



## AGENDA

Wednesday, December 30, 2020

**5:30 PM**

Virtual Meeting via [GoToMeeting](#)

[www.plslwd.org](http://www.plslwd.org)

## SPECIAL BOARD MEETING

### BOARD OF MANAGERS:

**Mike Myser, President; Curt Hennes, Vice President; Bruce Loney, Treasurer**

**Steve Pany, Secretary and Frank Boyles, Manager**

Note: Individuals with items on the agenda or who wish to speak to the Board are encouraged to be in attendance when the meeting is called to order.

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5:30 – 5:35 PM **BOARD MEETING CALL TO ORDER & PLEDGE OF ALLEGIANCE**

5:35 – 5:40 PM **PUBLIC COMMENT**

If anyone wishes to address the Board of Managers on an item not on the agenda or on the consent agenda please come forward at this time. Turn on your microphone on the GoToMeeting app and state your name and address. (The Chair may limit your time for commenting.)

5:40 – 5:45 PM **APPROVAL OF AGENDA** (Additions/Corrections/Deletions)

5:45 – 7:00 PM **OTHER OLD/NEW BUSINESS**

- 1) Sutton Lake Outlet Project: Selection of Contractor (Kyle Crawford, EOR) *(Vote)*
- 2) 2021 – 2022 Accounting Services Contract (Maggie Karschnia) *(Vote)*
- 3) Draft Upper Watershed Blueprint Report (Brian Kallio, Wenck) *(Discussion Only)*
- 4) District Administrator Hiring Update (Bruce Loney) *(Discussion Only)*

**PLSLWD Board Staff Report**

December 28, 2020



<b>Subject</b>	Sutton Lake Outlet Retrofit Project Bid Selection		
<b>Board Meeting Date</b>	December 30, 2020	<b>Item No</b>	1
<b>Prepared By</b>	Maggie Karschnia, Water Resources Project Manager		
<b>Attachments</b>	Draft Contract & Construction Planset		
<b>Action</b>	Board authorize the District Administrator to sign a contract with the apparent lowest, responsible bidder for the Sutton Lake Outlet Retrofit Project in an amount not to exceed the bid amount contingent upon any conditions by the District Engineer.		

**BACKGROUND**

One of the projects identified in the 2016 Prior Lake Stormwater Management & Flood Mitigation Study was to explore upstream storage on Sutton Lake. This Sutton Lake Outlet Retrofit Project has been several years in the making and will reduce downstream flood impact on Prior Lake by retrofitting the existing Sutton Lake outlet (ditch) to manage the water levels of Sutton Lake to provide additional flood storage and attenuate peak discharge. The proposed outlet structure will also have the ability to conduct temporary drawdowns, pending approval by the MnDNR as part of a future Phase 2.

At its regular meeting on October 8<sup>th</sup>, 2019, the Board of Managers authorized District staff to solicit bids for construction of the Sutton Lake Outlet Retrofit Project, conditioned on the successful acquisition of landowner easements and MnDNR approval of the Operating Plan. The easements have since been fully executed by the landowners and the District.

The MnDNR approved the Sutton Lake Outlet Operating Plan through the issuance of the Public Waters Work Permit for the project. While the MnDNR did not allow the Operating Plan to specify drawdown without further habitat investigation and public hearing proceedings, the District intends to continue to pursue the option to drawdown the Sutton Lake basin as a future Phase 2 addition. Note that during its review of the project in October of 2019, the Board considered and agreed that the downstream flood reduction benefits were worth proceeding with as is, even without the future Phase 2 drawdown.

**FUNDING**

PLSLWD currently has a State of Minnesota Flood Hazard Mitigation Grant that is providing \$207,000 of funding for the project. The budget breakdown for the 2021 construction project including engineering & oversight costs is as follows:

<u>FUNDING SOURCE</u>	<u>TOTAL ALLOCATION</u>
Flood Hazard Mitigation Grant	\$207,000. <sup>00</sup>
PLSLWD Storage & Infiltration Project Reserve	\$172,000. <sup>00</sup>
PLSLWD 2021 Sutton Lake Outlet Budget	\$ 25,000. <sup>00</sup>
<b>TOTAL PROJECT COSTS:</b>	<b>\$404,000.<sup>00</sup></b>

The estimated engineering & oversight costs for the project in 2021 is approximately \$15,000, leaving \$389,000 to cover construction costs. For references purposes, the engineer's estimate for the construction costs dated 10/03/2019 was \$312,746 which included a 10% construction contingency. It is anticipated that the 2021 budget will be sufficient to cover the costs of the lowest bidder for the project should the District receive competitive bids.

### **BID PROCESS & REVIEW**

The District released a request for bids on December 7, 2020 for the Sutton Lake Outlet Retrofit Project which was advertised in the Prior Lake American for two consecutive weeks. A pre-bid meeting was held virtually at 10:00am on December 16, 2020. The bid closing date is December 29, 2020 at 10:00am.

At the conclusion of the bid opening scheduled for December 29, 2020 at 11:00am, Kyle Crawford at EOR will prepare a recommendation to the Board for contractor selection which will be presented at the Special Board Meeting on December 30<sup>th</sup>. This recommendation will include completeness of bids and bid totals for each bid received.

### **REQUESTED ACTION**

At the Special Board Meeting on December 30<sup>th</sup>, staff will recommend that the Board authorize the District Administrator to sign a contract with the lowest responsible bidder for the Sutton Lake Outlet Retrofit Project in an amount not to exceed the bid total made by the contractor contingent upon: 1) any conditions made by the District Engineer; and 2) the bid price does not exceed the District's current budget of \$389,000 for construction costs.

**SECTION 005200**

**AGREEMENT**

**BETWEEN OWNER AND CONTRACTOR**

**FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between Prior Lake - Spring Lake Watershed District (PLSLWD) (“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:

*Embankment Construction, Excavation, Storm Structure Installation, Erosion Control, Revegetation.*

**ARTICLE 2 – THE PROJECT**

- 2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

*Sutton Lake Outlet Retrofit*

**ARTICLE 3 – ENGINEER**

- 3.01 The Project has been designed by Emmons & Olivier Resources, Inc. (Engineer), which is 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 *Dates for Substantial Completion and Final Payment*

- A. The Work will be substantially completed on or before March 31, 2021, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before May 31, 2021.

- 4.02 *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 Article 12 of the General Conditions. 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), Contractor shall pay Owner ~~\$750.00~~ \$500.00 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner ~~\$500.00~~ \$250.00 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

## ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A, 5.01.B, and 5.01.C below:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

## ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 1st day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of 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 in the General Requirements.

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 Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.

a. 95 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

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

B. Owner will pay all retainage to Contractor within 60 days of Substantial Completion, except that Owner may withhold a specified amount of retainage to secure:

1. completion of known defective Work; and/or
2. submission of documentation required under section 5.03 below.

C. Owner will promptly provide Contractor, and any inquiring subcontractor, with a statement of the amount and basis for Owner's continued withholding of retainage, including a description of defective Work still to be completed or corrected, along with an estimate of the cost of such Work. Retainage withheld under 5.02.B.1 above will not exceed 250 percent of the cost of any Work still to be completed or corrected.

- D. Owner may withhold \$500 of payment due to Contractor on Substantial Completion until Contractor has provided proof of compliance with state income tax-withholding requirements pursuant to Minnesota Statutes section 270C.66 and all written manuals, documentation of warranties and guarantees, and as-built drawings required by the Contract Documents.

#### 6.03 Final Payment

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions.
- B. Owner will not make final payment until Contractor has provided proof of compliance with State Income Tax withholding requirements pursuant to Minnesota Statutes section 270C.66.
- C. Contractor must submit Form IC-134, record drawings, warranties, lien waivers and all other documents specified in the Contract Documents before final payment.

### ARTICLE 7 – INTEREST

- 7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the rate of 1.5 percent per annum.

### ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:
  - A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
  - B. Contractor has visited the Site 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.
  - C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
  - D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," ~~and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC 4.06 of the Supplementary Conditions as containing reliable "technical data."~~
  - E. Contractor has considered the information known to Contractor; 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, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor’s safety precautions and programs.
  - F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that 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 Documents.
  - G. 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.

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

## ARTICLE 9 – CONTRACT DOCUMENTS

### 9.01 Contents

- A. The Contract Documents consist of the following:
  - 1. This Agreement (pages 1 to 7, inclusive).
  - 2. Performance bond (pages \_\_\_\_ to \_\_\_\_, inclusive).
  - 3. Payment bond (pages \_\_\_\_ to \_\_\_\_, inclusive).
  - 4. Other bonds (pages \_\_\_\_ to \_\_\_\_, inclusive).
    - a. \_\_\_\_\_ (pages \_\_\_\_ to \_\_\_\_, inclusive).
  - 5. General Conditions (pages 1 to 49, inclusive).
  - 6. Specifications as listed in the table of contents of the Project Manual.  
Special Provisions (pages 1 to 12, inclusive).  
Minnesota Department of Transportation 2018 Standard Specifications for Construction.
  - 7. Drawings consisting of 11 sheets with each sheet bearing the following general title: Sutton Lake Outlet Retrofit
  - 8. Addenda (numbers \_\_\_\_ to \_\_\_\_, inclusive).
  - 9. Exhibits to this Agreement (enumerated as follows):
    - a. Contractor's Bid (pages \_\_\_\_ to \_\_\_\_, inclusive).
    - b. Documentation submitted by Contractor prior to Notice of Award (pages \_\_\_\_ to \_\_\_\_, inclusive).
  - 10. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
    - a. Notice to Proceed (pages \_\_\_\_ to \_\_\_\_, inclusive).
    - b. Work Change Directives.
    - c. Change Orders.
- B. The documents listed in Paragraph 9.01.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 9.

- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

## ARTICLE 10 – MISCELLANEOUS

### 10.01 *Terms*

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

### 10.02 *Assignment of Contract*

- A. 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, moneys that may become due and moneys that are 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.

### 10.03 *Successors and Assigns*

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

### 10.04 *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.

### 10.05 *Other Provisions*

- A. This Agreement shall be governed by the laws of the State of Minnesota.
- B. There are no other provisions.

### 10.06 *Records Retention*

- A. Contractor will maintain all records pertaining to the Work for six years from the date of the completion of the Work. Contractor agrees that any authorized representative of the Owner or the State Auditor may examine, audit, and copy any such records during normal business hours.

### 10.07 *Equal Opportunity*

- A. In its performance of the Work, Contractor will ensure that no person is excluded from full employment rights or participation in or the benefits of any program, service or activity on the ground of race, color, creed, religion, age, sex, disability, marital status, sexual orientation, public assistance status of national origin; and no person who is protected by applicable federal or state laws, rules or regulations against discrimination otherwise will be subjected to discrimination.

### 10.08 *Minnesota Data Practices Act*

- A. If Contractor receives a request for data pursuant to the Data Practices Act, Minnesota Statutes chapter 13 (DPA), that may encompass data (as that term is defined in the DPA) Contractor possesses or has created as a result of this agreement, it will inform Owner immediately and transmit a copy of the request. If the request is addressed to Owner, Contractor will not provide any information or documents, but will direct the inquiry to Owner. If the request is addressed to Contractor, Contractor will be responsible to determine whether it is legally required to respond to the request and otherwise what its legal obligations are, but will notify and consult with Owner and its legal counsel before replying. Nothing in the preceding sentence supersedes Contractor's obligations under this agreement with respect to protection of Owner data, property rights in data or confidentiality. Nothing in this section constitutes a determination that Contractor is performing a governmental function within the meaning of Minnesota Statutes § 13.05, subdivision 11, or otherwise expands the applicability of the DPA beyond its scope under governing law.

10.09 Prevailing Wages

- A. Pursuant to Minnesota Statutes sections 177.41 to 177.44 and corresponding Minnesota Rules 5200.1000 to 5200.1120, this Contract is subject to the prevailing wages as established by the Minnesota Department of Labor and Industry (provided in Exhibit A attached to and made part of this agreement). Specifically, Contractor and all subcontractors must pay all laborers and mechanics the established prevailing wages for work performed under the contract. Failure to comply with the aforementioned may result in civil or criminal penalties. Owner shall demand and the Contractor and all subcontractors shall furnish to the contracting agency, copies of any or all payrolls not more than 14 days after the end of each pay period.
- B. In accordance with Minnesota Statutes section 177.43: (a) no laborer or mechanic employed directly on the project work site by Contractor or any subcontractor, agent, or other person doing or contracting to do all or a part of the work of the project, is permitted or required to work more hours than the prevailing hours of labor unless paid for all hours in excess of the prevailing hours at a rate of at least 1½ times the hourly basic rate of pay; (b) a laborer or mechanic may not be paid a lesser rate of wages than the prevailing wage rate in the same or most similar trade or occupation in the area.

10.10 Nonresident or foreign contractor

- A. If Contractor or a Subcontractor is a nonresident person or foreign corporation as defined in Minnesota Statutes section 290.01, subdivision 5, Contractor or the subcontractor will be subject to the requirements of Minnesota Statutes section 290.9705.

10.11 Contractor's Certifications

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
  2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
  3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
  4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective on \_\_\_\_\_ (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR

Prior Lake - Spring Lake Watershed District (PLSLWD)

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

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

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

Address for giving notices:

4646 Dakota Street SE

Prior Lake, MN

(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 this Agreement.)

License No.: \_\_\_\_\_  
(Where applicable)

Agent for service of process:

\_\_\_\_\_



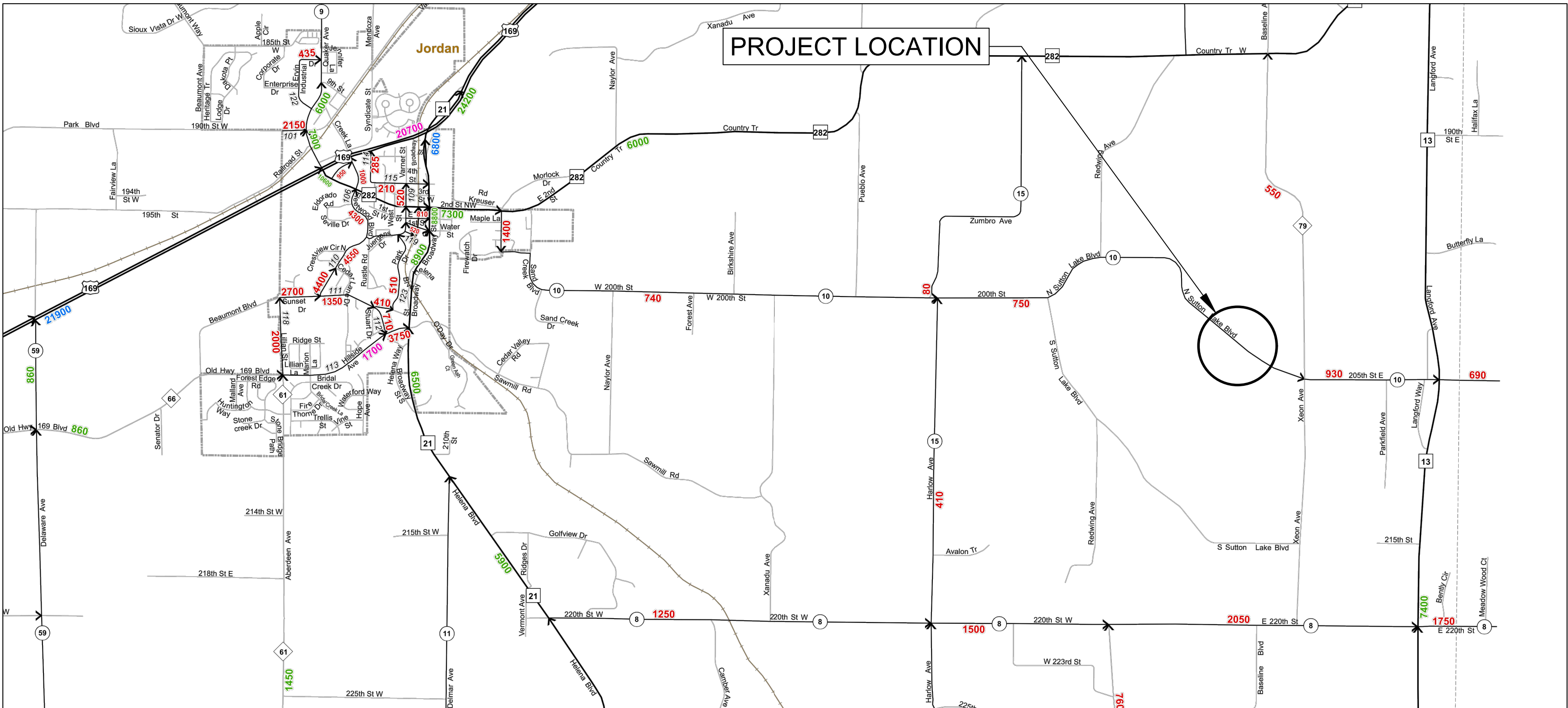
# PRIOR LAKE SPRING LAKE WATERSHED DISTRICT

## SUTTON LAKE OUTLET RETROFIT

### JORDAN, SCOTT COUNTY, MINNESOTA

#### LEGEND

FEATURE	EXISTING	PROPOSED
SILT FENCE		~SF~SF~SF~SF~SF~SF~
CONSTRUCTION FENCE		~CF~CF~CF~CF~CF~CF~
DELINEATED WETLAND	-----WID-----WID-----	
OVERHEAD ELECTRIC LINES	—E-O—	
BURIED ELECTRIC LINES	—E-U—	
FIBER OPTIC LINES	—FO—	
BURIED TELEPHONE	—T-U—	
SPLIT RAIL WOODEN FENCE	—o—o—o—o—o—o—o—o—	
CHAIN LINK FENCE	—x—x—x—x—x—x—x—x—	
SANITARY SEWER LINE	---	---
SANITARY SEWER FORCE MAIN	---FM---	---FM---
SANITARY SEWER MANHOLE	---(S)---	---(S)---
STORM PIPE LINE	---	---
STORM MANHOLE	---(S)---	---(S)---
DRAIN TILE	---DT---	---DT---
WATERMAIN	---	---
WATERMAIN MANHOLE	---(W)---	---(W)---
HYDRANT	---(H)---	---(H)---
GATE VALVE	---(GV)---	---(GV)---
TREE PROTECTION		○
MAJOR CONTOUR	-----	=====
MINOR CONTOUR	-----	=====
DRAINAGE FLOW ARROW		➔
TREE	☼ ☼	○



SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
01	TITLE SHEET
02	SEQ AND NOTES
03	PROJECT OVERVIEW
04	EXISTING CONDITIONS & REMOVALS PLAN
05	EROSION AND SEDIMENT CONTROL PLAN
06	GRADING AND DRAINAGE PLAN
07	RESTORATION PLAN
08	TRAFFIC CONTROL PLAN
09	DETAIL SHEET I
10	DETAIL SHEET II
11	DETAIL SHEET III

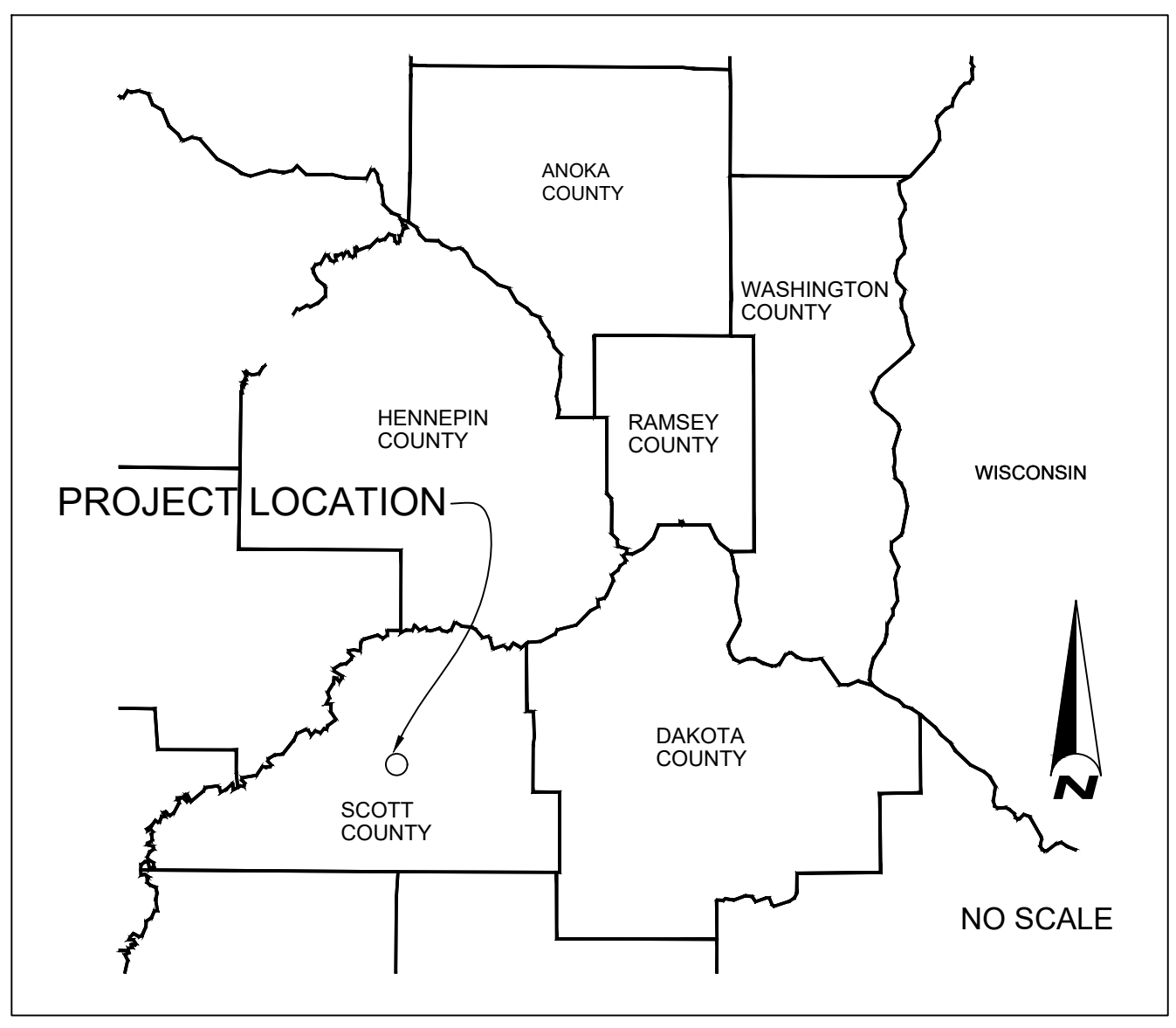
\* THIS PLAN SET CONTAINS 11 PLAN SHEETS

#### GOVERNING SPECIFICATIONS

THE 2018 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING FIELD MANUAL FOR TEMPORARY CONTROL ZONE LAYOUTS.

#### LOCATION MAP



**EXISTING UTILITIES**

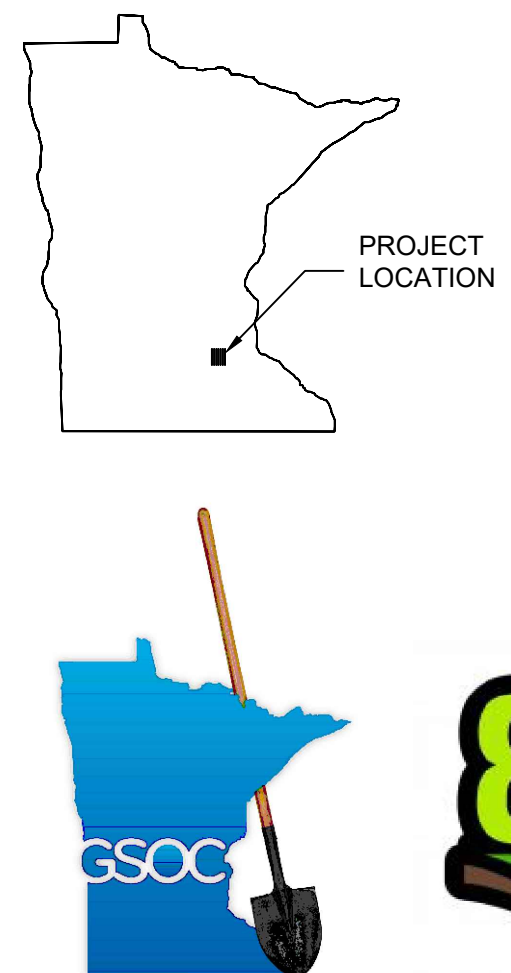
THE LOCATION OF UNDERGROUND FACILITIES AND/OR STRUCTURES AS SHOWN ON THE PLANS ARE BASED ON AVAILABLE RECORD AT THE TIME THE PLANS WERE PREPARED AND ARE NOT GUARANTEED TO BE COMPLETE OR CORRECT. THE SUBSURFACE UTILITY INFORMATION SHOWN IS UTILITY QUALITY LEVEL D, AS DETERMINED USING THE GUIDELINES OF "C/ASCE 38-02 STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITIES 72 HOURS PRIOR TO CONSTRUCTION TO DETERMINE THE EXACT LOCATION OF ALL FACILITIES AND TO PROVIDE ADEQUATE PROTECTION OF SAID UTILITIES DURING THE COURSE OF WORK.

**CONSTRUCTION NOTE**

CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO MAINTAIN OPERATION OF EXISTING UTILITIES THROUGHOUT THE DURATION OF THE PROJECT. IN THE EVENT THAT AN INTERRUPTION OF SERVICE IS UNAVOIDABLE IN ORDER TO COMPLETE THE WORK, CONTRACTOR SHALL PROVIDE ADEQUATE NOTIFICATION TO ALL AFFECTED BUSINESSES A MINIMUM OF 3 WORKING DAYS IN ADVANCE OF ANY INTERRUPTION.

**GOPHER STATE ONE-CALL**

IT IS THE LAW THAT ANYONE EXCAVATING AT ANY SITE MUST NOTIFY GOPHER STATE ONE CALL (GSOC) SO THAT UNDERGROUND ELECTRIC, NATURAL GAS, TELEPHONE OR OTHER UTILITY LINES CAN BE MARKED ON OR NEAR YOUR PROPERTY BEFORE ANY DIGGING BEGINS. A 48-HOUR NOTICE, NOT INCLUDING WEEKENDS, IS REQUIRED. CALLS CAN BE MADE TO GSOC AT 1-800-252-1166 OR (651)454-0002, MONDAY THROUGH FRIDAY (EXCEPT HOLIDAYS) FROM 7 A.M. TO 5 P.M.



**CLIENT**

**PRIOR LAKE SPRING LAKE WATERSHED DISTRICT**  
4646 DAKOTA ST SE  
PRIOR LAKE, MN 55372

**ENGINEER**

**EMMONS & OLIVIER RESOURCES, INC.**  
1919 UNIVERSITY AVENUE WEST, STE 300  
SAINT PAUL, MN 55104  
TELEPHONE: (651) 770-8448  
FAX: (651) 770-2552  
eorinc.com

Plot Date: 12/07/2020  
Drawing Name: W000758\_PLSLWD0114\_Sutton\_Lake\_Outlet\_Retrofit  
User: J. Blum  
Xref: J. Blum

6			
5			
4			
3			
2			
1	12/07/2020	KDC	BID PLANS - NOT FOR CONSTRUCTION
NO	DATE	BY	REVISION

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.

KYLE D. CRAWFORD, P.E.  
DATE: 12/07/2020 LICENSE # 54906

SUBMISSION DATE:	12/07/2020
DESIGN BY	KDC
DRAWN BY	KDC
EOR PROJECT NO.	00758-0114

**EOR** Emmons & Olivier Resources, Inc.  
1919 University Ave W  
Saint Paul, MN 55104  
Tele: 651.770.8448  
www.eorinc.com

**PRIOR LAKE SPRING LAKE WATERSHED DISTRICT**

**SUTTON LAKE OUTLET RETROFIT**  
JORDAN, SCOTT COUNTY, MINNESOTA

STATE PROJECT NO. --- CITY PROJECT NO. ---

**TITLE SHEET**

**SHEET 01 OF 11 SHEETS**



GENERAL SITE WORK NOTES

1.

VERIFY HORIZONTAL LOCATION AND ELEVATION WHERE A CONNECTION TO EXISTING PAVEMENT, STRUCTURE, PIPE OR OTHER SITE FEATURE IS TO BE MADE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM THE PLANS.
2.

REFERENCE TO MN/DOT SPECIFICATIONS SHALL MEAN DIVISIONS II AND III OF THE 2018 SPECIFICATIONS FOR CONSTRUCTION.
3.

SITE ACCESS IS ONLY OFF SCOTT COUNTY ROAD 10. CONSTRUCTION PARKING IS ONLY ALLOWED WITHIN LANE CLOSURE OR ALONG FIELD ROAD. NO PARKING ALLOWED ON ROAD SHOULDER OUTSIDE LANE CLOSURE/SHIFT.
4.

SEE RESTORATION PLAN FOR VEGETATION RESTORATION REQUIREMENTS.
5.

TOPOGRAPHIC SURVEY BY EOR, INC.
6.

A CONSTRUCTION STAGING PLAN SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR FOR REVIEW BY THE PROJECT ENGINEER AND CITY. NO STORAGE OF EQUIPMENT OR MATERIALS IS ALLOWED WITHIN RIGHT OF WAY.
7.

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MUTCD, INCLUDING FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS, JANUARY 2014. A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE ENGINEER AND SCOTT COUNTY FOR APPROVAL.
8.

ALL CONSTRUCTION WORK SHALL BE COMPLETED WITHIN CITY APPROVED WORKING HOURS.
9.

PROPOSED WORK MUST BE IN COMPLIANCE WITH THE PLSLWD AND SCOTT COUNTY PERMITS. CONTRACTOR IS EXPECTED TO OBTAIN ANY ADDITIONAL REQUIRED PERMITS.
10.

A PRE-CONSTRUCTION MEETING WILL BE REQUIRED WITH WATERSHED STAFF PRIOR TO ANY MOBILIZATION OF CONSTRUCTION EQUIPMENT OR MATERIAL.

GENERAL UTILITY NOTES

1.

CONTRACTOR SHALL CONTACT 'GOPHER STATE ONE CALL' WITHIN TWO WORKING DAYS PRIOR TO EXCAVATION/CONSTRUCTION FOR UTILITY LOCATIONS. TWIN CITIES METRO AREA: 651-454-0002 OR TOLL-FREE: 1-800-252-1166.
2.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND INVERTS, SHOWN OR NOT SHOWN. ANY DISCREPANCY BETWEEN PLANS AND FIELD CONDITIONS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
3.

ALL UTILITY WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, COUNTY AND STATE SPECIFICATIONS.
4.

UTILITY TRENCHES SHALL BE COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY (ASTM D698.78 OR AASHTO T-99) FROM THE PIPE ZONE TO WITHIN THREE FEET OF THE GROUND SURFACE AND 100% STANDARD PROCTOR IN THE UPPER THREE FEET. BERM SHALL BE COMPACTED TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING TESTING AND RELAYING RESULTS TO ENGINEER.
5.

FIELD ADJUST ALL CASTINGS TO MATCH FINAL GRADES.
6.

CONTRACTOR SHALL NOTIFY SCOTT COUNTY HIGHWAY DEPARTMENT 72 HOURS IN ADVANCE OF WORKING WITHIN THE EXISTING RIGHT OF WAY.

