

# elm creek

## Watershed Management Commission

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### AGENDA **REVISED** Regular Meeting February 13, 2019

1. Call Regular Meeting to Order.
  - a. Approve Agenda.\*
2. Consent Agenda.
  - a. Minutes last Meeting.\*
  - b. **Treasurer's Report and Claims.\*\***
3. Open Forum.
  - a. Fish Lake / Rice Lake Carp Assessment.
    - 1) **Phase I Report.\***
    - 2) **Phase II Handout.\***
4. Action Items.
  - a. Project Reviews – see Status Report.\*
  - b. **Resolution 2019-01.\* Table. Discussions re revision are still ongoing.**
  - c. Local Plans.
    - 1) Rogers.\*
  - d. Work Plans.
    - 1) 2018 in Review.\*
    - 2) Draft 2019.\*
  - e. **Approve Rush Creek Phase 3 Plans.\***
5. Old Business.
6. New Business.
7. Communications.
  - a. I-94 UBOL Resurfacing Project Maple Grove to Rogers.\*
8. Education.
  - a. WMWA Update.\*\*
9. Grant Opportunities and Updates.
  - a. FEMA Floodplain Mapping – *see Staff Report.*
  - b. Fish Lake Alum Project.
    - 1) Annual Report.\*
    - 2) 2018 Report Card.\*
  - c. Elm Creek Reach D Weekly Report.\*
10. Project Reviews – *also see Staff Report.\**

\*in meeting packet  
\*\*available at meeting



10. Project Reviews. (See Staff Report.*)						
a.				AR	2013-046	Woods of Medina, Medina.
b.					2014-015	Rogers Drive Extension, Rogers.
c.					2015-004	Kinghorn Outlet A, Rogers.
d.				AR	2015-030	Kiddiegarten Child Care Center, Maple Grove.
e.				AR	2016-002	The Markets at Rush Creek, Maple Grove.
f.					2016-005W	Ravinia Wetland Bank Plan, Corcoran.
g.					2016-040	Kinghorn 4th Addition, Rogers.
h.					2016-047	Hy-Vee North, Maple Grove.
i.			R	AR	2016-052	The Woods at Rush Creek, Maple Grove.
j.				AR	2017-014	Laurel Creek, Rogers.
k.				AR	2017-016	Territorial Woods, Maple Grove.
l.				AR	2017-017	Mary Queen of Peace Catholic Church, Rogers.
m.				AR	2017-021	Hindu Society of MN Staff Housing, Maple Grove.
n.				AR	2017-029	Brayburn Trails, Dayton.
o.			R	AR	2017-034	Plymouth Memory Care, Plymouth.
p.			R	AR	2017-037	Corcoran L-80 Lift Station MCEs Project 808520, Corcoran.
q.			R	AR	2017-038	Bass Lake Estates, Corcoran.
r.					2017-039	Rush Creek Apartments, Maple Grove.
s.		E			2017-050W	Ernie Mayer Wetland/floodplain violation, Corcoran.
t.				AR	2018-001	Rush Creek Commons, Maple Grove.
u.					2018-004	Rush Creek Restoration, Maple Grove.
v.					2018-005	Sundance Greens, Dayton.
w.					2018-014	Refuge at Rush Creek, Corcoran.
x.				AR	2018-018	Summers Edge Phase II, Plymouth.
y.					2018-020	North 101 Storage, Rogers.
z.					2018-021	113th Lane Extension/Brockton/101, Rogers.
aa.				AR	2018-026	Windrose, Maple Grove.
ab.				AR	2018-028	Tricare Third Addition, Maple Grove.
ac.	A	E			2018-033	Cloquet Island Estates, Dayton.
ad.					2018-038	Vincent Woods of Roger.
ae.				AR	2018-043	BeeHive Homes, Maple Grove.
af.				AR	2018-044	OSI Phase II, Medina.
ag.					2018-046	Graco, Rogers
ah.				AR	2018-048	Faithbrook Church Phase 2, Dayton.
ai.					2018-052	Rogers Tennis Center, Rogers.
aj.	A	E			2018-053	Elm Creek Stream Stabilization, Champlin.
ak.					2018-054W	C&D Order 9120 Trail Haven Road, Corcoran.
al.	A	E			2019-001	Fernbrook View Apartments, Maple Grove.
am.	A	E			2019-002	Parkside Villas, Champlin.
an.					2019-003	Rogers High School Tennis Court, Rogers.
ao.					2019-004	Rogers Middle School Chiller Units, Rogers.

A = Action item E = Enclosure provided I = Informational update will be provided at meeting RPFI - removed pending further information  
R = Will be removed RP= Information will be provided in revised meeting packet..... D = Project is denied AR awaiting recordation

## 11. Other Business.

- Responses to Solicitation of Interest Proposals.\*
- Nomination of Officers. Election of Officers will occur at March meeting.

Z:\Elm Creek\Meetings\Meetings 2019\02 TAC and Regular Meeting Agenda.docx

\*in meeting packet  
\*\*available at meeting



## Elm Creek Watershed Management Commission 2018 Treasurer's Report

		2018 Budget	Jan 2019	Feb 2019	2018 Budget YTD
<b>EXPENSES</b>					
Administrative		90,000	6,206.37	8,825.33	93,351.92
Watershed-wide TMDL Admin		2,500			0.00
Grant Writing		4,000			0.00
Website		6,000	109.80	94.80	2,068.10
Legal		2,000			271.00
Audit		5,000			4,500.00
Insurance		3,900		2,865.00	5,635.00
Miscellaneous/Contingency		1,000			0.00
Project Reviews	HCEE	95,000		16,329.04	92,476.67
Project Reviews	Consult	12,000	1,052.50	6,563.50	37,553.35
Project Reviews	Admin	14,000	484.01	715.15	14,258.26
WCA-Technical	HCEE	17,750		3,252.77	15,886.06
WCA	Legal	500		31.00	714.00
WCA	Admin	1,500	184.96	742.71	4,131.20
Floodplain Mapping	Admin				201.74
Floodplain Mapping	Technical			5,436.36	7,027.42
Stream Monitoring		24,900			21,660.00
Extensive Stream Monitoring		7,600		7,600.00	7,600.00
DO Longitudinal Survey		1,000		1,000.00	1,000.00
TMDL Follow-up - TRPD		5,000			0.00
Rain Gauge		250	16.50	16.50	224.78
Rain Gauge Network		100			0.00
Lakes Monitoring - CAMP		720			550.00
Lakes Monitoring - TRPD					
Sentinel Lakes		3,300		3,300.00	3,300.00
Additional Lake		825			0.00
Aquatic Vegetation Surveys		1,100		1,100.00	1,100.00
Wetland Monitoring (WHEP)		4,000		4,000.00	4,000.00
Education		4,000	110.02		2,268.80
Education 2019			500.00	510.20	1,010.20
WMWA General Activities		4,000		3,000.00	5,000.00
WMWA Educators/Watershed Prep		4,500		2,000.00	4,250.00
WMWA Special Projects		2,000			1,000.00
Rain Garden Workshops		2,000	2,924.25		2,924.25
Education Grants		2,000			0.00
Macroinvertebrate Monitoring-River Watch		3,000		3,000.00	3,000.00
Projects ineligible for ad valorem		50,000			0.00
Studies / Project ID / SWA		35,000	132.60	403.04	3,937.67
Plan Amendments		2,000			1,388.13
Local Plan Review		8,000			0.00
Transfer to (from) Encumbered Funds (see below)					0.00
Transfer to (from) Capital Projects (see CIP Tr		490,000			323,544.81
Transfer to (from) Cash Sureties (see below)			45,000.00		165,570.60
Transfer to (from) Grants (see below)			27.48	18.56	27,649.16
To Fund Balance					0.00
<b>TOTAL - Month</b>			<b>56,748.49</b>	<b>70,803.96</b>	<b>859,053.12</b>
<b>TOTAL Paid in 2018, incl 2017 Expenses</b>		<b>910,445.00</b>	<b>842,568.70</b>	<b>913,372.66</b>	<b>2018 Paid</b>
			<b>2018 Activity</b>		



## Elm Creek Watershed Management Commission 2018 Treasurer's Report

		2018 Budget	Jan 2019	Feb 2019	2018 Budget YTD
<b>INCOME</b>					
<i>From Fund Balance</i>					
Project Review Fee		80,000	1,289.50		80,644.50
Return Project Fee					(6,600.00)
Water Monitoring - TRPD Co-op Agmt		6,500			0.00
WCA Fees		10,000			3,450.00
Return WCA Fee					0.00
Reimbursement for WCA Expense					2,733.00
WCA Escrow Earned					0.00
Member Dues		225,000			225,000.00
Interest/Dividends Earned		1,000	2,382.80		20,764.45
Transfer to (from) Capital Projects (see CIP Tr		490,000	2,589.68		436,392.95
Transfer to (from) Grants (see below)					167,855.00
Misc Income					0.00
<b>Total - Month</b>			6,261.98	0.00	930,239.90
<b>TOTAL Funds Rec'd in 2018, incl 2017 Inco</b>		<b>812,500.00</b>	<b>940,502.30</b>	<b>940,502.30</b>	<b>2018 Received</b>
<b>CASH SUMMARY</b>		<b>Balance Fwd</b>			
Checking		-9,220.00			
4M Fund		1,118,838.76	1,252,552.36		
<b>Cash on Hand</b>			<b>1,252,552.36</b>		
<b>CASH SURETIES HELD</b>		<b>Balance Fwd</b>			<b>Activity 2018</b>
WCA Escrows Received		150,570.60			45,000.00
WCA Escrow Reduced		0.00	-45,000.00		-165,570.60
<b>Total Cash Sureties Held</b>		<b>150,570.60</b>	<b>30,000.00</b>	<b>30,000.00</b>	
<b>RESTRICTED / ENCUMBERED FUNDS</b>		<b>Balance Fwd</b>			
<i>Restricted for CIPs</i>		129,049			129,048.57
<i>Enc. Studies / Project Identification / SWA</i>		62,832			62,831.80
<i>Assigned Extensive Stream Monitoring</i>		1,000			0.00
<b>Total Restricted / Encumbered Funds</b>		<b>191,880</b>	<b>190,880.37</b>	<b>190,880.37</b>	
			Jan 2019	Feb 2019	2018 Budget YTD
<b>GRANTS</b>					
<b>Fish Lake CWLA</b>					
Revenue					80,000.00
Expense			27.48	18.56	362.95
Balance			(27.48)	(18.56)	79,637.05
<b>Rush Creek SWA</b>					
Revenue					20,612.00
Expense					27,286.21
Balance					(6,674.21)
<b>BWSR Watershed-based Funding</b>					
Revenue					67,243.00
Expense					-
Balance					67,243.00
<b>TOTAL GRANTS</b>					
Revenue					167,855.00
Expense			27.48	18.56	27,649.16
Balance			(27.48)	(18.56)	140,205.84



## Elm Creek Watershed Management Commission 2018 Treasurer's Report

Claims Presented		General Ledger Account No	Jan 2019	Feb 2019	TOTAL
Campbell Knutson - Legal		521000			31.00
Legal - WCA		579200		31.00	
Connexus - Rain Gauge		551100		16.50	16.50
Barr Engineering - Proj Rev Consultant		578050			6,563.50
Barr Eng - Consultant Ravinia		578050		5,899.50	
Barr Eng - Consultant Cloquet Island		578050		664.00	
Blue Thumb - 2019 Partner Fee		590000		500.00	500.00
Hennepin County Treasurer					32,018.17
HCEE - Tech Svcs Project Reviews		578000		16,329.04	
HCEE - Tech Svcs WCA		579500		3,252.77	
HCEE - Tech Svcs Floodplain Mapping		580440		5,436.36	
HCES - River Watch		553000		3,000.00	
HCES - WHEP		579800		4,000.00	
League of MN Cities					2,865.00
LMC - Property, Liability Insurance		513000		2,665.00	
LMC - Workers' Comp Insurance		513000		200.00	
Shingle Creek WMO - WMWA					5,000.00
SCWMO-2019 WMWA General Expense		590001		3,000.00	
SCWMO-2019 WMWA Watershed PREP		590001		2,000.00	
State Register-Request for Interest Proposals		511000		95.00	95.00
Three Rivers Park District					13,000.00
TRPD - Lakes Monitoring		561000		3,300.00	
TRPD - Aquatic Vegetation Survey		561010		1,100.00	
TRPD - Stream Monitoring		551000		7,600.00	
TRPD - DO Longitudinal Survey		551020		1,000.00	
JASS					10,714.79
Administration		511000		8,435.53	
TAC Support		511000		294.80	
Annual Report		511000			
Website		581000		94.80	
Project Reviews		578100		715.15	
WCA		579000		215.40	
WCA Admin Reimbursable Mayers		579000		527.31	
Plan Amendment		541500			
Education		590000		10.20	
CIPs General		563001		403.04	
CIP 2016-02 Miss Shoreline Repair		563006			
Grant Opportunities		511000			
Grant - Fish Lake CWLA		584001		18.56	
Grant - Rush Creek SWA		584002			
Floodplain Mapping Admin		580430			
<b>TOTAL CLAIMS</b>					<b>70,803.96</b>



**Elm Creek Watershed Management Commission  
2018 Treasurer's Report - Capital Improvement Project Tracking**

CIPs		Amount	%age	TOTAL 2014	TOTAL 2015	TOTAL 2016	TOTAL 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018	DEC 2018	JAN 2019 (2018)	TOTAL 2018	TOTAL ALL YEARS
	2014-01 Medina Tower Drive	68,750	52.380																			
	Revenue			-	68,916.44	(37.13)	(15.52)							(25.88)					25.06	7.38	6.56	68,870.35
	Expense			1,989.80	-	-	-														-	1,989.80
	Balance			(1,989.80)	68,916.44	(37.13)	(15.52)							(25.88)	-	-	-	-	25.06	7.38	6.56	66,880.55
	2014-02 Champlin Mill Pond Dam	62,500	47.620																			
	Revenue			-	62,653.69	(33.75)	(14.11)							(23.52)							(23.52)	62,582.31
	Expense			1,631.81	-	-	-				75.00										75.00	1,706.81
	Payment to City										60,793.19										60,793.19	60,793.19
	Balance (unexpended funds)			(1,631.81)	62,653.69	(33.75)	(14.11)				(60,868.19)			(23.52)							(60,891.71)	82.31
	2015-01 Plymouth Elm Creek Restoratio	250,000.00	100.000																			
	Revenue			-	249,866.05	1,273.36																251,139.41
	Expense			2,606.17	280.99	-	-															2,887.16
	First Half Payment					122,112.84	-															122,112.84
	Second Half Partial Payment					123,163.52	-															123,163.52
	Final Payment						1,836.48															1,836.48
	Balance (unexpended funds)			(2,606.17)	4,308.70	(563.12)																1,139.41
	2016-01 Fox Creek Phase 2 Bank Stabl	80,312.00	16.296																			
	Revenue			-	-	80,353.26								(122.29)					21.11	2.93	(98.25)	80,255.01
	Expense			-	106.32	-	-														-	106.32
	Balance			-	(106.32)	80,353.26								(122.29)	-	-	-	-	21.11	2.93	(98.25)	80,148.69
	2016-02 Miss River Shore Repair/Stabil	75,000.00	15.219																			
	Revenue			-	-	75,042.75								(114.21)							(114.21)	74,928.54
	Expense			-	106.32	-	-										75.00				75.00	181.32
	Payment to City																74,747.22				74,747.22	74,747.22
	Balance			-	(106.32)	75,042.75								(114.21)			(74,822.22)				(74,936.43)	-
	2016-03 EC Dam at Mill Pond	187,500.00	38.047																			
	Revenue			-	-	187,604.39								(104.39)							(104.39)	187,500.00
	Expense			-	106.32	-	-				75.00										75.00	181.32
	Payment to City										187,318.68										187,318.68	187,318.68
	Balance (unexpended funds)			-	(106.32)	187,604.39					(187,393.68)			(104.39)							(187,498.07)	-
	2016-04 Rush Creek Main Stem Restor	75,000.00	15.219																			
	Revenue			-	-	75,042.75								(114.21)					19.72	2.74	(91.75)	74,951.00
	Expense			-	106.32	-	-														-	106.32
	Balance			-	(106.32)	75,042.75								(114.21)	-	-	-	-	19.72	2.74	(91.75)	74,844.68
	2016-05 Fish Lake Alum Trmt Phase 1	75,000.00	15.219																			
	Revenue			-	-	75,042.75								(114.21)					19.72	2.74	(91.75)	74,951.00
	Expense			-	106.32	-	-														-	106.32
	Balance			-	(106.32)	75,042.75								(114.21)	-	-	-	-	19.72	2.74	(91.75)	74,844.68



