MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

Meeting: Board Meeting
Meeting date: 1/14/2021
Agenda Item #: 10.2
Item type: Permits Requiring a Variance or Discussion

Title: Permit 20-625: Six Mile Creek- Halsted Bay Carp Barrier, Victoria

Prepared by: Name: Grace Barlow
Phone: 952-641-4518
gbarlow@minnehahacreek.org

Purpose:

Recommendation: Approval of MCWD permit application on the following conditions:

1. Identification of the contractor responsible for implementing the erosion control plan;
2. Submission of draft maintenance agreement for Waterbody Crossings & Structures for District approval.

Background:

The Minnehaha Creek Watershed District (MCWD or District) has applied for an MCWD permit for the installation of a permanent carp barrier within the Six Mile Creek subwatershed. This barrier will be located entirely in West Auburn Lake, where the lake outlets into Six Mile Creek, within Carver Park Reserve. This is the fourth and final carp barrier to be established as part of the Six Mile Creek-Halsted Bay Habitat Restoration project. The first three barriers were permitted and approved in 2018 under permit 18-501. Due to budgeting changes, the carp barrier originally scheduled for the end of 2019/20 was re-designed and has been analyzed under this application, as permit 20-625. The new application for permit 20-625 was received on December 10th, 2020. Additional clarifying information was requested on December 22nd, 2020. The application was considered complete on December 28th, 2020. Public notice for the project was sent on December 30th 2020 and concluded on January 13th, 2021.

The purpose of this project is to manage invasive common carp within the Six-Mile Creek-Halsted Bay (SMCHB) Subwatershed. Studies completed by MCWD and the University of Minnesota's Aquatic Invasive Species Research Center have determined that common carp are a significant driver of habitat degradation within these lakes as they uproot aquatic vegetation, increase turbidity, and modify ecosystems to the detriment of native fish. As a result, the use of carp barriers can help prevent these listed types of degradation by inhibiting adult carp from returning to spawning areas and decreasing population growth.

Permit 20-625 will involve the installation of a permanent carp barrier at the outlet of West Auburn Lake into Six Mile Creek. The barrier consists of three sections: two concrete footings (installed subgrade into the lake bed), the moveable aluminum slats (installed and affixed directly above the concrete footings), and chain-link fence barrier portion (installed on either side of the aluminum slats and extend outward to the edge of the shoreline). The aluminum slats in the middle can be raised or lowered to allow larger fish species, other than carp, to pass through during their spawning seasons. Many smaller species of fish will be able to cross the barrier without raising the slats. The placement of the chain-link fence further prevents carp movement around the barriers.

The project triggers the District's Erosion Control, Waterbody Crossings and Structures, and Floodplain Alteration Rules, as discussed below. The applicant has requested an Exception from the Waterbody Crossings and Structures Rule and is before the Board of Managers because of the request and in keeping with District policy directing Board review of permits for District projects.

The applicant has applied for a Public Waters Work permit from the Department of Natural Resources, therefore is not seeking to utilize General Permit 2001-6009, which provides state authorization to work conducted under a District permit.

District Rule Analysis:

Erosion Control Rule

The District's Erosion Control Rule is applied to projects proposing at least 5,000 square feet of land disturbance or 50 cubic years of fill, grading, excavating, or stockpiling. The Applicant is proposing 357 square feet of disturbance, 2.5 cubic yards of fill with no grading, excavating or onsite storage of dirt. As such, the project does not trigger the rule. Work triggering MCWD's floodplain requirements must submit an erosion control plan compliant with the substantive requirements of MCWD's Erosion Control Rule (Floodplain Alteration Rule paragraph 4(g)). The applicant has submitted an erosion control plan that requires the use of a floating silt curtain to control sedimentation in the water.

The applicant must identify a contractor responsible for implementing and maintaining its erosion control plan.

Floodplain Alteration

The District's Floodplain Alteration Rule is applied to projects that propose the alteration of land below the projected 100-year high water elevation of a waterbody. This project is subject to the Floodplain Alteration rule because, as described below, the Applicant is proposing disturbance that will occur below an elevation of 943.44, which is the 100 year floodplain elevation of West Auburn Lake. This disturbance is associated with the overall installation of the carp barrier, however as this section describes there will be no lasting impacts to the floodplain of West Auburn Lake.

As described in the introduction, the carp barrier consists of two concrete footings, movable aluminum slats, and side barriers made of chain link fence. The lake bed of West Auburn Lake as an elevation of 940. The concrete footings will be installed subgrade into the lake bed. The 2.5 CY of fill associated with this project are a result of these footings. No portion of the footings will extend above the 940 elevation. The two components that make up the fence portions of the barrier start at an elevation of 945.5 and then extend downward to the bed of the lake.

Section 3(a) of the District's Floodplain Alteration Rule requires that "fill shall not cause a net decrease in storage capacity below the projected 100-year high water elevation of a waterbody." As mentioned above, the 2.5 CY of fill associated with this project is a result of the concrete footings, which will be installed subgrade of the bed of West Auburn Lake. This subgrade installation is not considered to be floodplain fill as subgrade construction does not result in displacement of storage of or a net decrease in storage capacity. Therefore, criteria of section 3(a) is met.

Section 3(b) of the rule requires no increase in the 100-year flood elevation of a watercourse. As West Auburn Lake is defined as a basin and not a watercourse, this section of the rule is met.

Section 3(c) of the rule does not apply as the 2.5 CY of fill associated with this project is a result of subgrade concrete footings. This 2.5 CY of fill will not occur within the floodplain of the water basin.

Section 3(d) of the rule requires that no new impervious surface be created in the lesser of 25 feet of the centerline of a watercourse of the 10 year floodplain, unless that surface is an integral component of a linear public roadway or trail.

No new impervious surface is proposed, so analysis of section 3(d) is not required.

Section 3(e) is not applicable, as no ice ridge grading is proposed.

Section 3(f) of the rule requires that the low openings to all new structures be a minimum of 2 feet above the 100 year high water elevation. There are no new structures with low openings proposed in association with this project.

Shoreline and Streambank Stabilization

The Shoreline and Streambank Stabilization Rule is applicable when a project proposes alterations or improvements of the shoreline of a water basin or to the banks of watercourses. Per the rule language, “no person shall install an improvement or alteration of the shoreline of a water basin or the bank of a watercourse, including but not limited to a bioengineered installation, riprap, a retaining wall, a sand blanket, or a boat ramp without first securing a permit under this rule.”

Any alteration to the shoreline of West Auburn Lake will be temporary in nature and will be limited to the removal of vegetation in the immediate area required for construction access to the barrier site and subsequent restoration of this vegetation. No permanent structural or bioengineered alteration to the shoreline is proposed in conjunction with this project. As a result, the proposed project meets the criteria for the rule.

Waterbody Crossings and Structures

The Waterbody Crossings and Structures Rule is triggered whenever a structure is placed in the bed or bank of a waterbody. This project is subject to this rule as it proposes the placement of a permanent carp barrier within West Auburn Lake. As mentioned in the introduction, the carp barrier is comprised of includes three sections to maximize the barrier’s purpose of preventing carp from entering or exiting a body of water while still allowing the free movement of native species.