GRADING & EROSION CONTROL NOTES

1.

CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AND TOPOGRAPHIC FEATURES PRIOR TO START OF SITE GRADING. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE PROJECT ENGINEER OF ANY DISCREPANCIES OR VARIATIONS.
2.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADDITIONAL HORIZONTAL AND VERTICAL CONTROL BEYOND THE INITIAL BENCHMARKS SET BY THE ENGINEER.
3.

INSTALL PERIMETER EROSION CONTROL MEASURES BEFORE BEGINNING SITE GRADING ACTIVITIES. SOME EROSION CONTROL SUCH AS SEDIMENT CONTROL LOGS AND TEMPORARY SEDIMENT PONDS MAY BE INSTALLED AS GRADING OCCURS IN THE SPECIFIC AREA. MAINTAIN EROSION CONTROLS THROUGHOUT THE GRADING PROCESS AND REMOVE WHEN APPROVED BY THE CITY AND WATERSHED.
4.

CONTRACTOR TO ADHERE TO ALL CITY, COUNTY AND WATERSHED PERMIT REQUIREMENTS, INCLUDING THE REQUIREMENT TO MINIMIZE THE AREA DISTURBED BY GRADING AT ANY GIVEN TIME AND TO COMPLETE TURF RESTORATION WITHIN THE TIME REQUIRED BY THE PERMIT AFTER COMPLETION OF GRADING OF AN AREA.
5.

ALL EXPOSED SOIL AREAS WITHIN 100 FEET OF A WATER OF THE STATE OR ANY STORMWATER CONVEYANCE SYSTEM WHICH IS CONNECTED TO A WATER OF THE STATE MUST BE STABILIZED WITHIN 24 HOURS OR AS DIRECTED BY THE ENGINEER.
6.

ALL CONSTRUCTION ENTRANCES SHALL BE SURFACED WITH CRUSHED ROCK (OR APPROVED EQUAL) ACROSS FULL WIDTH FROM ENTRANCE POINT TO 50 FEET INTO THE CONSTRUCTION ZONE. SEE DETAIL.
7.

WHERE NECESSARY, INLET PROTECTION IS TO BE USED DURING CONSTRUCTION.
8.

ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH CITY, COUNTY AND WATERSHED DISTRICT PERMITS.
9.

THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES, INCLUDING THE REMOVAL OF ACCUMULATED SILT IN FRONT OF SILT FENCES, SEDIMENT CONTROL LOGS, ETC. DURING THE DURATION OF THE CONSTRUCTION.
10.

MAINTAIN EXISTING EROSION CONTROL. RE-ESTABLISH ANY EXISTING EROSION CONTROL DISTURBED BY CONSTRUCTION.
11.

CONTRACTOR SHALL PROVIDE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES AS REQUIRED FOR CONSTRUCTION.
12.

ANY EXCESS SEDIMENT IN PROPOSED BASINS SHALL BE REMOVED BY THE CONTRACTOR.
13.

THE CONTRACTOR SHALL REMOVE ALL SOILS AND SEDIMENT TRACKED ONTO EXISTING STREETS AND PAVED AREAS WITHIN 24 HOURS OF NOTICE. SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
14.

IF BLOWING DUST BECOMES A NUISANCE, THE CONTRACTOR SHALL APPLY WATER FROM A TANK TRUCK TO ALL CONSTRUCTION AREAS. SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
15.

SWEEP ADJACENT STREETS IN ACCORDANCE WITH COUNTY REQUIREMENTS.
16.

INSPECT EROSION CONTROL DEVICES AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. IMMEDIATELY REPAIR FAILED OR FAILING EROSION CONTROL DEVICES.
17.

SEDIMENT REMOVAL - SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT.
18.

ANY SEDIMENT REMAINING IN PLACE AFTER THE EROSION CONTROL DEVICE IS NO LONGER REQUIRED SHALL BE GRADED TO CONFORM WITH THE EXISTING GRADE, PREPARED, AND SEEDED WITH THE APPROPRIATE SEED MIX AS DIRECTED BY THE WATERSHED. THIS SHALL BE INCIDENTAL TO THE CONTRACT.
19.

SUITABLE GRADING MATERIAL SHALL CONSIST OF ALL SOIL ENCOUNTERED ON THE SITE WITH EXCEPTION OF TOPSOIL, DEBRIS, ORGANIC MATERIAL AND OTHER UNSTABLE MATERIAL. STOCKPILE TOPSOIL AND GRANULAR FILL AT LOCATIONS DIRECTED BY CONTRACTOR. SUITABLE MATERIAL FOR THE BERM SHALL BE AS DETAILED IN THESE PLANS, THE GEOTECHNICAL REPORT AND THE SPECIAL PROVISIONS.
20.

EXISTING GRANULAR MATERIALS SHALL BE SEGREGATED AND STOCKPILED FOR REUSE ON-SITE.
21.

CONTRACTOR SHALL STRIP, STOCKPILE AND RE-SPREAD EXISTING ON-SITE TOPSOIL TO PROVIDE A UNIFORM THICKNESS OF AT LEAST 6 INCHES ON ALL DISTURBED AREAS TO BE SEEDED.
22.

SUBGRADE EXCAVATION SHALL BE BACKFILLED IMMEDIATELY AFTER EXCAVATION TO HELP OFFSET ANY STABILITY PROBLEMS DUE TO WATER SEEPAGE OR STEEP SLOPES. WHEN PLACING NEW SURFACE MATERIAL ADJACENT TO EXISTING PAVEMENT, THE EXCAVATION SHALL BE BACKFILLED PROMPTLY TO AVOID UNDERMINING OF THE EXISTING PAVEMENT.
23.

GRADES SHOWN ARE FINISHED GRADES, CONTRACTOR SHALL ROUGH GRADE TO SUBGRADE ELEVATION, LEAVE SITE READY FOR SUBBASE.

GRADING & EROSION CONTROL NOTES (CONT)

1.

FINAL GRADING TOLERANCES ARE ±0.1 FEET OF PLAN GRADES, UNLESS NOTED OTHERWISE.
2.

ALL EXCESS MATERIAL, BITUMINOUS SURFACING, CONCRETE ITEMS, ANY ABANDONED UTILITY ITEMS, AND OTHER UNSTABLE MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OFF THE CONSTRUCTION SITE. DISPOSAL SHALL BE DONE IN A MANNER THAT MEETS ALL APPLICABLE REGULATIONS.
3.

CONTRACTOR IS RESPONSIBLE FOR GRADING AND SLOPING THE FINISHED GROUND SURFACE TO PROVIDE SMOOTH & UNIFORM SLOPES, WHICH PROVIDE POSITIVE DRAINAGE AND PREVENT PONDING IN LOWER AREAS. CONTACT ENGINEER IF FIELD ADJUSTMENTS TO GRADING PLANS ARE REQUIRED.
4.

SLOPES AT 3:1 OR STEEPER, AND/OR WHERE INDICATED ON THE PLANS SHALL BE SEEDED AND HAVE AN EROSION CONTROL BLANKET INSTALLED OR MAY BE HYDROSEEDED WITH TACKIFIER MULCH. CONTRACTOR SHALL FOLLOW RESTORATION PLAN.

EROSION CONTROL ALLOWANCE NOTES

1.

AN EROSION CONTROL ALLOWANCE HAS BEEN PROVIDED FOR ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES FOR THIS PROJECT. THIS ALLOWANCE IS FOR ITEMS ABOVE AND BEYOND THE MEASURES LISTED IN THE BID TAB OR AS SHOWN ON THE CONTRACT DOCUMENTS. PLEASE READ THE FOLLOWING FOR INFORMATION REGARDING THE ALLOWANCE:
2.

THE CONTRACTOR SHALL SUBMIT IN WRITING ADDITIONAL MEASURES, INCLUDING, BUT NOT LIMITED TO TYPE, LOCATION, AND REASON FOR SAID MEASURES, AND SHALL NOT BE IMPLEMENTED WITHOUT PRIOR WRITTEN AUTHORIZATION BY ENGINEER. SUCH MEASURES MUST BE ABOVE AND BEYOND THOSE SPECIFIED IN THE CONTRACT DOCUMENTS. ANY MEASURES INSTALLED PRIOR TO ENGINEER APPROVAL WILL NOT RECEIVE PAYMENT.
3.

MEASUREMENT AND PAYMENT OF ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE AS SPECIFIED IN CONTRACT DOCUMENTS, AND UNIT PRICES SHALL BE THE SAME FOR ITEMS INCLUDED IN THE BID TAB. ADDITIONAL ITEMS NOT INCLUDED IN THE BID TAB SHALL BE NEGOTIATED FOR UNIT PRICE PRIOR TO WORK COMMENCING. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BRING TO THE ENGINEER'S ATTENTION ADDITIONAL ITEMS FOR INCLUSION UNDER THE ALLOWANCE.
4.

ADDITIONAL MEASURES NOT ALLOWED FOR APPROVAL UNDER THIS ALLOWANCE INCLUDE TEMPORARY EROSION & SEDIMENT CONTROL BASINS, INCLUDING, BUT NOT LIMITED TO EXCAVATION, EROSION & SEDIMENT CONTROL, OUTLET STRUCTURES, DEWATERING, AND REMOVAL OF SAID BASINS AND STRUCTURES. SUCH TEMPORARY BASINS SHALL BE CONSIDERED INCIDENTAL TO COMMON EXCAVATION, WITH NO ADDITIONAL PAYMENT MADE FOR CONSTRUCTION, MAINTENANCE, OR REMOVAL OF SAID BASINS.
5.

PAYMENT OF THE ESC ALLOWANCE SHALL BE MADE BASED ON A PERCENTAGE OF THE ALLOWANCE TOTAL AMOUNT DIVIDED BY THE TOTAL COST FOR A SPECIFIC WORK ITEM.

STORM SEWER NOTES

1.

STORM SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH MNDOT 2501-2511 SPECIFICATIONS.
2.

STORM SEWER SHALL BE AS SPECIFIED.
3.

CONCRETE MANHOLES SHALL BE PRECAST REINFORCED CONCRETE IN ACCORDANCE WITH ASTM C478. CASTING SHALL BE NEENAH R-1733. MANHOLES SHALL HAVE A MINIMUM OF 2 AND A MAXIMUM OF 4 ADJUSTMENT RINGS.
4.

PIPE LENGTHS ON THE PLAN ARE FROM CENTER TO CENTER OF STRUCTURES.
5.

APPLY FLEX-SEAL TO ALL JOINTS, SEAMS, RINGS, MORTAR, ETC. PER THE MANUFACTURER'S RECOMMENDATIONS.

GENERAL LANDSCAPE NOTES

1.

CONTRACTOR SHALL INSPECT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS RELATING TO THE NATURE AND SCOPE OF WORK.
2.

CONTRACTOR SHALL VERIFY PLAN LAYOUT AND BRING TO THE ATTENTION OF THE ENGINEER DISCREPANCIES WHICH MAY COMPROMISE THE DESIGN OR INTENT OF THE LAYOUT.
3.

CONTRACTOR SHALL ASSURE COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS GOVERNING THE WORK AND MATERIALS SUPPLIED.
4.

CONTRACTOR SHALL PROTECT EXISTING ROADS, TRAILS, TREES, AND SITE ELEMENTS DURING CONSTRUCTION OPERATIONS. DAMAGE TO SAME SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
5.

CONTRACTOR SHALL REVIEW THE SITE FOR DEFICIENCIES IN SITE CONDITIONS WHICH MIGHT NEGATIVELY AFFECT PLANT ESTABLISHMENT, SURVIVAL OR WARRANTY. UNDESIRABLE SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO BEGINNING OF WORK.
6.

CONTRACTOR IS RESPONSIBLE FOR ONGOING MAINTENANCE OF NEWLY INSTALLED MATERIALS UNTIL TIME OF SUBSTANTIAL COMPLETION. REPAIR OF ACTS OF VANDALISM OR DAMAGE WHICH MAY OCCUR PRIOR TO SUBSTANTIAL COMPLETION SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.
7.

EXISTING TREES OR SIGNIFICANT SHRUB MASSINGS FOUND ON SITE SHALL BE PROTECTED AND SAVED UNLESS NOTED TO BE REMOVED OR ARE LOCATED IN AN AREA TO BE GRADED. QUESTIONS REGARDING EXISTING PLANT MATERIAL SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO REMOVAL.

SITE DEMOLITION & REMOVAL NOTES

1.

ALL VEGETATION REMOVAL INCLUDING CATTAILS, SOD, WINDFALL/DEADFALL, TREES, AND/OR BRUSH REMOVAL SHALL BE CONSIDERED INCIDENTAL TO CLEARING AND GRUBBING.

SEEDING NOTES

1.

SEEDING SHALL FOLLOW MNDOT SEEDING MANUAL 2014 EDITION.
2.

SEED SHALL BE LOCAL ORIGIN AND WILD ECOTYPE. SEED ORIGIN SHALL BE CERTIFIED BY THE MN CROP IMPROVEMENT ASSOCIATION. LOCAL ORIGIN SHALL MEAN WITHIN 175 MILES OF PROJECT SITE. PROVIDE MCIA DOCUMENTATION TO ENGINEER PRIOR TO SEEDING.
3.

SOW SEED MIXES ON DISTURBED AREAS AFTER ALL GRADING AND CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
4.

ACCEPTABLE SEEDING DATES ARE APRIL 15 - JULY 20 IN THE SPRING, OR SEPTEMBER 20 - OCTOBER 20 IN THE FALL. DORMANT SEEDING IS ALLOWED WITH PERMISSION AND COORDINATION WITH THE ENGINEER.
6.

HYDROSEED 50% OF SEED MIX WITH TRACER PRIOR TO APPLICATION OF BONDED FIBER MATRIX. APPLY THE OTHER 50% OF SEED WITHIN THE BONDED FIBER MATRIX.

SEED ESTABLISHMENT NOTES

1.

ESTABLISHMENT PERIOD COMMENCES UPON ACCEPTANCE OF SEEDING (ADEQUATE COVER CROP GERMINATION AND COVERAGE >80% OF DISTURBED AREAS) AND RUNS FOR 2 YEARS FROM THIS DATE.
2.

MONITOR THE SITE MONTHLY DURING THIS PERIOD TO DETECT AREAS OF WEED COLONIZATION. CUT AND REMOVE ALL NOXIOUS WEEDS (AS DEFINED BY THE MN DEPARTMENT OF AGRICULTURE) AS SOON AS DETECTED. DO NOT ALLOW WEED SEEDS TO SET.
3.

DURING THE FIRST GROWING SEASON CUT THE ENTIRE SEEDED AREA WITH A STRING TRIMMER OR SCYTHE TO A HEIGHT OF 6-8" EVERY 30 DAYS UNTIL SEPTEMBER 30TH.
4.

IF AREAS OF BARE GROUND PERSIST AFTER FIRST GROWING SEASON RESEED PER PLAN.
5.

DURING THE SECOND GROWING SEASON CUT THE ENTIRE SEEDED AREA WITH A STRING TRIMMER OR SCYTHE TO A HEIGHT OF 6-8" ONCE IN MID-JUNE AND ONCE IN MID-AUGUST.

Item No.	Item	MnDOT Reference #	Unit	Estimated
1	Mobilization	2021.501	LS	1
2	Clearing and Grubbing	2101.501	LS	1
3	Common Excavation (EV)	2105.507	CY	2,928
4	Common Borrow (CV)	2105.507	CY	913
5	Dewatering	2105.601	LS	1
6	Stainless Steel Pipe (1" Dia)	2402.603	LF	350
7	Steel Sheet Piling	2452.618	SF	821
8	Storm Sewer, PVC 10"	2501.502	LF	97
9	Storm Sewer, PVC 18"	2501.502	LF	33
10	Storm Sewer, CMP 24"	2501.502	LF	116
11	Clemson Beaver Pond Leveler	2501.602	EA	2
12	CMP Apron, 24"	2501.502	EA	3
13	Pipe Guard for CMP Apron, 24"	2501.502	EA	1
14	Anti-Seepage Collar	2503.602	EA	3
15	Casting Assembly	2506.502	EA	2
16	Install Casting	2506.502	EA	2
17	Drainage Structure Design Special (24 x 28 Outlet Structure)	2506.602	EA	1
18	Drainage Structure Design Special (48" Corrugated OCS)	2506.602	EA	2
19	Slide Gate	2506.602	EA	2
20	Geotextile Filter, Type IV	2511.504	SY	814
21	Random Riprap, Class IV	2511.507	CY	271
22	Traffic Control	2563.601	LS	1
23	Erosion Control Supervisor	2573.501	LS	1
24	Stabilized Construction Exit	2573.501	EA	1
25	Floatation Silt Curtain, Type TB	2573.503	LF	40
26	Sediment Control Log Type Wood Fiber	2573.503	LF	500
27	Silt Fence, Type MS	2573.503	LF	1,545
28	Temporary Erosion & Sediment Control Allowance	2573.601	LS	1
29	Erosion Control Blanket, Category 25	2575.504	SY	864
30	Seeding	2575.505	ACRE	1.90
31	Hydraulic Bonded Fiber Matrix	2575.508	LB	5,883
32	Seed, Mixture 34-181	2575.508	LB	7
33	Seed, Mixture 34-271	2575.508	LB	6
34	Native Vegetation 3-Year Extended Warranty	2575.601	LS	1

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1	12/07/2020	KDC	BID PLANS - NOT FOR CONSTRUCTION
NO	DATE	BY	REVISION

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.

*Kyle D. Crawford*

KYLE D. CRAWFORD, P.E.  
DATE: 12/07/2020

SUBMISSION DATE:  
12/07/2020

DESIGN BY KDC    DRAWN BY KDC

EOR PROJECT NO.  
00758-0114

**EO**  
water  
ecology  
community

**Emmons & Olivier  
Resources, Inc.**  
1919 University Ave W  
Saint Paul, MN 55104  
Tele: 651.770.8448  
www.eorinc.com



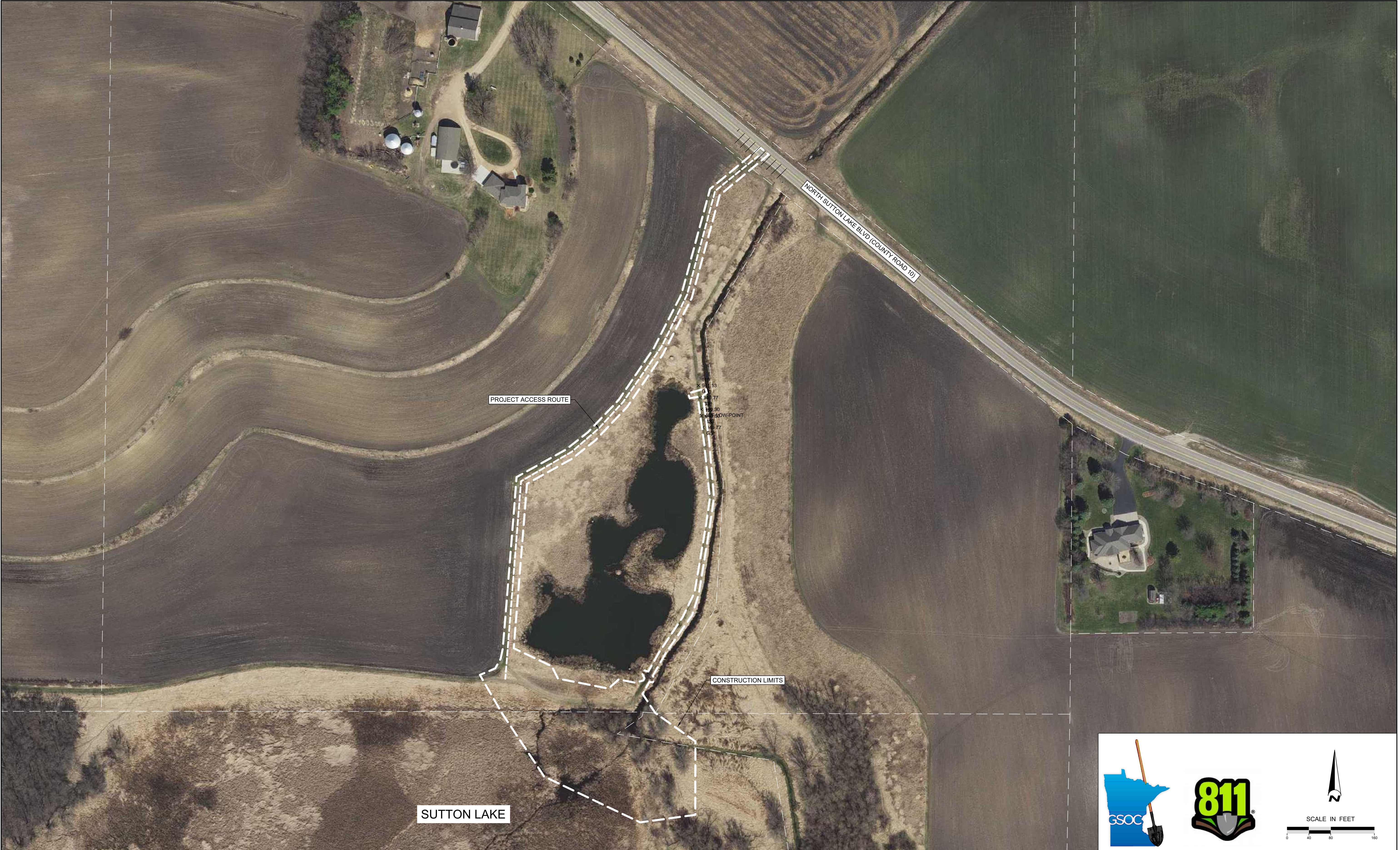
SUTTON LAKE OUTLET RETROFIT  
JORDAN, SCOTT COUNTY, MINNESOTA

STATE PROJECT NO. ---    CITY PROJECT NO. ---

SEQ AND NOTES

SHEET 02 OF 11 SHEETS





Plot Date: 12/07/2020  
Drawing Title: Sutton Lake Outlet Retrofit Project  
Drawing Number: 00758-0114  
Drawing Scale: 1" = 100'  
Drawing Author: KDC  
Drawing Checker: KDC  
Drawing Date: 12/07/2020

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*Kyle D. Crawford*  
KYLE D. CRAWFORD, P.E.  
DATE: 12/07/2020 LICENSE # 54906

SUBMISSION DATE:  
12/07/2020

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KDC

DRAWN BY  
KDC

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**PRIOR LAKE  
SPRING LAKE**  
WATERSHED DISTRICT

SUTTON LAKE OUTLET RETROFIT  
JORDAN, SCOTT COUNTY, MINNESOTA

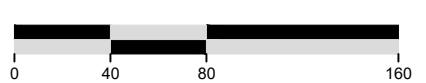
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PROJECT OVERVIEW

SHEET 03 OF 11 SHEETS



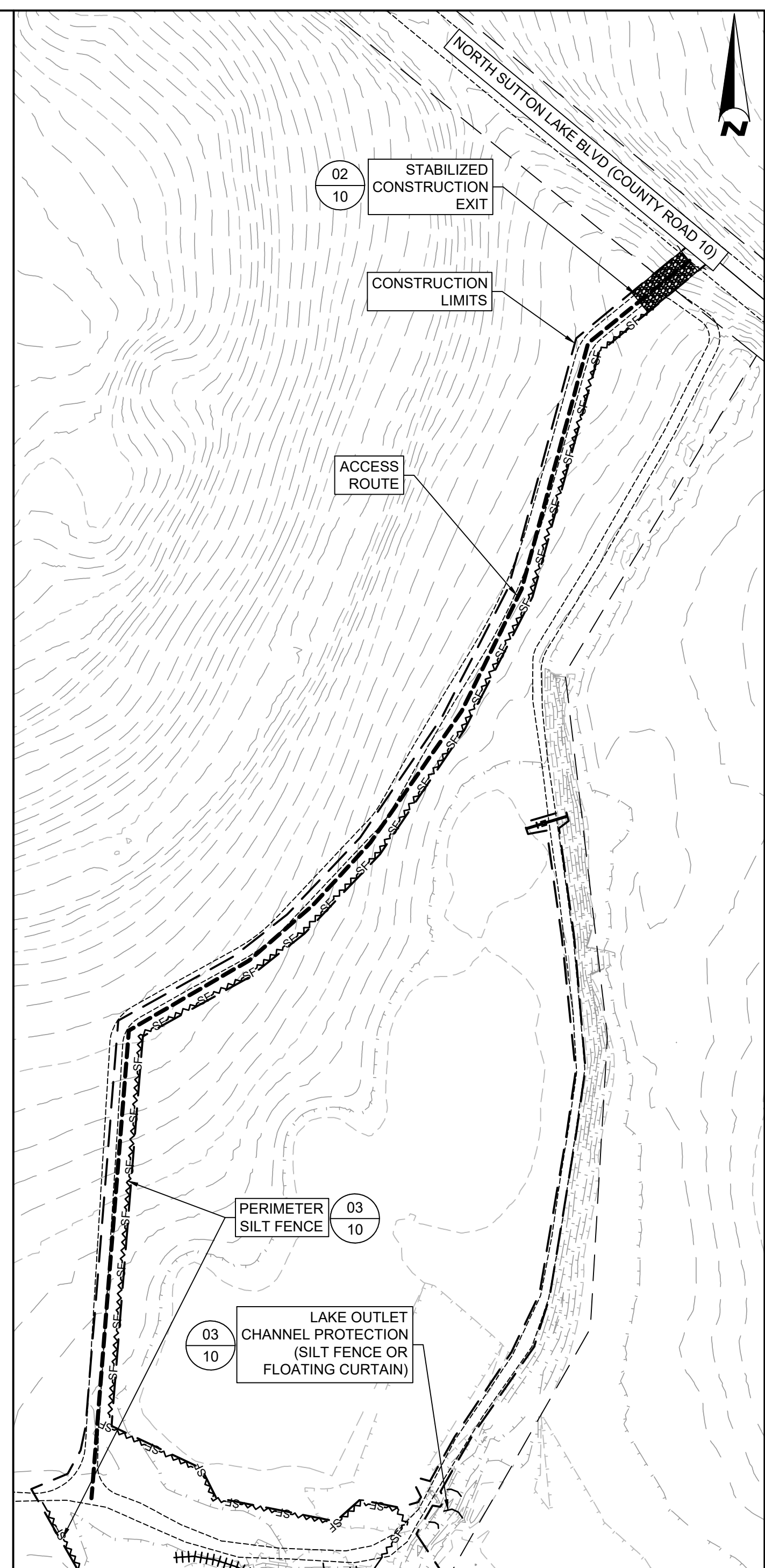
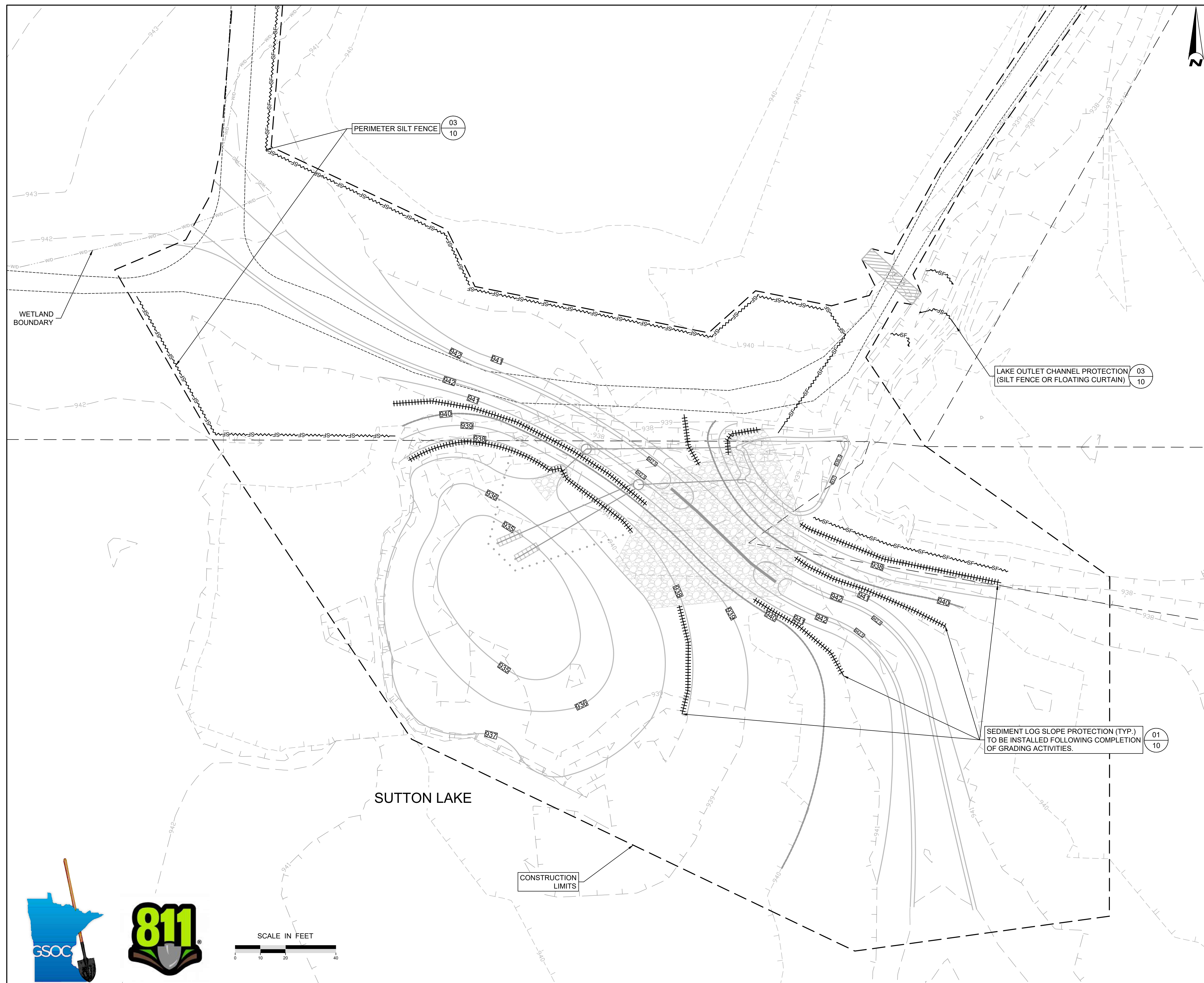




1. CATTAIL AND TREE REMOVAL SHALL BE PAID FOR UNDER CLEARING AND GRUBBING.
2. EXISTING 100-YEAR, 24-HOUR HWL ELEVATION : 940.77

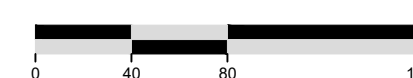
EXISTING CONDITIONS & REMOVALS PLAN
SHEET 04 OF 11 SHEETS





ACCESS ROAD INSET

SCALE IN FEET



NOTES:

1. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE IN PLACE PRIOR TO BEGINNING GRADING ACTIVITIES.
2. AN EROSION CONTROL ALLOWANCE IS AVAILABLE FOR TEMPORARY ESC ABOVE AND BEYOND WHAT IS INDICATED ON THE PLAN. GUIDANCE ON PROPER USE IS DICTATED IN THE GENERAL NOTES ON SHEET 02.