**Elm Creek Watershed Management Commission**  
**2018 Treasurer's Report - Capital Improvement Project Tracking**

CIPs		Amount	%age	TOTAL 2014	TOTAL 2015	TOTAL 2016	TOTAL 2017	JAN 2018	FEB 2018	MAR 2018	APR 2018	MAY 2018	JUN 2018	JUL 2018	AUG 2018	SEP 2018	OCT 2018	NOV 2018	DEC 2018	JAN 2019 (2018)	TOTAL 2018	TOTAL ALL YEARS
	2017-01 Fox Creek Phase 3 Streambank	112,500.00	25.714																			
	Revenue				-	-	-							62,159.50					49,525.76	661.85	112,347.11	112,347.11
	Expense				-	-	135.85														-	135.85
	Balance				-	-	(135.85)							62,159.50	-	-	-	-	49,525.76	661.85	112,347.11	112,211.26
	2017-03 Mill Pond Fishery & Habitat Re	250,000.00	57.143																			
	Revenue				-	-	-							138,134.11					110,058.72	1,470.80	249,663.63	249,663.63
	Expense				-	-	135.86														-	135.86
	Balance				-	-	(135.86)							138,134.11	-	-	-	-	110,058.72	1,470.80	249,663.63	249,527.77
	2017-04 Rain Garden at Independence	75,000.00	17.143																			
	Revenue				-	-	-							41,440.47					33,017.81	441.24	74,899.52	74,899.52
	Expense				-	-	135.85														-	135.85
	Balance				-	-	(135.85)							41,440.47	-	-	-	-	33,017.81	441.24	74,899.52	74,763.67
	2018-01 Rush Creek Ph 3 Main Stem S	75,000.00																				
	Revenue				-	-	-														-	-
	Expense				-	-	-									115.18					115.18	115.18
	Balance				-	-	-							-		(115.18)					(115.18)	(115.18)
	2018-02 Elm Creek Reach D Stream Re	212,500.00																				
	Revenue				-	-	-														-	-
	Expense				-	-	-									115.18					115.18	115.18
	Balance				-	-	-							-		(115.18)					(115.18)	(115.18)
	2018-03 Elm Creek Phase III Stream Re	100,000.00																				
	Revenue				-	-	-														-	-
	Expense				-	-	-									115.18					115.18	115.18
	Balance				-	-	-							-		(115.18)					(115.18)	(115.18)
	2018-04 Downs Road Trail Rain Garde	75,000.00																				
	Revenue				-	-	-														-	-
	Expense				-	-	-									115.18					115.18	115.18
	Balance				-	-	-							-		(115.18)					(115.18)	(115.18)
<b>TOTAL CIP</b>																						
	Revenue			-	131,570.13	249,795.17	494,329.63	-	-	-	-	-	-	241,115.37	-	-	-	-	192,687.90	2,589.68	436,392.95	1,312,087.88
	Expense			3,621.61	2,606.17	812.59	407.56	-	-	-	150.00	-	-	-	-	460.72	75.00	-	-	-	685.72	8,133.65
	Payments					245,276.36	1,836.48	-	-	-	248,111.87	-	-	-	-	-	74,747.22	-	-	-	322,859.09	569,971.93
	Balance			(3,621.61)	128,963.96	3,706.22	492,085.59	-	-	-	(248,261.87)	-	-	241,115.37	-	(460.72)	(74,822.22)	-	192,687.90	2,589.68	112,848.14	733,982.30



**CAMPBELL KNUTSON**  
***Professional Association***  
**Attorneys at Law**  
**Federal Tax I.D. #41-1562130**  
**Grand Oak Office Center I**  
**860 Blue Gentian Road, Suite 290**  
**Eagan, Minnesota 55121**  
**(651) 452-5000**

Elm Creek Watershed Management Commission  
c/o Judie A. Anderson, Exec. Secty.  
3235 Fernbrook Lane  
Plymouth MN 55447

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January 31, 2019  
Account # 1448-0000G  
210

RE: GENERAL MATTERS  
SERVICES RENDERED TO DATE:

			HOURS	
01/03/2019	JJJ	Emails Judie re: draft resolution, WCA enforcement costs.	0.20	31.00
		AMOUNT DUE	0.20	31.00
		TOTAL CURRENT WORK		31.00
		PREVIOUS BALANCE		\$388.50
12/17/2018		Payment - thank you		-388.50
		TOTAL AMOUNT DUE		<u>\$31.00</u>

Amounts due over 30 days will be subject to a finance charge of  
.5% per month (or an annual rate of 6%). Minimum charge - 50 cents.



**CAMPBELL KNUTSON**  
***Professional Association***  
**Attorneys at Law**  
**Federal Tax I.D. #41-1562130**  
**Grand Oak Office Center I**  
**860 Blue Gentian Road, Suite 290**  
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**(651) 452-5000**

Elm Creek Watershed Management Commission  
c/o Judie A. Anderson, Exec. Secty.  
3235 Fernbrook Lane  
Plymouth MN 55447

Page: 1  
January 31, 2019  
Account # 1448G

**SUMMARY STATEMENT**

PREVIOUS BALANCE	FEES	EXPENSES	CREDITS	PAYMENTS	BALANCE
1448-0000 RE: GENERAL MATTERS					
SERVICES RENDERED TO DATE:					
388.50	31.00	0.00	0.00	-388.50	<u>\$31.00</u>

Amounts due over 30 days will be subject to a finance charge of  
.5% per month (or an annual rate of 6%). Minimum charge - 50 cents.





**Account Number:**  
**481113-238425**

ELM CREEK WATERSHED MGMT ORG

## Monthly Statement

**Service Address**  
ELM CREEK RD  
DAYTON MN

### Billing Summary

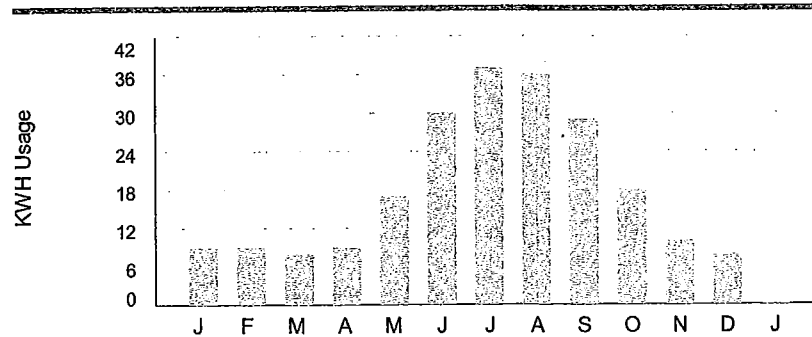
**Billing Date:** Jan 17, 2019

Previous Balance	\$16.50
Payments - Thank You!	\$16.50
<b>Balance Forward</b>	<b>\$0.00</b>
<b>New Charges</b>	<b>\$16.50</b>

**Total Amount Due** **\$16.50**

Payment must be received on or before February 13, 2019

### Energy Comparison



### How to contact us

Member Services / Moving - 763-323-2650  
Outages and Emergencies - 763-323-2660  
Hearing/Speech Impaired Call - 711 or 800-627-3529  
Email: [info@connexusenergy.com](mailto:info@connexusenergy.com)  
[www.connexusenergy.com](http://www.connexusenergy.com)  
Gopher State One Call - 811  
14601 Ramsey Boulevard, Ramsey, MN 55303

Total Amount Due	Due Date
<b>\$16.50</b>	<b>February 13, 2019</b>

### Message Center

#### No rate increase in 2019

Budgeting for the coming year? The budget for your 2019 electric bill should stay the same. For the second year in a row, Connexus Energy members will not see a rate increase. In addition, the more energy-efficient you are, the more control you will have over your monthly bill.

#### Lower cost for going solar

Going solar now costs less. If you want to subscribe to our solar program, the cost for full house solar is down to \$12 per month (decrease of \$5). Going with half-house solar is down to \$6 a month (from \$8.50). This is an additional charge on your monthly bill that's added to your basic electric service. For more information on how our SolarWise programs work, visit us at [connexusenergy.com](http://connexusenergy.com).

▼ Please detach at perforation and return this portion with a check or money order made payable to Connexus Energy ▼

TRA3-D-007675/007535 AGWIKX S1-ET-M1-C00002 1



**Account Number:** **481113-238425**

**Total Amount Due** **\$16.50**

**Payment Due By** **February 13, 2019**



007675 1 AB 0.405 003671/007675/007535 029 02 AGWIKX  
ELM CREEK WATERSHED MGMT ORG  
3235 FERNBROOK LN N  
PLYMOUTH MN 55447-5325



**Connexus Energy**  
PO Box 1808  
Minneapolis, MN 55480-1808

00001650 0004811130238425 000000 00000 00000000000 0000000





# INVOICE

Barr Engineering Co.  
4300 MarketPointe Drive, Suite 200  
Minneapolis, MN 55435  
Phone: 952-832-2600; Fax: 952-832-2601  
FEIN #: 41-0905995 Inc: 1966

Ms. Judie Anderson  
Elm Creek Watershed Management  
JASS-Watershed Administrators  
3235 Fernbrook Lane  
Plymouth, MN 55447

January 29, 2019  
Invoice No: 23270F55.05 - 8

<b>Total this Invoice</b>	<b>\$5,899.50</b>
---------------------------	-------------------

## Regarding: Elm Creek Wetland Mitigation Monitoring

This invoice is for professional services related to Elm Creek Wetland Mitigation Monitoring project, which included the following tasks:

### Job 001 – Ravinia Wetland Mitigation

#### Task 002 – 2018 Monitoring and Report

- Reviewing data collected in 2018
- Building vegetation tables
- Communications with Hennepin County
- Completing the 2018 monitoring report
- Project management and invoicing

### Professional Services from December 01, 2018 to December 28, 2018

Job:	001	Ravinia Wetland Mitigation
Task:	002	2018 Monitoring and Report

#### Labor Charges

	Hours	Rate	Amount
Engineer / Scientist / Specialist III			
Wold, Karen	3.70	125.00	462.50
Engineer / Scientist / Specialist II			
Burgner, Brian	51.50	100.00	5,150.00
Lind, James	.40	105.00	42.00
Engineer / Scientist / Specialist I			
Shalley, Matthew	2.50	80.00	200.00
Support Personnel I			
Nypan, Nyssa	.50	90.00	45.00
	58.60		5,899.50
<b>Subtotal Labor</b>			<b>5,899.50</b>
		<b>Task Subtotal</b>	<b>\$5,899.50</b>
		<b>Job Subtotal</b>	<b>\$5,899.50</b>
		<b>Total this Invoice</b>	<b>\$5,899.50</b>

	Current	Prior	Total	Received	A/R Balance
Invoiced to Date	5,899.50	7,497.75	13,397.25	7,497.75	5,899.50

Thank you in advance for your prompt processing of this invoice. If you have any questions, please contact your Barr Project Manager, Jeff Weiss, Phone: 952-832-2706 or E-Mail: [jweiss@barr.com](mailto:jweiss@barr.com).

PLEASE REMIT TO ABOVE ADDRESS and INCLUDE INVOICE NUMBER ON CHECK.

Terms: Due upon receipt. 1 1/2% per month after 30 days. Please refer to the contract if other terms apply.





# INVOICE

Barr Engineering Co.  
4300 MarketPointe Drive, Suite 200  
Minneapolis, MN 55435  
Phone: 952-832-2600; Fax: 952-832-2601  
FEIN #: 41-0905995 Inc: 1966

Ms. Judie Anderson  
Elm Creek Watershed Management  
JASS-Watershed Administrators  
3235 Fernbrook Lane  
Plymouth, MN 55447

January 28, 2019  
Invoice No: 23270F55.03 - 98

<b>Total this Invoice</b>	<b>\$664.00</b>
---------------------------	-----------------

## Regarding: Development Reviews

This invoice is for professional services related to Elm Creek Watershed Management Commission project reviews, which included the following tasks:

### Task 168 – 2018-033 Cloquet Island Estates

- Communications with the City and developer to stay up to date on the project
- Review of re-submitted materials
- Attending the December ECWMC meeting
- Project management and invoicing

### Professional Services from November 03, 2018 to December 28, 2018

Job:	JOB3	Project Review
Task:	168	2018-033 Cloquet Island Estates

#### Labor Charges

	Hours	Rate	Amount	
Engineer / Scientist / Specialist III				
Weiss, Jeffrey	4.00	130.00	520.00	
Support Personnel I				
Nypan, Nyssa	1.60	90.00	144.00	
	5.60		664.00	
<b>Subtotal Labor</b>				<b>664.00</b>
		<b>Task Subtotal</b>		<b>\$664.00</b>
		<b>Job Subtotal</b>		<b>\$664.00</b>
		<b>Total this Invoice</b>		<b>\$664.00</b>

Thank you in advance for your prompt processing of this invoice. If you have any questions, please contact your Barr Project Manager, Jeff Weiss Phone: 952-832-2706 or E-Mail: [jweiss@barr.com](mailto:jweiss@barr.com).

PLEASE REMIT TO ABOVE ADDRESS and INCLUDE INVOICE NUMBER ON CHECK.

Terms: Due upon receipt. 1 1/2% per month after 30 days. Please refer to the contract if other terms apply.



**Blue Thumb Invoice**

**PO Box 17099**

**Minneapolis, MN 55417**

**651-699-2426**

**[www.metroblooms.org](http://www.metroblooms.org)**

**1/16/2019**

**Attn: Amy Juntunen/Elm Creek WMO**



**Blue Thumb Partner Service Fees:**

**SWCD/County**

<u>Amount</u>
<b>\$ 500.00</b>

**Total Due by Feb. 1, 2019**

<b>\$ 500.00</b>
------------------

**Please remit to: Blue Thumb/Metro Blooms, PO Box 17099, Minneapolis, MN 55417. Questions: (651) 699-2426**

This invoice represents service fees for a 2019 membership in Blue Thumb. You have elected to fulfill 100% of your fees through a full payment.



**HENNEPIN COUNTY**

Public Works General  
Solid Waste  
612-348-9357  
300 South 6th Street, MC 129  
Minneapolis, MN 55487

Elm Creek Watershed Management Commissio  
3235 Fernbrook Lane  
Plymouth, MN 55447

Page: 1  
Customer Number: 0000010608  
Invoice Number: 1000122079  
Invoice Date: 12/31/2018

Total Amount Due: \$32,018.17  
Due Date: 01/31/2019

Date	Description	Quantity	Unit Amount	Net Amount
10/01/2018 - 12/31/2018	4th. Qtr. Technical Assistance	1.00	\$16,329.04	\$16,329.04
Elm Creek Watershed, 4th. Qtr., 2018- for technical services per Agreement A188604				
10/01/2018 - 12/31/2018	4th. Qtr. WCA	1.00	\$3,252.77	\$3,252.77
Elm Creek Watershed, 4th. Qtr., 2018- for technical services per Agreement A188604				
10/01/2018 - 12/31/2018	4th. Qtr. Elm Creek Floodplain	1.00	\$5,436.36	\$5,436.36
Elm Creek Watershed, 4th. Qtr., 2018- for technical services per Agreement A188604				
10/01/2018 - 12/31/2018	River Watch (5 sites)	1.00	\$3,000.00	\$3,000.00
Elm Creek Watershed, 4th. Qtr., 2018- for technical services per Agreement A188604				
10/01/2018 - 12/31/2018	4th Qtr. WHEP (5 Sites)	1.00	\$4,000.00	\$4,000.00
Elm Creek Watershed, 4th. Qtr., 2018- for technical services per Agreement A188604				

Balance Due: \$32,018.17

There is a \$30.00 service charge on all returned checks. Civil penalties may be imposed for non-payment, per Minnesota State Statute 604.113.

Please return the bottom portion with your check made payable to: Hennepin County Treasurer.