Per section 3(a) of the rule, the use of the bend or bank of a state Public Water shall meet a demonstrated public benefit because West Auburn Lake is a state Public Water. As the purpose of this project is to manage invasive common carp within the Six Mile Creek-Halsted Bay watershed, the water quality and ecosystem benefits of managing their populations provides a benefit for the subwatershed and beyond by preventing their movement, making the removal process easier, and diminishing the ways in which the species degrades the ecosystem as outlined in the Background section. Based on the overall benefits of diminishing the impacts of carp within the SMCHB subwatershed and thereby improving water quality, this criteria is met.

Per Section 3(b) of the rule, use of the bed or bank shall retain adequate hydraulic capacity and may not result in upstream or downstream increases in flood stage. The Applicant has provided detailed modeling demonstrating no increase in upstream or downstream flood stage as result of the project. This modeling has This No-Rise Statement has been reviewed by District Engineers who have found that the design of the proposed barrier allows for the retention of adequate hydraulic capacity and will not result in increases to upstream or downstream flood stage.

Section 3(d) of the rule requires projects to preserve aquatic and upland wildlife passage. The purpose pf the project is to prevent the passage of invasive Common Carp. Because of this, the project will intentionally affect aquatic passage. The applicant has requested an exception from this requirement. There will be no impact to upland wildlife passage as the barrier does not extend out of the body of water in a way that would prevent upland wildlife from moving around it.

Under Section 3(e) of the rule, use of the bed or bank shall not adversely affect water quality. The project has been designed to minimize disturbance to the waterbody to the greatest extent possible while still achieving the goals of the project. Proper erosion control measures will also be installed on site to prevent sediment from leaving the project area and any disturbance will be re-stabilized. As a result, no lasting adverse impacts to water quality will occur and the criteria of this section are met.

Section 3(f) states that the use of the bed or bank shall represent the “minimal impact” solution to a specific need with respect to all other reasonable alternatives. The applicant provided two alternative analyses to be considered in order to justify the placement of the permanent barrier. The first alternative considered was a no-build scenario. This alternative was determined not to be viable as carp are a significant driver of degraded conditions within the subwatershed- both through their direct ecosystem impacts as well as the fact that the presence of this species makes other management techniques within the subwatershed less effective. Relief from the ecosystem degradation cannot be achieved while the species is present, and therefore necessitating the barriers. The second alternative considered was installation of

temporary barriers. This option was also determined not to be viable as temporary barriers may have a higher ecosystem impact than permanent barriers, as access to the barrier site can be restricted by the timing of spring weather and result in the temporary barriers being installed too late in the season to prevent carp migration. As a result, this criteria is met.

Section 3(g) of the rule is not applicable, as no bored utility lines are proposed underneath the bed or bank of a watercourse.

Section 3(h) of the rule is not applicable, as this project is not proposing to install, modify, or excavate a sanitary sewer. Per section 6 of the rule, maintenance requirements for the barrier will be met through an Operations and Maintenance plan developed by the District.

In summary, the proposed barrier has been determined by staff and the District Engineer to meet all applicable criteria of the Waterbody Crossings and Structures Rule, except wildlife passage criteria from which the applicant has requested an exception.

Exception

The Variance and Exception Rule Allows the Board of Managers to grant exceptions from rule provisions on a determination that the proposed application will achieve a greater degree of water resource protection than strict compliance with the provision. The applicant has requested an Exception from section 3(d) of the Waterbody Crossings and Structures Rule, with regard to aquatic wildlife passage. This section analyzes the specifics of the Exception request and provides additional analysis on the resource benefits achieved through implementation of the project.

Per section 3(d) of the Waterbody Crossings and Structures rule, aquatic and upland passage must be preserved. The proposed project is designed to prevent passage of carp, which conflicts with the requirement to maintain aquatic passage. The design of barrier will allow wildlife passage for species of fish smaller than the common carp, which includes many native species. In addition, the Applicant will be minimizing the impact on other wildlife through regular inspections. Staff will manually raise the barrier as needed to allow other species of fish, such as Northern Pike, to pass during spawning times specific to that species and that are earlier in the season than carp.

The intent and goal of the Applicant's proposed project is to efficiently remove invasive common carp from the Six Mile Creek-Halsted Bay subwatershed. This barrier is the fourth and final barrier to be installed within the subwatershed. As mentioned in other parts of this report, carp barriers are an integral part of the subwatershed management plan. High concentrations of the species have detrimental effects on water quality as Common Carp are a significant driver of habitat degradation within these lakes as they uproot aquatic vegetation, increase turbidity, and modify ecosystems to the detriment of native fish. Further, as brought forward in the previous carp barrier permit (18-501), the Applicant provided published scientific studies demonstrating the Six Mile Creek-Halsted Bay subwatershed to be the second largest contributor of phosphorous to Lake Minnetonka. The presence of Common Carp exacerbates phosphorous problems by re-suspending sediment containing the nutrient further complication water quality problems within the subwatershed and beyond. Finally, with the full implementation of the subwatershed management plan, 2,488 acres of littoral habitat will be restored, directly benefitting and enhancing the water quality for a multitude of ecosystem benefits.

The Applicant's proposed project will result in significant water quality benefits by limiting the movement of invasive carp. However, the project does propose to do so in a manner that does not fully comply with the MCWD regulatory criteria outlined in this section. Specifically, the Applicant has determined that the project cannot meet its intended goals and also be designed in a way that meets the criteria for which exceptions are being requested. Regardless, the Applicant has provided evidence that the project will result in improved water quality by limiting the many ways that common carp result in ecosystem degradation.

Summary:

The Minnehaha Creek Watershed District has applied for a Minnehaha Creek Watershed District permit under the Floodplain Alteration, Waterbody Crossings and Structures, and Variance and Exception Rules for the installation of a permanent carp barrier on at the outlet of West Auburn Lake into Six Mile Creek. The proposed project meets the necessary requirements under the applicable rules, upon satisfaction of the recommended conditions and approval of the Exception by the Board of Managers. Staff Recommends approval of the permit with the conditions listed.

Supporting documents (list attachments):

1. Application Form
2. Flood Modeling and Site Plans
3. Application Narrative
4. Exemption Request Form

WATER RESOURCE PERMIT APPLICATION FORM

Use this form to notify/apply to the Minnehaha Creek Watershed District (MCWD) of a proposed project or work which may fall within their jurisdiction. Fill out this form completely and submit with your site plan, maps, etc. to the MCWD at:
15320 Minnetonka Blvd. Minnetonka, MN 55345.
Keep a copy for your records.

YOU MUST OBTAIN ALL REQUIRED AUTHORIZATIONS BEFORE BEGINNING WORK.