Plot Date: 12/07/2020  
Drawing File: W:\00758\_PLS\WD0114\_Sutton\_Lake\_Outlet\_Retrofit\03\_GIS\ProjectName.dwg  
User: J. Blum, J. Blum

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KYLE D. CRAWFORD, P.E.  
DATE: 12/07/2020 LICENSE # 54906

SUBMISSION DATE:  
12/07/2020

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KDC

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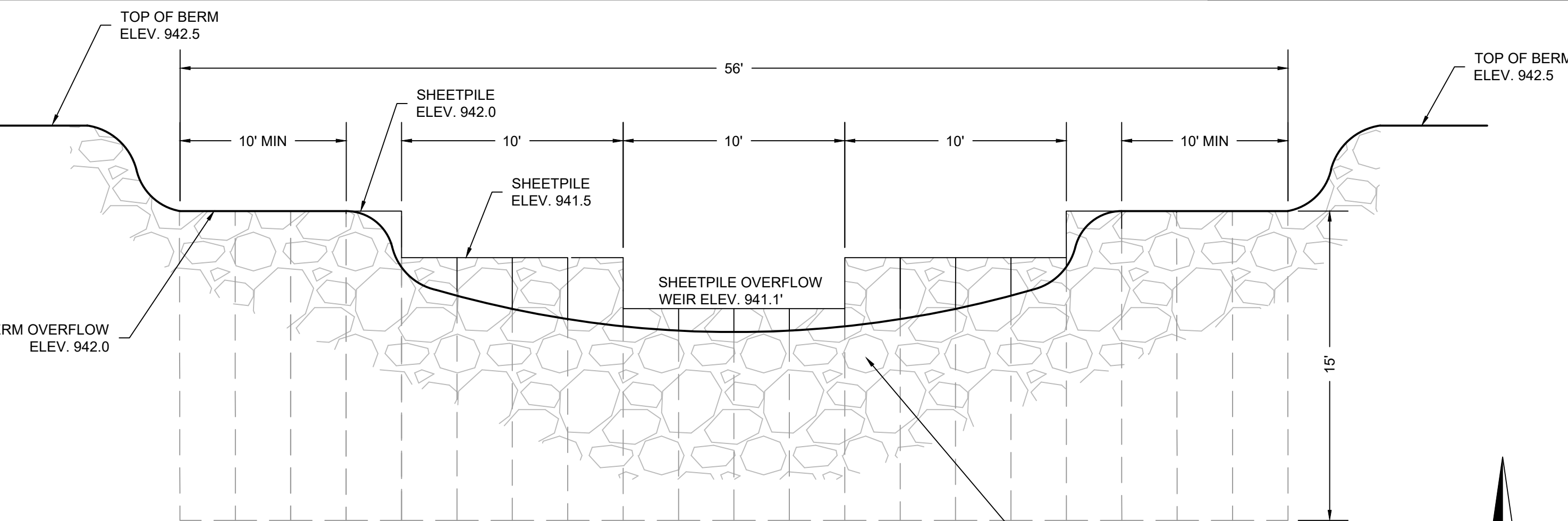
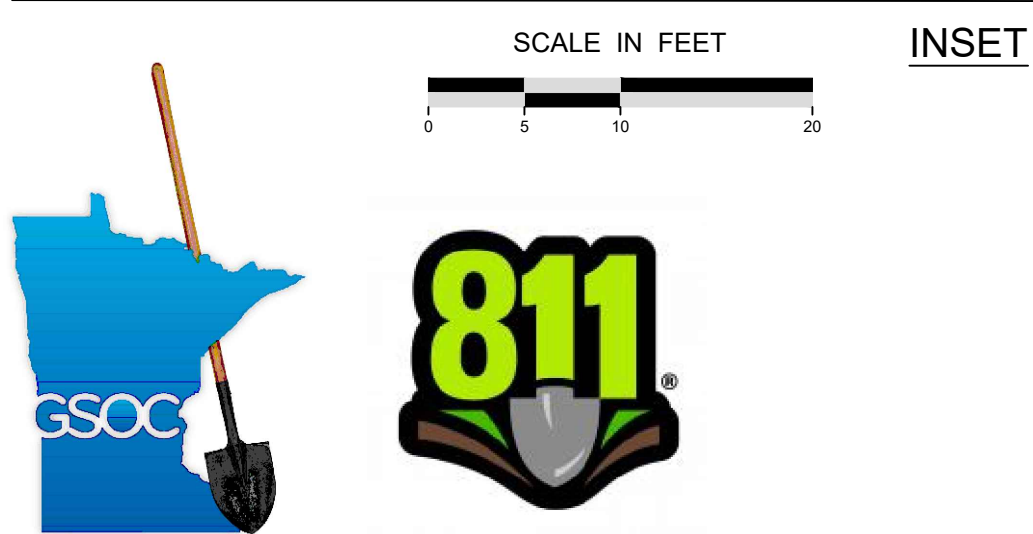
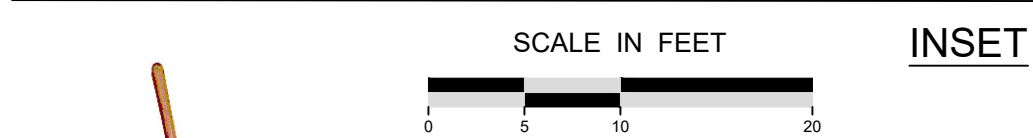
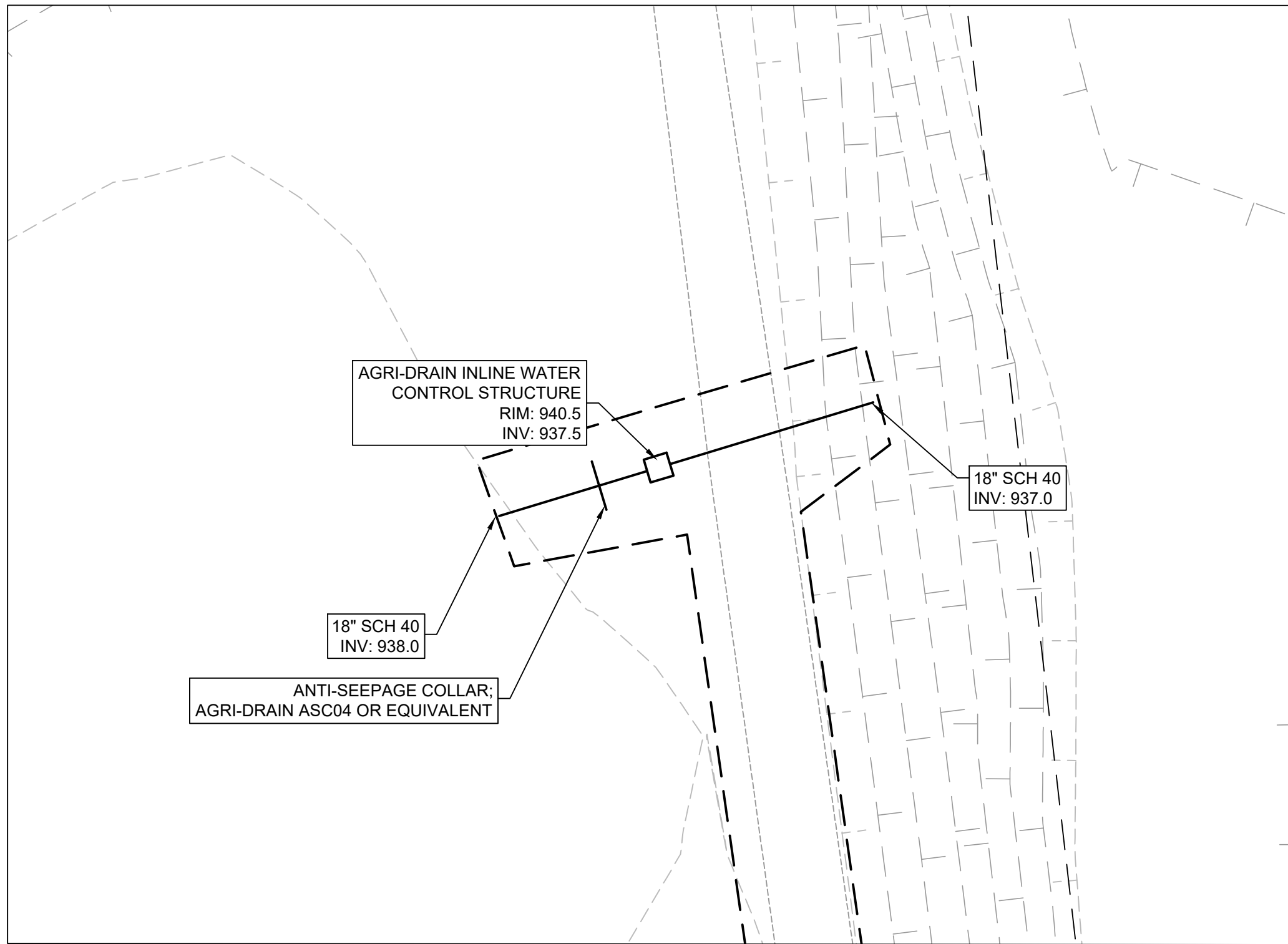
STATE PROJECT NO. --- CITY PROJECT NO. ---

EROSION AND SEDIMENT CONTROL PLAN

SHEET 05 OF 11 SHEETS



- NOTES:
1. A 4' SUBCUT DEPTH FOR AN AREA OF 6160 SQUARE FEET HAS BEEN ACCOUNTED FOR IN THE EARTHWORK QUANTITIES PER THE GEOTECHNICAL REPORT. CONTRACTOR SHALL REFER TO NORTHERN TECHNOLOGIES INC. GEOTECHNICAL REPORT DATED 09/01/18 FOR GUIDANCE ON SUBCUT DEPTH AND AREA, AND COMPACTION AND PROJECT CONSTRUCTION REQUIREMENTS.
  2. PROPOSED 100-YEARR, 24-HOUR HWL ELEVATION : 941.36.



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KDC DRAWN BY  
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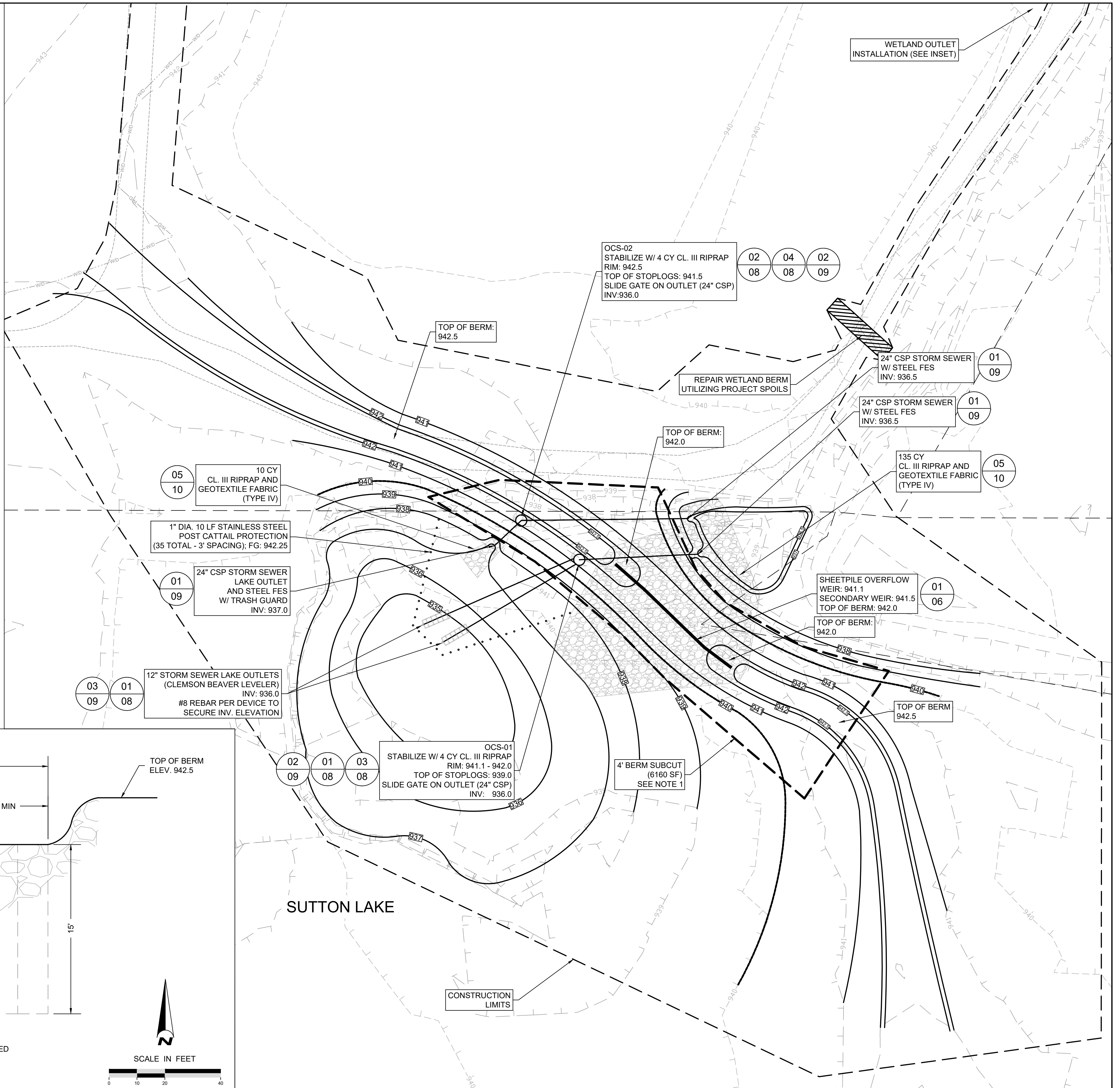
**PRIOR LAKE  
SPRING LAKE**  
WATERSHED DISTRICT

SUTTON LAKE OUTLET RETROFIT  
JORDAN, SCOTT COUNTY, MINNESOTA

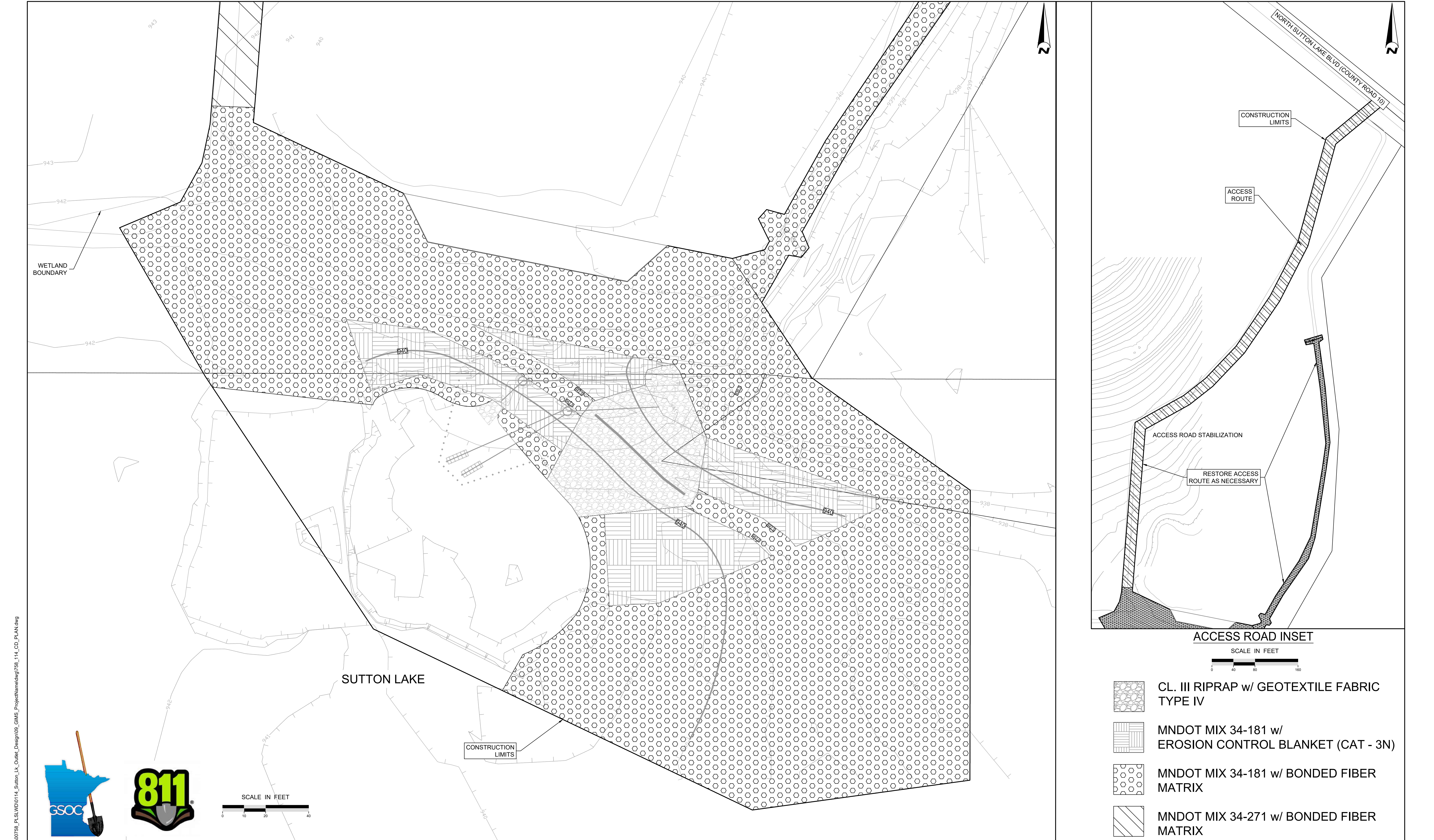
STATE PROJECT NO. --- CITY PROJECT NO. ---

GRADING AND DRAINAGE PLAN

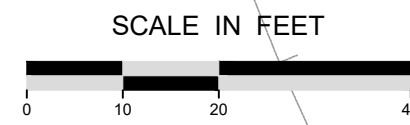
SHEET 06 OF 11 SHEETS







Plot Date: 12/07/2020  
Drawing Title: Sutton Lake Outlet Retrofit Project  
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KYLE D. CRAWFORD, P.E.  
DATE: 12/07/2020 LICENSE # 54906

SUBMISSION DATE:  
12/07/2020

DESIGN BY: KDC DRAWN BY: KDC

EOB PROJECT NO.: 00758-0114

**EOB** Emmons & Olivier  
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Saint Paul, MN 55104  
Tele: 651.770.8448  
www.eorinc.com

**PRIOR LAKE  
SPRING LAKE**  
WATERSHED DISTRICT

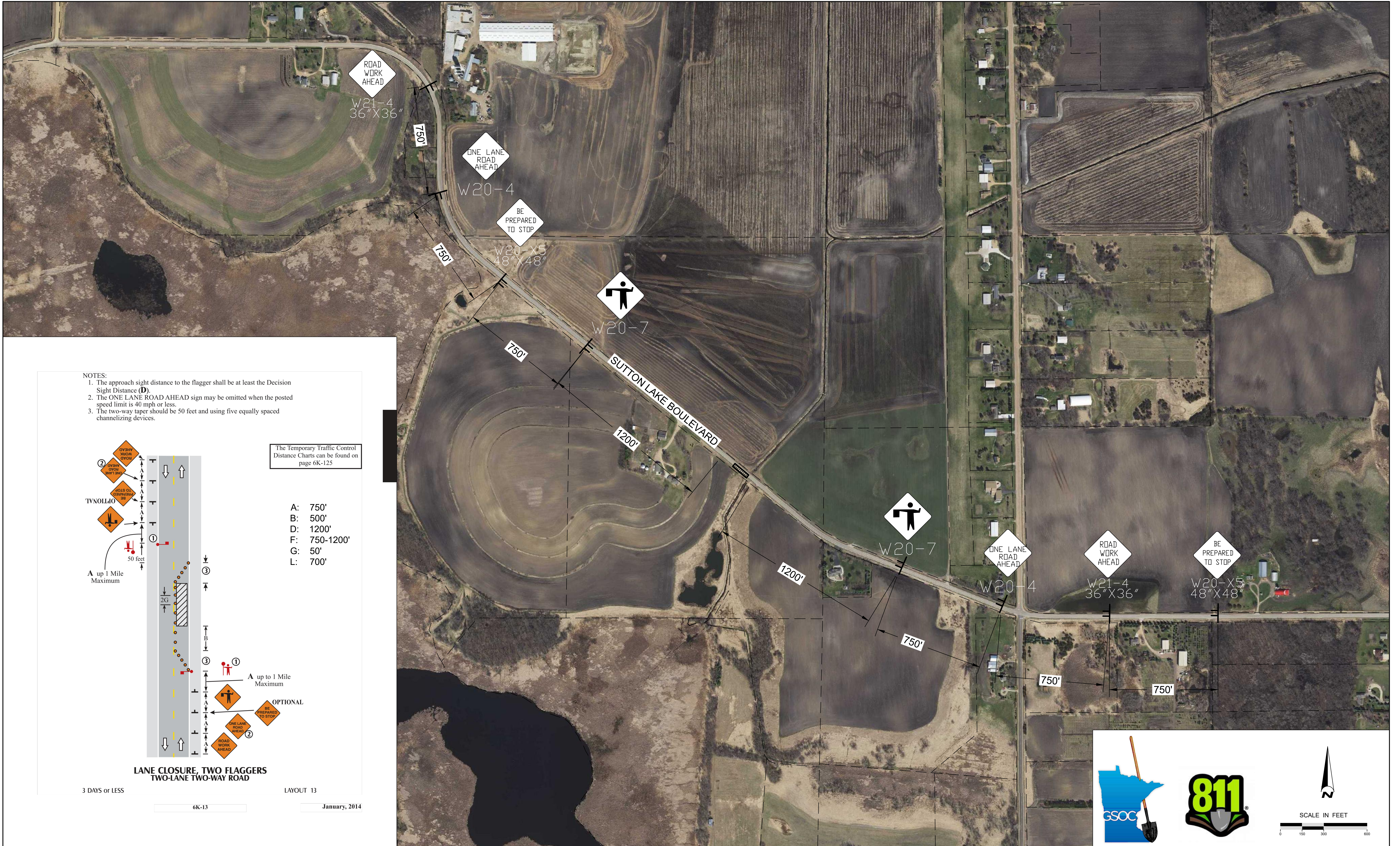
SUTTON LAKE OUTLET RETROFIT  
JORDAN, SCOTT COUNTY, MINNESOTA

STATE PROJECT NO. --- CITY PROJECT NO. ---

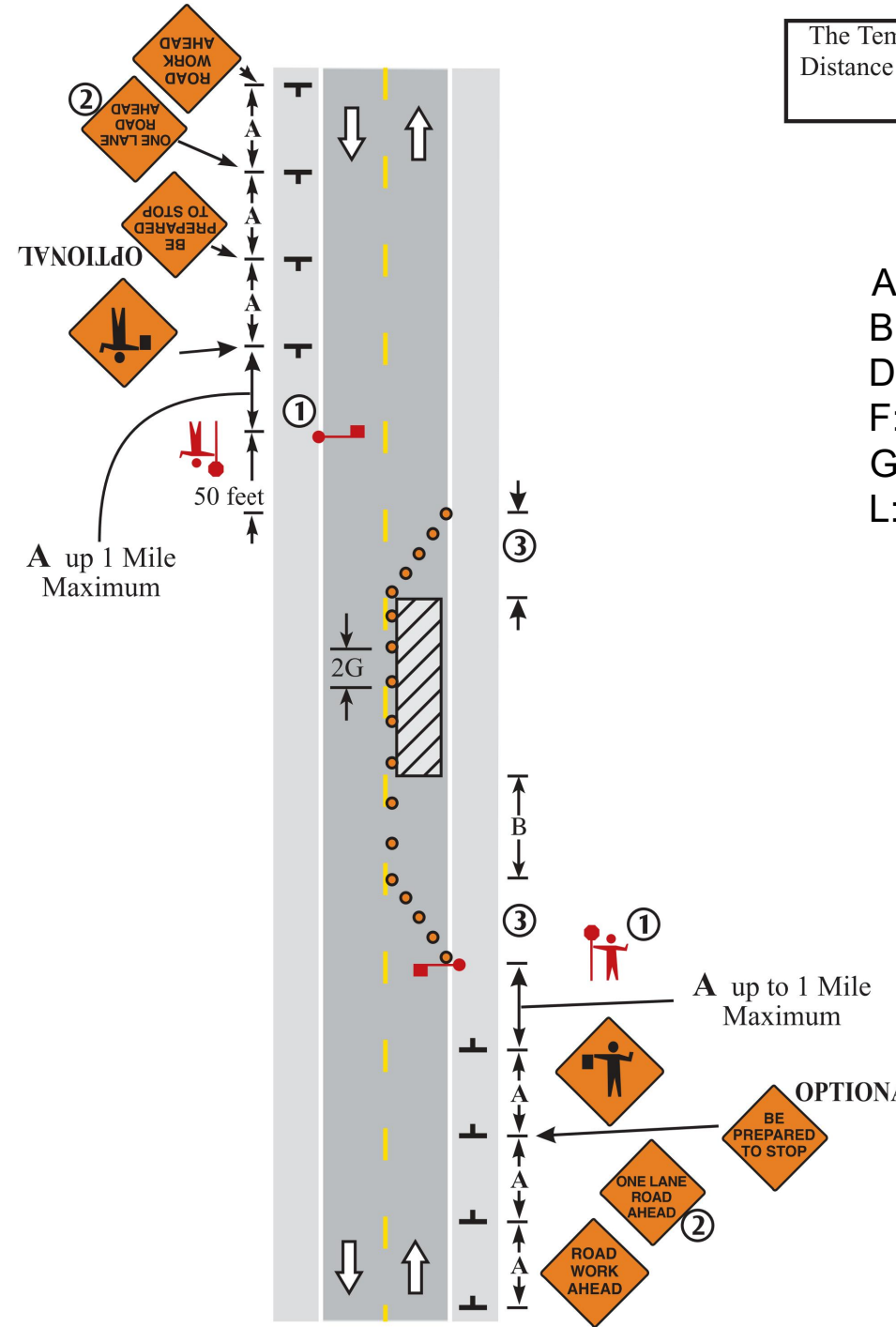
RESTORATION PLAN

SHEET 07 OF 11 SHEETS





NOTES:  
1. The approach sight distance to the flagger shall be at least the Decision Sight Distance (D).  
2. The ONE LANE ROAD AHEAD sign may be omitted when the posted speed limit is 40 mph or less.  
3. The two-way taper should be 50 feet and using five equally spaced channelizing devices.



The Temporary Traffic Control Distance Charts can be found on page 6K-125

- A: 750'
- B: 500'
- D: 1200'
- F: 750-1200'
- G: 50'
- L: 700'

LANE CLOSURE, TWO FLAGGERS  
TWO-LANE TWO-WAY ROAD

3 DAYS or LESS

LAYOUT 13

6K-13

January, 2014

6			
5			
4			
3			
2			
1	12/07/2020	KDC	BID PLANS - NOT FOR CONSTRUCTION
NO	DATE	BY	REVISION

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.