**HENNEPIN COUNTY**  
612-348-9357

Customer Number: 0000010608  
Invoice Number: 1000122079  
Payment Due Date: 01/31/2019  
Amount Due: \$32,018.17

Elm Creek Watershed Management Commissio  
3235 Fernbrook Lane  
Plymouth, MN 55447

Amount Enclosed:

--	--	--	--	--	--	--	--	--	--

Remit To:  
Hennepin County Accounts Receivable  
300 South Sixth Street  
Mail Code 129  
Minneapolis, MN 55487

2HNPWS00000106081000122079000000032018176





CONNECTING & INNOVATING  
SINCE 1913

## Billing Statement

Page 1 of 3

**Member Name and Address**

Elm Creek Watershed  
Management Commission  
3235 Fernbrook Lane North  
Plymouth, MN 55447-5325

**Statement Date**

01/08/2019

**Agent**

Arthur J Gallagher Risk Management Services Inc  
3600 American Blvd W Ste 500  
Bloomington, MN 55431-4502  
(952)358-7500

**Account Number:** 10002968  
**Current Balance:** \$ 2,665.00  
**Minimum Due:** \$ 2,665.00  
**Due Date:** 02/10/2019

Summary of activity since last Billing Statement	Date	Activity	Account Balance	Minimum Due
See reverse side and attachments for additional information		Previous Statement Balance	2,649.00	
		Payments Received	-2,649.00	
		Total of Transactions and Fees shown on reverse or attached	2,665.00	
		Current Balance	\$ 2,665.00	\$ 2,665.00

Detach and return this Payment Coupon with your payment	Account Number	Statement Date	Due Date	Current Balance	Minimum Due	Amount Enclosed
	10002968	01/08/2019	02/10/2019	\$ 2,665.00	2,665.00	\$ _____

**Member Name** Elm Creek Watershed Management Commission

**BILLING STATEMENT - Return stub with payment - make checks payable to:**

Mail payment  
7 days before  
Due Date to  
ensure timely  
receipt

League of MN Cities Insurance Trust P&C  
c/o Berkley Risk Administrators Company  
222 South Ninth Street, Suite 2700  
P.O. Box 581517  
Minneapolis, MN 55458-1517





CONNECTING & INNOVATING  
SINCE 1913

## Billing Statement

Page 1 of 3

**Member Name and Address**

Elm Creek Watershed  
Management Commission  
3235 Fernbrook Lane North  
Plymouth, MN 55447-5325

**Statement Date**

01/09/2019

**Agent**

Arthur J Gallagher Risk Management Services Inc  
3600 American Blvd W Ste 500  
Bloomington, MN 55431-4502  
(952)358-7500

**Account Number:** 10002653  
**Current Balance:** \$ 200.00  
**Minimum Due:** \$ 200.00  
**Due Date:** 02/22/2019

Summary of activity since last Billing Statement	Date	Activity	Account Balance	Minimum Due
		Previous Statement Balance	200.00	
		Payments Received	-200.00	
		Total of Transactions and Fees shown on reverse or attached	200.00	
See reverse side and attachments for additional information		Current Balance	\$ 200.00	\$ 200.00

Detach and return this Payment Coupon with your payment	Account Number 10002653	Statement Date 01/09/2019	Due Date 02/22/2019	Current Balance \$ 200.00	Minimum Due 200.00
					Amount Enclosed \$ _____

**Member Name** Elm Creek Watershed Management Commission

**BILLING STATEMENT - Return stub with payment - make checks payable to:**

Mail payment  
7 days before  
Due Date to  
ensure timely  
receipt

League of MN Cities Insurance Trust WC  
c/o Berkley Risk Administrators Company  
222 South Ninth Street, Suite 2700  
P.O.Box 581517  
Minneapolis, MN 55458-1517





**3235 Fernbrook Lane Plymouth MN  
55447**

Bassett Creek Watershed Management Commission	_____
Elm Creek Watershed Management Commission	_____
Shingle Creek Watershed Management Commission	_____
West Mississippi Watershed Management Commission	_____

16-Jan-19

### 2019 WMWA General Expense, Watershed PREP and Special Projects

[illegible]



# State Register

660 Olive Street • St. Paul, MN 55155

Hours: 8 a.m. - 5 p.m. Central Time Monday - Friday

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## For state agency internal use

Vendor G020000000, Address 11

Category 32101800 (Advertising)

Account 411104

Category 55101506 (Subscriptions)

Account 413002

Bill To: ELM CREEK WATERSHED MGMT  
ACCOUNTS PAYABLE  
3235 FERNBROOK LN  
PLYMOUTH, MN 55447

Quantity Ordered	Quantity Shipped	Item Number	Description	Price/Per	Amount
	1	1304	State Register Affidavit	\$15.00	\$15.00
	5	14581	Vol 43 No 29 - 1/14/2019	\$16.00	\$80.00

Subtotal: \$95.00

Shipping: \$0.00

**INVOICE TOTAL: \$95.00**

Amount Due: \$95.00

udle A 612.348.7338  
ffidavit of Publication

**Thanks for using the State Register. When paying this invoice, please reference the receipt number shown below.  
For billing questions, please call 651.297.3000. Please include customer number with submissions.**

Payment Terms

Associate Loretta

Customer PO#

Entry Date 1/16/2019

Order Number

**Receipt Number 104639**

Customer Number 7002128

Ship Via Shipping





Remit To:  
Three Rivers Park District  
Revenue Department  
3000 Xenium Lane North  
Plymouth, MN 55441  
763-694-1154

# INVOICE

INVOICE #: 1800000021  
INVOICE DATE: 12/13/2018  
CUSTOMER #: 00004  
AMOUNT DUE: 4,400.00

AMOUNT PAID \$

ELM CREEK WATERSHED MGMT COMM

ATTN: JUDIE ANDERSON  
3235 FERNBROOK LANE  
PLYMOUTH, MN 55447

-PAYMENT IS DUE UPON RECEIPT-

Please detach this payment stub at the dotted line and remit it with your payment. Make checks payable to Three Rivers Park District and write your invoice number on your check.

DATE	DESCRIPTION	AMOUNT
12/13/2018	LAKE MONITORING SERVICES	8,100.00

CORRECTED AMOUNT DUE FOR LAKE MONITORING SERVICES:

LAKE MONITORING SERVICES =	\$3,300.00
DIAMOND AQUATIC VEGETATION SURVEY =	<u>\$1,100.00</u>
<b>CORRECTED TOTAL BALANCE DUE</b>	<b>\$4,400.00</b>

Notes:

LAKE MONITORING SERVICES

IF YOU HAVE ANY QUESTIONS REGARDING THIS INVOICE, PLEASE CONTACT BRIAN VLACH, THREE RIVERS PARK DISTRICT SENIOR WATER RESOURCES MANAGER, AT 763-694-7846 OR BRIAN.VLACH@THREERIVERSPARKS.ORG.

THANK YOU

INVOICE #: 1800000021  
CUSTOMER #: 00004

Total Invoice:	8,100.00
Credits Applied:	(3,700.00)
Payments Applied:	0.00
Invoice Balance:	4,400.00

Thank you for your prompt attention to this invoice. We appreciate your patronage.

-Three Rivers Park District-





Remit To:  
Three Rivers Park District  
Revenue Department  
3000 Xenlum Lane North  
Plymouth, MN 55441  
763-694-1154

# INVOICE

INVOICE #: 1800000022  
INVOICE DATE: 12/13/2018  
CUSTOMER #: 00004  
AMOUNT DUE: 8,600.00

AMOUNT PAID \$

ELM CREEK WATERSHED MGMT COMM

ATTN: JUDIE ANDERSON  
3235 FERNBROOK LANE  
PLYMOUTH, MN 55447

-PAYMENT IS DUE UPON RECEIPT-

Please detach this payment stub at the dotted line and remit it with your payment. Make checks payable to Three Rivers Park District and write your invoice number on your check.

DATE	DESCRIPTION	AMOUNT
12/13/2018	STREAM MONITORING SVCS	6,300.00

CORRECTED AMOUNT DUE FOR STREAM MONITORING SERVICES:

STREAM MONITORING SERVICES =	\$7,600.00
DO LONGITUDINAL SURVEY =	<u>\$1,000.00</u>
<b>CORRECTED TOTAL BALANCE DUE</b>	<b>\$8,600.00</b>

Notes:

STREAM MONITORING SERVICES

IF YOU HAVE ANY QUESTIONS REGARDING THIS INVOICE, PLEASE CONTACT BRIAN VLACH, THREE RIVERS PARK DISTRICT SENIOR WATER RESOURCES MANAGER, AT 763-694-7846 OR AT BRIAN.VLACH@THREERIVERSPARKS.ORG.

THANK YOU

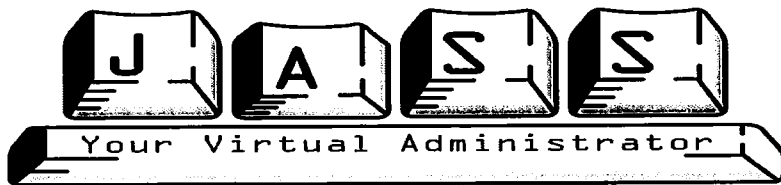
INVOICE #: 1800000022  
CUSTOMER #: 00004

Total Invoice:	6,300.00
Credits Applied:	2,300.00
Payments Applied:	0.00
Invoice Balance:	8,600.00

Thank you for your prompt attention to this invoice. We appreciate your patronage.

-Three Rivers Park District-





3235 Fernbrook Lane  
Plymouth MN 55447

Elm Creek Watershed Management Commission  
3235 Fernbrook Lane  
Plymouth, MN 55447

Feb 12 2019

Total by  
Project Area

Administrative	3.67	55.00	201.85	
Administrative	101.58	60.00	6,094.80	
Admin - Offsite	3.83	65.00	248.95	
Office Support	5.00	200.00	1,000.00	
Storage Unit	1.00	140.62	140.62	
Data Processing/File Mgmt	0.17	55.00	9.35	
File Management		60.00	0.00	
Archiving		60.00	0.00	
Admin - Reimbursable Expense	739.96	1.00	739.96	8,435.530
Admin - TAC support		55.00	0.00	
Admin - TAC support	3.17	60.00	190.20	
Admin - TAC support offsite		65.00	0.00	
TAC Support - Reimbursable Expense	104.60	1.00	104.60	294.800
Website		55.00	0.00	
Website	1.58	60.00	94.80	
Website - Reimbursable Expense		1.00	0.00	
Web Domain, hosting thru June 2020		1.00	0.00	94.800
Project Reviews - Secre		55.00	0.00	
Project Reviews - Admin	7.67	60.00	460.20	
Project Reviews - Admin offsite		65.00	0.00	
Project Reviews - Admin - File Mgmt		55.00	0.00	
Project Reviews - Reimbursable Expense	254.95	1.00	254.95	715.150
WCA - Secre		55.00	0.00	
WCA - Admin	2.25	60.00	135.00	
WCA - Reimbursable Expense	80.40	1.00	80.40	215.400
WCA - Secre - reimbursable		55.00	0.00	
WCA - Admin - reimbursable Mayers	0.75	60.00	45.00	
WCA - Reimbursable Expense -Mayers	482.31	1.00	482.31	527.310
Education - Secretarial		55.00	0.00	
Education - Admin	0.17	60.00	10.20	
Education - Admin Offsite		65.00	0.00	
Education - Reimbursable Expense		1.00	0.00	10.200
CIPs - General - Secretarial		55.00	0.00	
CIPs - Administrative	2.00	60.00	120.00	
CIPs- Offsite Admin		65.00	0.00	
CIPs - reimbursables	283.04	1.00	283.04	403.040
Fish Lake CWLA - Admin		55.00	0.00	
Fish Lake CWLA - Admin	0.28	60.00	16.80	
Fish Lake CWLA - Reimbursables	1.76	1.00	1.76	18.560

Invoice Total

10,714.790



# **Fish Lake (DOW# 27-0118) Rice Lake (DOW# 27-0116)**

## **Common Carp Assessment 2018: Phase I**

Prepared for the Fish Lake Area Residents Association (FLARA)  
& Rice Lake Area Association (RLAA)

December 2018

by Mary Newman  
Environmental Scientist  
WSB & Associates



Funding for this project was provided by: The City of Maple Grove, Minnesota with partial match funding from the Fish Lake Area Residents Association (FLARA) and the Rice Lake Area Association (RLAA)

Special thanks to Tony Havranek (WSB), George Schneider (RLAA), Jim Malone (RLAA), Dave Spatafore (FLAA), and Mark Lahtinen (City of Maple Grove) for their assistance in field sampling activities.



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Project Area .....	1
Methodology.....	3
Results .....	4
Integrated Pest Management .....	7
Conclusion .....	8
References.....	9

Appendix A: Fish Lake and Rice Lake: Common Carp Length & Weight Frequency

Appendix B: Trap-Net Locations

Appendix C: Electrofishing CPUE – Transect Data

Appendix D: Mini-fyke net data – Catch Per Unit Effort & Average Length



## Introduction

Common carp *Cyprinus carpio* were intentionally introduced into freshwater systems in North America in the late 1800's. This introduction was quickly followed by an attempt to manage the population of this invasive species by local agencies, since populations were quick to grow (Hoffbeck, 2001). Management actions began with removing a portion of the population but was not always followed by a holistic and long-term plan and it remains that carp are one of the world's most invasive species. At WSB, we take a systematic approach to first quantifying a population and then developing a management plan that is as unique as the lakes we assess.

Common carp can be ecologically damaging in a lake system if the biomass exceeds a certain threshold (Zambrano et al, 2001; Chumchal et al, 2005). The University of Minnesota has published reports that establish the damaging threshold to be 100 kg/ha (89.9 lbs/acre) (Bajer et al, 2009). An estimate of the population of carp in a lake or system of lakes can be compared to this threshold value so that management goals can be developed. This is the first step towards a successful carp management plan.

Carp are listed in several studies as a potential stressor on the nutrient loading, vegetative abundance, and water clarity in the interconnected waterbodies of Fish Lake and Rice Lake, Maple Grove, MN. The Fish Lake Area Residents Association (FLARA) and the Rice Lake Area Association (RLAA) members are interested in pursuing carp removal efforts to alleviate this pressure. Before pursuing biomass removal, these groups want to know the extent of the problem so that resources can be soundly directed. In 2018, FLARA and RLAA contracted with WSB to quantify the carp population and begin describing the recruitment of young carp to the system to achieve this goal.

This report summarizes the methodology and results of this study. We also provide recommendations for the future of carp management in Fish Lake and Rice Lake using an integrated pest management (IPM) approach. Carp management is not the "silver bullet" to all the water related issues. However, it is an important component to managing nutrient loads, aquatic plants, and water clarity in a system of lakes. Recommendations are based on data collected in this Phase I carp assessment project and with reference to other in-lake studies that have been completed in these basins.

## Project Area

Fish Lake and Rice Lake are in Elm Creek Watershed Management Organization within Hennepin County in Maple Grove, Minnesota (Figure 1). Fish Lake (DOW# 27-0118) is a 238 acre deep lake basin (maximum depth: 49 feet; 45% Littoral) while Rice Lake (DOW# 27-0116) is a 365 acre shallow lake basin (maximum depth: 11.5 feet; 97% Littoral). Fish lake drains through a stream and wetland complex to neighboring Rice Lake to the north and occasionally receives a back-flow of water from that basin (figure 2). Other flow into Fish Lake is through storm water and overland run-off. The City of Maple Grove has installed and maintains a "flapper gate system" that impedes flow from Rice Lake when water levels are elevated. This gate operation is to prevent excess water and high nutrient concentrations from entering Fish Lake from Rice Lake. These gates act as a water control structure but also acts as a barrier to fish movement when closed and fish movement has been observed when open.



Figure 1: project area (Hennepin County, Minnesota)

Rice Lake is a eutrophic or algae-dominated lake due to high nutrient concentrations and lack of aquatic plants. Elm Creek inlets to Rice Lake in the western portion of the lake while it outlets via Elm Creek to the north east towards Hayden Lake and eventually to the Mississippi River. It is suspected that the dam structure on the outlet channel prevents most movement of fish from entering Rice Lake from downstream (figure 2). However, movement from upstream Elm Creek is mostly unimpeded.



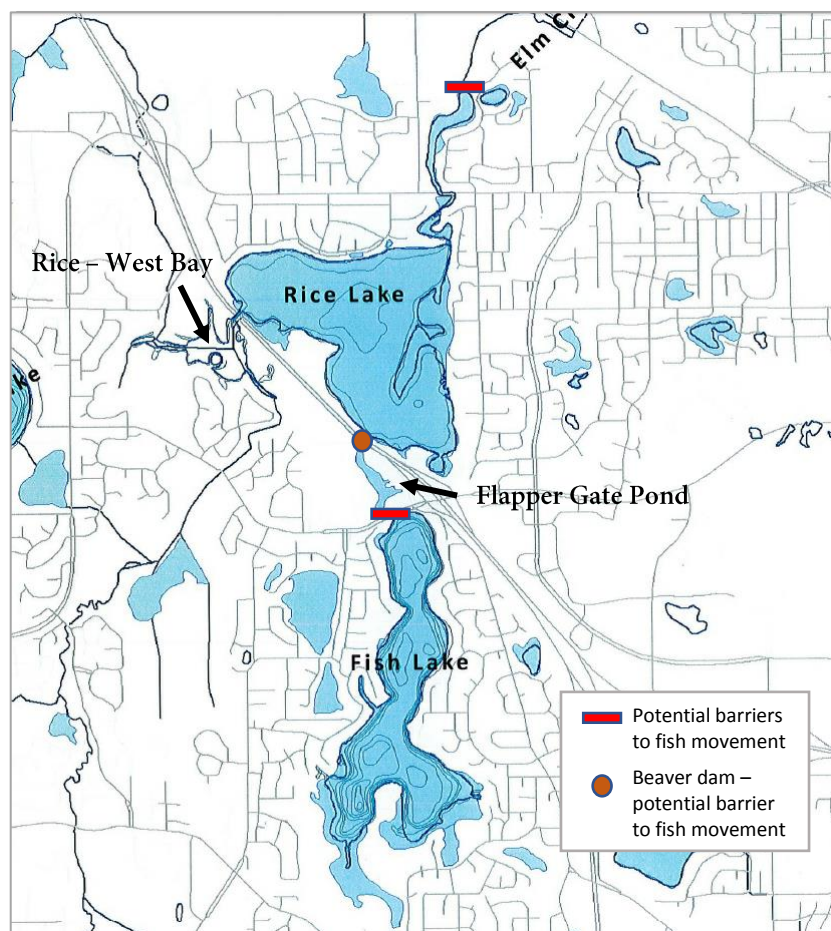


Figure 2. Diagram of the Fish Lake and Rice Lake and adjacent waterbodies and potential barriers to fish movement immediately adjacent to these lakes.