1. Name of each property owner: Minnehaha Creek Watershed District (Agreement Holder)
Mailing Address: 15320 Minnetonka Blvd City: Minnetonka State: MN Zip: 55345
Email Address: abrown@minnehahacreek.org Phone: 952-641-4522 Fax: _____

2. Property Owner Representative Information (not required) (licensed contractor, architect, engineer, etc…)
Business Name: _____ Representative Name: _____
Business Address: _____ City: _____ State: _____ Zip: _____
Email Address: _____ Phone: _____ Fax: _____

3. Project Address: 6825 Carver Park Rd City: Victoria
State: MN Zip: 55386 Qtr Section(s): _____ Section(s): _____ Township(s): _____ Range(s): _____
Lot: _____ Block: _____ Subdivision: _____ PID: 070100100

4. Size of project parcel (square feet or acres): N/A
Area of disturbance (square feet): 357 Volume of excavation/fill (cubic yards): 2.5 (Fill)
Area of existing impervious surface: N/A Area of proposed impervious surface: N/A
Length of shoreline affected (feet): N/A Waterbody (& bay if applicable): West Auburn Lake

5. Type of permit being applied for (Check all that apply):

- ☑ EROSION CONTROL
- ☑ FLOODPLAIN ALTERATION
- ☐ WETLAND PROTECTION
- ☐ DREDGING
- ☑ SHORELINE/STREAMBANK STABILIZATION
- ☑ WATERBODY CROSSINGS/STRUCTURES
- ☐ STORMWATER MANAGEMENT
- ☐ APPROPRIATIONS
- ☐ ILLICIT DISCHARGE

6. Project purpose (Check all that apply):

- ☐ SINGLE FAMILY HOME
- ☐ ROAD CONSTRUCTION
- ☐ UTILITIES
- ☐ DREDGING
- ☐ SHORELINE/STREAMBANK STABILIZATION
- ☐ MULTI FAMILY RESIDENTIAL (apartments)
- ☐ COMMERCIAL or INSTITUTIONAL
- ☐ SUBDIVISIONS (include number of lots)
- ☐ LANDSCAPING (pools, berms, etc.)
- ☑ OTHER (DESCRIBE): Fish Barrier

7. NPDES/SDS General Stormwater Permit Number (if applicable): N/A

8. Waterbody receiving runoff from site: N/A

9. Project Timeline: Start Date: January 18, 2021 Completion Date: May 1, 2020

Permits have been applied for: City ☐ County ☐ MN Pollution Control Agency ☒ DNR ☐ COE ☐
Permits have been received: City ☐ County ☐ MN Pollution Control Agency ☐ DNR ☐ COE ☐

By signing below, I hereby request a permit to authorize the activities described herein. I certify that I am familiar with MCWD Rules and that the proposed activity will be conducted in compliance with these Rules. I am familiar with the information contained in this application and, to the best of my knowledge and belief, all information is true, complete and accurate. I understand that proceeding with work before all required authorizations are obtained may be subject to federal, state and/or local administrative, civil and/or criminal penalties.

Anna Brown 12/10/2020
Signature of Each Property Owner Date

MINNESOTA "NO-RISE" CERTIFICATION

This is to certify that I am a duly qualified professional engineer licensed to practice in the State of Minnesota.

It is further to certify that the attached documentation supports the installation of a fish barrier, upstream of the outlet of West Auburn Lake near Victoria, MN. The proposed project is one of three fish barriers that Minnehaha Creek Watershed District (MCWD) plans to install along the conveyance of Six Mile Creek to prohibit the migration of carp. Using the existing XP-SWMM Model for Upper MCWD Watershed, the fish barrier was modeled at the outlet of West Auburn Lake as two orifice devices to simulate the new effective flow area at the outlet. The orifices were sized to match the effective flow areas, or open spaces, in the vertical bars and aluminum-slat fencing that makes up the fish barrier. The plans attached to this certificate show the proposed fish barrier.

West Auburn Lake is located in a mapped FEMA A Zone. Through modeling, it was determined that the proposed fish barrier would result in no increase in the Atlas-14 24-hour, 100-year high water level (BFE) of West Auburn (943.44). The 943.44 elevation reflects the Updated Existing scenario for the outlet with approximately 1 ft of sediment in the outlet culvert. The Proposed barrier will be placed at the existing bottom elevation of 940. If the downstream channel and culvert are cleaned out in the future, the barrier will need to be adjusted to an elevation at 939, 0.12 feet below in the invert of the outlet. Both fish barrier scenarios were modeled, with the barrier at 939 and 940, and the modeling showed no increases greater than 0.0044 feet for either scenario. A comparison of the two scenarios is outlined in Tables 1 and 2 with the nodes are shown in Figure 1. The project meets the MN DNR's no-rise criteria for upstream waterbodies.

I hereby certify that this 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.

Engineer: Erik Megow

Signature: 

Title: Water Resources Engineer

Lic. No.: 57794

Date: December 8, 2020

Comparison Tables

Modeled Scenarios:

- Existing: This is the Existing XP-SWMM Modeling scenario where no sediment has accumulated in the West Auburn Outlet culvert or the downstream channel.
- Updated Existing: This scenario is Updated Existing XP-SWMM Modeling scenario showing the surveyed accumulation of sediment in the West Auburn Outlet culvert and downstream channel.
- Proposed (939.0): This scenario models the barrier with an invert elevation of 939.0. If the outlet culvert and downstream channel were cleaned-out, the barrier would need to be lowered to 939.0.
- Proposed (940.0): This scenario models the barrier at the proposed invert elevation, which is consistent with the existing, surveyed elevation.