KYLE D. CRAWFORD, P.E.  
DATE: 12/07/2020 LICENSE # 54906

SUBMISSION DATE: 12/07/2020  
DESIGN BY KDC DRAWN BY KDC  
EOR PROJECT NO. 00758-0114

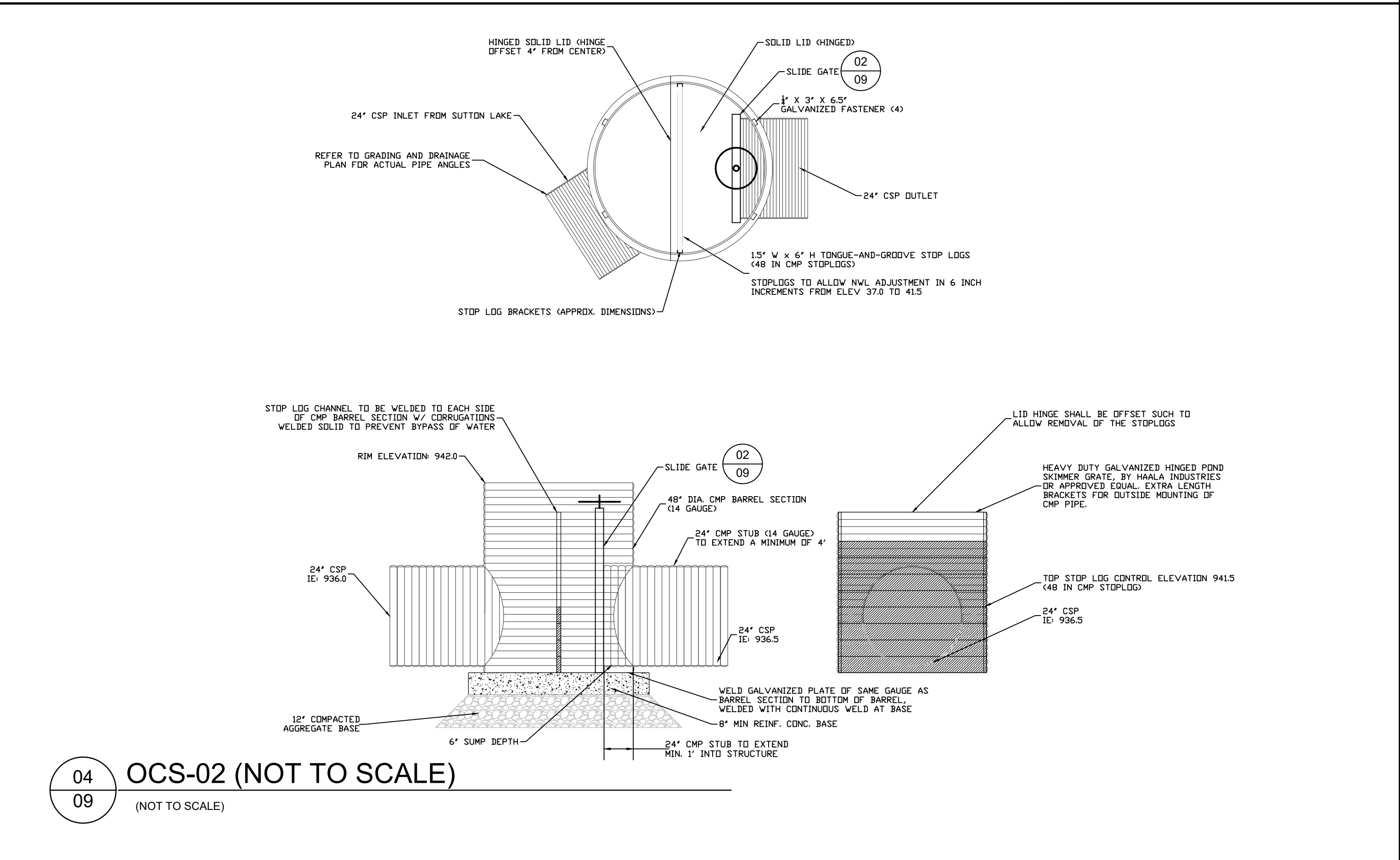
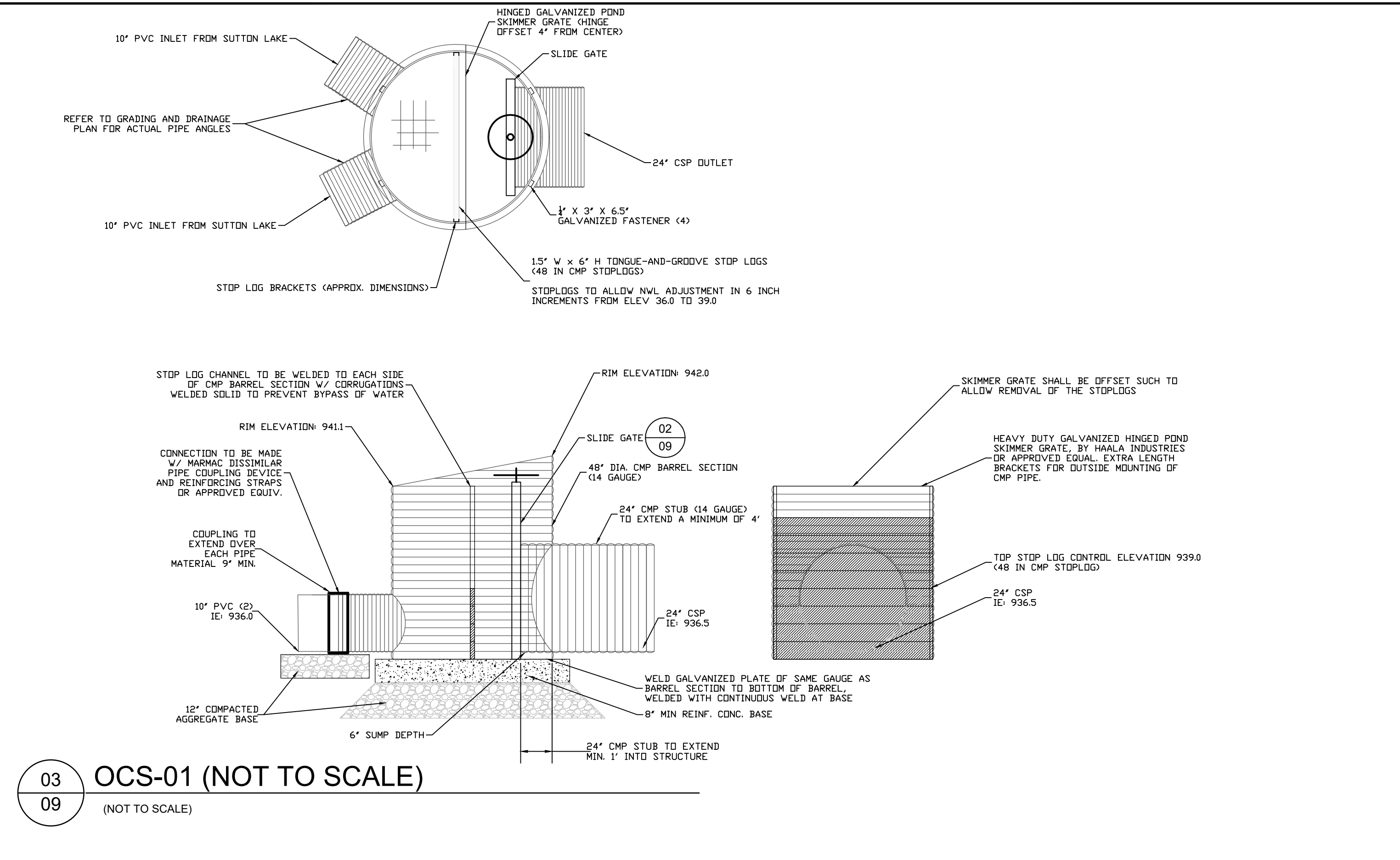
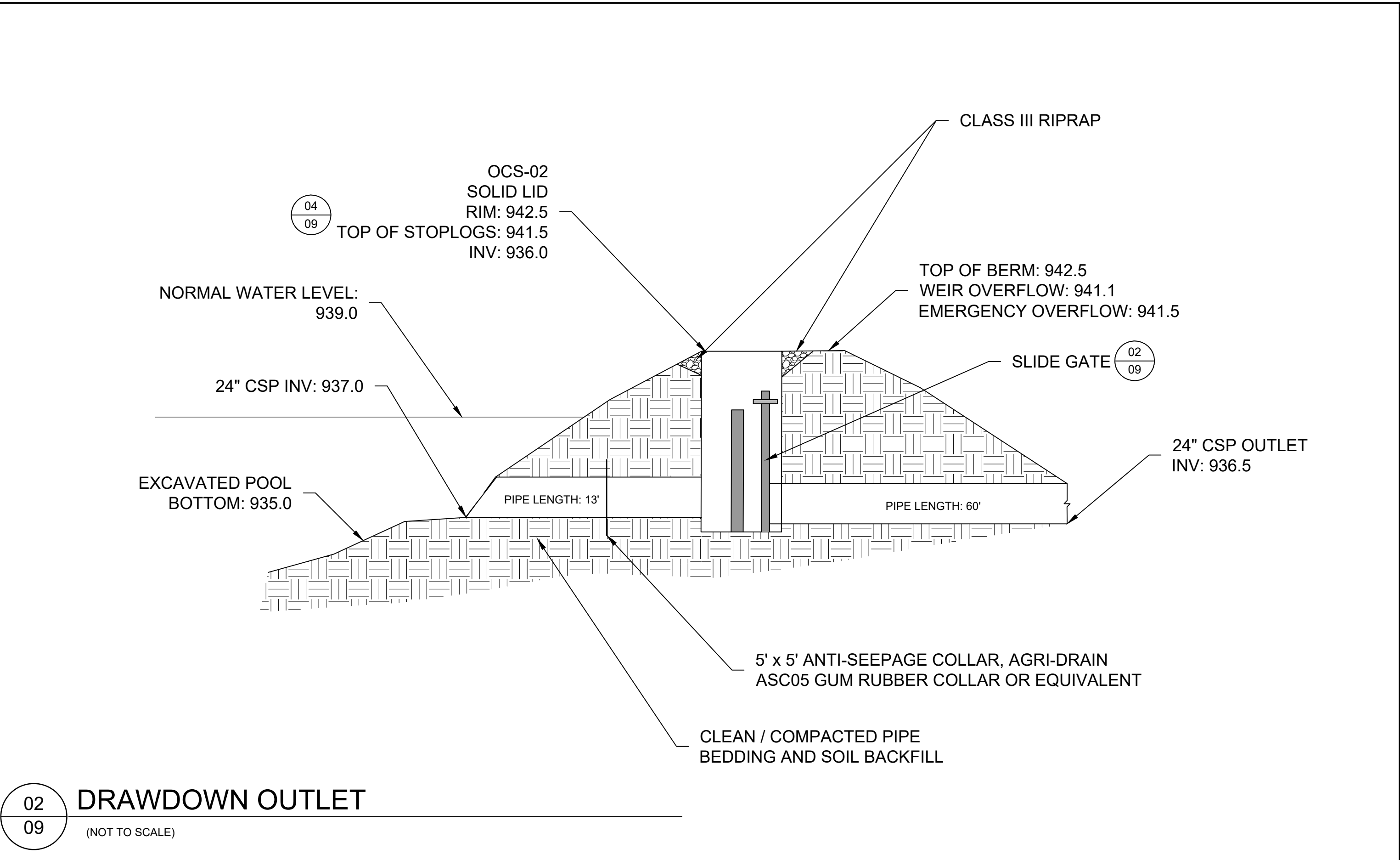
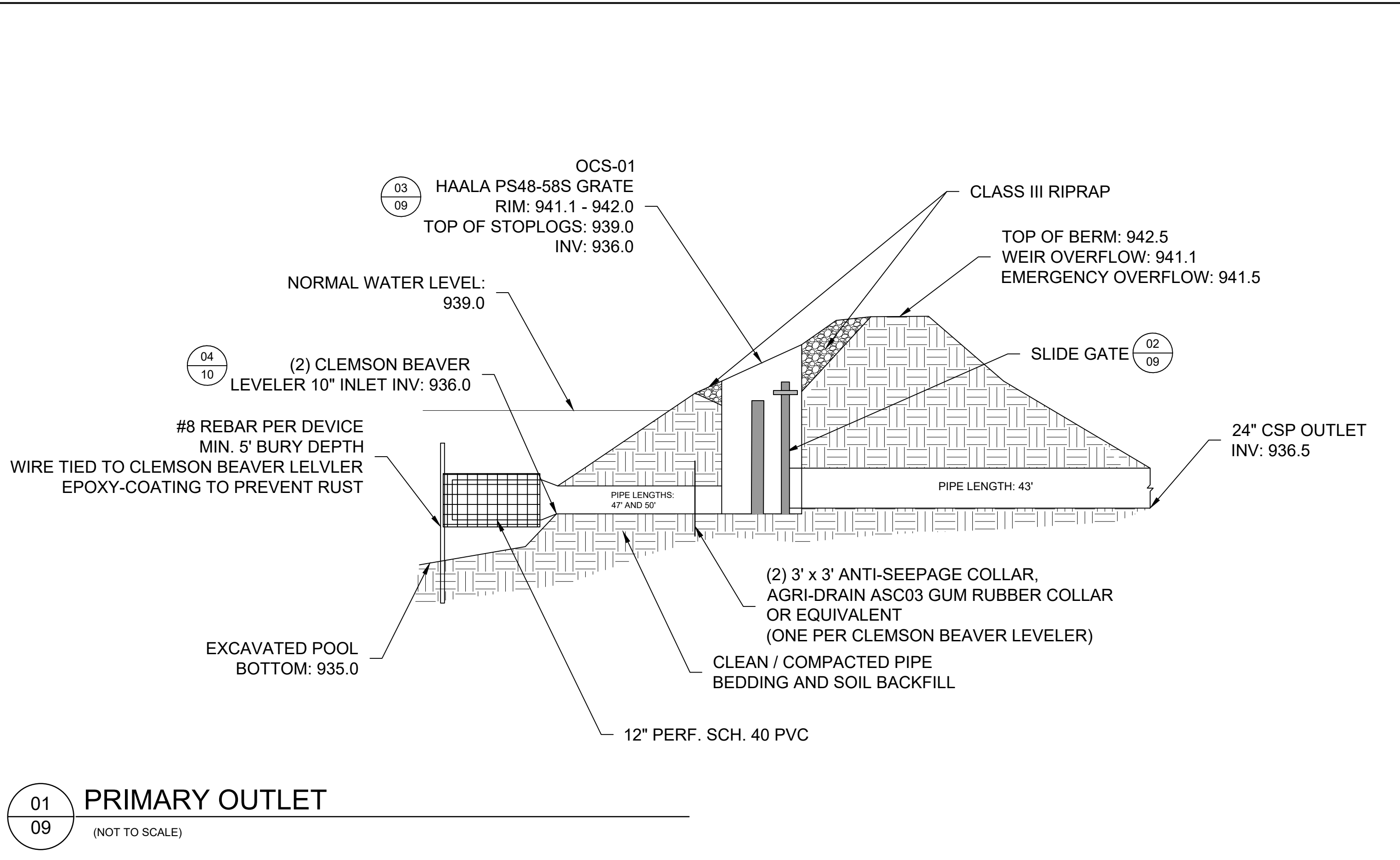
**EOR** Emmons & Olivier Resources, Inc.  
1919 University Ave W  
Saint Paul, MN 55104  
Tele: 651.770.8448  
www.eorinc.com

**PRIOR LAKE SPRING LAKE**  
WATERSHED DISTRICT

SUTTON LAKE OUTLET RETROFIT  
JORDAN, SCOTT COUNTY, MINNESOTA  
STATE PROJECT NO. --- CITY PROJECT NO. ---

TRAFFIC CONTROL PLAN  
SHEET 08 OF 11 SHEETS





Plot Date: 12/07/2020  
Drawing Title: Sutton Lake Outlet Retrofit  
Drawing Number: W000758\_PLSLWD0114\_Sutton\_Lake\_Outlet\_Design09\_GNS\_ProjectName.dwg  
User: J. Blum  
PLOT: 12/07/2020 14:11:11

6			
5			
4			
3			
2			
1	12/07/2020	KDC	BID PLANS - NOT FOR CONSTRUCTION
NO	DATE	BY	REVISION

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.

*Kyle D. Crawford*

KYLE D. CRAWFORD, P.E.  
DATE: 12/07/2020 LICENSE # 54906

SUBMISSION DATE:	12/07/2020
DESIGN BY	KDC
DRAWN BY	KDC
EOR PROJECT NO.	00758-0114

**EOR**  
water  
ecology  
community

**Emmons & Olivier Resources, Inc.**  
1919 University Ave W  
Saint Paul, MN 55104  
Tele: 651.770.8448  
www.eorinc.com

**PRIOR LAKE  
SPRING LAKE**  
WATERSHED DISTRICT

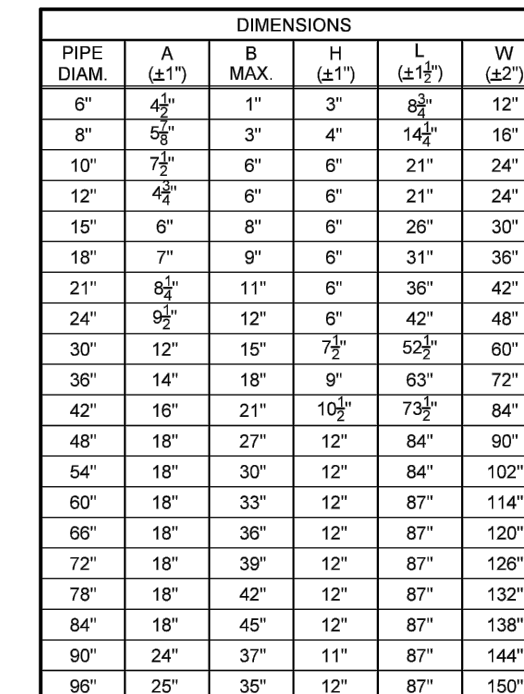
**SUTTON LAKE OUTLET RETROFIT  
JORDAN, SCOTT COUNTY, MINNESOTA**

STATE PROJECT NO. --- CITY PROJECT NO. ---

DETAIL SHEET I

SHEET 09 OF 11 SHEETS



METAL PIPE APPROX  
AND APRON GUARD

(NOT TO SCALE

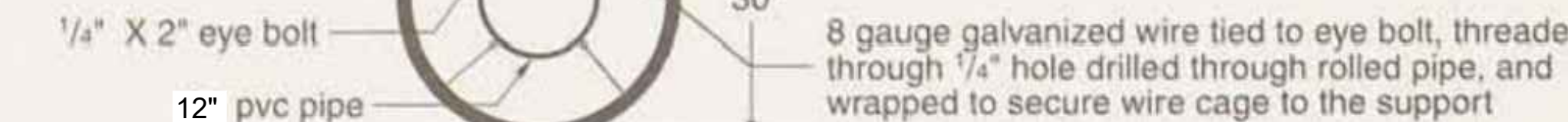
(NOT TO SCALE



1. FOR CORRUGATED PIPES,  
ATTACH TO SPIGOT BACK FRAME

(NOT TO SCALE)

(NOT TO SCALE)




---

10

(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.



KYLE D. CRAWFORD, P.E.  
DATE: 12/07/2020 LICENSE # 54906

KYLE D. CRAWFORD, P  
DATE: 12/07/2020

LICENSE # 54906

EOR PROJECT NO  
00758-0114

**EOR**  
water  
ecology  
community

**Emmons & Olivieri  
Resources, Inc.**  
1919 University Ave W  
Saint Paul, MN 55104  
Tele: 651.770.8444  
[www.eorinc.com](http://www.eorinc.com)

PRIOR LAKE  
SPRING LAKE  
WATERSHED DISTRICT

SUTTON LAKE OUTLET RETROFIT  
JORDAN, SCOTT COUNTY, MINNESOTA

STATE PROJECT NO. ---	CITY PROJECT NO. ---
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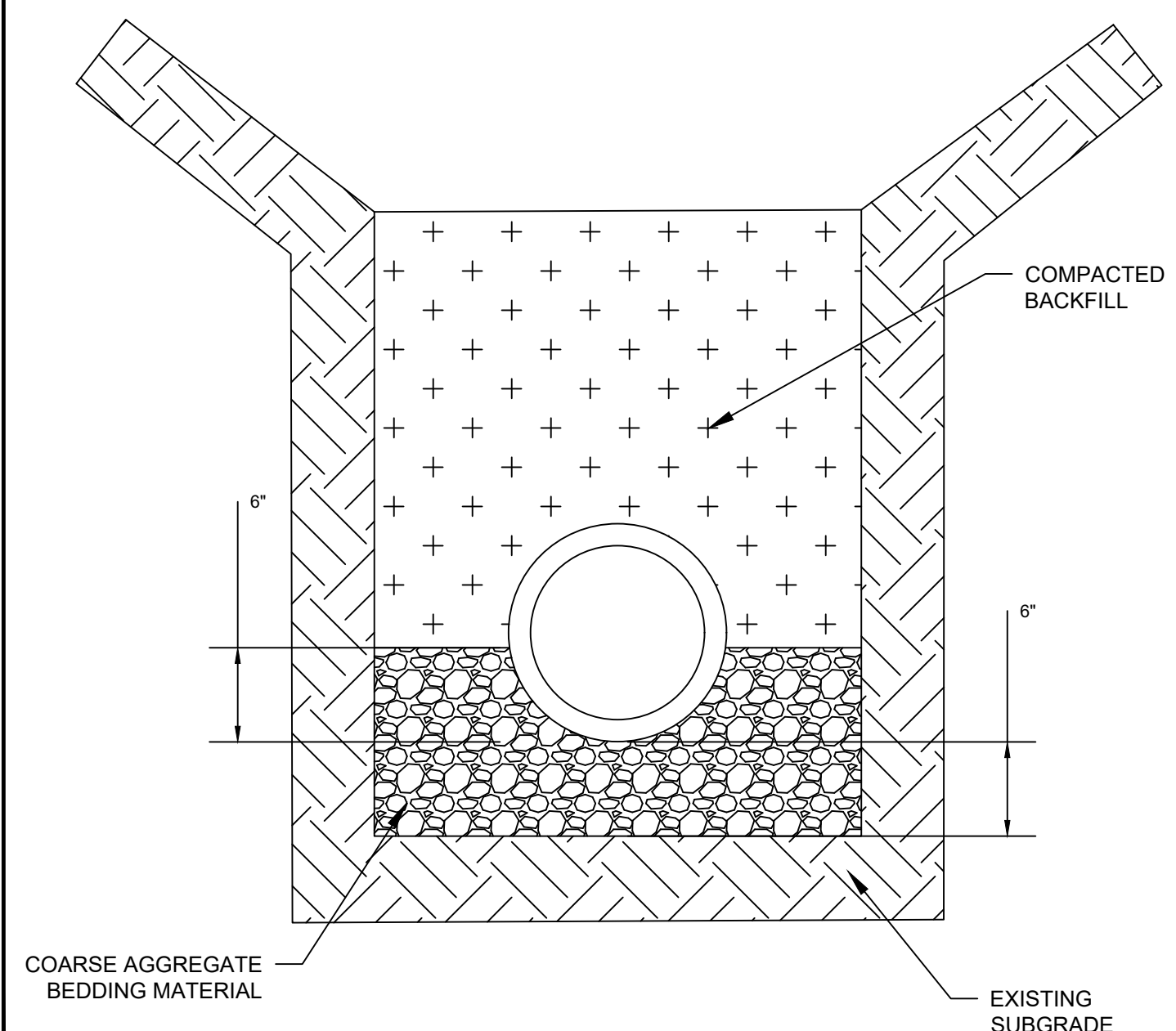
DETAIL SHEET II

SHEET 10 OF 11 SHEETS

MATERIAL LIST FOR INTAKE DEVICE	
QUANTITY	MATERIAL
1	10" SECTION, 12" DIA. PVC PIPE (SCHEDULE 40)
1	PVC CAP FOR 12" DIA. PVC PIPE (SCHEDULE 40)
1	12" - 10" PVC PIPE REDUCER (SCHEDULE 40)
6	86" SECTIONS, 1" DIA. PLASTIC ROLL PIPE (WATER PIPE)
6	1" NYLON COUPLINGS FOR ROLL PIPE
30	$\frac{3}{4}$ " X 2" GALVANIZED EYEBOLTS
30	$\frac{1}{4}$ " GALVANIZED NUTS
30	$\frac{1}{4}$ " GALVANIZED FLAT WASHERS
30	$\frac{1}{4}$ " GALVANIZED LOCK WASHERS
30	16" SECTIONS, 8 GA. GALVANIZED WIRE (MEDIUM HARDNESS)
2	96" SECTIONS, 2" X 4" 12 GA. GALVANIZED WELDED WIRE
	"C" FASTENERS OR HOG RINGS

NOTE

CONTRACTOR SHALL FOLLOW GUIDELINES FOR CONSTRUCTING CLEMSON BEAVER LEVELERS AS LAID OUT IN MNDNR DOCUMENT (PROVIDED IN SPECIFICATIONS)



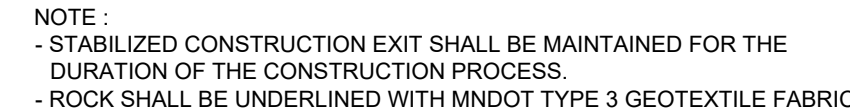
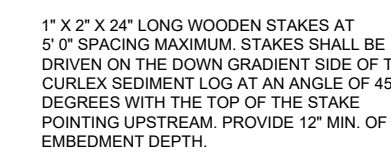
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10

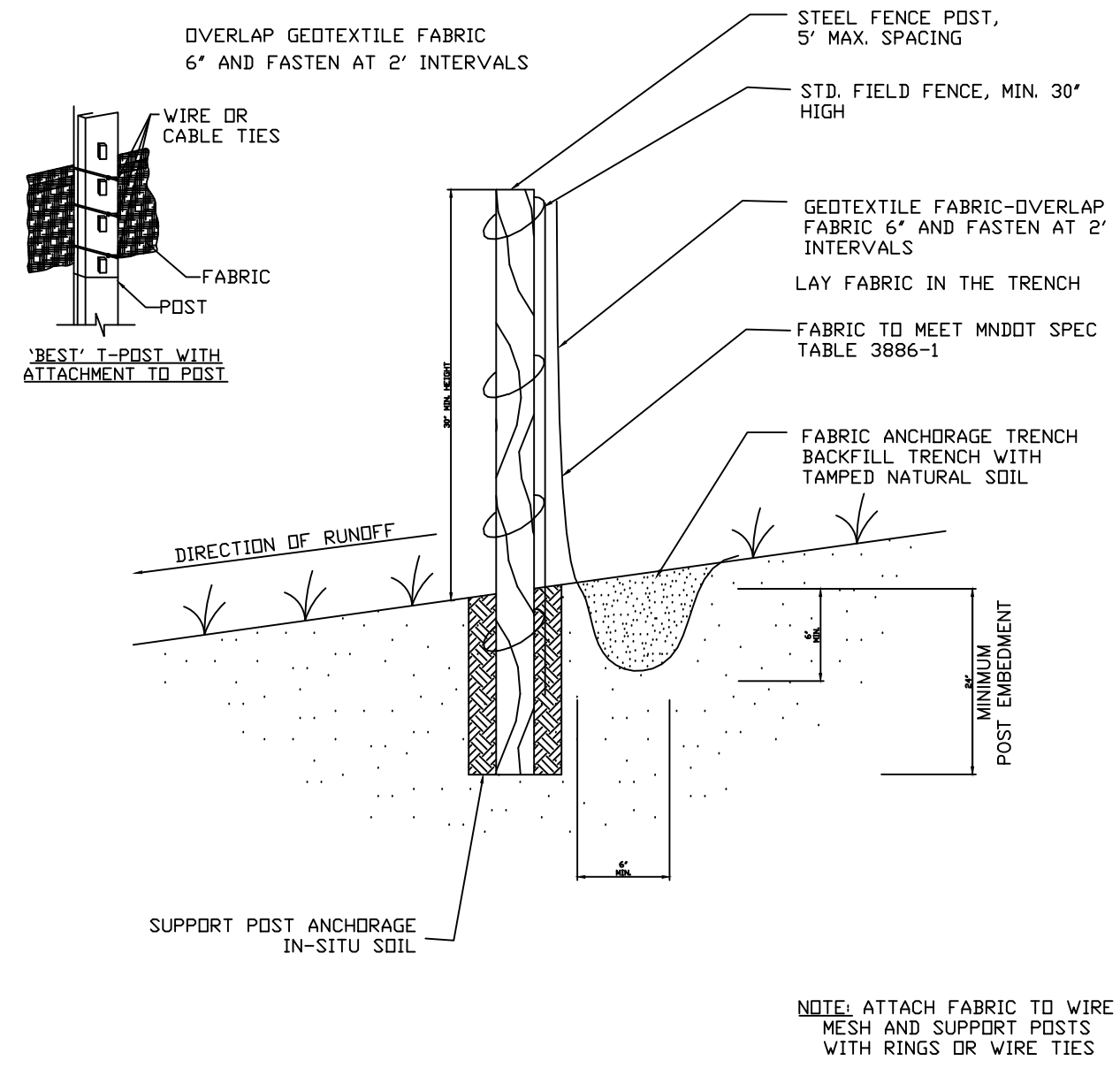
(NOT TO SCALE)



1. SPACE STAKES AS FOLLOWS:  
  
FILTER SOCKS: 2"X2" NOMINAL WOOD STAKES AT 8 FOOT MAXIMUM SPACING.  
  
WOOD EXCELSIOR LOGS AND STRAW  
WATTLES: 1"X1" NOMINAL WOOD STAKES AT 8 FOOT MAXIMUM SPACING.
2. INSTALL SLOPE PROTECTION  
PERPENDICULAR TO SLOPE (PARALLEL TO  
CONTOURS), OVERLAP JOINTS PER DETAIL 'A'.  
RUN THE LAST 10 FEET OF EACH DEVICE UP  
THE SLOPE TO PREVENT FLOW RUNAROUND.
3. STAKES ARE NOT TO PROTRUDE THROUGH  
LOGS, BUT RATHER PLACED ON THE  
DOWNSTREAM SIDE AT A 45 DEGREE ANGLE  
SO AS TO "PINCH" THE LOG TIGHT TO THE  
GROUND SURFACE
4. 100% COIR FIBER LOGS 9" DIA. ROLL (CURLEX  
SEDIMENT LOG OR APPROVED EQUAL.)



- NOTE :
- STABILIZED CONSTRUCTION EXIT SHALL BE MAINTAINED FOR THE DURATION OF THE CONSTRUCTION PROCESS.
  - ROCK SHALL BE UNDERLINED WITH MNDOT TYPE 3 GEOTEXTILE FABRIC



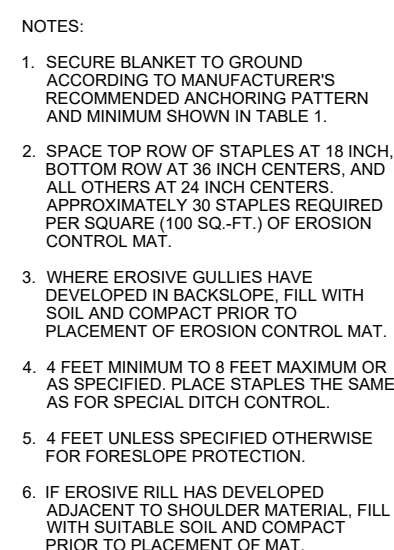
NOTE: ATTACH FABRIC TO WIRE  
MESH AND SUPPORT POSTS  
WITH RINGS OR WIRE TIES

## SEDIMENT LOG

(NOT TO SCALE)

## STABILIZED CONSTRUCTION EXIT

**SILT FENCE**  
(NOT TO SCALE)



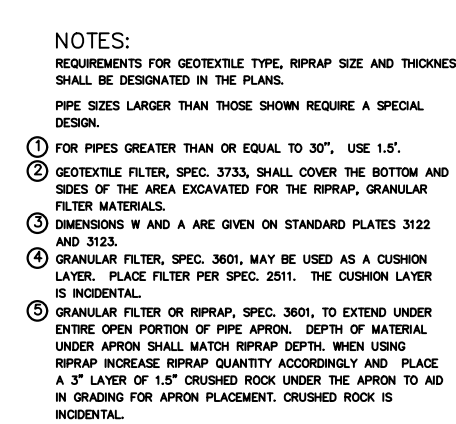
Max. slope	Min. anchors
≤ 3:1	1.5/yd <sup>2</sup>
2:1	2/yd <sup>2</sup>
1:1	2.5/yd <sup>2</sup>

04  
11

EROSION CONTROL BLANKET

(NOT TO SCALE)

SPAN OF PIPE (IN.)		CLASS II d <sub>50</sub> = 6"				CLASS IV d <sub>50</sub> = 9"				CLASS IV d <sub>50</sub> = 12"			
		GEO- TEXTILE FILTER (IN.)	12" DEPTH UNDER (IN.)	GEO- TEXTILE FILTER (IN.)	12" DEPTH UNDER (IN.)	GEO- TEXTILE FILTER (IN.)	12" DEPTH UNDER (IN.)	GEO- TEXTILE FILTER (IN.)	24" DEPTH UNDER (IN.)	GEO- TEXTILE FILTER (IN.)	24" DEPTH UNDER (IN.)	GEO- TEXTILE FILTER (IN.)	24" DEPTH UNDER (IN.)
17	8	18.7	0.5	2.3	21	0.4	6.7	23.2	0.3	9.3			
21	8	21.9	0.4	3.1	25.1	0.4	6.7	28.6	0.5	9.0			
24	10	23.5	0.3	4.9	28.5	0.5	7.4	30.4	0.6	8.8			
28	14	29.2	0.4	6.4	32.0	0.3	6.8	36.8	0.8	8.6			
35	14	36.8	0.6	8.5	41.0	0.9	12.8	45.4	1.2	17.1			
42	16	46.5	0.9	11.2	51.1	1.3	16.8	56.0	1.7	22.5			
51	18	55.1	1.3	16.6	60.6	1.7	20.7	64.2	2.2	26.5			




- ## NOTES:
- REQUIREMENTS FOR GEOTECHNILE TYPE, RPPAP SIZE AND THICKNESS SHALL BE DETERMINED IN THE PLANS.
- ITEM SIZE LARGER THAN THOSE SHOWN REQUIRE A SPECIAL DESIGN.
- 1 FOR PIPES GREATER THAN OR EQUAL TO 30", USE 1.5'.
  - 2 GEOTECHNILE TYPE, SPEC. 3733, SHALL COVER THE BOTTOM AND SIDES OF THE AREA EXCAVATED FOR THE RPPAP, GRADDED FILTER MATERIAL.
  - 3 DIMENSIONS "W" AND "A" GIVEN ON STANDARD PLATES 3122 AND 3123.
  - 4 GRASS FILTER, SPEC. 3605, MAY BE USED AS A CUSHION LAYER. PLACE FILTER PER SPEC. 2511. THE CUSHION LAYER IS NOT REQUIRED.
  - 5 GRASS FILTER OR RPPAP, SPEC. 3605, TO EXTEND UNDER ENTIRE OPEN LENGTH OF PIPE. APPROX. DEPTH OF MATERIAL UNDER PIPE SHALL MATCH RPPAP DEPTH. WHEN USING RPPAP INCREASE RPPAP QUANTITY ACCORDINGLY AND PLACE RPPAP AT A LAYER OF 1.5' CRUSHED ROCK UNDER THE PIPE AND TO GRASS OR GEOTECHNILE PLACEMENT. CRUSHED ROCK IS NOT A LAYER.

APPROVED <u>DECEMBER 9, 2013</u>	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE	STA P
<i>Christophe By</i> STATE DESIGN ENGINEER	RIPRAP AT CSP OUTLETS	3123 3122 3601 3733 2511	31

05  
11

RIPRAP APRON  
(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.