In a system of interconnected basins like the system described above, carp will often use deep water basins as winter and summer refuge areas while following waterway connections to shallow basins in the springtime to spawn and hatch young (Bajer, 2010). Many fish species, including Northern pike, use this spawning migration strategy because the shallow basins are periodically void of native predators of eggs and larvae (Chizinski et al, 2016). Bluegill sunfish are known to predate on carp eggs and larvae and should be monitored with carp abundance.

In Minnesota, severe winter conditions cause dissolved oxygen to drop, resulting in a partial or complete winter-kill of fish. Rice Lake is prone to winter-kill because of the shallow depth of the basin. The RLAA and the City of Maple Grove maintain an aerator through the winter months to help prevent this. In past years, RLAA has worked with the City to drawdown Rice Lake to control invasive curlyleaf pondweed. Heavy growth of this plant has also been linked to winterkill events. The last recorded winterkill was the winter of 2013-14.

Rice Lake and Fish Lake offer recreational activities including boating, swimming, and fishing to residents and visitors to the area. Fish Lake has one public boat launch in the Fish Lake Regional Park while access to large boats on Rice Lake is limited to residents with local access. Carry-in access is available in the outlet channel of Rice Lake for canoe and kayak. There are no motor restrictions on these waterbodies and both lakes have semi-permanent water ski courses set-up in the open water months signifying the recreational importance. These lakes are among seven lakes within the Elm Creek Watershed Management Organization that are listed on the Minnesota Pollution Control Agencies 303(d) list of impairments due to excess nutrients.



## Methodology

### Common Carp Assessment 2018: WSB

#### Objective 1: Development Of A Common Carp Population Estimate

To determine the abundance of carp within the system, and ultimately how many would have to be removed to go below threshold values, we employed two methods, an electrofishing catch per unit effort (CPUE) model and a mark recapture population estimate.

##### **CPUE Survey**

The CPUE model used to calculate carp biomass has been developed for this purpose by University of Minnesota researchers and can be used to predict the density of adult common carp (Bajer, 2012). To fit the model, these surveys are to be completed in the late Summer to early Fall when water temperatures are approximately between 59-77°F. Up to three (3) separate electrofishing surveys in each lake are conducted to establish an average CPUE and areas sampled should cover shoreline and littoral zones that are suitable habitat for carp. Recorded are the time spent electrofishing, number of carp captured, length, weight, and environmental conditions.

$$\text{Number of Individuals/Hectare} = 4.71 * (\# \text{ carp/hour}) + 3.04$$

*Equation 1: CPUE model equation to determine individuals per hectare.*

*Final numbers are calculated using actual carp weights and lake acreage to report in pounds per acre.*

Size distributions can be shown using the length and weight data collected as a part of this survey. This data will suggest a frequency of recruitment of young carp and also provide information to commercial harvesters who are interested in the fish for a certain market. This information is provided in **Appendix A**.

##### **Mark-Recapture**

In addition to the CPUE estimate, we attempted to complete a mark recapture population estimate as this methodology may be more accurate; but is more logistically challenging. This method assumes that marked carp are redistributed with the unmarked population, meaning that sufficient time (upwards of one-week) must be given between the date of marking a carp to the recapture event (Chapman, 1951). It also assumes that no emigration or immigration of the species occurs during the survey period.

Carp captured as part of the CPUE survey were marked with a unique fin clip to each basin and released. In Fish Lake carp received a Left Pelvic Fin Clip while on Rice Lake carp received a Right Pelvic Fin Clip. On subsequent visits to the lake, recaptured fish and their unique fin clip was recorded and used to develop a mark-recapture population estimate using the Chapman equation:

$$N = (((K+1)(n+1))/(k+1)) - 1$$

*Equation 2: Chapman equation where N = Number of animals in the population,*

*n = Number of animals marked on the first visit,*

*K = Number of animals captured on the second visit,*

*k = Number of recaptured animals that were marked.*



## Objective 2: Trap-net survey for presence/absence of young-of-the year or juvenile carp and bluegill sunfish

### *Trap-Net Survey*

Trap-net sampling can provide index values for a variety of fish species including carp young of year and panfish species and is used by the MN DNR in standard lake surveys. This survey uses nets to passively capture fish as they are set out overnight. Nets are designed with a lead line extending to shore to direct moving fish into a trap and fish are processed when nets are checked a day or two following the net-set.

Nets used by WSB are mini-fyke nets that are most suitable for catching small fish such as sunfish species and young-of-the-year fish of many species. Bluegill are known to predate upon carp eggs and larvae and are thought to be a limiting factor in the successful recruitment of young carp to a system. This trap-net data is best used to indicate presence/absence of fish species and can be compared to MN DNR normal catch rates for the type of lake being sampled.

Fish Lake, “Flapper gate pond”, Rice Lake, and Rice -West Bay were all sampled in September 2018. Four (4) nets were set in Fish Lake and Rice Lake while the smaller basins were sampled with two (2) nets. The number of nets used was determined by the size of the basin and the amount of open water available for setting. The location of the net-sets was chosen based on habitat type, depth of water, and lake coverage, see **Appendix B**.

## Results

### Common Carp Biomass/Population Estimate

#### *CPUE Estimate of Population*

The CPUE protocol was followed as WSB completed three (3) electrofishing surveys in each basin in late summer to early fall 2018 when water temperatures were above 60 degrees Fahrenheit, see **Appendix C**. On September 4, 11, and 25, each lake was visited and sampled for common carp. Data collected was used to calculate the CPUE carp biomass estimate (lbs/acre) for each lake.

The results of the electrofishing CPUE model indicate that biomass is  $224.9 \pm 72.8$  lbs/ac in Rice Lake and  $286.8 \pm 145.9$  lbs/ac in Fish Lake. This is at least 1.5 times the threshold value of 89.9 lbs/acre and warrants a removal of 41-70 % of the biomass in Rice Lake while a 37-79% removal rate is recommended for Fish Lake. (Figure 3)

Lake	Threshold Value (lbs/ac)	CPUE estimate (lbs/ac)	Estimated # Individuals	Removal needed to reach 89.9 lbs/acre
Rice Lake	89.9	$224.92 \pm 72.8$	$14,200 \pm 4,700$	~ 55 %
Fish Lake	89.9	$286.84 \pm 145.9$	$14,100 \pm 5,250$	~ 58 %



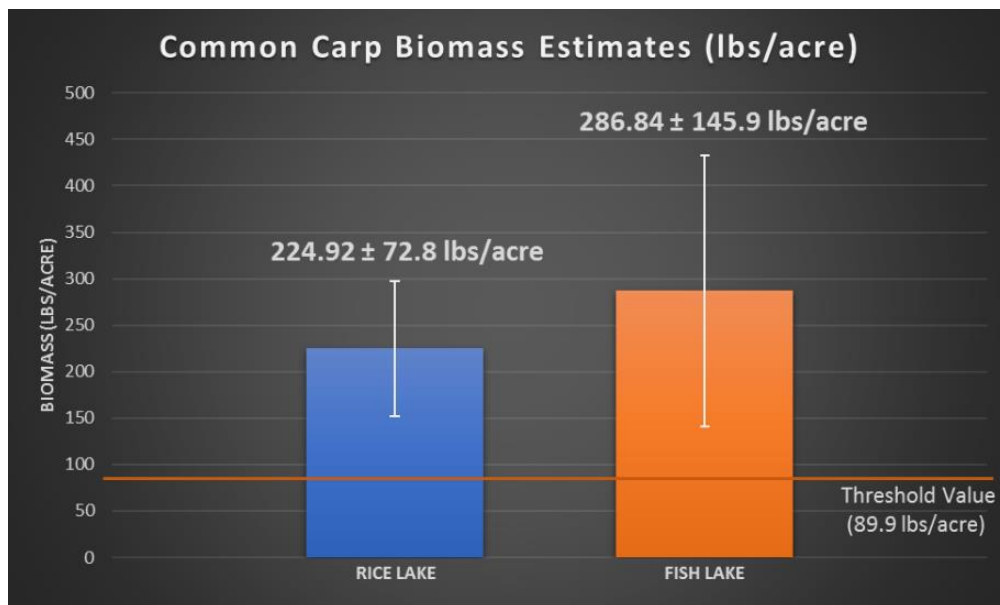


Figure 3: CPUE Common carp biomass estimates in Rice Lake and Fish Lake, Fall 2018. Estimate is an aggregation of transect data by date. Boat electrofishing catch rates indicate an elevated biomass in both Rice Lake and Fish Lake.

A total of 86 carp in Rice Lake and 91 carp in Fish Lake were captured during this project period and lengths are plotted as a surrogate for aging data. This is done to suggest a rate of recruitment of young fish to the lake. Though limited in number and gear used to capture fish, we can begin to decipher the rate of recruitment of young fish to the lake. Data collected in 2018 suggests that no recruitment has happened in Rice Lake or Fish Lake in at least the past year. Aging data would have to be collected to definitively define the rate of recruitment in these lakes.

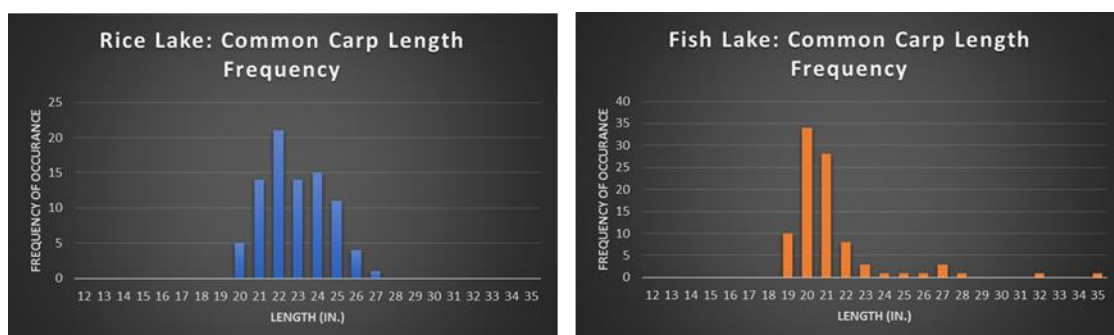


Figure 4: Common carp length frequency in Rice Lake and Fish Lake suggest no recent (past year) recruitment of young carp.



### **Mark-Recapture Estimate of Population**

Although marked carp were re-captured in subsequent sampling events, the catch rates were not large enough to give an accurate estimate using this method and are not being relied upon to make recommendations. Two marked carp were re-captured in Rice Lake while no marked carp were re-captured in Fish Lake.

Marks given that are unique to each basin can also inform of potential mixing among individuals from the separate basins being studied. In Fish Lake 91 carp were marked with a left pelvic fin clip and in Rice Lake 86 carp were marked with a right pelvic fin clip. No fish were captured with a fin clip given in the adjacent lake in any of these sampling events described, however, these marks will remain detectable for a number of years and can be used in future netting or sampling events to determine mixing of the population. They can also be used to run a mark-recapture population estimate in the case a large enough sample of carp is examined, for example, a removal event. It is not recommended these be used in this manner after the if movement outside these basins is documented in a future phase of the project.

### **Assess Recruitment of Carp In Rice Lake and Fish Lake and Connected Waterbodies**

#### **Trap-Net Sampling for Presence Absence of Young of Year Common Carp**

On September 11, nets were set in Fish Lake (4) and the basin between Fish and Rice Lake referred to as Flapper Gate Pond (2). These nets were checked the following day and all fish captured were identified by species and measured for length. These nets were moved to Rice Lake and Rice – West Bay on September 12 and checked the following day using the same methodology. Bluegill and carp young-of-year index values are reported while CPUE for other fish species and can be found in **Appendix D**.

No young-of-the-year (YOY) common carp were captured in any of the sampling events conducted in Fall 2018 trap-net net survey or electrofishing CPUE surveys (Table 1). This finding indicates that conditions in 2018 did not allow for recruitment within these basins and does not guarantee that recruitment never occurs here. Dissolved oxygen dropped below 5mg/l in January 2018, but no evidence shows that Rice Lake winter-killed in the winter of 2017-2018.

<b>Sampling Dates (2018)</b>	<b>Lake</b>	<b># traps set</b>	<b># Fish Species Sampled</b>	<b>CPUE YOY Carp</b>	<b>CPUE Bluegill</b>	<b>MN DNR Bluegill CPUE Normal Range</b>
9/11 – 9/12	Fish Lake	4	11	NONE	62	7.5 – 62.5
9/11 – 9/12	Flapper Gate Pond	2	5	NONE	9	N/A
9/12 – 9/13	Rice Lake	4	9	NONE	24	1.9 – 29.5
9/12 – 9/13	Rice – West Bay	2	5	NONE	99	N/A

*Table 1: This table summarizes the fish sampled in trap-net net sampling in the Fall of 2018 and is represented as CPUE = total catch/(# of nets\*net nights). No young-of-year carp were captured in the traps in any of the four basins sampled and bluegill abundance is within the MN DNR normal range for these types of lakes.*



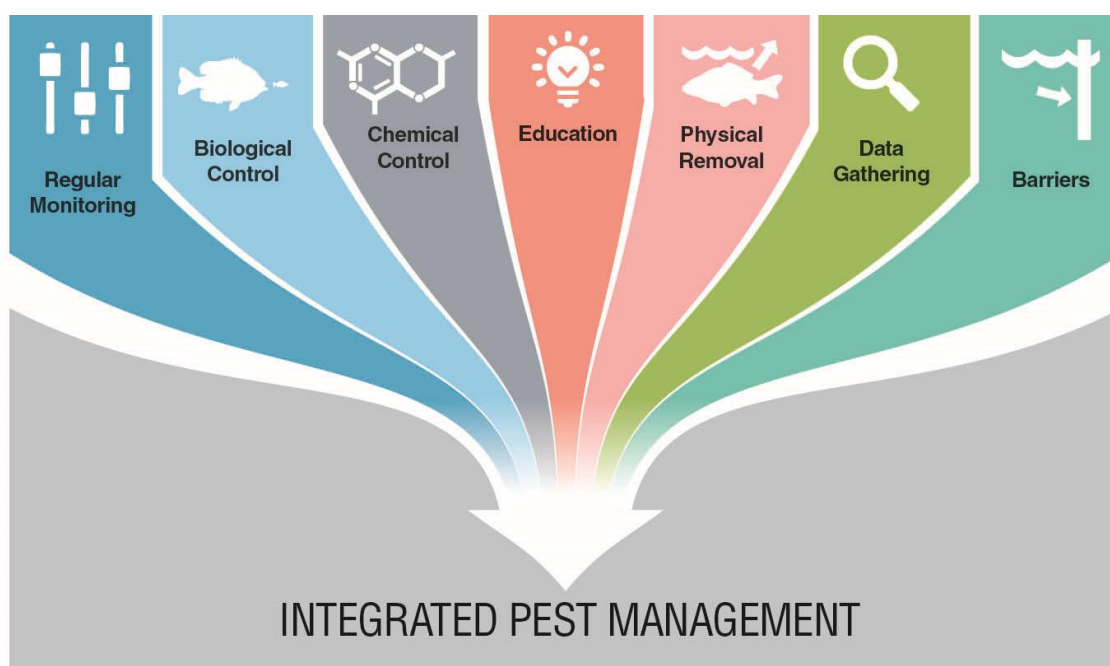
### ***Presence/Absence Common Carp Young-of-Year: Additional Considerations***

Rice Lake experienced a winterkill event in the winter of 2013-14. The die-off of native fish in response to low dissolved oxygen conditions in the winter of 2013-14, left Rice Lake devoid of natural predators to carp eggs and larvae. In the springtime of 2014, spawning in the basin resulted in the survival of young carp (McComas, 2014). The habitat and frequency of winterkill in Rice Lake could indicate that recruitment of young carp happens periodically within Rice Lake itself.

In 2018, the catch rates of bluegill sunfish indicate a healthy population in most basins. Flapper gate pond may have a lower abundance of bluegill because of the truncated connection to the main basins of Fish Lake and Rice Lake. A flapper gate that prevents movement of fish when closed, is in the connection between Fish and Rice. A beaver dam was observed between this pond and Rice Lake in the September 4<sup>th</sup> CPUE survey. These connections have not been studied but it is hypothesized that these structures may impede movement of fish to this basin.

## **Integrated Pest Management**

An integrated pest management plan aims to control pest populations at or below nuisance levels and is necessary when addressing a dynamic system like the one described here. Control of a population is achieved by incorporating best management options and control tools available and being adaptive with how these tools are used (Diggle et al, 2012). The graphic below shows a variety of tools WSB scientists use when implementing carp management activities shown in Figure 5 below.



*Figure 5. Tools used as part of a Common Carp Integrated Pest Management Plan*



## Conclusion

This study shows that the biomass of common carp in Fish Lake and Rice Lake exceeds the threshold value where carp damage has been observed and no young carp were captured in any of the sampling events. The elevated carp biomass is likely having a negative impact on the ecological integrity of these lakes and can be addressed by developing and implementing a carp IPM plan. WSB recommends using an integrated pest management approach to control the carp population at or below nuisance levels.