Table 1. Update Existing vs. Proposed (940.0) Results

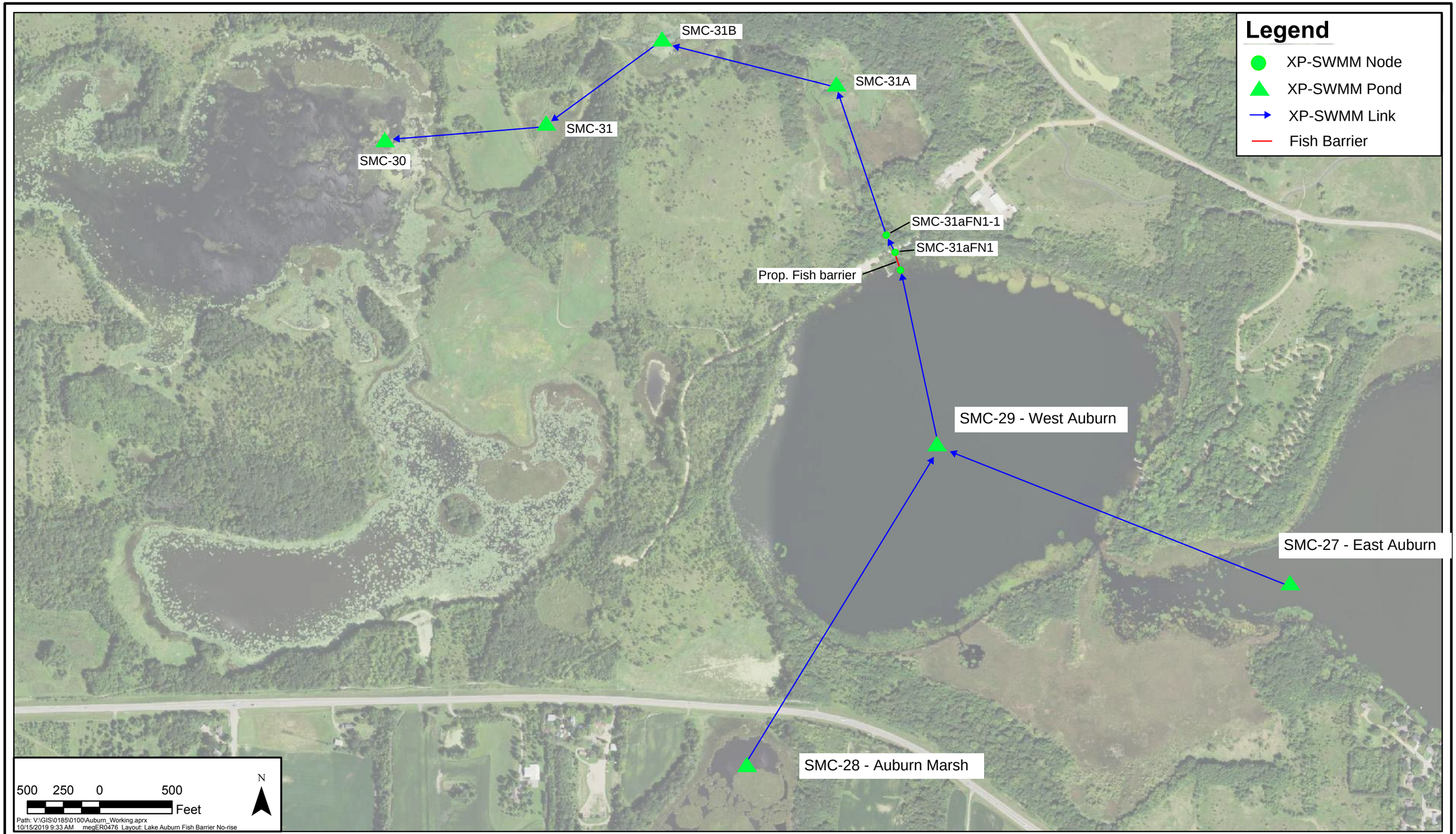
Atlas-14, 100-yr, 24-hr HWLs			
Node	Up. Existing	Proposed (940.0)	Prop - Exist.
SMC-27	943.4512	943.4450	-0.0062
SMC-28	944.2026	944.2026	0.0000
SMC-29	943.4426	943.4366	-0.0060
SMC-31AFN1	942.5978	942.5998	0.0020
SMC-31A	942.5063	942.5091	0.0028
SMC-31B	940.3800	940.3805	0.0005
SMC-31	939.1513	939.1517	0.0004
SMC-30	974.4570	974.4570	0.0000

Table 1 shows that the proposed Fish Barrier, at a 940.0 invert, results in a no-rise scenario for waterbodies upstream and downstream of the barrier. The Proposed elevations are compared to an Updated Existing scenario where there is approximately 1 foot of sediment in the culvert. Figure 1 shows where the corresponding nodes are located in the District's XP-SWMM Model. Table 1 shows that there are no increases greater than 0.0044', so the placement of the barrier satisfies the No-Rise criteria.

Table 2. Existing vs. Proposed (939.0) Results

Atlas-14, 100-yr, 24-hr HWLs			
Node	Existing	Proposed (939.0)	Prop - Exist.
SMC-27	943.1292	943.1312	0.0020
SMC-28	944.2026	944.2026	0.0000
SMC-29	943.0894	943.0927	0.0033
SMC-31AFN1	942.5779	942.5794	0.0015
SMC-31A	942.4834	942.4854	0.0020
SMC-31B	940.4186	940.4105	-0.0081
SMC-31	939.2034	939.1947	-0.0087
SMC-30	974.4570	974.4570	0.0000

Table 2 shows that the barrier will need to be adjusted to an elevation of 939.0, if the West Auburn outlet and the downstream channel were cleaned-out. The 939.0 elevation is approximately 0.12 feet below the invert of the outlet culvert. As shown in the survey (Plan Sheet C-100, attached) and the Fish Barrier Profile (Plan Sheet C-101, attached), the bottom of the lake at the outlet is currently at 940.0.



MINNEHAHA CREEK WATERSHED DISTRICT	WENCK Responsive partner. Exceptional outcomes.	DEC 2019
Lake Auburn Fish Barrier No-rise		Figure 1

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OWNER

MINNEHAHA CREEK WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

MINNEHAHA CREEK WATERSHED DISTRICT
15320 MINNETONKA BLVD
MINNETONKA, MN 55345
(P) - 952-471-0590
CONTACT: ANNA BROWN

ENGINEER

WENCK

WENCK ASSOCIATES, INC.
7500 OLSON MEMORIAL HWY
SUITE 300
GOLDEN VALLEY, MN 55427
(P) - 763-252-6800
CONTACT: CHRIS MEEHAN, P.E.

