for how this issue could be solved:

Anticipated support or opposition from other governmental units?

(Check one) This issue is of importance to:

Only our district _____
Only our region _____
The entire state _____



MN Association of Watershed Districts, Inc. | 595 Aldine Street | St. Paul MN 55104
www.mnwatershed.org | 651.440.9407