  
KYLE D. CRAWFORD, P.E.  
DATE: 12/07/2020

LICENSE # 54906

SUBMISSION DATE 12/07/2020	
DESIGN BY KDC	DRAWN BY KDC
EOR PROJECT NUMBER 00758-0114	

**EO**  
water  
ecology  
community

**Emmons & Olivie  
Resources, Inc.**  
1919 University Ave W  
Saint Paul, MN 55104  
Tele: 651.770.8444  
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PRIOR LAKE  
SPRING LAKE  
WATERSHED DISTRICT

<p>SUTTON LAKE OUTLET RETROFIT JORDAN, SCOTT COUNTY, MINNESOTA</p>	
STATE PROJECT NO. ---	CITY PROJECT NO. ---

DETAIL SHEET III

SHEET 11 OF 11 SHEETS

**AGREEMENT BETWEEN  
PRIOR LAKE - SPRING LAKE WATERSHED DISTRICT and  
CLIFTON LARSON ALLEN LLP**

**ACCOUNTING SERVICES AGREEMENT**

This agreement is entered into by the Prior Lake - Spring Lake Watershed District, a public body with powers set forth at Minnesota Statutes chapters 103B and 103D (PLSLWD), and CliftonLarsonAllen LLP a Minnesota corporation (CONSULTANT). In consideration of the terms and conditions set forth herein and the mutual exchange of consideration, the sufficiency of which hereby is acknowledged, PLSLWD and CONSULTANT agree as follows:

1. Scope of Work

CONSULTANT will perform the work described in the Scope of Services attached as Exhibit A (the "Services"). Exhibit A is incorporated into this agreement and its terms and schedules are binding on CONSULTANT as a term hereof. PLSLWD, at its discretion, in writing may at any time suspend work or amend the Services to delete any task or portion thereof. Authorized work by CONSULTANT on a task deleted or modified by PLSLWD will be compensated in accordance with paragraphs 5 and 6. Time is of the essence in the performance of the Services.

2. Independent Contractor

CONSULTANT is an independent contractor under this agreement. CONSULTANT will select the means, method and manner of performing the Services. Nothing herein contained is intended or is to be construed to constitute CONSULTANT as the agent, representative or employee of PLSLWD in any manner. Personnel performing the Services on behalf of CONSULTANT or a subcontractor will not be considered employees of PLSLWD and will not be entitled to any compensation, rights or benefits of any kind from PLSLWD.

3. Subcontract and Assignment

CONSULTANT will not assign, subcontract or transfer any obligation or interest in this agreement or any of the Services without the written consent of PLSLWD and pursuant to any conditions included in that consent. PLSLWD consent to any subcontracting does not relieve CONSULTANT of its responsibility to perform the Services or any part thereof, nor in any respect its duty of care, insurance obligations, or duty to hold harmless, defend and indemnify under this agreement.

4. Duty of Care; Indemnification

CONSULTANT will perform the Services with due care and in accordance with national standards of professional care. CONSULTANT will defend PLSLWD, its board members, employees and agents from any and all actions, costs, damages and liabilities of any nature arising from; and hold each such party harmless, and indemnify it, to the extent due to: (a) CONSULTANT's negligent or otherwise wrongful act or omission, or breach of a specific contractual duty; or (b) a subcontractor's negligent or otherwise wrongful act or omission, or breach of a specific contractual duty owed by CONSULTANT to PLSLWD. For any claim subject to this paragraph by an employee of CONSULTANT or a subcontractor, the indemnification obligation is not limited by a limitation on the amount or type of damages, compensation or benefits payable by or for

CONSULTANT or a subcontractor under workers' compensation acts, disability acts or other employee benefit acts.

5. Compensation

PLSLWD will compensate CONSULTANT for the Services on an hourly basis and reimburse for direct costs in accordance with Exhibit A. The hourly rates and other fees set forth in Exhibit A to the Agreement shall apply to all services rendered by CONSULTANT. Invoices will be submitted monthly for work performed during the preceding month. Payment for undisputed work will be due within 60 days of receipt of invoice. Direct costs not specified in Exhibit A will not be reimbursed except with prior written approval of the PLSLWD administrator. Subcontractor fees and subcontractor direct costs, as incurred by CONSULTANT, will be reimbursed by PLSLWD at the rate specified in PLSLWD's written approval of the subcontract.

The total payment for each task will not exceed the amount specified for that task in Exhibit A. The total payment for the Services will not exceed \$37,000 for 2021, and \$34,000 for 2022. Total payment in each respect means all sums to be paid whatsoever, including but not limited to fees and reimbursement of direct costs and subcontract costs, whether specified in this agreement or subsequently authorized by the administrator.

CONSULTANT will maintain all records pertaining to fees or costs incurred in connection with the Services for six years from the date of completion of the Services. CONSULTANT agrees that any authorized PLSLWD representative or the state auditor may have access to and the right to examine, audit and copy any such records upon reasonable notice during normal business hours.

6. Termination; Continuation of Obligations

This agreement is effective when fully executed by the parties and will remain in force until December 31, 2022 unless earlier terminated as set forth herein.

PLSLWD may terminate this agreement at its convenience, by a written termination notice stating specifically what prior authorized or additional tasks or services it requires CONSULTANT to complete. CONSULTANT will receive full compensation for all authorized work performed, except that CONSULTANT will not be compensated for any part performance of a specified task or service if termination is due to CONSULTANT's breach of this agreement.

Insurance obligations; duty of care; obligations to defend, indemnify and hold harmless; and document-retention requirements will survive the completion of the Services and the term of this agreement.

7. No Waiver

The failure of either party to insist on the strict performance by the other party of any provision or obligation under this agreement, or to exercise any option, remedy or right herein, will not waive or relinquish such party's rights in the future to insist on strict performance of any provision, condition or obligation, all of which will remain in full force and affect. The waiver of either party on one or more occasion of any provision or obligation of this agreement will not be construed as a waiver of any subsequent breach of the same provision or obligation, and the consent or

approval by either party to or of any act by the other requiring consent or approval will not render unnecessary such party's consent or approval to any subsequent similar act by the other.

Notwithstanding any other term of this agreement, PLSLWD waives no immunity in tort. This agreement creates no right in and waives no immunity, defense or liability limit with respect to any third party.

8. Insurance

At all times during the term of this Agreement, CONSULTANT will have and keep in force the following insurance coverages:

- A. General: \$1.5 million, each occurrence and aggregate, covering CONSULTANT's ongoing operations on an occurrence basis and including contractual liability.
- B. Professional liability: \$1.5 million each claim and aggregate. Any deductible will be CONSULTANT's sole responsibility and may not exceed \$50,000. Coverage may be on a claims-made basis, in which case CONSULTANT must maintain the policy for, or obtain extended reporting period coverage extending, at least three (3) years from completion of the Services.
- C. Automobile liability: \$1.5 million combined single limit each occurrence coverage for bodily injury and property damage covering all vehicles on an occurrence basis.
- D. Workers' compensation: in accordance with legal requirements applicable to CONSULTANT.

CONSULTANT will not commence work until it has filed with PLSLWD a certificate of insurance documenting the required coverages and naming PLSLWD as an additional insured for general liability, along with a copy of the additional insured endorsement establishing coverage for CONSULTANT's ongoing operations as primary coverage on a noncontributory basis. The certificate will name PLSLWD as a holder and will state that PLSLWD will receive written notice before cancellation, nonrenewal or a change in the limit of any described policy under the same terms as CONSULTANT.

9. Compliance With Laws

CONSULTANT will comply with all applicable laws and requirements of federal, state, local and other governmental units in connection with performing the Services and will procure all licenses, permits and other rights necessary to perform the Services.

In performing the Services, CONSULTANT will ensure that no person is excluded from full employment rights or participation in or the benefits of any program, service or activity on the ground of race, color, creed, religion, age, sex, disability, marital status, sexual orientation, public assistance status or national origin; and no person who is protected by applicable federal or state laws, rules or regulations against discrimination otherwise will be subjected to discrimination.

#### 10. Data and Information

All data and information obtained or generated by CONSULTANT in performing the Services, including documents in hard and electronic copy, software, and all other forms in which the data and information are contained, documented or memorialized, are the property of PLSLWD. Provided, however, that CONSULTANT'S work papers and audit documentation are CONSULTANT'S sole and exclusive property, consistent with applicable professional standards, and are not subject to the terms of this agreement. CONSULTANT hereby assigns and transfers to PLSLWD all right, title and interest in: (a) its copyright, if any, in the materials; any registrations and copyright applications relating to the materials; and any copyright renewals and extensions; (b) all works based on, derived from or incorporating the materials; and (c) all income, royalties, damages, claims and payments now or hereafter due or payable with respect thereto, and all causes of action in law or equity for past, present or future infringement based on the copyrights. CONSULTANT agrees to execute all papers and to perform such other proper acts as PLSLWD may deem necessary to secure for PLSLWD or its assignee the rights herein assigned.

PLSLWD may immediately inspect, copy or take possession of any materials on written request to CONSULTANT. On termination of the agreement, CONSULTANT may maintain a copy of some or all of the materials except for any materials designated by PLSLWD as confidential or non-public under applicable law, a copy of which may be maintained by CONSULTANT only pursuant to written agreement with PLSLWD specifying terms, or as required by law, regulation, or professional standards.

#### 11. Data Practices; Confidentiality

If CONSULTANT receives a request for data pursuant to the Data Practices Act, Minnesota Statutes chapter 13 (DPA), that may encompass data (as that term is defined in the DPA) CONSULTANT possesses or has created as a result of this agreement, it will inform PLSLWD immediately and transmit a copy of the request. If the request is addressed to PLSLWD, CONSULTANT will not provide any information or documents, but will direct the inquiry to PLSLWD. If the request is addressed to CONSULTANT, CONSULTANT will be responsible to determine whether it is legally required to respond to the request and otherwise what its legal obligations are, but will notify and consult with PLSLWD and its legal counsel before replying. Nothing in the preceding sentence supersedes CONSULTANT's obligations under this agreement with respect to protection of PLSLWD data, property rights in data or confidentiality. Nothing in this section constitutes a determination that CONSULTANT is performing a governmental function within the meaning of Minnesota Statutes section 13.05, subdivision 11, or otherwise expands the applicability of the DPA beyond its scope under governing law.

CONSULTANT agrees that it will not disclose and will hold in confidence any and all proprietary materials owned or possessed by PLSLWD and so denominated by PLSLWD. CONSULTANT will not use any such materials for any purpose other than performance of the Services without PLSLWD written consent. This restriction does not apply to materials already possessed by CONSULTANT or that CONSULTANT received on a non-confidential basis from PLSLWD or another party. Consistent with the terms of this section 11 regarding use and protection of confidential and proprietary information, CONSULTANT retains a nonexclusive license to use the materials and may publish or use the materials in its professional activities. Any CONSULTANT duty of care under this agreement does not extend to any party other than PLSLWD or to any use of the

materials by PLSLWD other than for the purpose(s) for which CONSULTANT is compensated under this agreement, or as required by law, regulation, or professional standards.

12. PLSLWD Property

All property furnished to or for the use of CONSULTANT or a subcontractor by PLSLWD and not fully used in the performance of the Services, including but not limited to equipment, supplies, materials and data, both hard copy and electronic, will remain the property of PLSLWD and returned to PLSLWD at the conclusion of the performance of the Services, or sooner if requested by PLSLWD. CONSULTANT further agrees that any proprietary materials are the exclusive property of PLSLWD and will assert no right, title or interest in the materials. CONSULTANT will not disseminate, transfer or dispose of any proprietary materials to any other person or entity unless specifically authorized in writing by PLSLWD, or as required by law, regulation, or professional standards.

13. Notices

Any written communication required under this agreement to be provided in writing will be directed to the other party as follows:

To PLSLWD:

Administrator  
Prior Lake - Spring Lake Watershed District  
4646 Dakota Street SE  
Prior Lake MN 55372

To CONSULTANT:

Christopher Knopik  
CliftonLarsonAllen LLP  
220 South Sixth Street, Suite 300  
Minneapolis, MN 55402

Either of the above individuals may in writing designate another individual to receive communications under this agreement.

14. Choice of Law; Venue

This agreement will be construed under and governed by the laws of the State of Minnesota. Venue for any action will lie in Scott County.

15. Whole Agreement

The entire agreement between the two parties is contained herein and this agreement supersedes all oral agreements and negotiations relating to the subject matter hereof. Any modification of this agreement is valid only when reduced to writing as an amendment to the agreement and signed by the parties hereto. PLSLWD may amend this agreement only by action of the Board of Managers acting as a body.



**IN WITNESS WHEREOF**, intending to be legally bound, the parties hereto execute and deliver this agreement.

**CLIFTON LARSON ALLEN LLP**

By \_\_\_\_\_ Date: \_\_\_\_\_

**PRIOR LAKE -SPRING LAKE WATERSHED DISTRICT**

By \_\_\_\_\_ Date: \_\_\_\_\_  
Mike Myser, Board President

DRAFT

## Exhibit A Scope of Services

### TASK 1: MONTHLY SERVICES & ANNUAL AUDIT

Role	Scope of Professional Services	Hourly Rate	Estimated Hours per Month
Principal: <i>Christopher Knopik</i>	<ul style="list-style-type: none"> <li>- Provide engagement oversight and review</li> <li>- Provide industry expertise</li> <li>- Assist with questions from the District, as needed</li> </ul>	\$200	1-2
Controller: <i>TBD</i>	<ul style="list-style-type: none"> <li>- Month-end close process including adjusting journal entries</li> <li>- Compile monthly financial statements</li> <li>- Create custom financial reports and cost analysis reports</li> <li>- Provide monthly review of the general ledger</li> <li>- Review work performed by Accountant</li> <li>- Facilitate and prepare for the annual audit</li> <li>- Assist with capital asset accounting</li> <li>- Assist with proper coding of receipts for taxes and other revenue sources</li> <li>- Assist with the calculation and allocation of costs related to Outflow costs</li> <li>- Run Quickbooks reports for staff as requested and provide timely response to accounting questions</li> <li>- Provide information and assistance to the Treasurer</li> <li>- Assist with annual budget planning &amp; provide budgeting support services</li> <li>- Attend board meetings/workshops as requested</li> <li>- Process accounts payable including the preparation and issuance of checks</li> <li>- Reconcile and record District credit card activity</li> <li>- Enter receipts into QuickBooks</li> <li>- Assist with grant accounting and reporting as requested</li> <li>- Prepare depreciation schedules annually</li> <li>- Reconcile accounts monthly and prepare journal entries</li> <li>- Additional services as requested by management</li> </ul>	\$125	8
Senior Accountant: <i>Laura Larson</i>	<ul style="list-style-type: none"> <li>- Process biweekly payroll including submitting PERA, HSA, &amp; HCP, deferred comp payments, ADP processing, W2 &amp; 941 forms, etc.</li> <li>- Prepare annual 1099 and W-2 forms</li> <li>- Enter payroll activity in QuickBooks with reports from Harvest timesheets</li> <li>- Reconcile bank accounts</li> <li>- Assist with month-end close process including adjusting journal entries</li> <li>- Assist with annual audit preparation</li> <li>- Additional services as requested by management</li> </ul>	\$80	8-12
Payroll	- ADP processing charge (if applicable)	TBD	n/a
Fees	- Technology and client support fee	(5% of billed services)	
<b>Total Annual Cost Not-to-Exceed:</b>		<b>\$27,000</b>	



**TASK 2: PRIOR LAKE OUTLET CHANNEL (PLOC) ACCOUNTING SERVICES**

Role	Scope of Professional Services	Hourly Rate	Estimated Hours per Year
Controller: <i>TBD</i>	<ul style="list-style-type: none"> <li>- Attend quarterly PLOC meetings as requested</li> <li>- Quarter-end close process including adjusting journal entries</li> <li>- Compile quarterly financial reports</li> <li>- Prepare quarterly segment allocation in coordination with District Engineer</li> <li>- Provide monthly review of the general ledger</li> <li>- Facilitate annual audit</li> <li>- Assist with proper coding of cost-share allocations and other revenue sources</li> <li>- Run Quickbooks reports and provide accounting information as requested by staff</li> <li>- Assist with the calculation and allocation of costs related to Outflow costs.</li> <li>- Provide assistance with annual budget planning</li> <li>- Assist with changes to PLOC cost-share allocations</li> <li>- Additional services as requested by management</li> </ul>	\$125	50-60
Fees	- Technology and client support fee (5% of billed services)		
<b>Total Annual Cost Not-to-Exceed:</b>		<b>\$7,000</b>	

**TASK 3: TRANSITIONING/ONBOARDING (NOTE: 2021 ONLY)**

Role	Scope of Professional Services	Hourly Rate	Estimated Total Hours
Principal: <i>Christopher Knopik</i>	<ul style="list-style-type: none"> <li>- Provide engagement oversight and review</li> <li>- Provide industry expertise</li> <li>- Assist with questions from the District, as needed</li> </ul>	\$200	1-2
Controller: <i>TBD</i>	<ul style="list-style-type: none"> <li>- Receive and review information from PLSLWD's current accountant, ensure all necessary information is transferred</li> <li>- Prepare CLA systems to be set-up for PLSLWD services</li> <li>- Set up accounts for services (e.g. ADP, Harvest, etc.)</li> <li>- Additional services as requested by management</li> </ul>	\$125	10
Senior Accountant: <i>Laura Larson</i>	<ul style="list-style-type: none"> <li>- Receive and review information from PLSLWD's current system, ensure all necessary information is transferred</li> <li>- Prepare CLA systems to be set-up for PLSLWD services</li> <li>- Set up accounts for services (e.g. ADP, Harvest, etc.)</li> <li>- Additional services as requested by management</li> </ul>	\$80	15
Fees	- Technology and client support fee (5% of billed services)		
<b>Total One-Time Cost Not-to-Exceed:</b>		<b>\$3,000</b>	

**2021 Total Cost Summary:**

Task	Total Cost
TASK 1: MONTHLY SERVICES & ANNUAL AUDIT	\$27,000
TASK 2: PRIOR LAKE OUTLET CHANNEL (PLOC) ACCOUNTING SERVICES	\$7,000
TASK 3: TRANSITIONING/ONBOARDING	\$3,000
<b>TOTAL:</b>	<b>\$37,000</b>

**2022 Total Cost Summary:**

Task	Total Cost
TASK 1: MONTHLY SERVICES & ANNUAL AUDIT	\$27,000
TASK 2: PRIOR LAKE OUTLET CHANNEL (PLOC) ACCOUNTING SERVICES	\$7,000
<b>TOTAL:</b>	<b>\$34,000</b>

**PLSLWD Board Staff Report**

December 28, 2020



<b>Subject</b>	Upper Watershed Blueprint – 60% Draft Report		
<b>Board Meeting Date</b>	December 30, 2020	<b>Item No</b>	3
<b>Prepared By</b>	Maggie Karschnia, Water Resources Project Manager		
<b>Attachments</b>	60% Draft Report		
<b>Action</b>	Discussion only. No action needed at this time.		

**BACKGROUND**

In order to approach Upper Watershed stormwater management comprehensively, the Prior Lake-Spring Lake Watershed District (PLSLWD) engaged Wenck to develop an Upper Watershed Blueprint. The Upper Watershed Blueprint is intended to be used as a prioritized implementation roadmap for the PLSLWD and local partners to improve water quality conditions and reduce flooding. The goals of the Upper Watershed Blueprint are to:

- 1) Recommend and prioritize programs, projects and policy to reduce phosphorus and runoff volume;
- 2) Identify partners and potential funding sources; and
- 3) Detail a 10-year schedule for prioritized program and project implementation including short- and long-term maintenance considerations.

**60% DRAFT REVIEW**

Wenck has provided the attached 60% draft of the Upper Watershed Blueprint report for Board review. The intent at the Special Board Meeting on December 30<sup>th</sup> is to get feedback on overall content, structure, and projects identified in the report. These comments by the Board will be incorporated into the 90% draft that will be brought to the Board's regular meeting in January.

**SCHEDULE**

The following are target milestone dates as the project progresses to completion:

- **December 30th:** 60% Draft presentation to Board at special meeting, comments to be incorporated into 90% Draft
- **January 12th:** 90% Draft presentation to Board at workshop, receive final comments
- **February 9th:** Final draft to Board for approval

**DISCUSSION**

Wenck is seeking comments from the Board to ensure the document is hitting all the marks and fulfilling the needs of the District before moving towards the 90% Draft Report.

# Upper Watershed Blueprint



*Prepared for:*

## Prior Lake-Spring Lake Watershed District

4646 Dakota Street SE  
Prior Lake, MN 55372



Responsive partner.  
Exceptional outcomes.

*Prepared by:*

**WENCK Associates, Inc.**  
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Maple Plain, MN 55359  
Phone: 763-479-4200  
Fax: 763-479-4242

December 2020

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Responsive partner. Exceptional outcomes.

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## **APPENDICES**

## Executive Summary

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This document presents an evaluation of the conditions in the Upper Watershed and projects that can improve the water quality and flood concerns for Spring, Upper Prior, and Lower Prior Lakes. The Upper Watershed is a significant source of nutrients to the downstream and contributor to flooding on the lakes. The water quality objective of the Upper Watershed Blueprint study is to provide a road map to improve the recreational benefits of Spring, Upper Prior and Lower Prior Lakes. The flood concern goals of the project are to evaluate projects in the Upper Watershed that can reduce the impacts caused by lake flooding and high water levels.

Spring Lake and Upper Prior Lake have been identified as impaired waters by the Minnesota Pollution Control Agency for excess nutrients. The high nutrient loading results in undesirable algae blooms and recreational use restrictions. The Total Maximum Daily Load (TMDL) study completed for the lakes requires an 83 percent reduction in total phosphorus to achieve the state water quality standard.

While small projects can provide small, incremental, improvements to water quality and quantity concerns, this report is focused on larger projects that will have a more significant benefit. The sum of the 11 projects identified and evaluated in this report have potential to reduce the annual phosphorous loads to Spring Lake by about 2,300 pounds. The four projects with the highest phosphorous reduction potential identified in the study and their estimated load reductions are:

- Sutton Lake Iron Enhanced Sand Filter (IESF) - 735 pounds per year
- Spring West IESF - 249 pounds per year
- Swamp Lake IESF - 223 pounds per year
- County Ditch 13 Improvements - 202 pounds per year

These 4 projects combine to reduce the total phosphorous loads from the upper watershed by about 1,400 pounds annually, or 22% of the watershed load. This is about 27% of the TMDL goal. The other seven projects provide a reduction of about 900 pounds, for a total phosphorous load reduction of 36%. The 11 projects combined provide a significant improvement and reach about 43% of the 83% total reduction goal provided in the TMDL study. These projects have various funding mechanisms that are available to assist from feasibility study through construction and long-term maintenance.

Forty-two percent of the phosphorous load to Upper Prior Lake is attributed to Spring Lake in the TMDL study. Reducing the external phosphorous load to Spring Lake, combined with the in-lake treatments being conducted to reduce internal phosphorous load on Spring Lake, will greatly improve the water quality on Upper Prior Lake.

Resolving flooding issues on the Spring, Upper Prior and Lower Prior Lake is the second issue evaluated in the study. Periods of extreme flooding cause shoreline erosion and extended periods of no wake zones on the lake, and limit access for emergency vehicles due to road closures. Various models and scenarios indicate that the flooding is driven by discharge volumes to and from the lakes. Based on modeling conducted during this study, and on the 2016 Flood Study report, solutions to address these flooding concerns in the Upper Watershed will require upstream storage on a very large scale to provide a



measurable benefit for both the magnitude and duration of flooding. Two alternatives that can make a positive impact on the flooding concern are:

- Modify the culvert and discharge allowance for the Prior Lake outlet channel to permit a higher discharge rate during period when the capacity is available in downstream channels and basins. In conjunction with permitting for a higher discharge rate, work with the DNR and other partners to allow discharge through the Prior Lake outlet channel at a lower water level in advance of forecasted significant precipitation events to provide storage to contain those events. This water level manipulation combined with a higher discharge rate have potential to reduce the 10-year high water level on Prior Lake by 2.6 feet.
- The 2016 Flood Study report included analysis of a series of 10 upstream detention projects that, when combined, could reduce the 100-year high water level on Prior Lake by 1.2 feet. These projects included a significant land area needed for the flood mitigation and most of it is privately owned.

The nature of the watershed and the causes of flooding present challenges identifying individual projects that address both water quality and flooding. The projects are ranked in Section 6 of the report based on phosphorous reduction potential, flood reduction potential, project cost, and overall feasibility. These rankings can be used to determine a priority list and schedule to implement future projects in the watershed. The district should evaluate any future land use changes or development in the upper watershed for potential water quality and flood reduction benefits that those changes may present.



# 1.0 Introduction

---

## 1.1 INTRODUCTION AND PROJECT PURPOSE

Wenck has prepared this Upper Watershed Blueprint (UWB) report on behalf of the Prior Lake-Spring Lake Watershed District (PLSLWD). The report presents current conditions and alternatives for stormwater treatment for the Upper Watershed as well as solutions to work towards mitigating flood conditions on Spring, Upper Prior and Lower Prior Lakes.

The Upper Watershed is a 12,760-acre area tributary to Spring Lake, located completely in Scott County, Minnesota. The Upper Watershed represents about 2/3 of the total tributary area to Spring Lake and Upper and Lower Prior Lakes. The Upper Watershed boundaries are shown in Figure 1.1.

The primary land use in the Upper Watershed is agricultural, with some rural residential. The current Scott County zoning map is for rural residential, transition reserve, agricultural preservation, and urban expansion reserve. There are about 2,700 acres of National Wetland Inventory (NWI) Type 3, 4, and 5 wetlands in the upper watershed. Cities and townships in the Upper Watershed include a small portion of Sand Creek Township, Spring Lake Township and the City of Prior Lake.

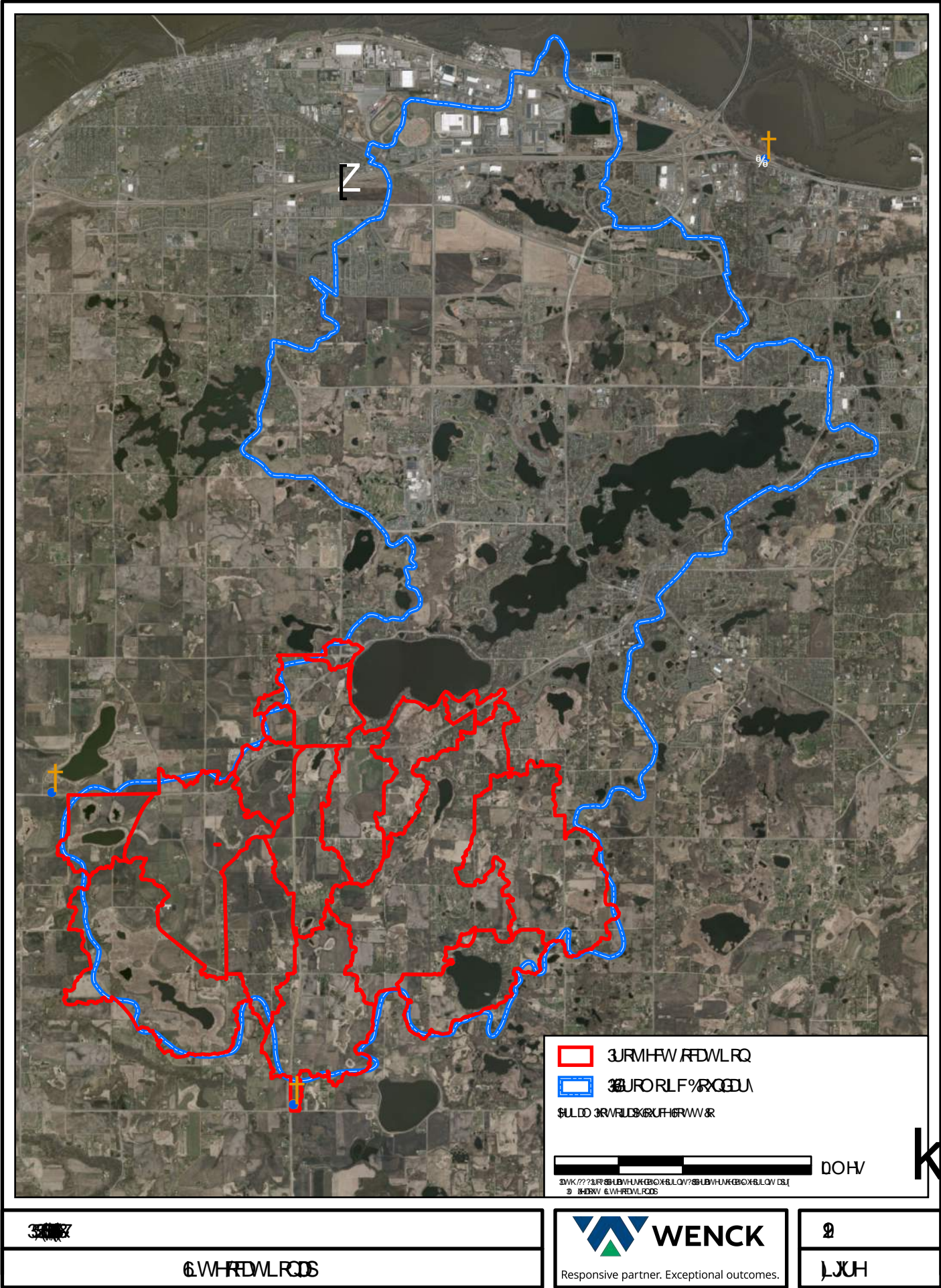
The Upper Watershed is drained primarily through two channel systems. The eastern channel is identified as the Buck Lake system. The Buck Lake system starts at Fish Lake and then flows through a series of streams and wetlands into Buck Lake, and from Buck Lake through a large wetland complex before entering Spring Lake. The land use in the Buck Lake system is a mix of agricultural, wetlands, and residential.

The western half of the Upper Watershed flows through Scott County Ditch 13, a largely man-made ditch that begins at Sutton Lake in the southwest area of the watershed. From Sutton Lake, the excavated channel flows to the north, through several agricultural fields and eventually to Spring Lake. There are two tributaries to County Ditch 13. One rises from Swamp Lake in the western portion of the watershed and flows through to the east and south before its confluence with the main branch of Ditch 13. The second rises at the southern extent of the upper watershed and flows north to meet with the main branch of Ditch 13 just west of Highway 13.

After the three ditches converge, the ditch crosses Highway 13 and Highway 282 before flowing into Spring Lake. Parts of the Ditch 13 flows pass through a Ferric Chloride treatment system before entering Spring Lake.

## 1.2 UPPER WATERSHED PROBLEMS

There are two primary problems in the Upper Watershed. First, phosphorus and sediment loading in runoff from the drainage area are the main sources of phosphorous in Spring Lake and Upper and Lower Prior Lakes. Spring Lake and Upper Prior Lake have been designated as Impaired Waters by the Minnesota Pollution Control Agency for excess nutrients. This results in undesirable algae blooms and restrictions on recreational use. Total Maximum Daily Load (TMDL) studies have been completed for each lake. Spring Lake requires an 83 percent reduction in total phosphorus to achieve the state water quality



standard. Spring Lake discharges into Upper Prior Lake, and accounts for about 42 percent of that lake's nutrient load. Improvements to Spring Lake should result in improvements to Upper Prior Lake water quality.