SITE CONSTRUCTION PLANS

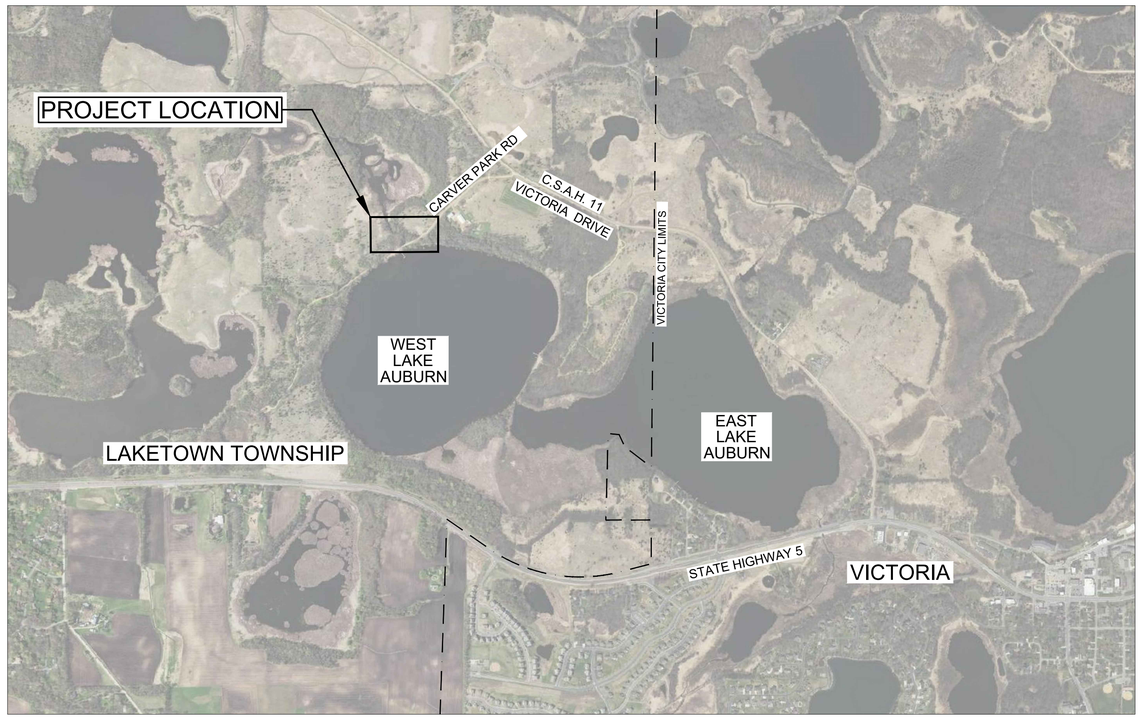
FOR

LAKE AUBURN CARP BARRIER

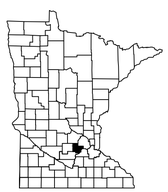
PREPARED FOR

MINNEHAHA CREEK WATERSHED DISTRICT

NOVEMBER 2020



VICINITY MAP

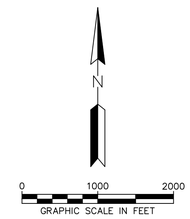


PROJECT LOCATION
NEAREST CITY: VICTORIA, MN
COUNTY: CARVER

THIS PLAN SET CONTAINS 7 SHEETS

SHEET INDEX

SHEET NUMBER	SHEET TITLE
G-100	COVER SHEET
C-100	EXISTING CONDITIONS
C-101	SITE PLAN
C-800	DETAILS
C-801	DETAILS
S-100	BARRIER PLAN AND ISO VIEW
S-101	BARRIER DETAILS



WARNING:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG

GOPHER STATE ONE CALL
TWIN CITY AREA: 651-454-0002
TOLL FREE 1-800-252-1166

WENCK
7500 OLSON MEMORIAL HWY
SUITE 300
GOLDEN VALLEY, MN 55427
PHONE: 763-252-6800
FAX: 952-831-1268
WWW.WENCK.COM

MINNEHAHA CREEK WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

PROJECT TITLE: LAKE AUBURN CARP BARRIER VICTORIA, MN

ISSUE NO.	DESCRIPTION:	DATE:
1	CONSTRUCTION PLANS	11/2/2020
2	CONSTRUCTION PLANS v2	6/17/2020
3	CONCEPT UPSTREAM	11/11/2020

CERTIFICATION:

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.

NOT FOR CONSTRUCTION

LICENSE NO.: 43066
DATE: 11/12/2020

PROJECT NO.: 0185-0123

DWN BY:	CHK'D BY:	APP'D BY:
MJK	ERM	CJM

ISSUE DATE: 11/11/2020
ISSUE NO.: 3
SHEET TITLE: COVER SHEET
SHEET NO.: G-100

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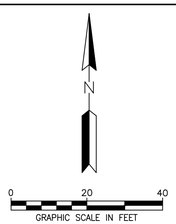

LEGEND

- EASEMENT LINE
- EXISTING PROPERTY LINE
- GUARD RAIL
- 901 EXISTING MINOR CONTOUR
- 900 EXISTING MAJOR CONTOUR
- EXISTING EDGE OF GRAVEL
- EXISTING TREE LINE
- EXISTING DECIDUOUS TREE
- EXISTING CONCRETE SURFACE

GENERAL NOTES

1. EXISTING CONDITIONS SHOWN ARE FROM A TOPOGRAPHIC SURVEY'S COMPLETED BY WENCK ASSOCIATES DATED OCTOBER 9, 2019, JUNE 18, 2020, AND NOVEMBER 10, 2020.. EXISTING FEATURES MAY NOT BE EXACT TO THEIR LOCATION. CONTRACTOR RESPONSIBLE FOR VERIFYING THE CONDITIONS OF THE SITE AND MUST IMMEDIATELY NOTIFY THE ENGINEER OF DISCREPANCIES OR VARIATIONS FROM THE DRAWINGS.
2. SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". EXACT LOCATION/DEPTH OF SUBSURFACE UTILITIES SUCH AS GAS, TELEPHONE, FIBER OPTIC, SEWER, WATER, PIPELINES, ELECTRICAL, AND CABLE TV ARE UNKNOWN AND THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE.
3. CONTRACTOR RESPONSIBLE FOR CONTACTING GOPHER STATE ONE CALL (1-800-252-1166) A MINIMUM OF 48 HOURS IN ADVANCE (EXCLUDING HOLIDAYS AND WEEKENDS) BEFORE STARTING WORK FOR LOCATIONS OF UNDERGROUND UTILITIES.
4. QUANTITIES ARE APPROXIMATE, AND MAY VARY TO ALLOW COMPLETION OF WORK.
5. WORK AND MATERIALS MUST COMPLY WITH CITY, COUNTY, STATE, AND FEDERAL (INCLUDING OSHA) REGULATIONS AND CODES.
6. CONTRACTOR SHALL COORDINATE AND MAINTAIN STORMWATER DRAINAGE CONVEYANCE THROUGHOUT CONSTRUCTION (BOTH PIPED AND OVERLAND FLOW). CONTRACTOR TO ENSURE ALL AREAS RECEIVING CONSTRUCTION STORMWATER RUNOFF TO BE PROTECTED PER NPDES PERMIT.
7. CONTRACTOR SHALL COORDINATE CONSTRUCTION STAGING, ON OR OFFSITE, AS NECESSARY TO COMPLETE THE WORK. IF OFFSITE STAGING AREA IS REQUIRED, CONTRACTOR IS RESPONSIBLE TO FIND, OBTAIN, AND PAY FOR NECESSARY STAGING AREA AT NO ADDITIONAL COST TO THE OWNER. SUBMIT A STAGING PLAN TO THE ENGINEER FOR REVIEW BEFORE STARTING WORK. (INCIDENTAL)
8. CONTRACTOR RESPONSIBLE FOR ALL TRAFFIC CONTROL. TRAFFIC CONTROL MUST BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MN MUTCD, INCLUDING LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS. SUBMIT TRAFFIC CONTROL PLAN TO OWNER, TRPD, AND ENGINEER FOR REVIEW BEFORE CONSTRUCTION RELATED ACTIVITIES. PLANS MUST COMPLY WITH APPLICABLE PERMIT REQUIREMENTS. (INCIDENTAL)
9. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING PAVEMENT, SITE FEATURES, UTILITIES, TREES, ETC., UNLESS NOTED OR SHOWN OTHERWISE.
10. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION AND WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES.
11. CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER AND ENGINEER OF DISCREPANCIES OR CONFLICTS IN THE CONTRACT DOCUMENTS BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS ARE TO BE MADE WITHOUT PRIOR APPROVAL FROM THE OWNER AND ENGINEER. FAILURE TO NOTIFY OWNER AND ENGINEER OF AN IDENTIFIABLE CONFLICT BEFORE PROCEEDING WITH INSTALLATION RELIEVES OWNER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
12. CONTRACTOR SHALL HAVE ONE COPY OF EACH REQUIRED CONSTRUCTION PERMIT AND ONE COPY OF THE MOST CURRENT AND COMPLETE SET OF CONSTRUCTION DOCUMENTS (INCLUDING PLANS, SPECIFICATIONS, GEOTECHNICAL REPORT AND SPECIAL CONDITIONS AND PROVISIONS) AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
13. CONTRACTOR SHALL PLAN FOR AND ENSURE PERSONNEL COMPLY WITH BASIC PROVISIONS OF OSHA SAFETY AND HEALTH STANDARDS (29 CFR 1910) AND GENERAL CONSTRUCTION STANDARDS (29 CFR 1926) AS APPROPRIATE.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH WORK. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS FOR SAFETY OF EMPLOYEES ON PROJECT SITE AND OTHER PERSONS AND ORGANIZATIONS WHO MAY BE AFFECTED BY THE PROJECT. CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR SAFETY IN CONNECTION WITH WORK SHALL CONTINUE UNTIL SUCH TIME AS ALL WORK IS COMPLETED, AND ENGINEER HAS ISSUED NOTICE TO CONTRACTOR THAT WORK IS COMPLETE.
15. PROTECT EXISTING TREES THAT ARE NOT REMOVED. INSTALL ORANGE MESH FENCING, 4 FEET HIGH, WITH STAKES EVERY 10 FEET, 5 FEET OUTSIDE OF THE DRIPLINE OF ALL PRESERVED TREES. DO NOT PERFORM ACTIONS WITHIN THE PROTECTED AREA THAT MAY HARM THE TREE AND COMPACT THE SOIL, INCLUDING, BUT NOT LIMITED TO, EXCAVATION, STORING MATERIALS, PARKING AND TRAFFIC DURING CONSTRUCTION. WHERE CONSTRUCTION REQUIRES DISTURBANCE WITHIN THE PROTECTED AREAS, DISTURB THE ROOT ZONE AS LITTLE AS POSSIBLE. ALL TREE PROTECTION MEASURES SHALL BE DIRECTED AND VERIFIED BY OWNER AND ENGINEER PRIOR TO STARTING CONSTRUCTION.
16. ALL TREE PROTECTION FENCING MUST BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION AND TREE REMOVALS.
17. OAK TREES SHALL BE PROTECTED WITH CONSTRUCTION FENCING A MINIMUM DISTANCE EQUAL TO 1.5 FEET TIMES THE TREE DIAMETER IN INCHES AT 4.5 FEET ABOVE GROUND (I.E. 12 INCH DIAMETER OAK TREE WOULD HAVE FENCING PLACED A MINIMUM OF 18 FOOT RADIUS AROUND THE TREE).
18. WHEN TREE ROOTS ARE ENCOUNTERED THAT MUST BE REMOVED, CUT ROOTS CLEANLY AS FAR FROM THE TREE AS POSSIBLE AND IMMEDIATELY WATER AND BACKFILL OVER THE ROOTS TO PREVENT DRYING.