The following recommendations are listed as a package of activities. This strategy will allow for a reduction in the carp biomass in both Fish and Rice Lakes while maintaining that biomass for as long as possible.

### ***Recommendations for next steps:***

- Develop a common carp integrated pest management plan for the greater watershed.
  - Partner with local agencies to pursue long-term funding for carp management.
  - Implementing a carp IPM in a wider geographic area and over the long-term will increase the success of carp management.
- Pursue removal of carp biomass in both Fish Lake and Rice Lake below 89.9 lbs/acre
  - WSB scientists recommend removing to a biomass of 30 lbs/acre to buffer against the growth rate of remaining carp and/or potential recruitment of new carp to the overall biomass.
  - Physical removal is recommended because it can be species specific. Because a variety of native fish species are present in both lakes, chemical removal is not recommended at this time.
- Study migration routes of common carp and northern pike.
  - This will help to develop a strategy to limit carp migration during spawning season while preserving migration routes for desirable fish species.
  - Migration routes of common carp April – June will indicate where these fish travel to spawn and these basins can be targeted for management activities.
  - Winter-time aggregations of carp can be documented and targeted for removal using location data
- Maintain a healthy population of native fish species on Fish Lake and Rice Lake
  - Continue to maintain an aerator on Rice Lake to prevent wintertime hypoxia; this will preserve bluegill populations, a top predator to carp eggs and larvae
  - Promote healthy populations of native predator species of carp eggs, larvae, and juveniles i.e. bluegill, largemouth bass, smallmouth bass, walleye, and northern pike (Weber et al, 2012).
  - In the case wintertime hypoxia is documented on Rice Lake, late summer sampling should be pursued to document presence/absence of young carp and bluegill sunfish
- Monitor carp population dynamics and biomass as management actions are completed
  - Periodic updates to the carp biomass will inform frequency needed for biomass removal efforts.
  - Marks (fin-clips) used in this study can be monitored as removal efforts are pursued to determine mixing of the population and refine estimates of population (mark-recapture).
  - Collection of aging data on common carp would indicate the frequency of recruitment of young carp to the system and help to inform on the frequency needed for biomass removal efforts.
- Re-establish plant community in Rice Lake following carp biomass removal
  - This can be accomplished through carp removal and subsequent plantings if native aquatic vegetation does not respond (Johnson, 2009).



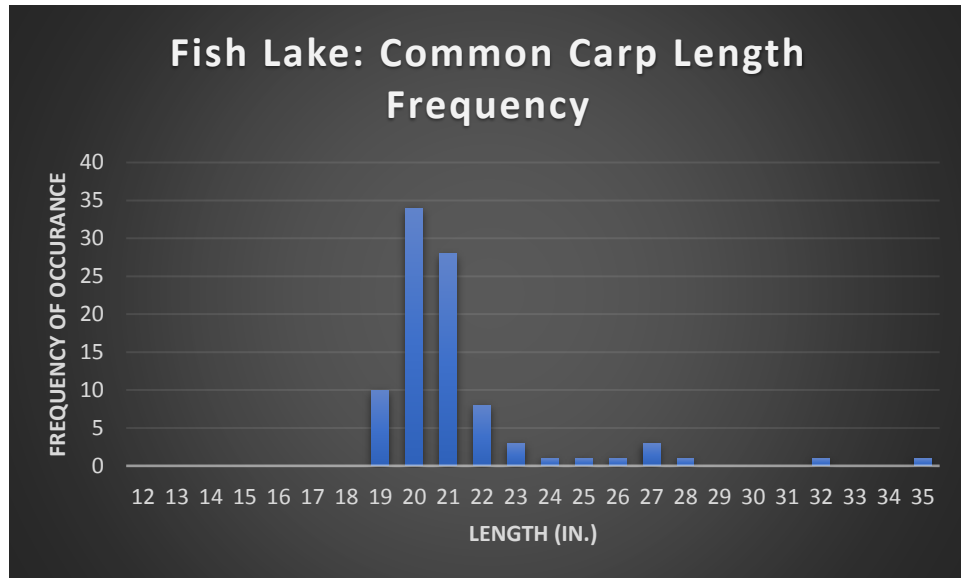
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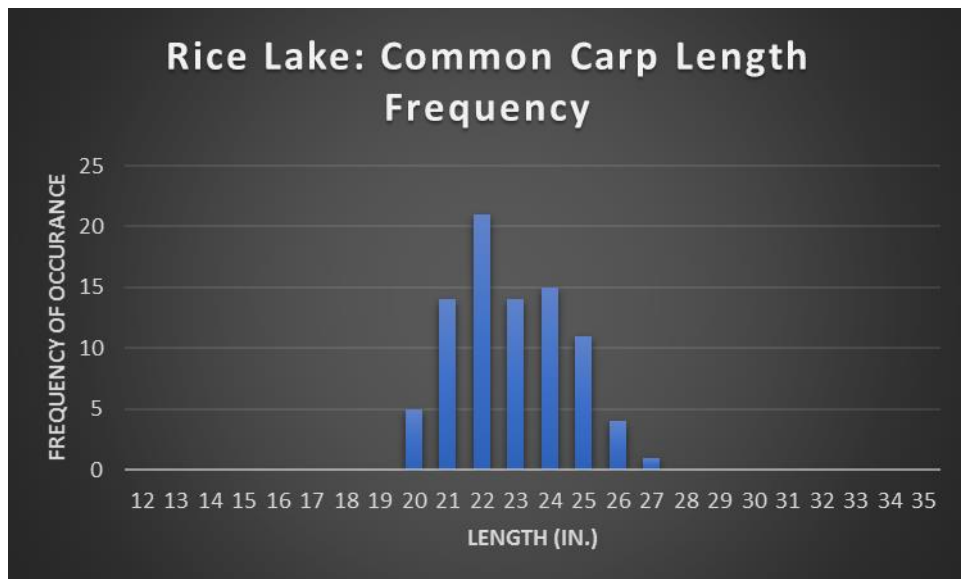


**Appendix A:**  
**Fish Lake and Rice Lake: Common Carp Length & Weight Frequency**



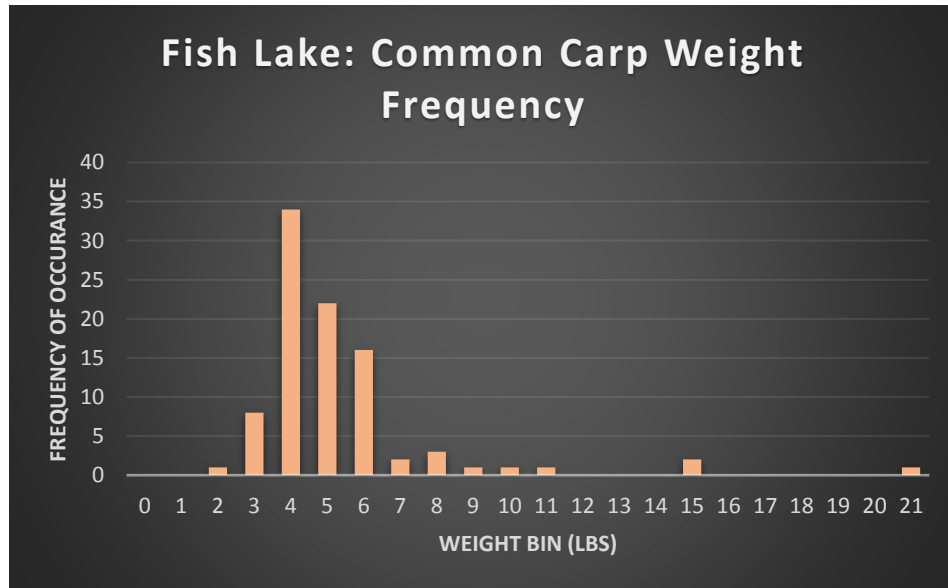


Appendix A – Figure 1: Length frequency of Common Carp in Fish Lake. No fish were sampled in the common carp assessment 2018 that were less than 19 inches. This could indicate no recent recruitment of young carp to Fish Lake in recent years and one to two larger year-class is present here. Collection of length data should continue as management actions are pursued since this data set is not robust thus, has not been included in the main report.

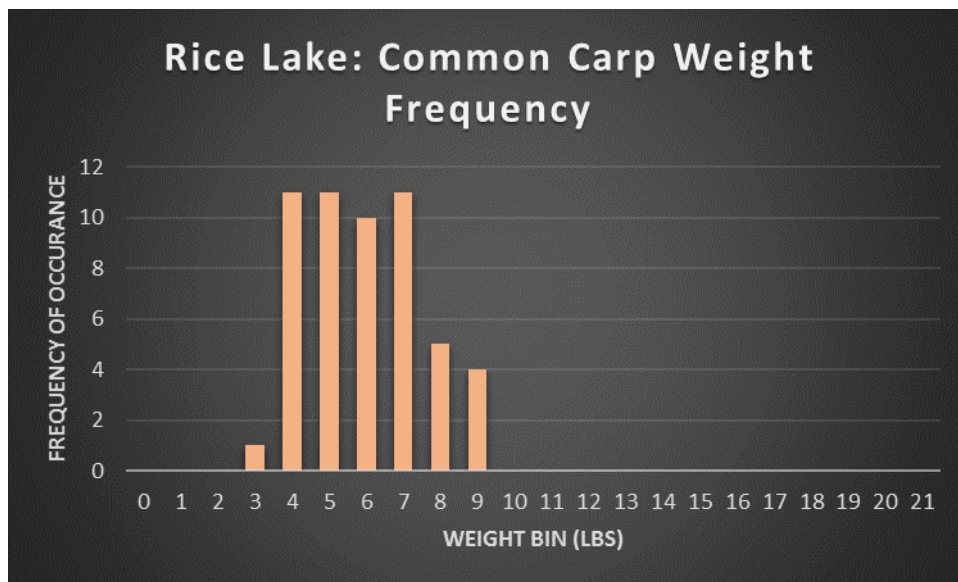


Appendix A – Figure 2: Length frequency of Common Carp in Rice Lake. No fish were sampled in the common carp assessment that were less than 20 inches in length. This could indicate that no recruitment has happened in recent years and one to two year-classes are present here. Collection of length data should continue as management actions are pursued since this data set is not robust thus, has not been included in the main report.





Appendix A – Figure 3: Weight frequency of common carp in Fish Lake.



Appendix A – Figure 4: Weight frequency of common carp in Rice Lake.



## **Appendix B**

### **Trap-Net Locations**





**Rice Lake & Rice - West Bay:  
mini-fyke net set locations  
September 12 & 13, 2018**

0 1,000  
Feet  
1 inch = 1,042 feet







**Fish Lake & Flapper Gate Pond:  
mini-fyke net set locations  
September 11 & 12, 2018**

0 1,000 Feet  
1 inch = 1,042 feet





## **Appendix C**

### **Electrofishing CPUE – Transect Data**



Lake	Date	Event Type	Water Temp (°F)	Transect / Time (hour)	# Carp Captured & marked / Recapture	Fin Clip	CPUE estimate (lbs./ac)
Fish	9/4/2018	CPUE/Fin Clip	74	T1 / .33	5 / NA	LPel	116.4
Fish	9/4/2018	CPUE/Fin Clip	74	T2 / .33	20 / NA	LPel	565.7
Fish	9/4/2018	CPUE/Fin Clip	74	T3 / .42	17 / NA	LPel	271.7
Fish	9/11/2018	CPUE/Fin Clip/M-R	72	T1 / .33	11 / 0	LPel	377.5
Fish	9/11/2018	CPUE/Fin Clip/M-R	72	T2 / .33	8 / 0	LPel	171.9
Fish	9/25/2018	CPUE/Fin Clip/M-R	68	T1 / .35	7 / 0	LPel	191.0
Fish	9/25/2018	CPUE/Fin Clip/M-R	68	T2 / .40	16 / 0	LPel	475.6
Fish	9/25/2018	CPUE/Fin Clip/M-R	68	T3 / .35	12 / 1	LPel	137.1
Rice	9/4/2018	CPUE/Fin Clip	75	T1 / .33	3 / NA	RPel	111.1
Rice	9/4/2018	CPUE/Fin Clip	75	T2 / .39	10 / NA	RPel	235.9
Rice	9/4/2018	CPUE/Fin Clip	75	T3 / .33	10 / NA	RPel	275.6
Rice	9/11/2018	CPUE/Fin Clip/M-R	73	T1 / .33	6 / 0	RPel	233.5
Rice	9/11/2018	CPUE/Fin Clip/M-R	73	T2 / .33	9 / 1	RPel	313.7
Rice	9/11/2018	CPUE/Fin Clip/M-R	73	T3 / .42	15 / 1	RPel	392.7
Rice	9/25/2018	CPUE/Fin Clip/M-R	68	T1 / .39	20 / 1	RPel	262.0
Rice	9/25/2018	CPUE/Fin Clip/M-R	68	T2 / .35	3 / 0	RPel	59.1
Rice	9/25/2018	CPUE/Fin Clip/M-R	68	T3 / .40	9 / 0	RPel	140.6

*Appendix C: Table 1 – Electrofishing CPUE survey data by transect. In Fish Lake a total of 83 carp were tagged with a right pelvic fin clip in Rice Lake while 91 carp were tagged with a left pelvic fin clip in Fish Lake. These marks can be used in future sampling events to determine mixing of the two populations or in winter of 2018-2019 to run a mark-recapture estimate in the event of a large scale catch via commercial seine.*

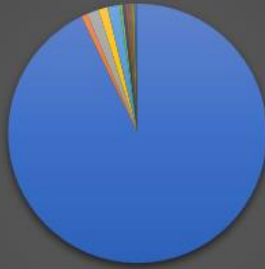


## **Appendix D**

### **Mini-fyke net data – Catch Per Unit Effort & Average Length**



## Fish Lake -- 2018 Trap-net assemblage (CPUE)



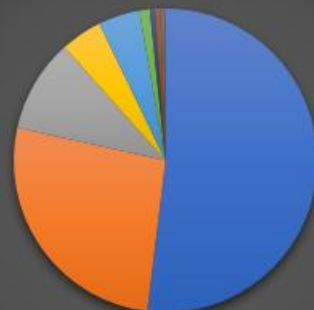
■ Bluegill      ■ Yellow Bullhead      ■ Golden Shiner      ■ Pumpkinseed  
■ Largemouth Bass      ■ Walleye      ■ Bowfin      ■ White Sucker  
■ Black Crappie      ■ Green Sunfish      ■ Hybrid Sunfish

Species	Fish CPUE	MN DNR Normal Range	Average Length (inches)
Bluegill	62	7.5-62.5	3.5
Yellow Bullhead	0.5	.9-5.7	8.9
Golden Shiner	1	.2-.8	3.0
Pumpkinseed	0.75	.7-4.2	3.3
Largemouth Bass	1	na	3.5
Walleye	0.25	na	8.0
Bowfin	0.25	.4-1.3	19.1
White Sucker	0.25	.4-2.2	20.2
Black Crappie	0.25	1.8-21.2	
Green Sunfish	0.25	na	6.8
Hybrid Sunfish	0.25	na	5.2

Appendix D – Figure 1: Fish Lake fish assemblage in trap net catch. In Rice Lake, four (4) mini-fyke nets were set for one net night. CPUE = Total Catch/(Total Nets\* Net Nights)



## Rice Lake -- 2018 Trap Net Assemblage (CPUE)

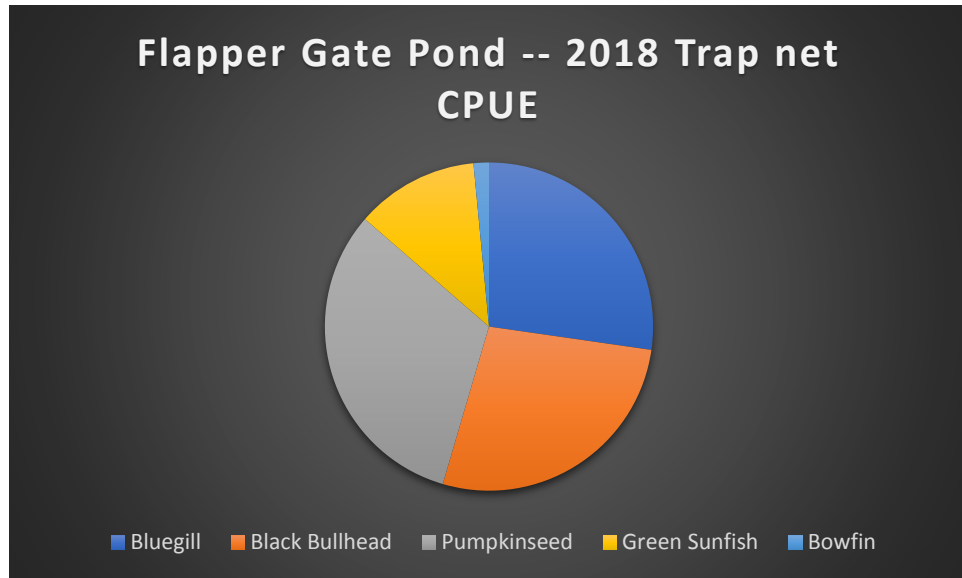


■ Bluegill      ■ Black Bullhead      ■ Yellow Bullhead  
■ Black Crappie      ■ Pumpkinseed      ■ Green Sunfish  
■ Bowfin      ■ Northern Pike      ■ Hybrid Sunfish