The volume and rate of runoff from the Upper Watershed is also a substantial contributor to flooding on Spring Lake, Upper Prior Lake, and Lower Prior Lake. Flood elevations and extended periods of high water on the lakes result in safety issues related to emergency vehicle access on flooded roads, shoreline erosion, impact to older homes on the lake, and no wake mandates.

### **1.3 PROJECT PARTNERS**

Identifying and working with project partners is a critical component of implementing watershed solutions towards effective water quality treatment and quantity mitigation. Scott County, Sand Creek Township, Spring Lake Township, City of Prior Lake, and MNDOT were all consulted during this project. These partners will be crucial to successful implementation of water quality and quantity projects. Working with these project partners when they implement any capital improvements with potential for a water resources benefit and coordination of projects present opportunities for improving water quality in the watershed.

### **1.4 FUNDING PROJECT PARTNERS**

Lack of adequate project funding can be a roadblock to successful implementation. Leveraging resources from various stakeholders and funding agencies will likely be necessary to meet the goals of this project. The following agencies and stakeholders are potential sources of funding for projects:

- Board of Water and Soil Resources (BWSR)
- Minnesota Pollution Control Agency (MPCA)
- Minnesota Department of Natural Resources (DNR)
- United States Army Corps of Engineers (USACE)
- Legislative-Citizen Commission on Minnesota Resources (LCCMR)
- Lessard-Sams Outdoor Heritage Council Funding (LSOHC)
- Minnesota Department of Transportation (MNDOT)
- Legislative appropriation
- Ducks Unlimited
- Pheasants Forever

### **1.5 PROJECT GOALS**

The overall project goal is a framework for a prioritized 10-year capital improvement plan targeted towards 1) making measurable improvements in water quality, and 2) to reduce the magnitude and frequency of flooding on Spring Lake, Upper Prior Lake and Lower Prior Lake. This report presents, evaluates, and prioritizes projects that can be implemented toward meeting those objectives.

The TMDL report included a target total phosphorous reduction goal of about 2,959 pounds, out of a total load of 3,595 pounds for the Spring Lake subwatershed. This is about 82% of the total phosphorous load from the watersheds that are tributary to Spring Lake. This reduction percentage is



## **1.6 REPORT ORGANIZATION**

This report is separated into the following sections with data and information towards meeting those goals:

- Section 2.0 – Data Summary
- Section 3.0 – Project Targeting
- Section 4.0 – BMP Conceptual Plans and Evaluation
- Section 5.0 – Project Prioritization
- Section 6.0 – Funding Sources
- Section 7.0 – Summary

## 2.0 Data Summary

---

### 2.1 INTRODUCTION

Wenck reviewed historical flow and water quality data for the Upper Watershed to compile maps showing the total phosphorous loads and runoff volumes that are attributable to each of the subcatchments in the tributary area. Wenck also reviewed previous reports that are relevant to the Upper Watershed.

### 2.1 HYDROLOGY DATA SUMMARY

Wenck used the District's PC-SWMM model to simulate the last ten years of precipitation (January 1, 2010- January 1, 2020) to estimate the volumes discharged from the Upper Watershed and each of the subwatersheds. Wenck created a precipitation file using 15-minute increment rainfall measurements at Flying Cloud Airport in Eden Prairie, about ten miles north of the watershed, the nearest with data available. Precipitation data discretized into longer durations (e.g. hourly and daily) was too coarse to capture the hydrologic response of the soils (i.e. peak rainfall intensities, which generate large runoff rates, were averaged out by the longer discretization period).

The District routinely monitors flow and water level at various locations throughout the Upper Watershed. The District's PCSWMM model was previously calibrated to the Spring 2014 flood on Prior Lake using post ice out water surface elevations as initial conditions and by calculating the snow water equivalent for the 2014 event. To simulate the last 10 years, Wenck added the following information to the model:

- Daily temperature data also obtained from the Flying Cloud airport (used for calculating evaporation and precipitation type).
- Typical monthly wind rates from Technical Bulletin 1955 (used for calculating evaporation).
- Typical initial soil freeze and spring thaw dates from MIDS (December 6 and April 7, respectively). These dates are used to tell the model to not allow infiltration during frozen ground conditions.
- Snow-water equivalent, snowmelt, snow management (i.e. plowable fraction), and snowpack formation parameters based on typical values published by Computational Hydraulics, Inc., like the soil freeze dates, these values are unable to be changed year over year or within a season.

With the additional information added to the model, it far over-predicted the amount of runoff for the Prior Lake watershed and the peak water surface elevation on Spring and Prior Lakes for the spring 2014 event. Wenck then recalibrated the model based on flow and stream level data provided by the District at eleven locations throughout the Upper Watershed. A perfect calibration across the entire 10-year calibration window is not possible due to the limitations of the model associated with:

- Year over year and seasonal differences of snow water equivalents, dates of initial soil freeze and thaw, and dates of lake ice-in and ice-out.
- Land use changes associated with a rapidly developing watershed (i.e. impervious, infiltration, and plowable fraction of snow).

Using the built-in PCSWMM Sensitivity-based Radio Tuning Calibration (SRTC), Wenck ran a Monte Carlo analysis for the 2010-2020 period by adjusting the subwatershed hydrologic inputs based on published ranges of uncertainty associated with each parameter. The uncertainty associated with each hydrologic input shown in Table 2.1 below. PCSWMM then automatically completed a series of runs by manipulating the hydrologic input to the upper bound of its uncertainty range, the lower bound of its uncertainty range, and the median value of its uncertainty range while holding other parameters constant. For uncertainty ranges exceeding 100%, additional runs are completed at half the upper and lower uncertainty bounds. Forty model runs were completed varying the hydrologic parameters. Based on the goodness-of-fit, reducing the watershed width by half best matched the measured data at the eleven measured locations for the 2010-2020 period.

**Table 2.1. Uncertainty associated with hydrologic inputs.**

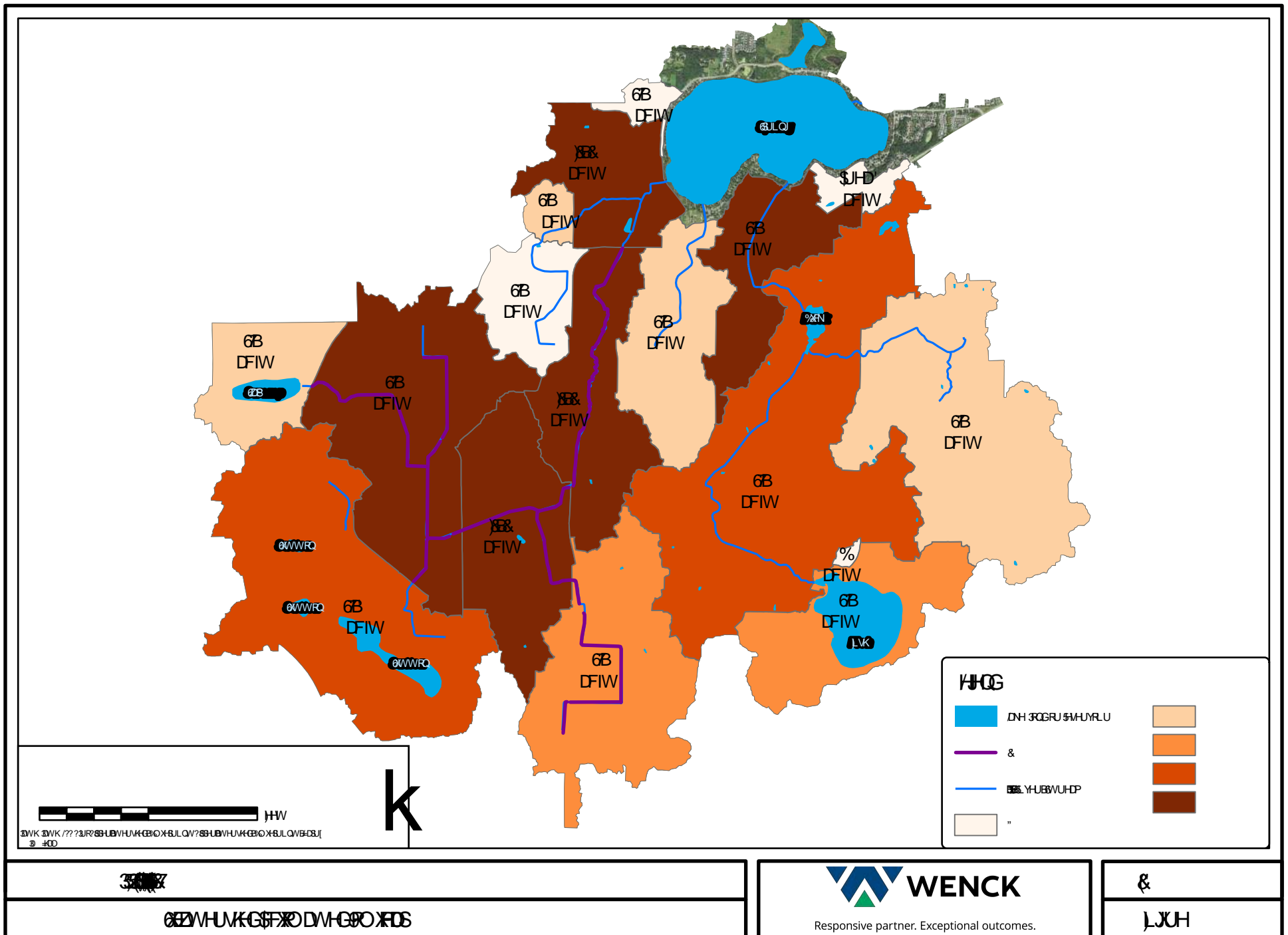
Hydrologic Input	Uncertainty (%)
Width	200
Percent Slope	25
Percent Imperviousness	20
Impervious Roughness	10
Pervious Roughness	50
Impervious Depression Storage	20
Pervious Depression Storage	50
Suction Head	50
Hydraulic Conductivity	50
Initial Deficit	25

Wenck evaluated the flood mitigation benefits, in both peak water surface elevation and duration of time above the no wake water surface elevation, to Prior Lake for each of the proposed projects for the 10-year, 30-day and the 2014 water year. These were selected because the 10-year, 30-day is a significant stormwater event and the 2014 water year is the flood of record after the current Prior Lake outlet structure was installed. In general, the post ice-out water surface elevations on Prior Lake are within 0.6 feet of the observed values for the 2010-2020. However, due to the model limitations above changes to the magnitude and duration of flooding on Prior Lake are reported as change from the baseline model (existing conditions). The focus should be on the relative benefit of each project.

The flow output summary from the PC-SWMM model is summarized in Figure 2-1, in terms of average annual volume of flow from each subwatershed area based on the 10-year model simulation. As showing in the figure, the Upper Watershed contributes about 10,000 acre-feet annually through County Ditch 13 and the Buck Lake system. Approximately 7,500 acre-feet of that runoff is contributed through the County Ditch 13 tributary area. The largest single subwatershed contributor to the total flow is the Sutton Lake Watershed at just under 2,000 acre-feet annually.

Figure 2-1 shows the total annual volume of stormwater contributed by each of the subwatersheds, in acre-feet. Figure 2-2 presents the cumulative volume at each of the stream locations. The volumes are based on the district models using the previous 10 years of climate data. As presented in the map, the largest annual volume of runoff in the upper watershed originates in the County Ditch 13 system, including the discharges from Sutton Lake and the agricultural fields surrounding County Ditch 13.







## 2.2 CHEMICAL DATA SUMMARY

Wenck used the chemistry data and flow volumes to estimate the total pounds of phosphorous originating in each of the subwatersheds, on an average annual basis.

Nine years (2011-2019) of stream and lake sampling data at 22 monitoring points were analyzed, including analysis for:

- Chloride
- Conductivity
- Total Iron
- Nitrate/Nitrite
- Ortho Phosphorous
- Soluble Reactive Phosphorous
- Temperature
- Total Phosphorous
- Total Suspended Solids
- Dissolved Oxygen
- E-Coli
- Dissolved Iron
- Nitrate + Nitrite
- pH
- Total Dissolved Phosphorous
- Total Kjeldahl Nitrogen
- Turbidity
- Volatile Suspended Solids

The total annual phosphorus loads contributed from each of the subwatersheds in the Upper Watershed are shown graphically in Figure 2-3. Figure 2-4 presents the cumulative load at each point in the watershed. The phosphorus loads shown in the figures are based on stream samples collected by the PLSLWD.

The total calculated phosphorous load from the upper watershed is about 6,380 pounds annually. Of that, the County Ditch 13 system contributes about 4,832 pounds and the Buck Lake channel contributes about 1,244 pounds, representing 75% and 19% of the total load respectively.

There are three primary discharges into Spring Lake from the Upper Watershed: County Ditch 13, the Buck Lake channel, and a smaller watershed between the two channels. These monitoring locations are identified as FC\_CD3, ST-16 and ST-17 respectively. The ranges of total phosphorous concentration for the monitoring data for each of the streams are:

- County Ditch 13 ranges from 0.01 to 0.91 mg/L and total suspended solids range from 2.4 to 79 mg/L.
- Buck Lake channel ranges from 0.16 to 0.37 mg/L and total suspended solids range from 2.5 to 5.5 mg/L.
- The third location at monitoring point ST-17 ranges from 0.046 to 0.867 mg/L and total suspended solids range from 1 to 28 mg/L.

## 2.3 PRIOR REPORTS

Wenck reviewed information in several prior reports for the Upper Watershed. The reports included the following documents:

- *Spring Lake-Upper Prior Lake Nutrient TMDL* (Wenck Associates, May 2011)
- *Phosphorous release and accumulation in the sediments of Fish and Pike Lake, Scott County, MN* (Herman, Nicholas W, and Hobbs William O., St. Croix Research Station, Undated)





- *County Ditch 13 Plan and Profile* (1968 and 1984)
- *Prior Lake Stormwater Management & Flood Mitigation Study* (Barr Engineering, December 2016)
- *Subwatershed Analysis for West Upper Watershed* (Scott Soil and Water Conservation District, May 2015)
- *Stormwater Retrofit Investigation for the Subwatersheds of Spring Lake* (Scott Soil and Water Conservation District, September 2011)
- *PLSLWD Upper Watershed Review and Assessment Technical Memo* (Emmons and Olivier Resources, April 22, 2010)
- *Hwy 13 Wetland Survey and CD-13 Field Investigation Technical Memo* (Emmons Olivier Resources, August 29, 2017)
- *Feasibility of a Chemical Treatment System Downstream of Buck Lake* (Barr Engineering, October 2014).
- *Tile Drainage Assessment* (Scott Soil and Water Conservation District, September 2017)
- Annual reports for the Ferric Chloride System as available on the PLSLWD website
- Sutton Lake Stormwater Storage Project Information available on the PLSLWD website

## 2.4 TMDL STUDY SUMMARY

The Total Maximum Daily Load (TMDL) report established goals for nutrient reduction in the Spring Lake and Upper Prior Lake watershed. The TMDL report was prepared in May 2011. The report estimated current nutrient loads for the lakes, waste load allocations and load allocations, and required reductions for the two impaired lakes. Some of the key outputs from the TMDL study are:

- The total internal and external phosphorous load to Spring Lake was 10,464 pounds per year and the total reduction goal was 8,640 pounds per year, or an 83% reduction.
- The external phosphorous load from the Spring Lake Watershed in the TMDL report is 3,595 pounds. This load includes some areas that are tributary to Spring Lake but are not in the upper watershed. The loads from areas that are not in the Upper Watershed are only a very small portion of the total load to Spring Lake.
- The TMDL report presents a target external phosphorous load reduction for the entire Spring Lake watershed of 2,959 pounds annually, which is 82% of the total phosphorous load in the TMDL report.
- 42% of the phosphorous load to Upper Prior Lake is attributed to discharges from Spring Lake, so reducing phosphorous in Spring Lake will have a positive benefit to Upper Prior Lake.
- Phosphorous load reduction from Spring Lake was identified as the key external load reduction target for Upper Prior Lake.

## 2.5 EXISTING BMPS

Existing BMPs that have been implemented in the Upper Watershed provide a portion of the phosphorous reduction goals. The following existing BMPS are currently in use for Spring Lake and in the Upper Watershed:

- County Ditch 13 ferric chloride treatment system
- Cover crop planting and other lake friendly farming practices

- Spring Lake shoreline & Raymond Park restorations
- Fish Lake shoreline enhancement and prairie restoration
- Carp management on Fish Lake, Spring Lake and Prior Lake
- Alum Treatments on Spring Lake and Upper Prior Lake
- Curlyleaf pondweed assessment and management
- CR 12/17 wetland restoration

## 3.0 Project Targeting

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Wenck used the modeling and current conditions data to identify locations where phosphorous load and volume reduction projects can have the biggest positive impact on Spring Lake. The project targeting process first evaluated the loads and discharges at various locations in the watershed. The following are sites that were identified as high potential sites for positive benefits:

- Locations with high phosphorous loads and concentrations.
- Locations with high flow volume.
- Locations with topography, elevations and current land use that has potential to provide significant benefits with minimal negative impacts.

Wenck further evaluated potential project sites based on topography, land use and ownership, and other factors in developing potential projects. Wenck focused on large, regional projects that can have a significant impact, rather than on smaller scale opportunities due to the scale of treatment and volume control that will be needed to effectively make a beneficial impact. Smaller projects would be completed opportunistically over a long period of time.

Opportunities to restore connections to existing wetlands were also considered in targeting potential projects. These connections to existing and improved wetlands and natural resource corridors can help to inform and involve the community in water resource improvements projects by creating a beneficial public use of the spaces.

### 3.1 LAND USE AND SETTING REVIEW

The current land use and setting were analyzed based on topography and surface drainage, land ownership, the presence of productive farm fields, zoning, and existing wetlands. These criteria were evaluated to identify feasible locations that may be implemented as a part of a capital improvement plan.

### 3.2 NUTRIENT LOADING DATA

Nutrient loading data were also evaluated during the project targeting process. The subwatersheds with higher nutrient loads present the greatest opportunity to reduce nutrient loads from the Upper Watershed. Figure 2-3 presents the total phosphorous loads, both for individual subwatersheds. Figure 2-4 presents the cumulative phosphorous loads in the streams in the watershed. These values present the framework used to target locations where projects would provide the greatest potential for nutrient reducing benefits.

### 3.3 VOLUME DATA

The volume data was also evaluated to identify locations where projects could be implemented to achieve the greatest flood control benefit for the downstream lakes. The PC-SWMM model and Figures 2-1 and 2-2 were used to determine which areas of the Upper Watershed made the largest volume contributions to the runoff to Spring and Upper and Lower Prior Lakes.

The volume and nutrient loading data reviewed concurrently also provides insight on the more efficient locations in the Upper Watershed to target projects for nutrient reduction. Subwatersheds with a high phosphorous load relative to a low runoff volume are an opportunity to develop smaller scale projects requiring less infrastructure than projects that may require more up-front costs for similar reductions.



## 4.0 Project Conceptual Plans and Evaluation

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### 4.1 INTRODUCTION

This section presents concept plans for the various alternatives identified in this study. The subsections describe reasoning and analysis used to select the project locations and suggested alternatives for capital improvement projects. A table of the potential benefits, challenges in design, permitting and construction, estimated cost and funding partners is also included in the summaries. The projects presented in this section have been evaluated using a GIS tool specific to the Upper Watershed. One of the outputs from that GIS tool is a map book that shows the specific project locations and benefits achieved by each project. The map book is included as Appendix A.

### 4.2 SUTTON LAKE

Sutton Lake is identified as a priority target location for treatment first because it has the highest identified phosphorous and volume load in the Upper Watershed and the highest modeled annual discharge volume. In addition to the chemical data and model outputs, the setting at the discharge from Sutton Lake is highly amenable to an iron enhanced sand filter (IESF). The ditch discharging from Sutton Lake drops approximately nine feet in elevation over less than 1,000 feet to provide the topography that is suitable to a gravity-controlled filter. In addition to the favorable topography, the landowner upstream of the road crossing has expressed a willingness to work with the district to construct this type of solution.

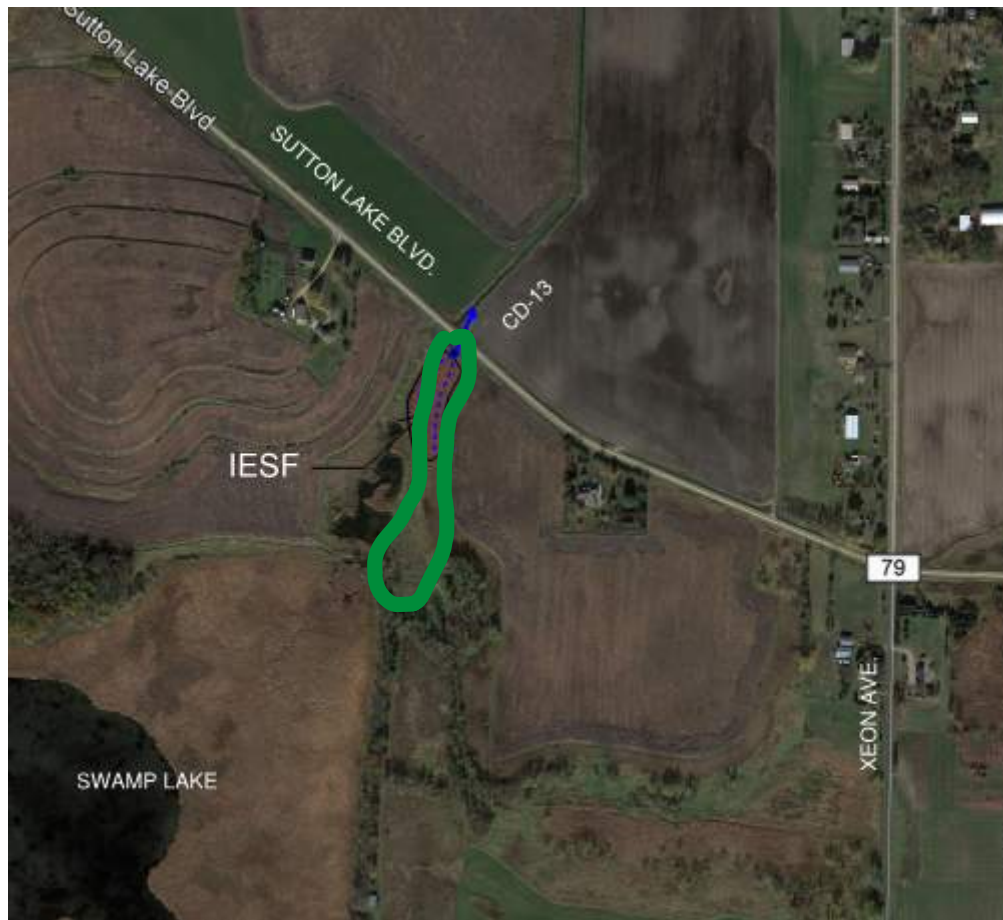
Possible solutions for the Sutton Lake system include:

- Construct an iron-enhanced sand filter (IESF) at the lake outlet to reduce the phosphorous loads in the discharge.
- Improve and restore wetlands in the Sutton Lake tributary areas to reduce the phosphorous loading and provide incremental volume reduction to Sutton Lake.
- Evaluate the sediments and water quality in Sutton Lake to determine whether internal loads from the lake may be contributing to the total subwatershed loads.

#### 4.2.1 Iron-Enhanced Sand Filter

The conceptual plan for the Sutton Lake IESF is shown in Figure 4.1. This filter is approximately 2.2 acres in surface area and situated along the ditch from Sutton Lake to Sutton Lake Boulevard. The filter would optimally be constructed in cells to allow ease of maintenance. The overall footprint would be sized to allow the entire Sutton Lake discharge volume to be filtered with an infiltration rate of 5 inches per hour, assuming that the discharge can be controlled to be evenly distributed through the year. The filter would consist of a one-foot layer of iron enhanced sand, overlying a coarse drainage layer with drain tiles to collect the filtered discharge. The drain tile would be discharged to a larger culvert to discharge into County Ditch 13 downstream of Sutton Lake Boulevard.

The Minnesota Stormwater Manual estimates reductions of 60% and 91% for ortho-phosphorous and particulate phosphorous for iron-enhanced sand filters. These values are used to estimate the total water quality benefit provided by the iron enhanced sand filter.



**Figure 4.1. Sutton Lake IESF.**

#### 4.2.2 Summary of Sutton Lake IESF

Sutton Lake has highly favorable conditions to improve the water quality in County Ditch 13. Details for an iron-enhanced sand filter are summarized in Table 4.1.

**Table 4.1. Sutton Lake summary.**

Parameter	Iron-Enhanced Sand Filter
Total Annual Volume	1971 acre-feet
Total Annual Phosphorous Load	990 Pounds
Flood Reduction Potential <sup>1</sup>	0.0
Phosphorous Load Reduction	736 Pounds
Implementation Challenges	Funding Easements with landowners
Estimated Construction Cost	\$1,950,000
15-year cost	\$2,100,000
15-years cost per pound of phosphorous reduction	\$180
Project Partners	Landowners Scott County Spring Lake Township

Parameter	Iron-Enhanced Sand Filter
Funding Partners	BWSR Scott County MPCA

- 1- Modeled change in the high water level on Prior Lake for the 10-year, 30-day rainfall event.
- 2- The long term cost and benefits for cannot be determined without further study.

#### 4.2.3 Other Sutton Lake Improvements

Some other possible projects to provide downstream benefits were identified in the Sutton Lake watershed but not evaluated in depth. Other possible projects in the Sutton Lake watershed were identified but not evaluated in depth include:

- Improve and restore wetlands in the Sutton Lake tributary areas to reduce the phosphorous loading and provide incremental volume reduction to Sutton Lake.
- Evaluate the sediments and water quality in Sutton Lake to determine whether internal loads from the lake may be contributing to the total subwatershed loads.
- Evaluate the effect of manipulating the water levels and discharges from Sutton Lake with automated controls that are tied to precipitation forecasts, water levels in Sutton, Spring and Prior Lake and flows in County Ditch 13.

Wetland restoration in focused areas on individual properties in the Sutton Lake watershed can provide incremental benefits for volume and phosphorous retention. Each of the individual projects would have potential for a small incremental benefit. Creating partnerships between landowners, Scott County, and the District to implement these focused projects would be a positive addition to other farm-friendly practices that are currently being used in the Upper Watershed.

Sutton Lake is a shallow lake with maximum depths of about 3 feet. Much of the vegetation surrounding Sutton Lake is dominated by floating cattail bogs. Shallow lakes can have reduced ability to retain sediments and phosphorous over time due to reduced capacity for the settlement of soil particles in the runoff. Additionally, as sediment and organic debris accumulates in the shallow water bodies, the sediments may begin releasing dissolved phosphorous, increasing the export of dissolved phosphorous over time.

A study to analyze the physical and chemical characteristics of the lake and the sediments in the lake is suggested. The study would consist of measuring the bathymetry of the lake, collecting sediment core samples and an evaluation of the water quality characteristics of the runoff entering and exiting the lake. The following evaluative steps are suggested for Sutton Lake:

- Conduct a bathymetric survey of the lake to estimate the depths and lake bottom topography.
- Conduct sediment core sampling to determine the thickness of sediments that have been deposited and evaluate the chemical properties of the sediments.
- Complete a summary report with the data collected to recommend any actions that will improve the water quality of Sutton Lake and the discharges from Sutton Lake.

A variety of potential projects may be identified by the lake study. Possible outcomes from the evaluation may include addition of chemical such as alum, dredging the sediments, actively managing the cattail bogs and vegetation around the lake, or doing nothing.

Sutton Lake has potential to store more than 100 acre-feet of stormwater with a high-water level increase of only 0.2 feet. Using some of that available storage capacity and regulating the flows based on water levels and precipitation forecasts may provide additional benefits such as maximizing how much of the discharged volume from Sutton Lake flows through the IESF and providing a small reduction in downstream flooding and flow in County Ditch 13.

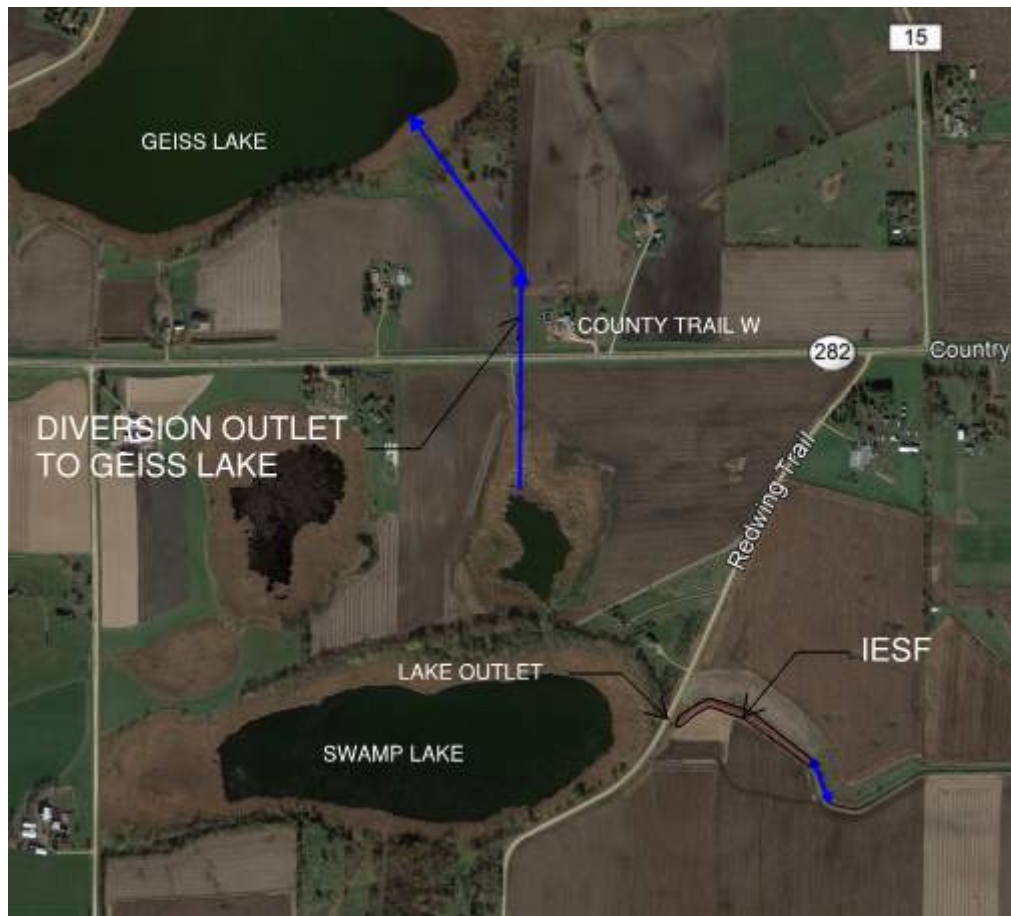
#### **4.3 SWAMP LAKE**

Swamp Lake is identified as a priority target location because it has potential to provide some improvements in water quality and the setting is favorable to treat the discharges to the County Ditch 13 system. The ditch bottom elevation is about 3-4 feet below the Swamp Lake outlet at Redwing Trail, providing a change in elevation that will be amenable to constructing a gravity controlled system, and the construction can be confined to the area within the existing limits of the ditch. Although the volume and phosphorous loads are relatively low for the Swamp Lake discharge relative to other subwatersheds, the physical setting of Swamp Lake is favorable to providing some water quality benefits.