HORIZONTAL AND VERTICAL CONTROL NOTES

1. HORIZONTAL DATUM: CARVER COUNTY COORDINATE SYSTEM NAD83(11)
2. VERTICAL DATUM: NAVD88
3. BENCHMARK: MNDOT CONTROL STATION "SERV" - ELEVATION=954.06' - LOCATED IN FRONT OF THE DAIRY QUEEN AT THE INTERSECTION OF TH5 AND CR11

WARNING:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG

GOPHER STATE ONE CALL

TWIN CITY AREA: 651-454-0002
TOLL FREE 1-800-252-1166

WENCK
7500 OLSON MEMORIAL HWY
SUITE 300
GOLDEN VALLEY, MN 55427
PHONE: 763-252-6800
FAX: 952-831-1268
WWW.WENCK.COM

MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

PROJECT TITLE:
LAKE AUBURN
CARP BARRIER
VICTORIA, MN

ISSUE NO.:	DESCRIPTION:	DATE:
1	CONSTRUCTION PLANS	1/22/2020
2	CONSTRUCTION PLANS v2	6/17/2020
3	CONCEPT UPSTREAM	11/11/2020

CERTIFICATION:

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NOT FOR CONSTRUCTION

LICENSE NO.: 43066
DATE: 11/12/2020

PROJECT NO.: 0185-0123

DWN BY:	CHK'D BY:	APP'D BY:
MJK	ERM	CJM

ISSUE DATE: 11/11/2020
ISSUE NO.: 3

SHEET TITLE:
EXISTING CONDITIONS

SHEET NO.:
C-100

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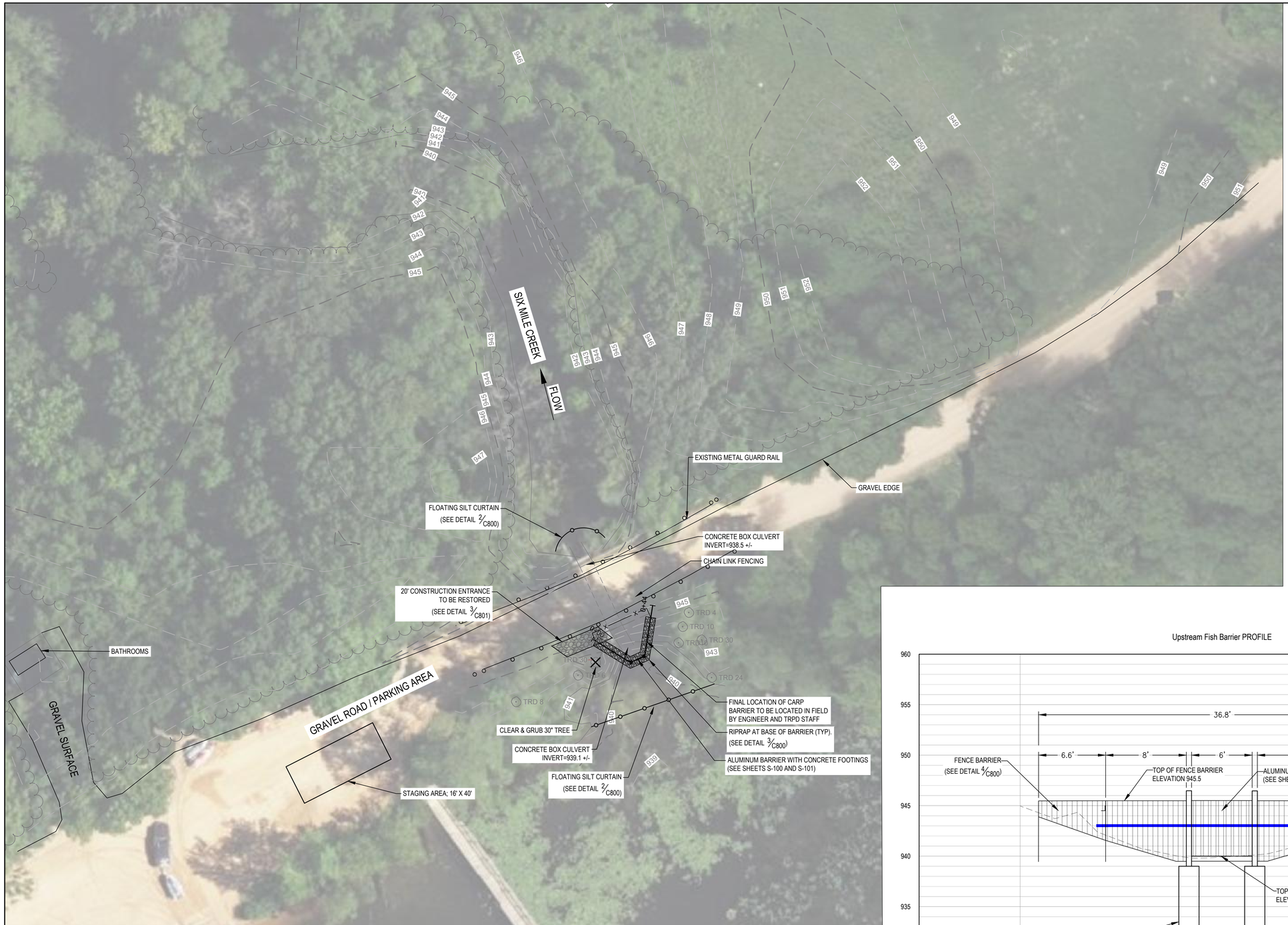
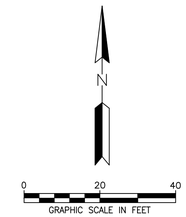