Species	Rice Lake CPUE	MN DNR Normal Range	Status	Average Length (inches)
Bluegill	23.50	1.9-29.5	normal	3.5
Black Bullhead	12.00	2.2-60.5	normal	6.6
Yellow Bullhead	4.50	.8-6.2	normal	7.8
Black Crappie	2.00		normal	8.6
Pumpkinseed	2.00	.8-8.4	normal	3.9
Green Sunfish	0.50	.2-2	normal	4.4
Bowfin	0.25	.5-1.7	below	13.4
Northern Pike	0.25	na	na	8.8
Hybrid Sunfish	0.25	na	na	5.5

Appendix D— Figure 2: Rice Lake fish assemblage in trap net catch. In Rice Lake, four (4) mini-fyke nets were set for one net night. CPUE = Total Catch/(Total Nets\*Net Nights)

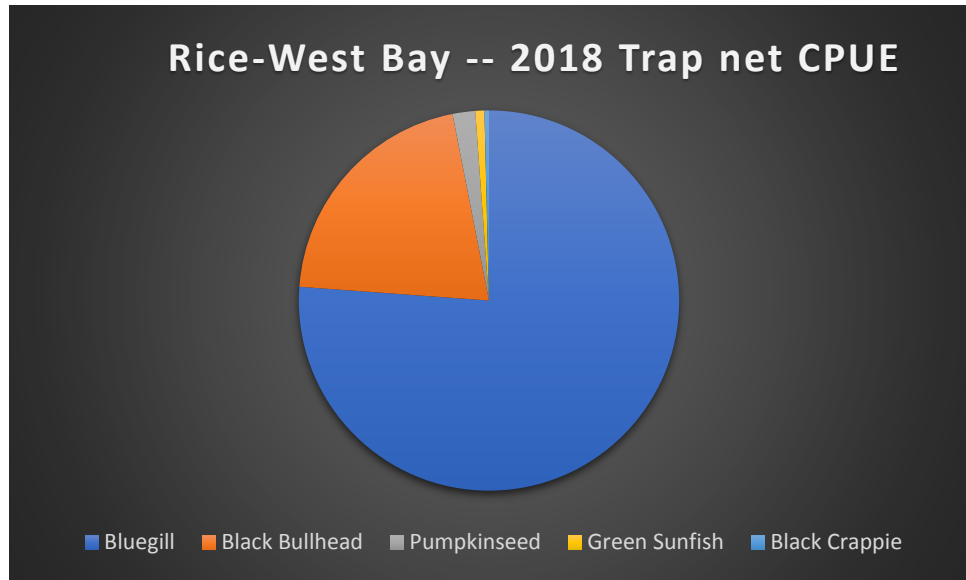




<b>"Flapper Pond" Species</b>	<b>CPUE</b>	<b>Average Length (inches)</b>
Pumpkinseed	10.50	1.9
Bluegill	9.00	2.5
Black Bullhead	9.00	4.8
Green Sunfish	4.00	2.5
Bowfin	0.50	8

Appendix D— Figure 3: Flapper gate pond assemblage in trap net catch. In the small pond between Fish Lake and Rice Lake called Flapper gate pond, two (2) mini-fyke nets were set for one net night. CPUE = Total Catch/(Total Nets\*Net Nights)





Rice – West Bay Species	CPUE	Average Length (inches)
Bluegill	99.00	4.9
Black Bullhead	27.00	6.6
Pumpkinseed	2.50	2.1
Green Sunfish	1.00	1.9
Black Crappie	0.50	6.5

Appendix D– Figure 4: Rice – West Bay assemblage in trap net catch. In the small pond connecting the inlet creek to Rice Lake, two (2) mini-fyke nets were set for one net night. CPUE = Total Catch/(Total Nets\*Net Nights)



## **Appendix E**

### **2018 Flapper Gate Operation**



2018 Flapper Gate Operation – Reported by Mark Lahtinen (City of Maple Grove)

<b>Dates (2018)</b>	<b>Operation</b>
July 4	Closed
July 5 – August 28	Open
August 28 – ~Sept 11	Closed
~Sept 11 – Sept 21	Open
Sept 21 – Sept 26	Closed

Appendix E – Table 1: Flapper gate operation schedule in 2018 to prevent high water from Rice Lake from entering Fish Lake. This data may be useful in developing an operation plan for carp exclusion as more data is collected on common carp and northern pike movement.



# elm creek

## Watershed Management Commission

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### **Champlin Elm Creek Restoration** **Champlin, Project #2018-053**

**Project Overview:** The City of Champlin proposes a stream restoration project located on Elm Creek, both east and west of Cartway Trail and on the existing oxbow on the northwest corner of the Mill Pond. Several different types of improvements are proposed, such as the installation of rock vanes, log and rock deflectors, installation of toe wood, boulder toes, fish sticks and cover rocks. Invasive species will be removed in some areas, and select vegetation will be removed in other areas to enhance stream flow. Native vegetation will be installed in these areas. Several rock riffles will be installed, floodplain channel restoration will occur in the oxbow, and one area of channel restoration will be undertaken to repair a failing slope. This project ties in to several other projects in the area, including the reconstruction of the Elm Creek Dam, the Mill Pond Restoration, and earlier streambank restoration projects. The Commission's standards require a review under Rule D, Stormwater Management, Rule E, Erosion and Sediment Control, Rule F, Floodplains, and Rule G Wetland Alterations.

**Applicant:** City of Champlin, c/o Todd Tuominen, 11955 Champlin Drive, Champlin, MN 55316. Phone: 763-923-7120. Email: [ttuimininen@ci.champlin.mn.us](mailto:ttuimininen@ci.champlin.mn.us)

**Agent/Engineer:** WSB & Associates, Inc, c/o Roxy Franta, 701 Xenia Ave S, Suite 300, Minneapolis, MN 55416. Phone: 763-762-2844. Email: [rfranta@wsbeng.com](mailto:rfranta@wsbeng.com)

#### **Exhibits:**

- 1) ECWMC Request for Plan Review and Approval received November 27, 2018
- 2) No project fee was submitted at the time of application.
- 3) Complete plan was received on November 27, 2018.
- 4) WCA Notice of Application, Dated November 29, 2018.
- 5) Joint Wetland Application, Dated November 29, 2018
- 6) WCA Notice of Decision, Dated January 4, 2019
- 7) Minnesota DNR Public Waters Permit, Dated February 7, 2019
- 8) Project Application Memo prepared by WSB, Dated November 27, 2018
- 9) Construction plans, dated 11/19/2018, totaling 16 pages, including the following:
  - a. 101...Title and Index Sheet
  - b. 102...Existing Conditions



- c. 103-104... Existing Cross Sections
- d. 105...Restoration Area
- e. 106...Project Access
- f. 107-108...Proposed Cross Sections
- g. 109-110...Details
- h. 111-114...SWPPP
- i. 115...Erosion Control Plans
- j. 116...Estimated Quantities / Construction Notes

**Findings:**

- 10) The project proposes the restoration of approximately 2,580 linear feet of Elm Creek, located to the east and west of Cartway Path, and at the Northwest side of the Mill Pond.
- 11) No project fee was submitted at the time of application. A fee of \$550 should be submitted.
- 12) The following channel/side slope modifications are proposed;
  - a. 3 Rock Vanes
  - b. 1 Log and Rock Deflector
  - c. Toewood in stream meanders and in the oxbow
  - d. Boulder Toes in stream cutbacks and in the oxbow
  - e. Fish Sticks in the Oxbow
  - f. Cover Rocks
  - g. Removal of invasive species and restoration with native vegetation
  - h. Removal of several in-stream trees
- 13) This stream segment is located immediately upstream of the Mill Pond, where substantial work was recently completed.
- 14) Stabilization of stream banks will reduce the transport of sediment-attached phosphorus from this channel section to the Mill Pond, Elm Creek, and ultimately to the Mississippi River.
- 15) The project is exempt from the requirements of Rule D, as no impervious surfaces are proposed to be added to the project area.
- 16) The project plans provide an Erosion control plan and SWPPP meeting the ECWMC Rule E requirements.
- 17) The project proposes significant work within the 100 year floodplain of Elm Creek. HEC-RAS modeling of the reach was submitted for review and to demonstrate the impact of the proposed rock riffle. The modeling shows a small localized impact of 0.04 feet (less than ½" ) that is located in the immediate vicinity of the riffle and it does not carry up or downstream.



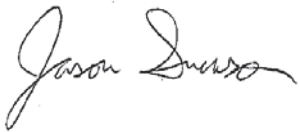
In addition, the project includes the removal of approximately 840 cubic yards of material from the oxbow area and the floodplain to manage invasive species. As such, the project meets the requirements of ECWMC Rule F.

18) Rule G: Project impacts to Elm Creek are regulated by permits by WCA, the Minnesota DNR and US Army Corps of Engineers. The applicant has made application to all relevant agencies and shall comply with their permitting requirements. Permits have been received from WCA and the Minnesota DNR at this time. The project as proposed meets the requirements of Rule G.

**Decision:**

- **Staff recommends approval of this project subject to submittal of the appropriate fee.**

Hennepin County  
Department of Environment and Energy

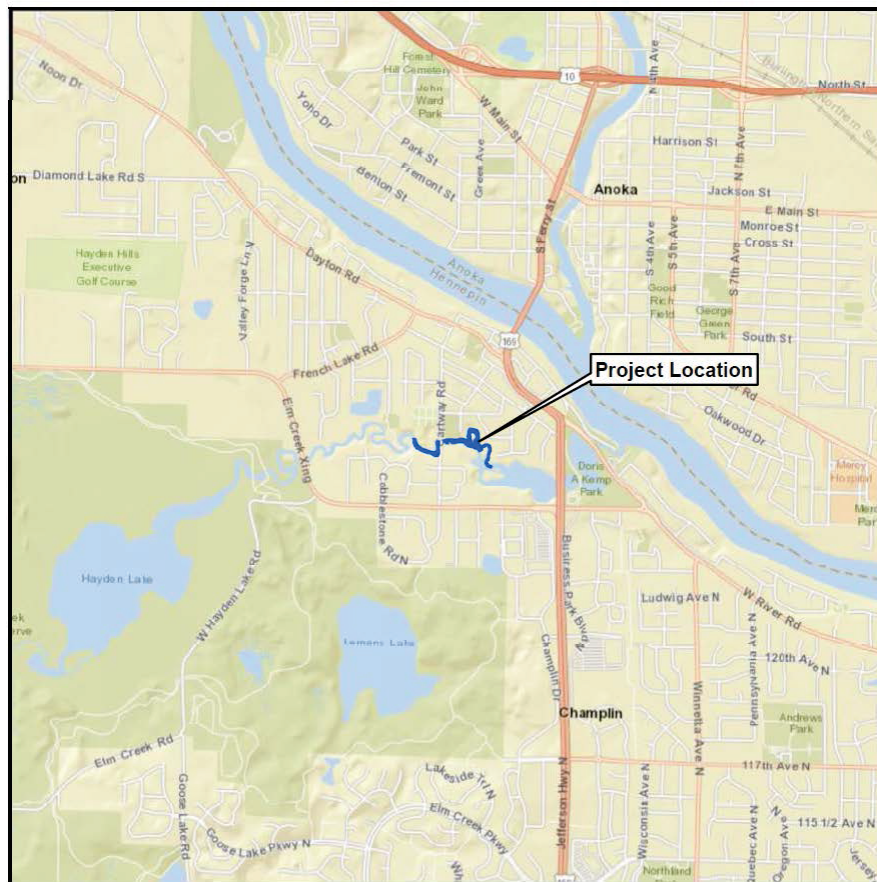
A handwritten signature in black ink, appearing to read "Jason Swenson". The signature is fluid and cursive, with the first name "Jason" being more prominent than the last name "Swenson".

January 11, 2019

Jason Swenson, P.E.  
Technical Advisor to the Commission



### Site Location

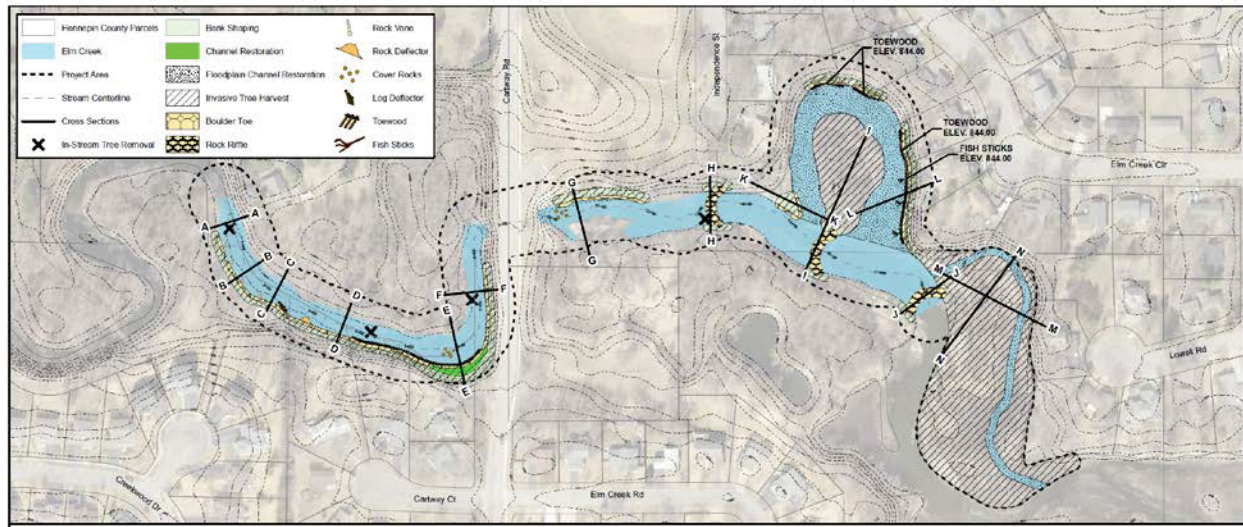


### Project Vicinity

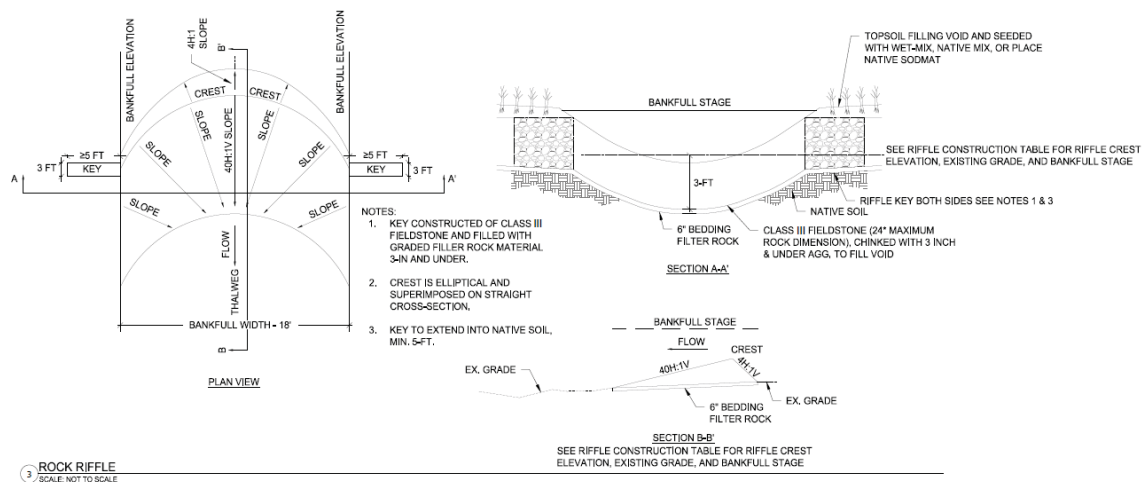
Scale: 1in = 3,000ft



## Site Aerial



## Details







## ENCLAVE ON RUSH CREEK PHASE 3

RUSH CREEK IMPROVEMENTS  
SLOPE STABILIZATION CITY PROJECT NUMBER 16-05  
2017

SHEET NUMBER	SHEET TITLE
G0.01	TITLE SHEET
G0.02	LEGEND
C0.01	LOCATION PLAN
C0.02	ACCESS PLAN
C2.01	TEMPORARY EROSION CONTROL PLAN
C3.01	SITE PLAN
C7.01 - C7.08	CROSS SECTIONS
C8.01 - C8.02	CONSTRUCTION DETAILS



VICINITY MAP  
1"=2000'