Possible projects for the Swamp Lake subwatershed are:

- Reroute a portion of the Swamp lake discharges to the north to reduce both discharge volume and phosphorous loading to County Ditch 13 and Spring Lake.
- Construct an iron enhanced sand filter downstream of the Swamp Lake within the footprint of the existing ditch.

There are two separate conceptual plans for Swamp Lake Discharge shown in Figure 4.2. The first is to construct a diversion to discharge from Swamp Lake to Geis Lake rather than down the County Ditch 13 system. The second is to modify and improve the Swamp Lake discharge at Redwing Trail, and to construct an iron enhanced sand filter within the existing ditch downstream of the crossing.



**Figure 4.2. Swamp Lake Diversion and IESF.**

#### 4.3.1 Swamp Lake Diversion

The Swamp Lake diversion would include reconnecting an 18" drain tile from the mitigated wetland north of Swamp Lake. The original drain was routed to Geis Lake and discharged to the Picha Creek watershed basin. The concept would use controls to determine when discharge is routed to Geis Lake and when the discharges are routed to County Ditch 13. The outlet controls could be based on Spring Lake levels, Swamp Lake levels, rainfall forecasts or other criteria that provide the maximum benefit but do not adversely impact the Picha Creek Basin or Geis Lake. Any runoff diverted to Geis Lake would reduce the volume and corresponding phosphorous loads to Spring Lake. Optimization of outlet control triggers will be fleshed out in a feasibility study for the Swamp Lake.

The recalibrated PCSWMM model was updated to reflect a proposed weir structure to limit normal flows out of the existing outlet and a proposed diversion outlet to Geis Lake. The results of the proposed diversion are shown in **Error! Reference source not found.** and are not expected to change the flooding severity on Prior Lake.

**Table 4.2. Impacts of Swamp Lake Diversion to flooding severity on Prior Lake.**

<b>Flooding Severity</b>	<b>10-year, 30-day Flood<sup>1</sup></b>	<b>2014 water Year<sup>1</sup></b>
Change in Peak Water Surface Elevation relative to Existing Conditions (feet)	0.0	-0.1
Change in Time Above No Wake Water Level on Prior Lake (days)	0	-3

1 + Increase in peak water surface elevation or number of days above no wake water level on Prior Lake (904.0 ft)  
 - Decrease in peak water surface elevation or number of days above no wake water level on Prior Lake

### 4.3.2 Swamp Lake IESF

The IESF shown in Figure 4.2 is approximately 0.5 acres and is situated in the tributary to County Ditch 13, downstream of Redwing Trail. The filter is sized to allow the entire Swamp Lake discharge volume to be filtered with an infiltration rate of 5 inches per hour, assuming that the discharge can be controlled to be evenly distributed through the year. The filter would be placed near the invert elevation of the Redwing Trail culvert crossing from Sutton Lake. The filter would consist of a one-foot layer of iron enhanced sand, overlying a coarse drainage layer with drain tiles to collect the filtered discharge. The drain tile will be collected in a larger culvert to discharge into the ditch at the downstream end of the filter.

### 4.3.3 Summary of Swamp Lake Alternatives

Swamp Lake has favorable conditions to improve the water quality in the County Ditch 13 system. Details are summarized in Table 4.3.

**Table 4.3. Swamp Lake summary.**

<b>Parameter</b>	<b>Diversion</b>	<b>Iron Enhanced Sand Filter</b>
Total Annual Volume	110-330 ac-ft <sup>1</sup>	447 acre-feet
Total Annual Phosphorous Load	80-240 pounds <sup>1</sup>	322 Pounds
Flood Reduction Potential	0.0 feet	0.0 feet
Phosphorous Load Reduction	80-240 pounds <sup>1</sup>	223 Pounds
Implementation Challenges	Routing water to a different watershed Highway Crossing Easement acquisition	Access to Funding Easements with landowners Property Access
Estimated Construction Cost	\$475,000	\$550,000
15-year cost	\$500,000	\$625,000
15-years cost per pound of phosphorous reduction	\$138-\$417 <sup>1</sup>	\$190
Project Partners	Landowners Scott County Spring Lake Township	Landowners Scott County Spring Lake Township
Funding Partners	Scott County	BWSR DNR Scott County

1- Values are the range of results if 25 to 75% of the discharges are routed to Geis Lake. Final values need to consider the operating range and factors.



#### 4.3.4 Other Swamp Lake Alternatives

Some other possible projects to provide downstream benefits were identified in the Swamp Lake watershed but not evaluated in depth. These other possible beneficial projects are

- Improve and restore wetlands in the Swamp Lake tributary areas to reduce the phosphorous loading and provide incremental volume reduction to Sutton Lake.
- Evaluate the effect of manipulating the water levels and discharges from Swamp Lake with automated controls that are tied to precipitation forecasts, water levels in Swamp, Spring and Prior Lake and flows in County Ditch 13.

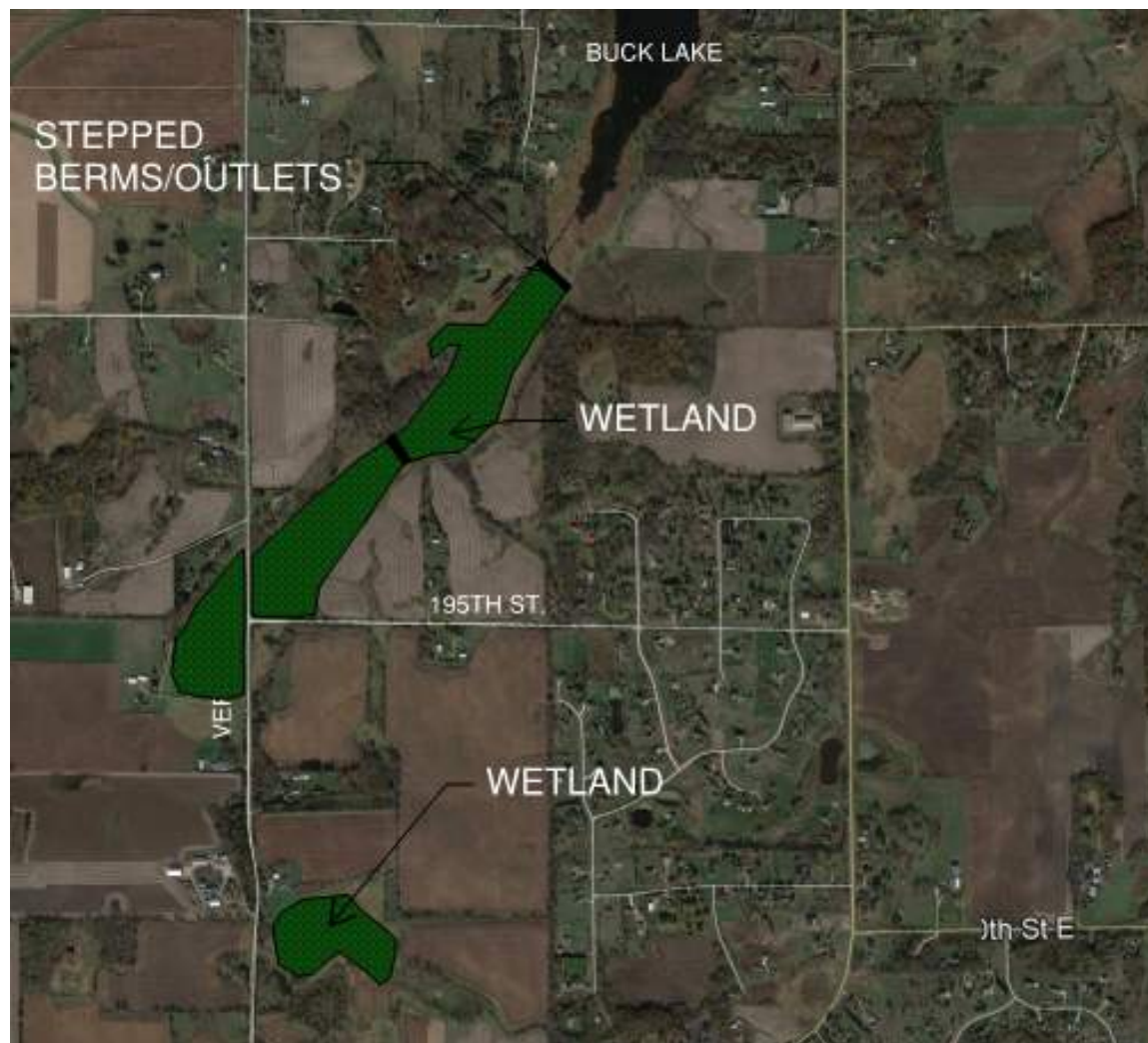
These alternatives would have potential to provide incremental water quality and flood mitigation benefits similarly to the same options in the Sutton Lake watershed.

#### 4.4 BUCK LAKE WETLAND IMPROVEMENTS

Although the Buck Lake system contributes smaller loads in terms of both volume and pollutants compared to County Ditch 13, projects in the Buck Lake subwatersheds can still provide a benefit. The wetlands between Fish Lake and Buck Lake features a 100-acre wetland area that may be suitable for improvements and enhancements. Concepts for the channel flowing into Buck Lake include:

- Construct a stepped system to provide improved storage, retention and habitat. Providing a 2-foot deep retention area over the area of the wetland to allow upstream storage and controlled release of nearly 200 acre-feet of runoff.
- Increased storage and retention through and improved wetland can also retain and trap phosphorous.
- These wetland restoration areas provide public access with trails and connections, improved habitat, and become an amenity in the district.

The wetland areas upstream of Buck Lake were identified as a potential location for wetland enhancements due to their size and the topography. This is a favorable location for storage and attenuation of suspended solids and phosphorous. A concept sketch of the Buck Lake Wetland Improvements is shown in Figure 4.3.



**Figure 4.3. Buck Lake wetland enhancements.**

The wetlands in the areas upstream of Buck Lake are nearly 100 acres. The conceptual plan for this area is to construct stepped berms with controlled outlets to hold more runoff in the wetlands and allow a larger surface area for storage during smaller rainfall events. At 1-1/2 feet in depth, the wetlands can retain almost 150 acre-feet of stormwater, which represents 15% of the total annual runoff generated from upstream of Buck Lake. This increased storage capacity can provide mitigation to flooding in Spring Lake and extended runoff detention as well as retention of suspended solids, phosphorous and nutrients. Outlet automation based on rainfall predictions and water levels on downstream water bodies can be implemented to optimize the system operation.

The Minnesota Stormwater manual estimates a 40% phosphorous reduction for wetlands. The 40% reduction is used to estimate the potential phosphorous reduction achieved by reconnecting the flood plain wetlands to the ditch as well as for other projects that include improved wetlands. A summary of the Buck Lake wetland enhancements project is summarized in Table 4.4.

**Table 4.4. Buck Lake summary.**

Parameter	Wetland Enhancements
Total Annual Volume	1034 acre-feet
Total Annual Phosphorous Load	947 Pounds
Flood Reduction Potential	-0.2 feet <sup>1</sup>
Phosphorous Load Reduction	114 Pounds <sup>2</sup>
Implementation Challenges	Access to Funding Easements with multiple landowners Accessibility
Estimated Construction Cost	\$620,000
15-year cost	\$690,000
15-years cost per pound of phosphorous reduction	\$401
Project Partners	Landowners Scott County
Funding Partners	BWSR Scott County LCCMR Ducks Unlimited Pheasants Forever

1- Modeled 10-year, 30-year rainfall event change in high water level on Prior Lake

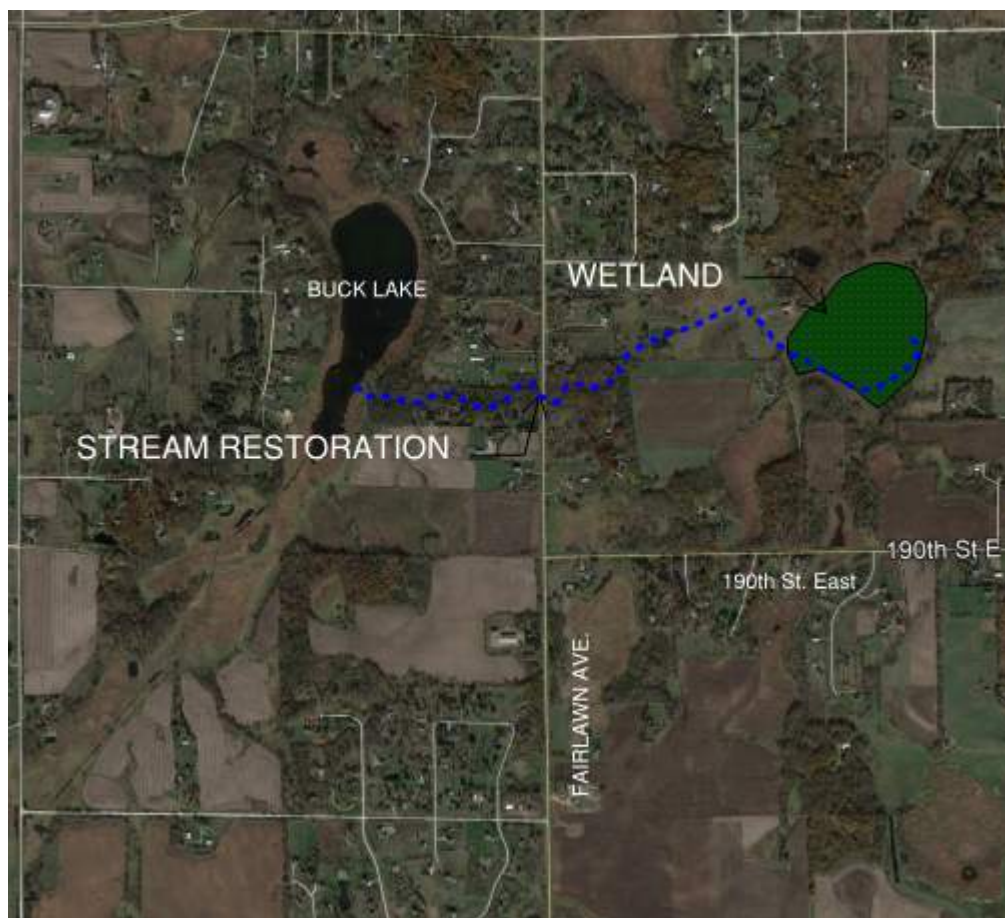
2- Reduction based on 125 reduction through impoundment and extended detention.

#### 4.5 BUCK LAKE EAST IMPROVEMENTS

The watershed to the east of Buck Lake, identified as the Buck Lake East subwatershed, is relatively high in phosphorus load in consideration of the annual runoff volume. Most of the watershed flows through a stream and wetlands that run into Buck Lake on the south end of the lake.

The channel discharge starts at a 40-acre wetland situated near the center of the subwatershed. The wetland discharges into the beginning of the stream at a private road crossing. This wetland was also identified as a potential location for upper watershed flood storage and modeled in the *Prior Lake Stormwater Management & Flood Mitigation Study* (Barr 2016). Improvement of this wetland would provide phosphorous reduction and some flood attenuation. The restoration can be as simple as constructing a berm with an outlet structure to contain the water at a higher elevation and reduce the discharge rate.

The stream that flows to Buck Lake from the wetland was identified by PLSLWD as a potential target location for a stream bank restoration. There is a reach of the stream to the west of Fairlawn Avenue that has degraded and has an eroding bank. Restoring this reach of stream will reduce the sediment and phosphorus load to Buck Lake. Using natural vegetation for restoration would also require clearing the tree canopy to allow natural sunlight on the stream, or the banks may be restored with hard armoring such as rip rap or other engineered products. Potential beneficial projects in the Buck lake East watershed are shown in Figure 4-4. The benefits provided by these projects is summarized in Table 4.5.



**Table 4.5. Buck Lake East wetland and stream improvements.**

**Table 4-5. Buck Lake East summary.**

Parameter	Wetland Enhancement	Stream Restoration
Total Annual Volume	384 ac-ft	384 acre-feet
Total Annual Phosphorous Load	502 pounds	502 Pounds
Flood Reduction Potential <sup>1</sup>	-0.1 feet	0.0 feet
Phosphorous Load Reduction	200 pounds	10 Pounds
Implementation Challenges	Private property access and impact Funding sources	Tree removal for vegetative restoration Accessibility Private property access
Estimated Construction Cost	Needs Analysis <sup>2</sup>	\$550,000
15-year cost	Needs Analysis <sup>2</sup>	\$625,000
15-years cost per pound of phosphorous reduction	Needs Analysis <sup>2</sup>	\$190
Project Partners	Landowners Scott County Spring Lake Township	Landowners Scott County Spring Lake Township
Funding Partners	BWSR Scott County Lessard Sams	Scott County DNR

1- Modeled 10-year, 30-year rainfall event change in high water level on Prior Lake

## 4.6 COUNTY DITCH 13 IMPROVEMENTS

The watersheds that flow to and through County Ditch 13 are a significant contributor of phosphorous to Spring Lake. The total phosphorous load in County Ditch 13 at the road crossing at Highway 282 is about 4,030 pounds per year based on the stream flow sampling and data. Improvements that capture or mitigate even a fraction of the total flow through this reach of ditch can provide a measurable benefit in pounds of phosphorous reduction annually.

This reach of County Ditch 13 was included in the evaluation because it is the location with the highest annual phosphorous loads and the greatest potential for load reduction.

While some of the suggested upstream improvements such as the Sutton Lake and Swamp Lake filters will reduce that loads to County Ditch 13, there will still be a significant amount of phosphorous and runoff volume carried in this reach. Potential improvements to County Ditch 13 are:

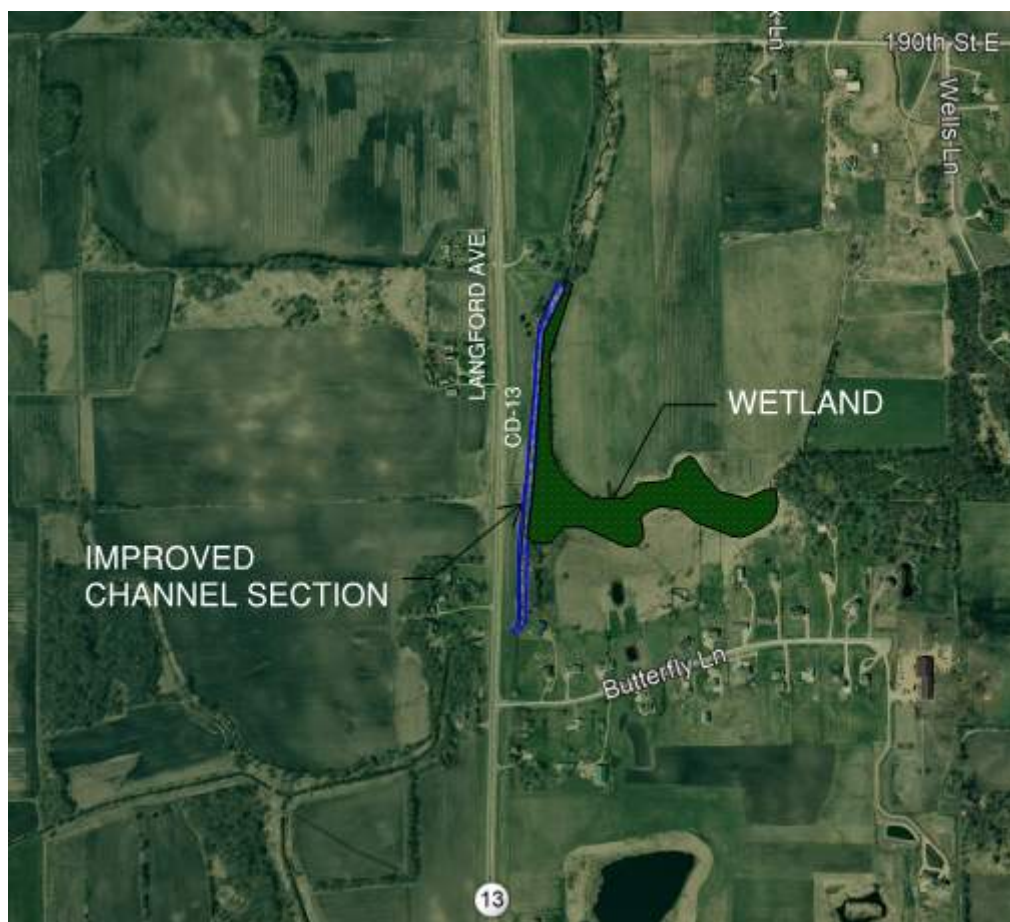
- Regrade the ditch cross section to provide vegetative overbanks for higher flows to attenuate the flows and reconnect the ditch to the floodplain.
- Improve the wetland located to the north of Butterfly Lane and east of Langford Avenue.

Most of the areas along County Ditch 13 are currently productive agricultural land and would not be likely candidates for ditch improvements or restoration. County Ditch 13 is a potential area to adopt policy with guidelines that require treatment or rate control with higher controls than other areas of the district because of the high discharge volume and nutrient loads and opportunities to provide benefits. Potential policy direction includes identifying areas for regional treatment and storage facilities, wide dedicated easements over existing ditches, or requiring treatment and rate control that exceeds the guidelines applied in other areas of the district.

Much of County Ditch 13 has a well-established buffer, which provides sediment and phosphorous reduction from the surface runoff. The ditch appears to be well vegetated and in good condition to minimize bank erosion. This is one of the farm friendly practices in use in the Upper Watershed that effectively reduce the pollutant and sediment loads from those watersheds.

The wetlands on the overbank of County Ditch 13 and north of the single-family homes on Butterfly Lane comprise about 20 acres in total area. Conceptually, the wetland on the east bank of the ditch can be excavated to a bench near the existing normal flow elevation of the ditch, and the larger wetland area can be restored to a more functional condition. This can allow for lower velocity and increased mitigation during low flow conditions. Even though small in area, these improvements can make an incremental improvement in the water quality. Locations and concepts for this improvement are shown in Figure 4.5. A summary of the County Ditch 13 improvements is provided in Table 4.6.





**Figure 4.4. County Ditch 13 improvements.**

**Table 4.6. County Ditch 13 Improvements summary.**

Parameter	Ditch Improvements
Total Annual Volume	5,657 ac-ft
Total Annual Phosphorous Load	4,030 pounds
Flood Reduction Potential	0.0 feet
Phosphorous Load Reduction	200 pounds
Implementation Challenges	Private property access and impact Currently primarily agricultural land use Funding sources
Estimated Construction Cost	\$1,150,000
15-year cost	\$1,200,000
15-years cost per pound of phosphorous reduction	\$400
Project Partners	Landowners Scott County Spring Lake Township Farmer Led Council
Funding Partners	BWSR Scott County DNR



#### 4.7 COUNTY DITCH 13 DIVERSION

The existing topography would allow a portion of the flow through County Ditch 13 to be diverted to the Buck Lake system, although it would need to be a piped discharge due to the topography between the two channels. The discharge would flow from County Ditch 13 near the crossing at Langford Avenue to the Buck Lake system near the intersection of Vergus Avenue and 195<sup>th</sup> Street Northeast. Possible benefits provided by this diversion include:

- Reducing the flow through County Ditch 13 from the diversion to Spring Lake. This would reduce the volume flowing County Ditch 13 and the ferric chloride treatment system and potentially improve the efficiency of that system.
- The corridor created by a discharge would create an opportunity for a trail connection between Langford Avenue and Vergus Avenue.
- The diversion could take advantage of the wetland systems upstream of Buck Lake to provide retention and treatment of the runoff from the agricultural lands in the County Ditch 13 subwatersheds. This benefit would be further enhanced if the Buck Lake wetland restoration alternative were implemented.

Diverting flows from County Ditch 13 to the Buck Lake channel as shown in Figure 4.6 presents both opportunities and challenges. The diversion would decrease flows and loads through the downstream reach of County Ditch 13; however, it would increase the flows and loads to Buck Lake by an equal amount.



**Figure 4.5. County Ditch 13 Diversion.**

The flows allowed through a diversion would need to be balanced to not cause a negative impact on the loads or flood levels on Buck Lake. The diversion would also need to be coupled with some form of treatment, such as the wetland enhancements in section 4.3, an IESF, or a proprietary treatment device to prevent increasing the nutrient loads to Buck Lake. A full feasibility study would need to be completed to confirm the effectiveness and benefit provided by a diversion. The system would also need to consider the existing ferric chloride treatment systems and any impact, positive or negative, on that existing BMP.

The recalibrated PCSWMM model was updated to reflect a proposed 3-foot diameter pipe, approximately 4,000 feet long, to route part of the flood flows to Buck Lake. The modifications do not change the frequency or severity of flooding severity on Prior Lake.

**Table 4.7. County Ditch 13 Diversion summary.**

Parameter	Diversion
Total Annual Volume	1,228 ac-ft <sup>1</sup>
Total Annual Phosphorous Load	904 pounds <sup>1</sup>
Flood Reduction Potential	0.0 feet
Phosphorous Load Reduction	361 pounds <sup>2</sup>
Implementation Challenges	Private property access and impact Funding sources

Parameter	Diversion
	Increased flow and loads to Buck Lake Permitting
Estimated Construction Cost	\$1,200,000
15-year cost	\$1,300,000
15-years cost per pound of phosphorous reduction	\$226
Project Partners	Landowners Scott County
Funding Partners	

1 – Assumes diversion of 25% of the total County Ditch 13 flow at this location.

2 – Assumes that the Buck Lake wetland system reduced phosphorous loading by 40%.

#### 4.8 FECL SYSTEM IMPROVEMENTS

This is a targeted location because it is the final discharge point of the County Ditch 13 system before entering Spring Lake and there is an existing treatment system in place.

Minor modifications to the system could provide for increased annual phosphorous reduction. Some possible inefficiencies in the current system include:

- The desilt pond is undersized for the County Ditch 13 flow. Increasing the pond footprint could improve the sedimentation capacity of the flocculated particles.
- The injection port is in a short length of culvert and the treatment could benefit from improved mixing between the ferric chloride injection point and the desilt pond
- The discharge rate from Geis Wetland is not controlled so it is subject to variations in flow rate. Even though the system flow is monitored, and the dosage is calibrated based on flow, it may operate more efficiently with a more constant flow rate.

Currently, discharges through the County Ditch 13 system flow into Geis Wetland located south of Highway 13. Geis Wetland flows over a weir, through the culvert crossing under Highway 13, and to the channel downstream. Most of the discharge at this location is routed through a 24-inch culvert, where it is mixed with ferric chloride, and then into a sedimentation basin identified as the desilt pond. The iron in the ferric chloride binds with the phosphorous in the stormwater and creates particles that settle out in the desilt pond prior to discharge to Spring Lake.

Modifications to the operating parameters or infrastructure associated with the ferric chloride treatment system may provide opportunities to increase the load reduction for County Ditch 13. The existing ferric chloride system removes about 500 pounds of the total phosphorous coming from the County Ditch 13 system annually based on reductions seen from 2013 to 2019. Even minor modifications could have a modest benefit to the phosphorous reduction and water quality for the discharges from County Ditch 13 to Spring Lake.

The building that houses the pumps and tank for ferric chloride is located on the south side of Highway 13. The ferric chloride is pumped from the equipment through a double walled pipe, about 900 feet, and into the 24-inch culvert.

Extremely high flows bypass the culvert and flow over a weir and directly to Spring Lake without treatment. Out of about 1,200 measurements at the desilt pond and on Spring Lake from 2014 through 2019, the water level in the desilt pond was higher than the bypass weir for 97 measurements. The water level in Spring Lake was above the weir for 66 of those measurements. These data show that the upstream discharges from large rainfall events in the County Ditch 13 watershed area only bypassed the desilt pond 31 times out of 1,200 measurements so most of the discharges through County Ditch 13 are treated prior to discharge to Spring Lake.

The ferric chloride system locations are shown in Figure 4.7.

Potential improvements to the system can increase the volume that passes through the system, improve mixing efficiency, or improve the settlement of flocculated particles. Possible modifications to the ferric chloride treatment system, presented in Table 4.8, are:

- Construct a new 700-foot long pipe from the Geis wetland upstream of Highway 282 directly to the desilt pond. Construct the outlet to discharge at a rate that optimizes the overall operation of the system. Include real time flow measurement to the discharge from Geis Wetland to the desilt pond to optimize dosing rates.
- Evaluate options to increase the settling capacity of the desilt pond or provide pre-treatment to remove a portion of the flocculated particles. One of the current limiting factors in the treatment capability for the entire system is the settling capacity of the desilt pond. The estimated cost includes installing a proprietary treatment device at the outlet to the desilt pond to improve the sediment capture in the discharge.
  - Enlarging the desilt pond would be another potential alternative to increase the settling capacity.



**Figure 4.6. Ferric Chloride System modifications.**

**Table 4.8. Ferric Chloride System modifications summary.**

Parameter	New Pipe
Total Annual Volume	5,657 ac-ft
Total Annual Phosphorous Load	4,030 pounds
Flood Reduction Potential	0.0 feet
Phosphorous Load Reduction	50 pounds <sup>1</sup>
Implementation Challenges	Needs full feasibility study and report
Estimated Construction Cost	\$275,000
15-year cost	\$300,000
15-years cost per pound of phosphorous reduction	\$399
Project Partners	Landowners Scott County Spring Lake Township MPCA
Funding Partners	BWSR Scott County MPCA

1 – Assumes a 10% increase in the potential phosphorous reduction. Additional study needs to be completed to determine optimal operating parameters.

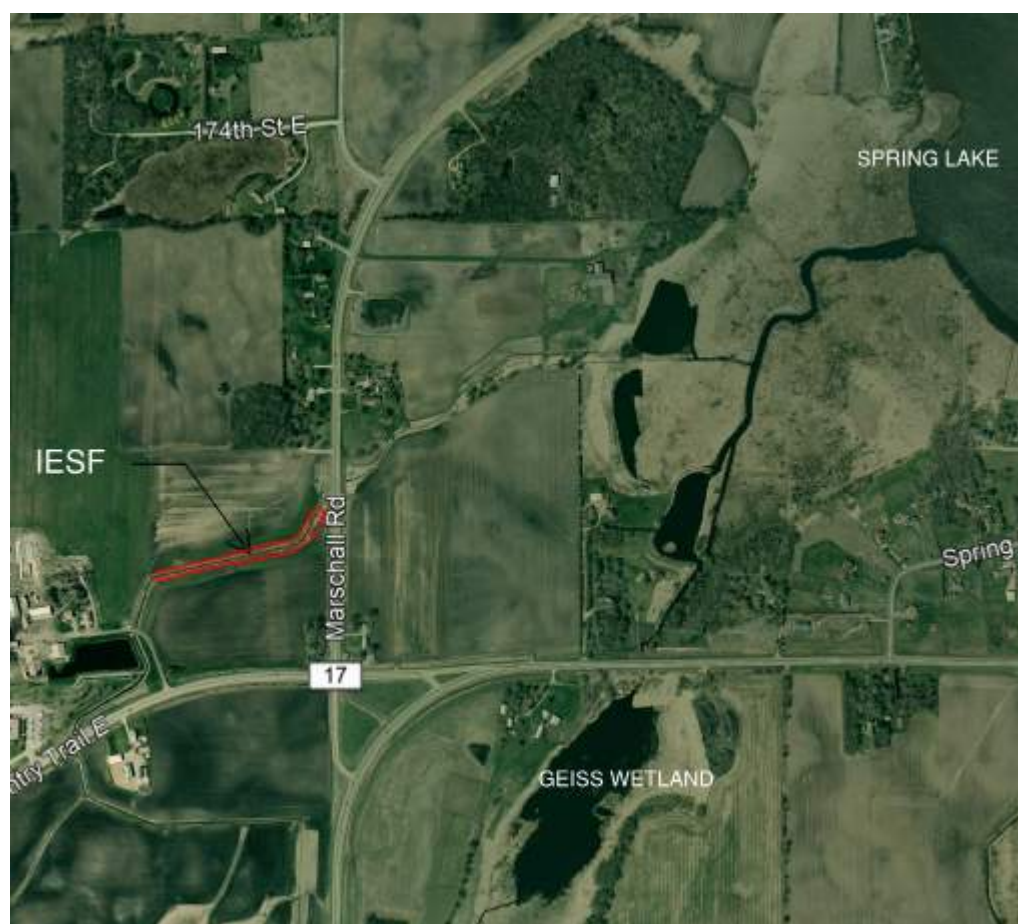


#### 4.9 SPRING WEST IESF

PLSLWD is currently evaluating the feasibility of an iron enhanced sand filter in the ditch from County Road E to Marschall Road. This project is identified as the Spring West iron enhanced sand filter.