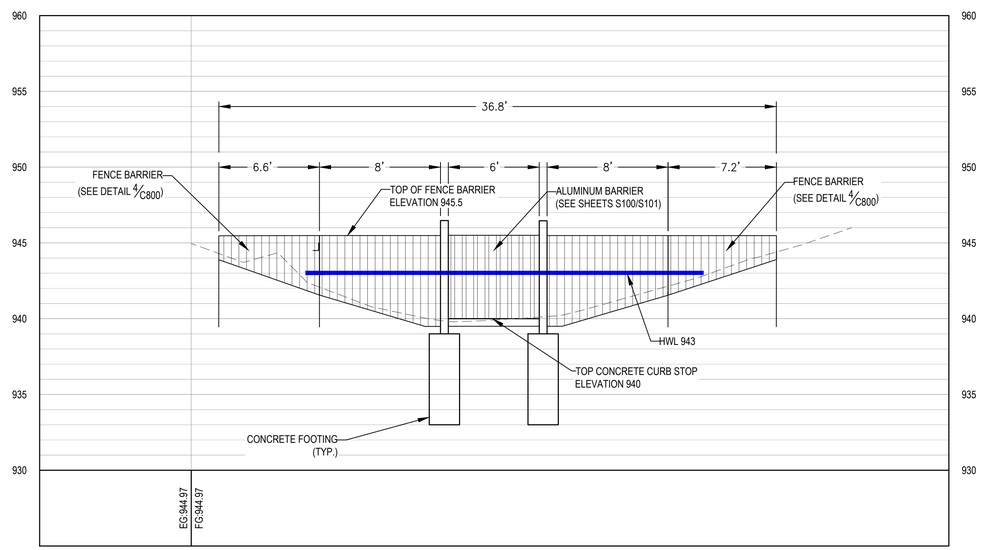
LEGEND

- EXISTING METAL GUARD RAIL
- MNDOT SEED MIX 36-211 W/ EROSION CONTROL BLANKET CATEGORY 3N STRAW 2S (NO POLY NETTING)
- RIPRAP
- FLOTATION SILT CURTAIN
- SILT FENCE
- ROCK CONSTRUCTION ENTRANCE
- CHAIN LINK FENCE

SITE PLAN NOTES

1. CLEAR AND GRUB BRUSH AS REQUIRED.
2. COORDINATE ANY TREE REMOVAL WITH ENGINEER/OWNER PRIOR TO REMOVAL.
3. PROTECT ALL EXISTING SIGNS OR SALVAGE AND REINSTALL (INCIDENTAL)

Upstream Fish Barrier PROFILE



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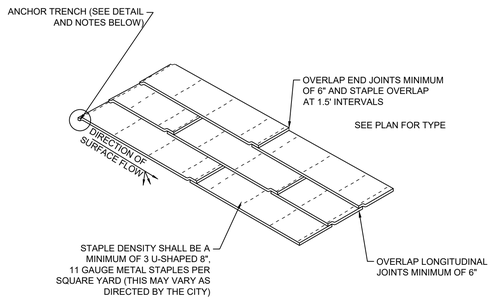
DWN BY:	CHK'D BY:	APP'D BY:
MJK	ERM	CJM

ISSUE DATE: 11/11/2020
ISSUE NO.: 3

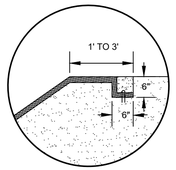
SHEET TITLE: SITE PLAN

SHEET NO.: C-101

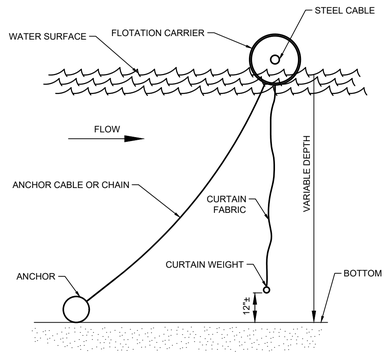
M:\0185\01235_DESIGN\1_CADD PLANSHEETS\C-101 SITE PLAN.dwg