MARK STEFFENSON	MAYOR
JUDY HANSON	COUNCIL MEMBER
KAREN JAEGER	COUNCIL MEMBER
KRISTY BARNETT	COUNCIL MEMBER
PHIL LEITH	COUNCIL MEMBER
HEIDI NELSON	ADMINISTRATOR
KENNETH ASHFELD	PUBLIC WORKS DIRECTOR/CITY ENGINEER
GEORGE HOFF	CITY ATTORNEY

G0.01

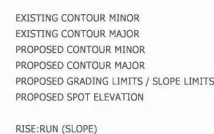


### GRADING INFORMATION

CTV-D	CTV-D	CTV-D	CABLE TV QUALITY LEVEL C
CTV-C	CTV-C	CTV-C	CABLE TV QUALITY LEVEL D
CTV-B	CTV-B	CTV-B	CABLE TV QUALITY LEVEL A
CTV-A	CTV-A	CTV-A	CABLE TV QUALITY LEVEL A
FO-D	FO-D	FO-D	FIBER OPTIC QUALITY LEVEL D
FO-C	FO-C	FO-C	FIBER OPTIC QUALITY LEVEL C
FO-B	FO-B	FO-B	FIBER OPTIC QUALITY LEVEL B
FO-A	FO-A	FO-A	FIBER OPTIC QUALITY LEVEL A
E-D	E-D	E-D	POWER QUALITY LEVEL D
E-C	E-C	E-C	POWER QUALITY LEVEL C
E-B	E-B	E-B	POWER QUALITY LEVEL B
E-A	E-A	E-A	POWER QUALITY LEVEL A
G-D	G-D	G-D	GAS QUALITY LEVEL D
G-C	G-C	G-C	GAS QUALITY LEVEL C
G-B	G-B	G-B	GAS QUALITY LEVEL B
G-A	G-A	G-A	GAS QUALITY LEVEL A
C-D	C-D	C-D	COMMUNICATION QUALITY LEVEL D
C-C	C-C	C-C	COMMUNICATION QUALITY LEVEL C
C-B	C-B	C-B	COMMUNICATION QUALITY LEVEL B
C-A	C-A	C-A	COMMUNICATION QUALITY LEVEL A
QHP	QHP	QHP	OVERHEAD POWER
QHC	QHC	QHC	OVERHEAD COMMUNICATION
QHU	QHU	QHU	OVERHEAD UTILITIES

Figure 1 is a schematic diagram of the proposed system. It shows a cross-section of the ground with various layers and components. From top to bottom, the layers are: FORCE MAIN, SANITARY SEWER, SANITARY SERVICE, STORM SEWER DRAINAGE, STORM SEWER, WATER MAIN, WATER SERVICE, and PIPE CASING. Arrows indicate the flow of water from the water main through the water service and pipe casing into the storm sewer, and from the sanitary sewer through the sanitary service into the storm sewer. The storm sewer is shown as a large pipe with a manhole at the bottom.

EXISTING	PROPOSED	FUTURE	DEMOLITION



AD	ALGEBRAIC DIFFERENCE
BV	BUTTERFLY VALVE
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
CL	CENTER LINE
CL	CLASS
CMP	CORRUGATED METAL PIPE
C.O.	CHANGE ORDER
DIP	DUCTILE IRON PIPE
E/LELEV	ELEVATION
E0F	EMERGENCY OVERFLOW
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EX	EXISTING
FES	FLARED END SECTION
F/F	FACE TO FACE
FM	FORCE MAIN
F.O.	FIELD ORDER
GV	GATE VALVE
HP	HIGH POINT
HWL	HIGH WATER LEVEL
INV	INVERT
K	CURVE COEFFICIENT
LP	LOW POINT
MH	MANHOLE (SANITARY)
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
PC	POINT OF CURVE
PCC	COMPOUND CURVE
PI	POINT OF INTERSECTION
P	PROPERTY LINE
PPVC	PERFORATED POLYVINYL CHLORIDE PIPE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENT
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT-OF-WAY
SS	STORM SEWER STRUCTURE
STA	STATION
TCE	TEMPORARY CONSTRUCTION EASEMENT
TNH	TOP NUT HYDRANT
TYP	TYPICAL
VC	VERTICAL CURVE
WM	WATER MAIN

	HEAVY DUTY BITUMINOUS		SAND
	BITUMINOUS		BEDROCK
	CONCRETE		GRAVEL



sol Date: 01/17/2018 - 12:55pm  
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 title: 192803312\_XSXT\_192803312BORDER\_192803312XNO\_192803312XSXV\_192803312XSST



Stantec

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.

PRINT NAME: DARREN T. AMUNDSEN  
SIGNATURE: 

MAPLE GROVE, MINNESOTA

ENCLAVE ON RUSH CREEK, PHASE 3  
SLOPE STABILIZATION CITY PROJECT NO. 16-05

LOCATION PLAN

NO	REVISION	DATE
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SURVEY	IN
DRAWN	12
DESIGNED	R
CHECKED	
APPROVED	D

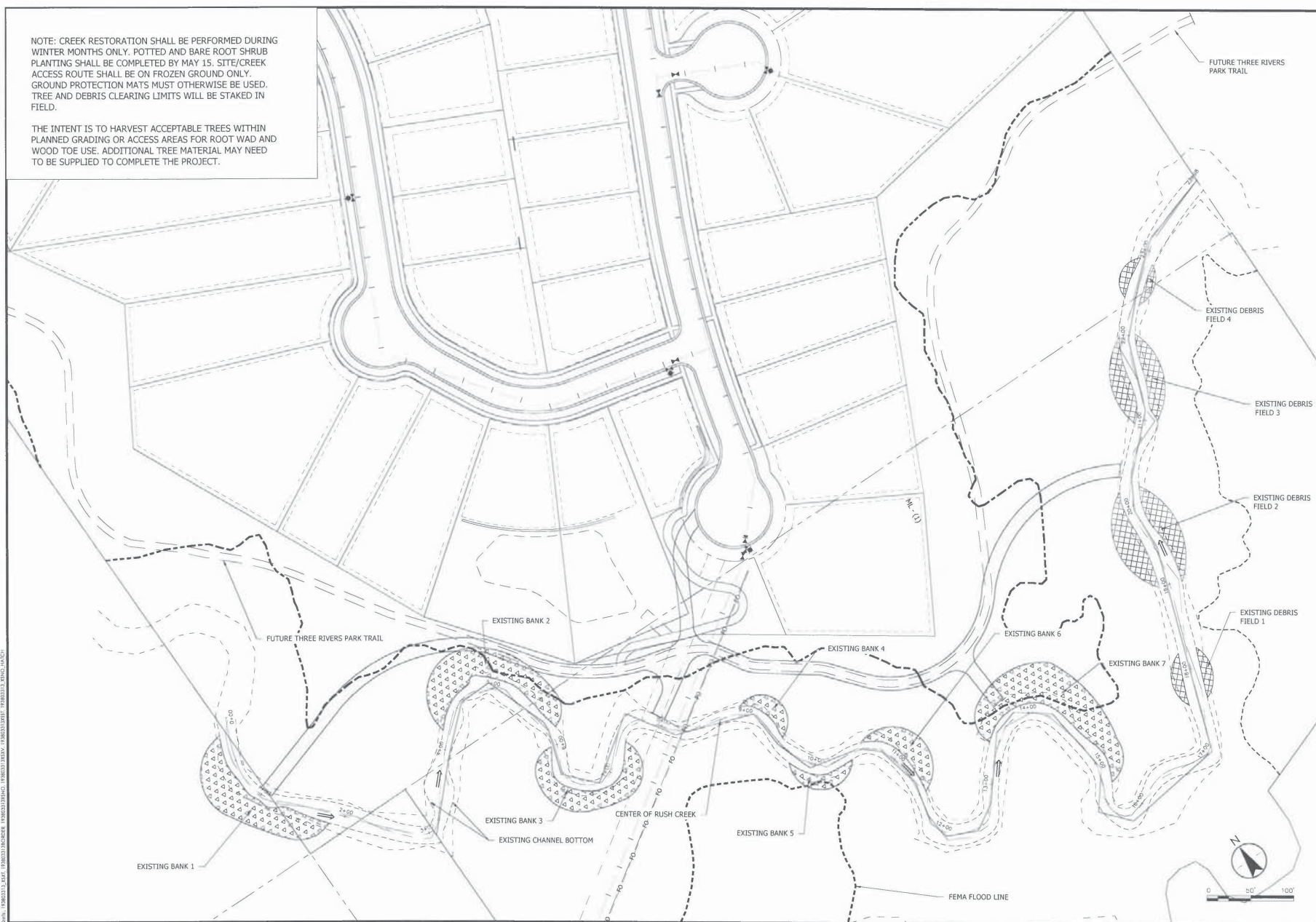
PROJ. NO. 193803312

C0.01



[illegible]

THE INTENT IS TO HARVEST ACCEPTABLE TREES WITHIN  
PLANNED GRADING OR ACCESS AREAS FOR ROOT WAD AND  
WOOD TOE USE. ADDITIONAL TREE MATERIAL MAY NEED  
TO BE SUPPLIED TO COMPLETE THE PROJECT.



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.

MAPLE GROVE, MINNESOTA

ENCLAVE ON RUSH CREEK, PHASE 3  
SLOPE STABILIZATION CITY PROJECT NO. 16-05

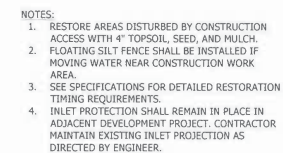
ACCESS PLAN

NO	REVISION	DATE
SURVEY	DATE	
DRAWN	DATE	
DESIGNED	DATE	
CHECKED	DATE	
APPROVED	DATE	
PROJ. NO.	19380331	

C0.02



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 Users: 19380331\BOP051F, 19380331\335NO, 19380331\33XCV, 17\PARCIS\2013, 19380331\33NO\_HATCH



CONCENTRATED SURFACE FLOW

MN STATE SEED MIX  
36-211 WITH EROSION  
CONTROL BLANKET

CONSTRUCTION  
ENTRANCE/EXIT

WOOD TOE WITH COIR WRAPPED  
SOIL LIFTS

FLOTATION SILT CURTAIN



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.

MAPLE GROVE, MINNESOTA

ENCLAVE ON RUSH CREEK, PHASE 3  
SLOPE STABILIZATION CITY PROJECT NO. 16-05  
TEMPORARY EROSION CONTROL PLAN

NO	REVISION	DATE
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DRAWN	72
DESIGNED	R
CHECKED	
APPROVED	D

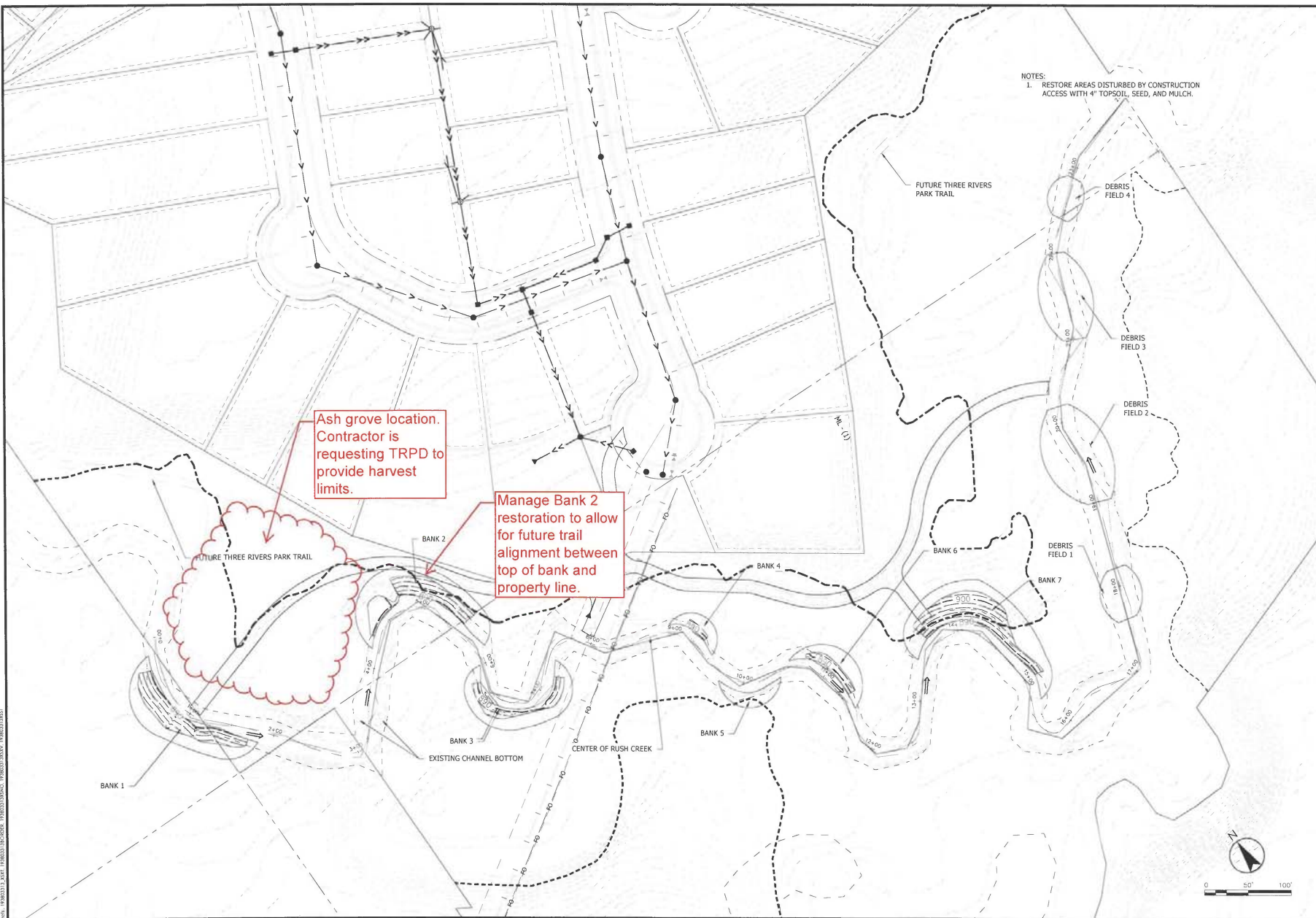
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C2.01



THE CONSULTANT HAS REVIEWED THE PLANS AND SPECIFICATIONS, AND REPORTS THAT THE PLANS AND SPECIFICATIONS ARE IN SUBSTANTIAL ACCORD WITH THE INFORMATION PROVIDED BY THE CLIENT. THE CONSULTANT HAS NOT CONDUCTED A FIELD SURVEY OF THE PROJECT AREA, AND THEREFORE CANNOT GUARANTEE THE ACCURACY OF THE INFORMATION PROVIDED BY THE CLIENT. THE CONSULTANT'S REVIEW IS LIMITED TO THE INFORMATION PROVIDED BY THE CLIENT, AND THE CONSULTANT DOES NOT ASSUME ANY LIABILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED BY THE CLIENT.

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- NOTES:
1. RESTORE AREAS DISTURBED BY CONSTRUCTION ACCESS WITH 4" TOPSOIL, SEED, AND MULCH.



WHERE CERTAIN THE PLANS, SPECIFICATIONS, OR REPORTS AND THAT THE PLANS, SPECIFICATIONS, OR REPORTS ARE IN SUBSTANTIAL ACCORD WITH THE INFORMATION PROVIDED BY THE CLIENT. THE CONSULTANT HAS NOT CONDUCTED A FIELD SURVEY OF THE PROJECT AREA, AND THEREFORE CANNOT GUARANTEE THE ACCURACY OF THE INFORMATION PROVIDED BY THE CLIENT. THE CONSULTANT'S REVIEW IS LIMITED TO THE INFORMATION PROVIDED BY THE CLIENT, AND THE CONSULTANT DOES NOT ASSUME ANY LIABILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED BY THE CLIENT.