This area has a small contributing subwatershed with a high relative phosphorous load. A feedlot and associated lagoon are potential sources of some of that phosphorous load. Based on the preliminary design calculations provided by the District, the current preferred concept for an iron enhanced sand filter at this location has potential to reduce the phosphorous loading by 168 pounds annually, and 81 pounds of ortho-phosphorous.

The Spring West IESF project is currently in the feasibility study and concept plan stage. The concept will use the existing ditch to construct a filter to remove phosphorous, similar to the IESF suggested for the Sutton Lake and Swamp Lake outlets. The final details on sizing and location are still being considered. The general location of the Spring West IESF is shown in Figure 4.8.



**Figure 4.7. Spring West IESF.**



#### 4.10 PRIOR LAKE OUTLET CHANNEL

The Prior Lake Outlet Channel (PLOC) is the outlet from Prior Lake to the Minnesota River. Prior to the construction of the outlet channel in 1983, Spring Lake and Prior Lake were landlocked and subject to more frequent flooding and higher water levels. The outlet was constructed through a joint agreement with City of Prior Lake, the City of Shakopee, the Shakopee Mdewakanton Sioux Community, and the Prior Lake-Spring Lake Watershed District.

The operation of the outlet is controlled by the Prior Lake Outlet Control Structure Management Policy and Operating Procedures approved by the Minnesota DNR. The approved operation of the outlet includes:

- The maximum discharge through the outlet channel is 65 cubic feet per second (cfs). The discharge rate is controlled by the peak capacity of the downstream culvert.
- The accordion weir allows discharge when the Lower Prior Lake water level reaches 902.45 feet above MSL.
- The outlet structure includes a low flow gate that can be opened to allow discharge when the Lower Prior Lake Elevation is between 902 and 902.5 as approved by the DNR.

Modifications to the PLOC can have a significant effect on the lake flooding with minimal land disturbance in terms of both grading and expanding existing flood plains. The concepts for modifying the outlet channel include:

- Renegotiate the discharge agreement to allow allowances for an increased discharge rate. The limiting factor for the discharge rate is the downstream 36-inch diameter culvert. Increasing the outlet size to a 54-inch diameter culvert would allow the added capacity.
- Allow discharges to lower water levels when a significant rainfall event is forecast to provide capacity to store the coming runoff and reduce the high-water level of the lakes.

At the allowed discharge rate, the lake water level recedes by only about 0.1 foot per day. Renegotiating the DNR agreement for the PLOC to allow discharges under some circumstances could provide significant relief from the duration and frequency of lake flooding. Feasible modifications may include:

- Allow the district to open the low flow gate when water levels are at or below 902.0 when significant rainfall is expected to provide storage capacity for the incoming event.
- Allow the district to release greater than 65 cfs when the downstream channel flow allows a higher rate of discharge. The channel is large enough to carry a larger flow when areas between Prior Lake and the Minnesota River are not discharging at high rates. The time to reduce the water level in Prior Lake by one foot would be reduced from about 10.5 days to 4.5 days by increasing the peak discharge rate to 150 cfs.

The recalibrated PCSWMM model was updated with two configurations to reflect a proposed Prior Lake outlet structure capable of discharging 150 cfs:

- **Increased Outlet Capacity:** The Prior Lake outlet capacity is increased to 150-cfs, the estimated conveyance capacity of the downstream channel. The rating curve for low and normal discharges remains unchanged. This analysis shows that during the 2014 water year, the peak flood elevation would have been approximately one foot lower and the duration of time above the no wake water level shorter by approximately one month.
- **Increased Outlet Capacity Forecasting + Drawdown:** The Prior Lake outlet capacity is increased to 150-cfs, the estimated conveyance capacity of the downstream channel. When the following conditions were met, a preemptive drawdown at a rate of 85-cfs was added (this rate was assumed that the estimated conveyance capacity of the downstream channel could not exceed 150-cfs). Lake drawdown is conducted when all of the following conditions are met:
  - Rainfall event occurs between May and October
  - Prior Lake level is higher than 901.5 feet
  - More than 1 inch of rain is in the 3-day forecast based
    - Note that a 'perfect' forecast was assumed (i.e. the observed rainfall was assumed to be forecast three days prior to the rainfall occurring)

This scenario establishes the theoretical maximum reduction in flooding severity on Prior Lake. Even during this scenario, water levels on Prior Lake are expected to exceed the no wake elevation by one quarter of a foot and for more than one week.

These two analyses of modifications to Prior Lake have the greatest benefit of all scenarios analyzed, to flooding severity on Prior Lake. The results of these analyses are shown in Table 4.9.

**Table 4.9. Impacts of Proposed Prior Lake Outlet Modifications to flooding severity.**

Scenario	Flooding Severity	10-year, 30-day Flood <sup>1</sup>	2014 Water Year <sup>1</sup>
Increased Outlet Capacity	Change Peak Water Surface Elevation relative to Existing Conditions (feet)	-0.3	-0.9
	Change in Time Above No Wake Water Level on Prior Lake (days)	-14	-29
Increased Outlet Capacity Increased Outlet Capacity with Flood Forecasting + Drawdown	Change Peak Water Surface Elevation relative to Existing Conditions (feet)	N/A <sup>2</sup>	-2.6
	Change in Time Above No Wake Water Level on Prior Lake (days)	N/A <sup>2</sup>	-53

1 + Increase in peak water surface elevation or number of days above no wake water level on Prior Lake (904.0 ft)  
 - Decrease in peak water surface elevation or number of days above no wake water level on Prior Lake

2 Not simulated because a rainfall forecast is not available for this rainfall event.

#### 4.11 LAKE FRIENDLY FARMING INITIATIVES

Scott Soil and Water Conservation District (SSWCD) encourages lake friendly farming practices, such as ditch buffers, cover crop planting, replacing open tile intakes with water quality intakes, and no till farming. These practices can have a beneficial effect on the soil loss and nutrient loading by keeping sediments on the land. The Farmer Led Council and the district support SWCD in implementing these programs.

The overall water quality benefits provided by some of these farm friendly practices are not calculated and tracked by the SSWCD. The tile intake modifications provide an estimated 113 pounds of annual phosphorous benefit. Participating farms in the upper watershed incorporated 1,594 acres of cover crops and 637 acres of other lake friendly practices in 2019. A vegetative buffer area is present along the entire length of County Ditch 13.

The lake friendly farming practices currently applied in the upper watershed are adding a positive benefit to the water quality at a low relative cost. Continuing those practices and expanding their use can increase the total benefit that they provide. Additional initiatives, such as restoring degraded wetlands and retaining stormwater on the site, should also be explored in cooperation with the SWCD and landowners.

#### 4.12 FLOOD MITIGATION

Apart from the Prior Lake Outlet Channel Modifications, the alternatives presented in this section will have little or no impact on flood mitigation for Spring Lake and Prior Lake. This effect is also reflected in the *Prior Lake Stormwater Management & Flood Mitigation Study* (Barr Engineering, December 2016) (2016 Flood Study). Based on the modeling completed as a part of this blueprint and on the data presented in the 2016 flood study, the individual storage solutions in the Upper Watershed provided high water elevation reductions on Prior Lake by 0.1 to 0.3 feet while providing storage of up to 330 acre-feet. Applied collectively, the ten storage sites analyzed in the 2016 Flood Study provide a total of about 1.2 feet of flood elevation reduction for Prior Lake and would be completed over a period of about 30 years. These combined alternatives create nearly 1,000 acre-feet of subwatershed storage and reduce the high water level for Prior Lake by about 1.2 feet. The flood reduction values are based on a 10-year, 30-day rainfall event for the upper watershed.

#### 4.13 POLICY

Governing policy can have a significant effect on water quality and quantity, but policy direction takes time and often needs to wait until lands are developed. The current district rules for land disturbing activities are:

- Maintain existing discharge rates for the 2, 10, and 100-year rainfall events
- Provide for infiltration or other means of retention to retain the equivalent of 1 inch of runoff from all new and reconstructed impervious surfaces on sites with one or more acre of new impervious surfaces. Retain 0.5 inches of runoff from all impervious surfaces for sites with less than one acre of new impervious surfaces.
- In addition to the infiltration requirement, provide additional BMPs or infiltration to retain the runoff from a 2-year rainfall event.

Some watersheds have more strict policies for development either on a district wide basis or in selected high priority areas of the district. These enhanced policies can be implemented

to improve the water quality or to address downstream flooding concerns. Some of the enhanced policies that may be considered are:

- Require that new developments meet greater than the typical standards for stormwater retention and treatment.
- Encourage low impact design standards to minimize impervious surfaces in new developments.
- Encourage and support the use of retention and treatment practices other than infiltration, such as manufactured treatment devices and stormwater reuse.
- Provide for easement areas, such as increased easement over ditches and streams, to allow for larger regional storage or treatment systems.
- Provide regional ponds and treatment facilities to centralize the systems and allow opportunities to optimize the use to provide maximum benefits for the watershed.
- Require stormwater management to meet typical district standards on smaller projects and not only larger developments.

Current policies should be reviewed and updated to provide the maximum possible benefit as currently open land is developed in the future. The future policies will need to be balanced with reasonable land use and take any restrictions on the land into consideration, such as high water tables, low permeability soil, environmental concerns and other restrictions as identified in the Minnesota Stormwater Manual.

Conversion of crop land to developed land by itself will significantly improve the water quality. The Scott County 2040 Land Use maps show much of the farmland along County Ditch 13, upstream of Langford Avenue as a Transition Area. The Transition Area is zoned as 1 unit per 10 acres with clustered developments.

Taking this subwatershed and using the Model My Watershed tool developed by the Stroud Water Research Center, conversion of the estimated 875 acres of cropland upstream of Langford Avenue to 20% low density mixed land use, 20% open space, and the remaining 60% in crops would reduce the phosphorous load from this area of the watershed by about 30%. Converting the entire subwatershed to low density mixed land use would reduce that load by 75%. This is a significant benefit to the water quality for the lakes, but it would happen over the next 20 years as estimated by the County Comprehensive Plan. Adding additional controls for new developments will increase that load reduction.

Wenck reviewed several policies and ordinances that could be adopted within the Upper Watershed to better manage flooding on Prior Lake. These policies and ordinances were added to the recalibrated PCSWMM model to determine the effectiveness of each:

- **2040 Land Use- No Onsite Rate Control:** Land use in the Upper Watershed is transitioned from primarily agricultural areas to the land uses changes occur on the attached map. In general, the watershed area west of Highway 13 transitions from agricultural land use to *Urban Transition* land use, which Scott County defines as one structure per 10 acres. The area east of Highway 13 transitions to *Rural or Large-Lot Residential*, which Met Council defines as one residence per 1-2 acres. While unlikely, should these properties be developed individually, they may not trigger stormwater pollution and rate control rules. To understand the worst-case outcome, Wenck assumed this area was developed with no stormwater rate control was required for the area east of Highway 13.

Based on the expected land use changes, the area of west of Highway 13 is expected to have reduced rates and volume of runoff; however, this is more than offset by the increased volume of runoff from the imperviousness from development east of Highway 13 and will result in a slight increase in the flood severity on Prior Lake. While rate control policies and ordinances may help flooding on public and private property and infrastructure adjacent to the development, the increased volume of runoff (not rate control) increases flood severity on Prior Lake.

- 2040 Land Use- Onsite Rate Control for Residential Area (East of Highway 13):** This analysis assumes the land is developed identically to the "2040 Land Use- No Onsite Rate Control"; however, stormwater rate control (but not volume control) features are added along with development. This scenario marginally improves the flooding severity outcomes on Prior Lake over the *No Onsite Rate Control* scenario, but because the volume of runoff from the new development drives flooding severity on Prior Lake, the lake is still expected to have worsened flooding severity than during current conditions.
- Development East of Highway 13 required to match 100-year Post Development Stormwater Runoff Rates to Pre-Development 50-year Rates:** This analysis assumes the land is developed identically to the "2040 Land Use- No Onsite Rate Control"; however, stormwater rate control (but not volume control) features are added requiring post-development 100-year peak discharge rates to match pre-project 50-year peak discharge rates. This scenario marginally improves the flooding severity outcomes on Prior Lake over the *No Onsite Rate Control* scenario and does not improve the outcome over typical rate control rules (i.e. proposed peak discharge rates must be less than or match pre-development peak discharge rates), but because the volume of runoff from the new development drives flooding severity on Prior Lake, the lake is still expected to have worsened flooding severity than during current conditions.
- Development East of Highway 13 required to match 100-year Post Development Stormwater Runoff Rates to Pre-Development 50-year Rates and Abstract the First 1.1-inches of Runoff from New Development:** This analysis assumes the land is developed identically to the "Development East of Highway 13 required to match 100-year Post Development Stormwater Runoff Rates to Pre-Development 50-year Rates"; however, stormwater rate control and volume features are added along with development. Based on the guidance from the Minnesota Pollution Control Agency, the first 1.1-inches of runoff is abstracted for the new development greater than one acre. This scenario is the only scenario to improve flooding severity outcomes on Prior Lake over current conditions and demonstrates the importance of volume control in the Upper Watershed to reducing flooding severity on Prior Lake.

The results of these analyses are shown in **Error! Reference source not found.**Table 4.10.



**Table 4.10. Impacts of proposed policy and ordinance changes to flooding severity on Prior Lake.**

Scenario	Flooding Severity	10-year, 30-day Flood <sup>1</sup>	2014 Water Year <sup>1</sup>
2040 Land Use- No Onsite Rate Control	Change Peak Water Surface Elevation relative to Existing Conditions (feet)	0.2	0.4
	Change in Time Above No Wake Water Level on Prior Lake (days)	4	8
2040 Land Use- Onsite Runoff Control for Residential Areas (East of Highway 13)	Change Peak Water Surface Elevation relative to Existing Conditions (feet)	0.2	0.3
	Change in Time Above No Wake Water Level on Prior Lake (days)	3	8
Development East of Highway 13 required to match 100-year Post Development Stormwater Runoff Rates to Pre-Development 50-year Rates	Change Peak Water Surface Elevation relative to Existing Conditions (feet)	0.2	0.3
	Change in Time Above No Wake Water Level on Prior Lake (days)	3	8
Development East of Highway 13 have 100-year Post Project rate match pre-project 50-year rates +1.1" of Abstraction	Change Peak Water Surface Elevation relative to Existing Conditions (feet)	-0.1	N/A <sup>2</sup>
	Change in Time Above No Wake Water Level on Prior Lake (days)	-2	

1 + Increase in peak water surface elevation or number of days above no wake water level on Prior Lake (904.0 ft)

- Decrease in peak water surface elevation or number of days above no wake water level on Prior Lake

2 Conditional on BMP media recovery times, therefore not simulated

## 5.0 Funding Sources

The projects described in Section 4 have potential to reduce the total phosphorous concentration in the discharges to Spring Lake by up to 2,571 pounds collectively. Most of these projects will require some sort of funding mechanism to perform the implement them. Wenck met with several agencies and entities to discuss the various programs available for the various projects. Table 5-1 presents a summary of some of those funding sources and the types of projects that may be eligible for funding.

**Table 5.1. Potential funding sources.**

Source	Funding Mechanism	Project Types
Board of Soil and Water Resources	Clean Water Fund	Surface water and drinking water protection, enhancement, and improvements
		Habitat protection, restoration and enhancement
		Support parks, trails and heritage
	Watershed-based Implementation Funding Program	Pursue watershed-based project instead of on a project by project basis
Minnesota DNR	Flood Hazard Mitigation Grant Assistance Program	Flood Damage reduction studies
	Conservation Partners Legacy Grants	Conservation projects that restore, enhance, or protect forests, wetlands, prairies, and habitat for fish, game, and wildlife
Minnesota Pollution Control Agency	Clean Water Partnership	Nonpoint pollution projects to improve surface waters
	Section 319 Grants	Surface water quality projects
	Clean Water Revolving Fund	Construction of accepted engineering practices that provide water quality benefits
US Army Corps of Engineers	Continuing Authorities Programs Section 206	Restoration of degrading aquatic ecosystem structure, function and process
Legislative-Citizen Commission on Minnesota Resources	Environment and Natural Resources Trust Fund	Activities that protect, conserve, preserve, and enhance Minnesota's air, water, land, fish, wildlife, and other natural resources
Lessard-Sams Outdoor Heritage Council	Outdoor Heritage Fund	Habitat protection, restoration and enhancement
Ducks Unlimited	Outdoor Heritage Fund	Waterfowl Habitat Protection, Restoration and Enhancement

Source	Funding Mechanism	Project Types
Pheasants Forever	Outdoor Heritage Fund	Habitat Protection, Restoration and Enhancement
Municipal Partners	Stormwater Funding Districts	Local tax collected to fund stormwater related projects
	Capital Improvement Project Collaboration	Partner with other entities performing capital improvement projects in the district

## 6.0 Project Screening

The projects described in Section 4 have potential to provide a significant reduction the total phosphorous concentration. Only the modifications to the Prior Lake Outlet structure or implementing much of the upper watershed storage solutions identified in the 2016 Flood Study will have a significant benefit for the flooding concerns on Prior Lake. The suggested projects for improved water quality do not provide a significant flood reduction benefit.

This section presents the screening results for the projects discussed in Section 4. The projects are screened based on phosphorous reduction, Spring, Upper Prior, and Lower Prior Lake flood reduction, construction costs, total lifecycle cost per pound of phosphorous reduction, and on potential challenges to construction.

The scoring for the alternatives is based on a maximum score of 50 for each category, with the alternative that has the best value for that category being scored 50 and the others receiving a score based on that value. For example, the highest score for total pounds of phosphorous reduction is for an iron enhanced sand filter at Sutton Lake, with a reduction of 735 pounds of phosphorous annually. The score for total annual phosphorous reduction for each of the other options is calculated by multiplying the value calculated for that alternative by 50 and dividing by 735. A similar formula is used for each category.

### 6.1 PROJECT SCORING

A discussion of the scoring for each alternative is presented in Tables 6-1 through 6-11. The total score presented in each alternative is the sum of the screening categories and the rank is from 1 to 11, with 1 being the highest scoring project and 11 being the lowest.

**Table 6.1. Sutton Lake Iron Enhanced Filter score.**

Category	Description	Score
Total Annual Phosphorous Load Reduction	735 pounds	50
Flood Reduction Potential	No change in Prior Lake High Water Level	0
Cost per Pound of Phosphorous Reduction	\$186	19
Lifecycle Cost	\$2,050,000	2
Implementation Challenges	High cost. The project could be implemented in phases with construction of separate cells to reduce yearly construction costs	45
<b>Total Score</b>	<b>Rank: 2</b>	<b>116</b>

**Table 6.2. Reroute Swamp Lake to Geis Lake.**

Category	Description	Score
Total Annual Phosphorous Load Reduction	161 pounds <sup>1</sup>	11
Flood Reduction Potential	No change in Prior Lake High Water Level	0
Cost per Pound of Phosphorous Reduction	\$208	17
Lifecycle Cost	\$500,000	10
Implementation Challenges	Dealing with multiple landowners Easement acquisitions Permitting for discharges to Picha Creek Watershed Highway crossing	10
<b>Total Score</b>	<b>Rank: 10</b>	<b>48</b>

1- The phosphorous load reduction potential is estimated with 50% of the total discharge from Swamp Lake diverted to Geis Lake.

**Table 6.3. Swamp Lake Iron Enhanced Sand Filter.**

Category	Description	Score
Total Annual Phosphorous Load Reduction	223 pounds	15
Flood Reduction Potential	No change in Prior Lake High Water Level	0
Cost per Pound of Phosphorous Reduction	\$185	19
Lifecycle Cost	\$620,000	8
Implementation Challenges	Land ownership and Easements	40
<b>Total Score</b>	<b>Rank: 5</b>	<b>82</b>

**Table 6.4. Buck Lake Wetland Storage.**

Category	Description	Score
Total Annual Phosphorous Load Reduction	379 pounds	26
Flood Reduction Potential	No change in Prior Lake High Water Level	0
Cost per Pound of Phosphorous Reduction	\$120	30
Lifecycle Cost	\$680,000	7
Implementation Challenges	Land ownership and Easements Flood plain changes Multiple landowners involved Need for Conservation easements	15
<b>Total Score</b>	<b>Rank: 6</b>	<b>78</b>



**Table 6.5. Buck Lake East Wetland Enhancement.**

Category	Description	Score
Total Annual Phosphorous Load Reduction	201 pounds	14
Flood Reduction Potential	0.1 feet	2
Cost per Pound of Phosphorous Reduction	\$71	50
Lifecycle Cost	\$215,000	22
Implementation Challenges	Land ownership and Easements Flood plain changes	35
Total Score	Rank: 1	123

**Table 6.6. Buck Lake East Stream Restoration.**

Category	Description	Score
Total Annual Phosphorous Load Reduction	10 pounds	1
Flood Reduction Potential	No change in Prior Lake High Water Level	0
Cost per Pound of Phosphorous Reduction	\$637	6
Lifecycle Cost	\$100,000	50
Implementation Challenges	Land Ownership and Easements Accessibility Tree Removal required	45
Total Score	Rank: 4	102

**Table 6.7. County Ditch 13 Improvements.**

Category	Description	Score
Total Annual Phosphorous Load Reduction	202 pounds	14
Flood Reduction Potential	No change in Prior Lake High Water Level	0
Cost per Pound of Phosphorous Reduction	\$398	9
Lifecycle Cost	\$1,200,000	4
Implementation Challenges	Land Ownership and Easements Accessibility Impacts to productive farmland Tree Removal required	10
Total Score	Rank: 11	37

**Table 6.8. County Ditch 13 Diversion.**

Category	Description	Score
Total Annual Phosphorous Load Reduction	362 pounds <sup>1</sup>	14
Flood Reduction Potential	No change in Prior Lake High Water Level	0
Cost per Pound of Phosphorous Reduction	\$240	15
Lifecycle Cost	\$1,300,000	4
Implementation Challenges	Land Ownership and Easements Accessibility Impacts to productive farmland Lack of funding resources	10
Total Score	Rank: 9	54

1- The phosphorous load reduction potential is estimated with 25% of the total discharge at County Ditch 13 diverted and treated by the enhanced Buck Lake wetland storage at 40% reduction

**Table 6.9. Ferric Chloride System Upgrades.**

Category	Description	Score
Total Annual Phosphorous Load Reduction	50 pounds <sup>1</sup>	3
Flood Reduction Potential	No change in Prior Lake High Water Level	0
Cost per Pound of Phosphorous Reduction	\$399	9
Lifecycle Cost	\$300,000	16
Implementation Challenges	Additional data and study needed	30
Total Score	Rank: 8	58

1- The phosphorous load reduction potential assumes a 10% improvement on the existing system.

**Table 6.10. Spring West Iron Enhanced Sand Filter.<sup>1</sup>**

Category	Description	Score
Total Annual Phosphorous Load Reduction	249 pounds	17
Flood Reduction Potential	No change in Prior Lake High Water Level	0
Cost per Pound of Phosphorous Reduction	\$99	2
Lifecycle Cost	\$385,000	13
Implementation Challenges	Easements needed for construction and maintenance Project is in feasibility study stage	50
Total Score	Rank: 2	116

1- Values and information provided by Emmons Olivier Resources.

**Table 6.11. Prior Lake Outlet Channel Modifications.**

<b>Category</b>	<b>Description</b>	<b>Score</b>
Total Annual Phosphorous Load Reduction	0 pounds	0
Flood Reduction Potential	2.6 feet	50
Cost per Pound of Phosphorous Reduction	NA	0
Lifecycle Cost	\$2,100,000	10
Implementation Challenges	Easements for construction and maintenance Need to modify discharge agreements with DNR, SMSC, and other entities The project does not provide any water quality benefit	10
Total Score	Rank: 7	62

## 6.2 PROJECT RANKING SUMMARY

The 11 projects score between 37 and 123 on the ranking system. Table 6.12 provides a summary of the values used for the rankings and Table 6.13 presents the scores and rankings for each of the projects identified, in order of highest to lowest ranking.

**Table 6.12. Summary of Values.**

<b>Project</b>	<b>Annual Phosphorous Reduction (pounds)</b>	<b>Flood Reduction Potential (feet)</b>	<b>Cost per Pound of Phosphorous Reduction</b>	<b>Lifecycle Cost</b>
Sutton Lake Iron Enhanced Sand Filter	735	0.0	\$ 186	\$ 2,046,665
Reroute Swamp Lake to Geiss Lake	161	0.0	\$ 208	\$ 501,899
Swamp Lake Iron Enhanced Sand Filter	223	0.0	\$ 185	\$ 616,591
Buck Lake Wetland Storage	114	0.0	\$ 401	\$ 683,497
Buck Lake East Wetland Enhancement	201	0.1	\$ 71	\$ 214,299
Buck Lake East Stream Restoration	10	0.0	\$ 637	\$ 95,549
County Ditch 13 Improvements	202	0.0	\$ 398	\$ 1,201,597
County Ditch 13 Diversion	90	0.0	\$ 961	\$ 1,302,695
Ferric Chloride System Upgrades	50	0.0	\$ 399	\$ 299,504
Spring West Iron Enhanced Sand Filter	249	0.0	\$ 99	\$ 368,814
Prior Lake Outlet Channel Modification Sutton Lake Iron Enhanced Sand Filter	0	2.6	\$ -	\$ 2,333,853

**Table 6.13. Summary of Scores.**

<b>Project</b>	<b>Annual P Reduction</b>	<b>Flood Reduction Potential</b>	<b>Cost per Pound of P Reduction</b>	<b>Lifecycle Cost</b>	<b>Feasibility</b>	<b>Total Score</b>
Buck Lake East Wetland Enhancement	14	2	50	22	35	123
Sutton Lake Iron Enhanced Sand Filter	50	0	19	2	45	116
Spring West Iron Enhanced Sand Filter	17	0	36	13	50	116
Buck Lake East Stream Restoration	1	0	6	50	45	102
Swamp Lake Iron Enhanced Sand Filter	15	0	19	8	40	82
Prior Lake Outlet Channel Modification	0	50	0	2	10	62
Ferric Chloride System Upgrades	3	0	9	16	30	58
Reroute Swamp Lake to Geiss Lake	11	0	17	10	10	48
Buck Lake Wetland Storage	8	0	9	7	15	39
County Ditch 13 Improvements	14	0	9	4	10	37
County Ditch 13 Diversion	6	0	4	4	10	24



## 7.0 Summary

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This Upper Watershed Blueprint evaluates 11 projects that provide varying levels of benefit for water quality and flood reduction improvements for Spring, Upper Prior and Lower Prior Lakes. Overall, the projects have potential to reduce the total annual phosphorous loads to Spring Lake by about 2,300 pounds, or 36% of the total Upper Watershed load. The four projects with the highest phosphorous reduction potential, IESF projects at Sutton Lake, Swamp Lake and Spring West, along with improvements on County Ditch 13, provide about 1,400 pounds in annual phosphorus reduction.

The water quality improvements do not have a significant impact on the flooding issues for Spring, Upper Prior and Lower Prior Lakes. Flood control projects identified that do have a significant impact are negotiating new agreements and modifying the Prior Lake Outlet Channel or constructing a significant volume of flood storage in the Upper Watershed.

These projects create a framework to prepare a long term improvements plan to move towards improved water quality in the district. The information can be re-evaluated with any changes in land use and other conditions in the Upper Watershed.

## 8.0 References

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# Appendix A

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# Appendix B

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**Memo To:** Frank Boyles, Kathryn Keller-Miller,  
**From:** Bruce Loney  
**Subject:** District Administrator Hiring Update and Process  
**Date:** December 21, 2020

The purpose of this memorandum is to update the full board of the hiring progress and future process in the hiring of a new district administrator. The application process is being handled by Joan Schultz of Scott County and after the December 13<sup>th</sup>, 2020 closing, we did receive 21 applications. Of these applications, 17 applications did meet the minimum qualifications.

These 17 applications were rated based on the rating system for education and experience. Out of these applications, 8 applicants were selected to move forward to a 1<sup>st</sup> screening interview to see who the best is to move forward to a semifinal interview.

The next steps are as follows as discussed by the hiring committee:

- Prepare Interview questions by Monday, December 21, 2020
- Setup virtual meetings with the 8 candidates by Joan and Kathryn for December 30, 2020 and from 12:30 to 4:30 pm. Results of these interviews will be shared with the board at our meeting on December 30, 2020.
- Need to setup interview panels for the second round of interviews:

**Panel of Stakeholders:**

- City of Prior Lake
- City of Shakopee
- City of Savage
- Spring Lake Township
- Sand Creek Township
- SMSC
- PLSLWD board member (Frank Boyles)
- Scott County

**Technical Panel:**

- PL - Pete Young
- EOR - Carl Almer (District Engineer)
- Shakopee - Kirby Templin
- SWCD - Troy Kupcal
- Scott WMO - Vanessa Strong
- SMSC – Scott Walz
- Charlie Howley Chanhassen and former board member
- PLSLWD board member (Bruce Loney)
- PLSLWD staff \*



**\*Staff Panel:**

It might be advantageous to have the candidates meet with staff separately so the candidates would get to see the staff they are having to work with and vice versa. The committee decided to have the staff meet the finalists and not before.

Additionally, specific questions need to be developed for each panel and not to duplicate but to gear the questions that is appropriate for the panel. For instance, stakeholder panel would be more interested in interaction with each agency. The technical panel would be interested in the experience level of knowing technical areas and project development.

The second round of interviews can be done in one day with no more than 4 candidates and to have the candidates do interviews rotating between the panels.

Future schedule for second round and final interviews can be as follows:

**Semifinal interviews with Stakeholder and Technical Panels:**

January 12, 2021 - This date is the same as the monthly board meeting and results of these panels can be reported at the meeting. Tentative times are 12:30 to 4:30 p.m.

**Final Interview with the full board:**

To be determined by the board at the January 12<sup>th</sup>, 2021 meeting.

Frank and Kathryn, I think I got the main points on what we discussed and tried to present a timeline and panel names for us to proceed. Getting the right questions for each panel and finally for the board will be next task after we schedule the interviews. After your review and any changes, I would submit a revised memo for the entire board for their review and input at the December 30<sup>th</sup>, 2020 special meeting.

Bruce Loney