PRINT NAME: DABERT AMUNDSEN  
 SIGNATURE: [Signature]  
 DATE: JANUARY 18, 2018  
 SCALE: 1" = 400'

MAPLE GROVE, MINNESOTA  
 ENCLAVE ON RUSH CREEK, PHASE 3  
 SLOPE STABILIZATION CITY PROJECT NO. 16-05

SITE PLAN

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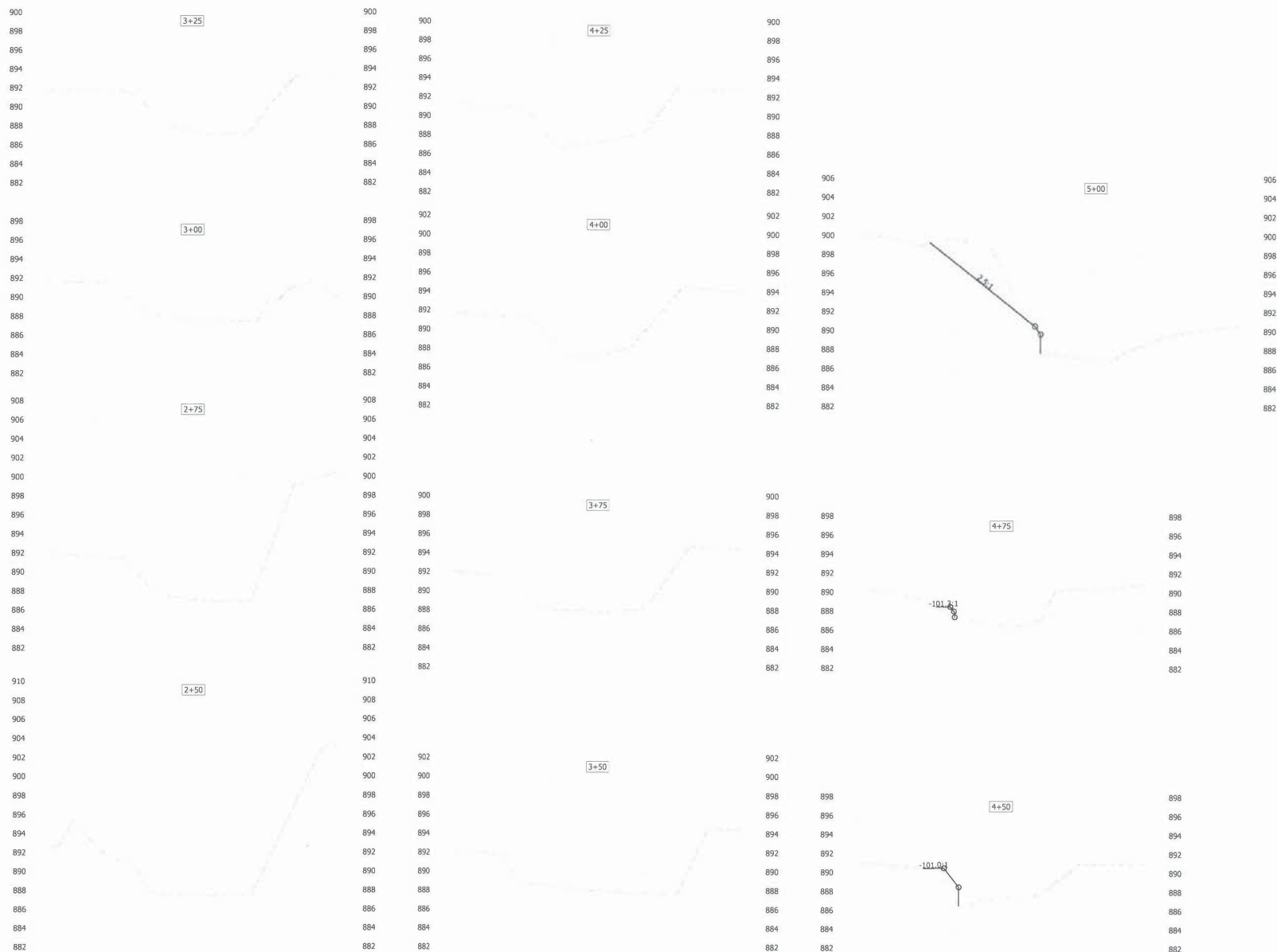
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 DRAWN: TAM  
 DESIGNED: RM  
 CHECKED: JS  
 APPROVED: CJA  
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User: 193803313\ORDR 193803313\_XERO\_DJCH



Stantec

HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT  
WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION

UNDER THE LAWS OF THE STATE OF MINNESOTA.

1

MAPLE GROVE, MINNESOTA  
ENCLAVE ON RUSH CREEK, PHASE 3  
SLOPE STABILIZATION CITY PROJECT NO. 16-05

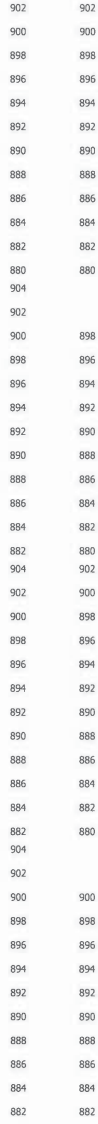
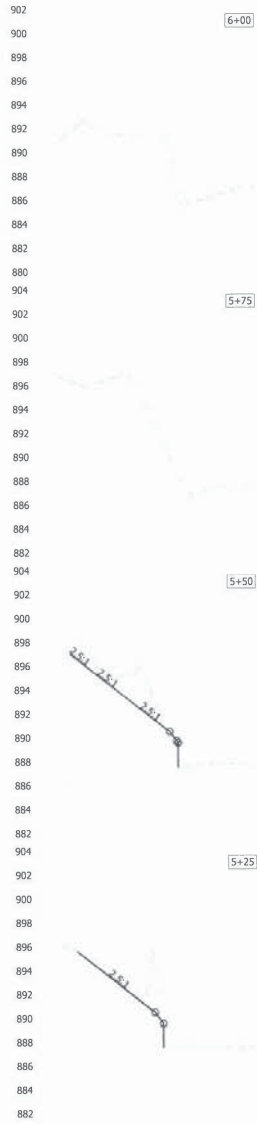
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SURVEY	DATE
DRAWN	DATE
DESIGNED	DATE
CHECKED	DATE
APPROVED	DATE
PROJ. NO.	1938C3

SHEET NUMBER  
C7.02



THE CONSULTANT HAS NOT CONDUCTED A VISUAL INSPECTION OF THE PROJECT AREA. THE CONSULTANT HAS NOT CONDUCTED A VISUAL INSPECTION OF THE PROJECT AREA. THE CONSULTANT HAS NOT CONDUCTED A VISUAL INSPECTION OF THE PROJECT AREA.

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 User: 1303313\303313 11/17/2018 10:28:00



STANTEC CERTIFY HAS THE PLAN, SPECIFICATION, OR REPORT AND THE DATA ON WHICH IT IS BASED PREPARED, CHECKED, AND DESIGNED BY A PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

MAPLE GROVE, MINNESOTA  
 ENCLAVE ON RUSH CREEK, PHASE 3  
 SLOPE STABILIZATION CITY PROJECT NO. 16-05

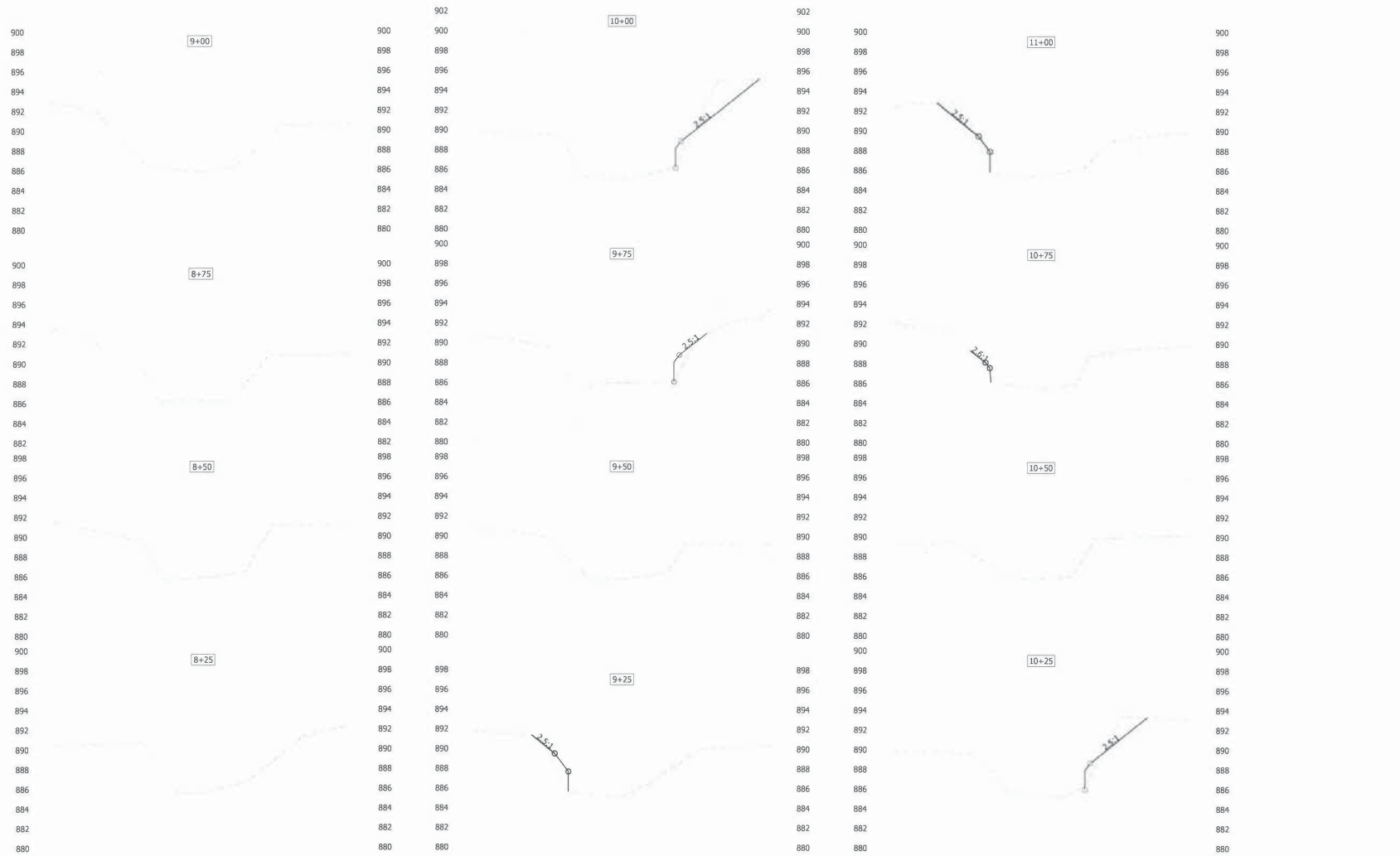
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PROJ. NO. 1608003-13  
 SHEET NUMBER  
**C7.03**



THE CONSULTANT HAS PREPARED THIS PLAN, SPECIFICATION, CONTRACT AND BIDDING DOCUMENTS FOR THE PROJECT DESCRIBED HEREIN. THE CONSULTANT HAS NOT CONDUCTED A FIELD SURVEY OF THE PROJECT AND HAS NOT BEEN ADVISED BY THE CLIENT OF ANY CHANGES TO THE PROJECT SINCE THE DATE OF THE LAST REVISION.

Plan Date: 01/17/2018 10:00am  
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 User: 1306033102.dwg  
 Plot: 1306033102.dwg



WEEDY CREEK AND RUSH CREEK, MINNESOTA  
 ENCLAVE ON RUSH CREEK, PHASE 3  
 SLOPE STABILIZATION CITY PROJECT NO. 16-05  
 PREPARED BY: JEFFREY L. LARSEN  
 CHECKED BY: JEFFREY L. LARSEN  
 DATE: JANUARY 12, 2018 EC: 404

MAPLE GROVE, MINNESOTA  
 ENCLAVE ON RUSH CREEK, PHASE 3  
 SLOPE STABILIZATION CITY PROJECT NO. 16-05  
 C7.04

NO.	REVISION	DATE
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SURVEY	MA
DRAWN	JML
DESIGNED	RM
CHECKED	JL
APPROVED	DJA
PROJ. NO.	1306033102

C7.04



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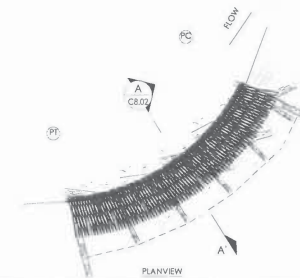
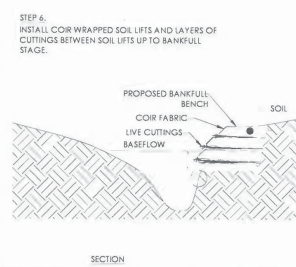
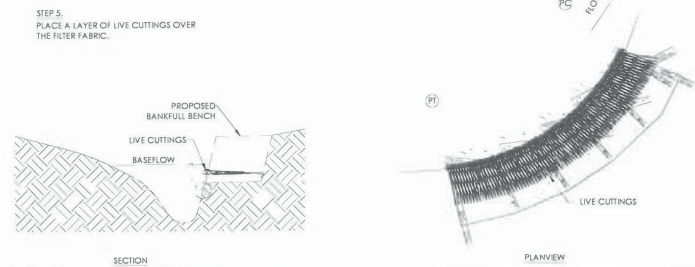
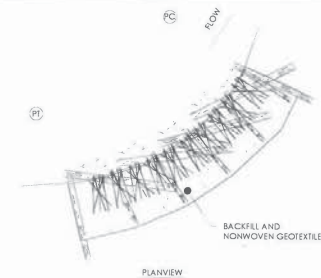
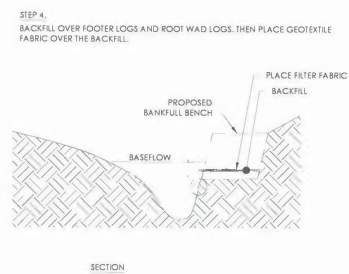
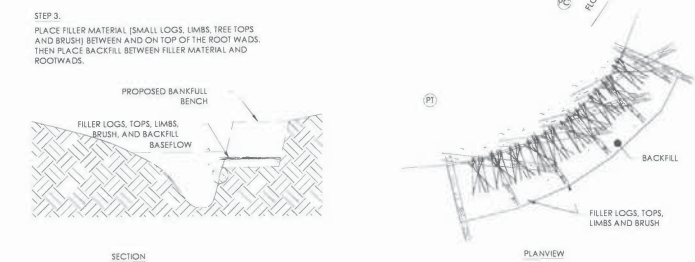
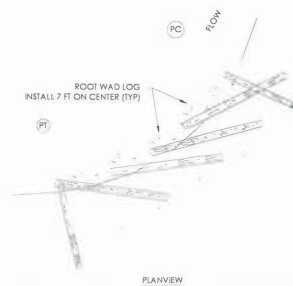
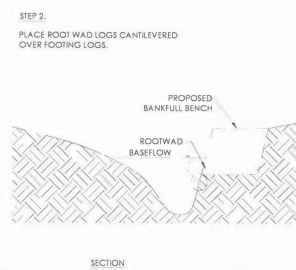
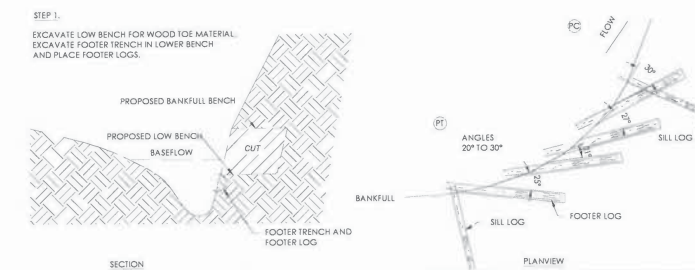
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1 WOOD TOE WITH COIR WRAPPED SOIL LIFTS  
C8.01 NOT TO SCALE

NOTES:

1. THE TOP OF THE ROOTWAD SHOULD BE INSTALLED AT AN ELEVATION SUCH THAT IT REMAINS INUNDATED DURING LOW FLOW EVENTS. THE ELEVATION SHOULD BE  $-0.5'$  ABOVE THE DRAINAGE BRIFLE INVERT ELEVATION.
2. THE WOOD SHOULD BE BURIED A MINIMUM OF 10 FEET INTO THE BANK.
3. LAYERS OF LIVE BRANCH CUTTINGS SHALL BE PLACED BETWEEN SOIL LIFTS. A MINIMUM OF TWO SOIL LIFTS WILL BE REQUIRED.
4. COIR MATTING SHALL BE DOUBLE LAYERED BIODEGRADABLE - NEDIA 1200 GRAM OR EQUIVALENT.

NO REVISION      DATE

SURVEY	TNA
DRAWN	TJM
DESIGNED	RM
CHECKED	JL
APPROVED	DA

PROJ. NO.	193803313
-----------	-----------

SHEET NUMBER

C8.01

CO.01



ALL WORK WITHIN SHALL BE INCLUDED  
IN BID ITEM "WOOD TOE WITH COIR  
WRAPPED SOIL LIFTS" PER LINEAR FOOT  
OF BANK RESTORATION

## PLANT SCHEDULE

SHRUBS	CODE	BOTANICAL	COMMON	SIZE
	RD	CORNUS SERICEA	RED OSIER DOGWOOD	2 GAL CONT

APPROX. EXTENTS OF CLEARING & GRUBBING  
REMOVE DEBRIS FROM CREEK

EXISTING GROUND (VARIES)

RESHAPE ERODED SLOPES TO 2.5:1 AS DIRECTED BY ENGINEER, SEED AND BLANKET.

RESHAPE SLOPE TO 2.5:1

SHRUB PLANTING 3' O.C.

RD

4 TYPICAL SECTION - DEBRIS FIELD LOCATIONS  
C8.02 NOT TO SCALE

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.

PRINT NAME: DARREN T. AMUNDSEN

SIGNATURE: 

DATE: JANUARY 10, 2018 LIC. NO. 40924

MAPLE GROVE, MINNESOTA

NO REVISION	DATE
SURVEY	TNA
DRAWN	TJM
DESIGNED	RMA
CHECKED	JF
APPROVED	DIA
PROJECT NO.	1938C0313

C8.02