ANCHOR TRENCH
1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT

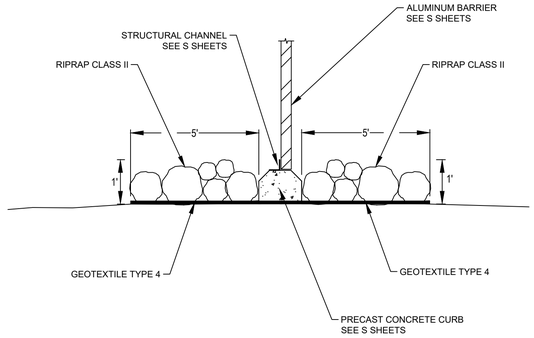


1 C800 EROSION CONTROL BLANKET INSTALLATION
NOT TO SCALE

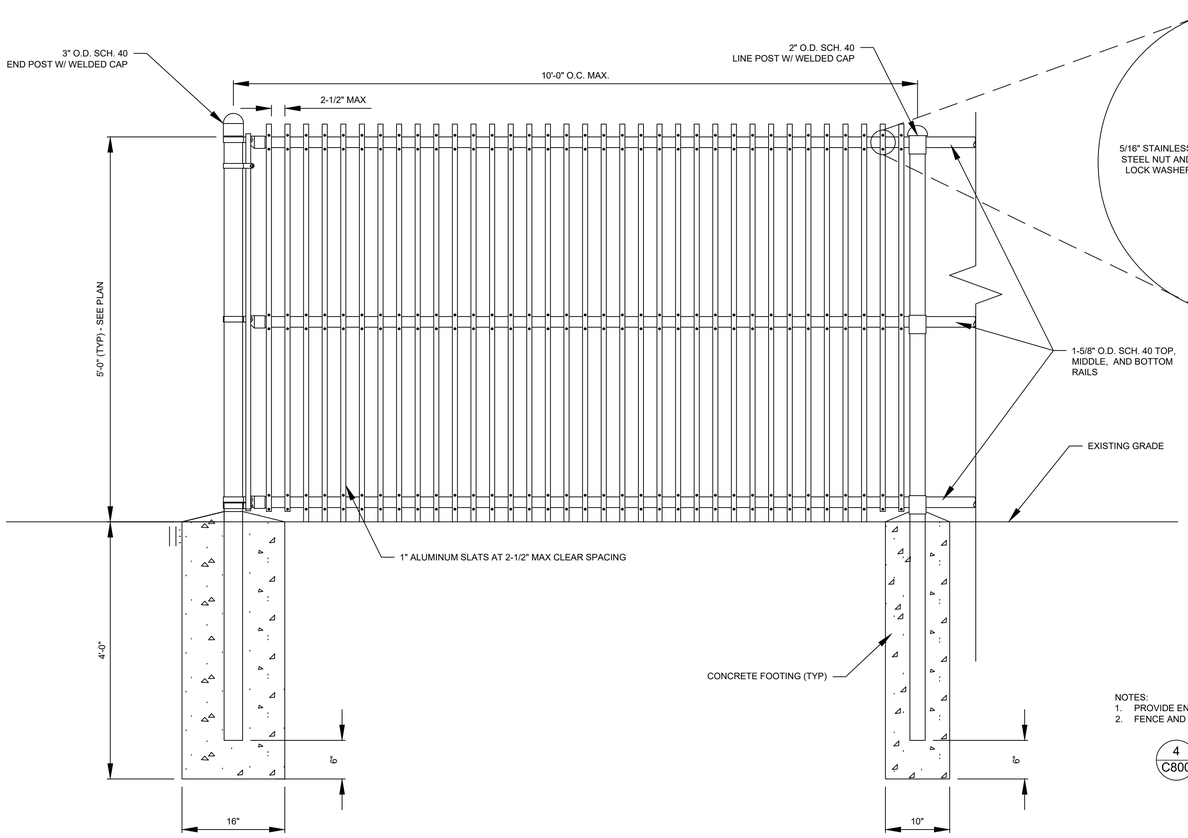


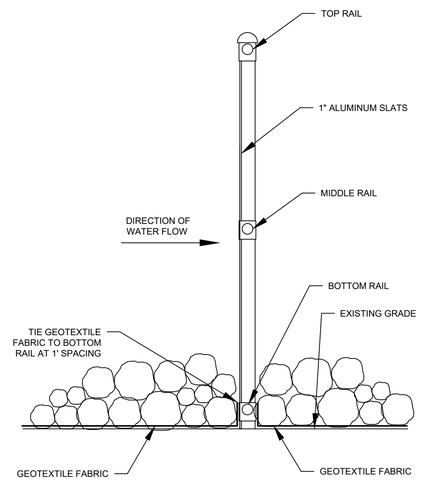
NOTE: CURTAIN LENGTH TO MATCH BOTTOM PROFILE AS CLOSELY AS POSSIBLE.
MAXIMUM INTERVAL FOR SPACING OF WEIGHT IS 15'.

2 C800 FLOATING SILT CURTAIN
NOT TO SCALE



3 C800 RIPRAP AT BARRIER DETAIL
NOT TO SCALE





SECTION VIEW

NOTES:
1. PROVIDE END POSTS AT ALL TERMINATION POINTS AND CHANGES IN DIRECTION.
2. FENCE AND POSTS SHALL BE BLACK POLY COATED AS SPECIFIED.

4 C800 ALUMINUM SLAT FENCING
NOT TO SCALE

WENCK
7500 OLSON MEMORIAL HWY
SUITE 300
GOLDEN VALLEY, MN 55427
PHONE: 763-252-6800
FAX: 952-831-1068
WWW.WENCK.COM

MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

PROJECT TITLE:
LAKE AUBURN
CARP BARRIER
VICTORIA, MN

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PROJECT NO.: 0185-0123

DWN BY:	CHK'D BY:	APP'D BY:
MJK	ERM	CJM

ISSUE DATE: 11/11/2020
ISSUE NO.: 3
SHEET TITLE: DETAILS
SHEET NO.: C-800

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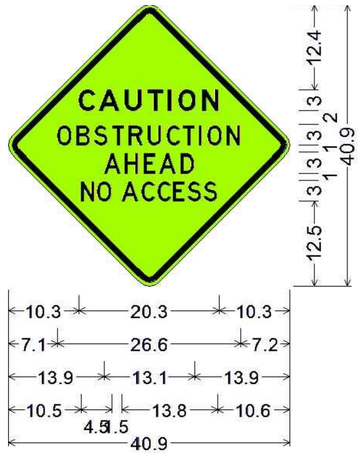
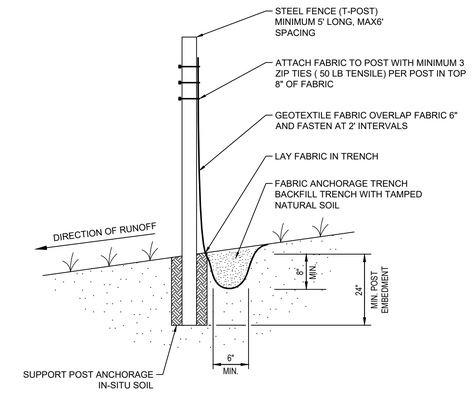
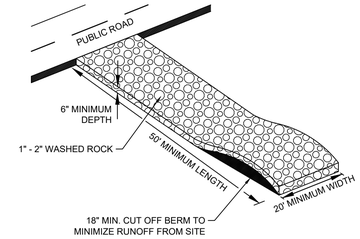


30.0" across sides 1.9" Radius, 0.8" Border, 0.5" Indent, Black on Bright yellow green;
"CAUTION" E Mod;
"OBSTRUCTION" D;
"AHEAD" D;
"NO ACCESS" D 50% spacing;

1 / C801 WARNING SIGN DETAIL (NOT USED)
NOT TO SCALE



2 / C801 SILT FENCE MACHINE SLICED
NOT TO SCALE



NOTE:
1. FILTER FABRIC SHALL BE PLACED UNDER ROCK TO STOP MUD MIGRATION THROUGH ROCK.
2. ENTRANCE MUST BE MAINTAINED TO PREVENT SEDIMENTATION ON PUBLIC ROADWAYS. FUGITIVE ROCKS WILL BE REMOVED FROM ADJACENT ROADWAYS DAILY OR MORE FREQUENTLY AS NECESSARY.

3 / C801 CONSTRUCTION ENTRANCE
NOT TO SCALE

WENCK
7500 OLSON MEMORIAL HWY
SUITE 300
GOLDEN VALLEY, MN 55427
PHONE: 763-252-6800
FAX: 952-831-1068
WWW.WENCK.COM

MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

PROJECT TITLE:
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PROJECT NO.: 0185-0123

DWN BY:	CHK'D BY:	APP'D BY:
MJK	ERM	CJM

ISSUE DATE: 11/11/2020
ISSUE NO.: 3
SHEET TITLE: DETAILS
SHEET NO.: C-801

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APPROXIMATE WEIGHTS - 6' LONG w/ TUBES

- 2-6' LONG CHORDS = 12' x 3.5 LBS/FT = 42 LBS
- 18-5.5' LONG SPINDALS = 99' x 0.63 LBS/FT = 62.5 LBS
- TOTAL WEIGHT = 105 LBS

CONCRETE:
- f'c = 4,000 PSI
- AIR CONTENT = 5% - 7%

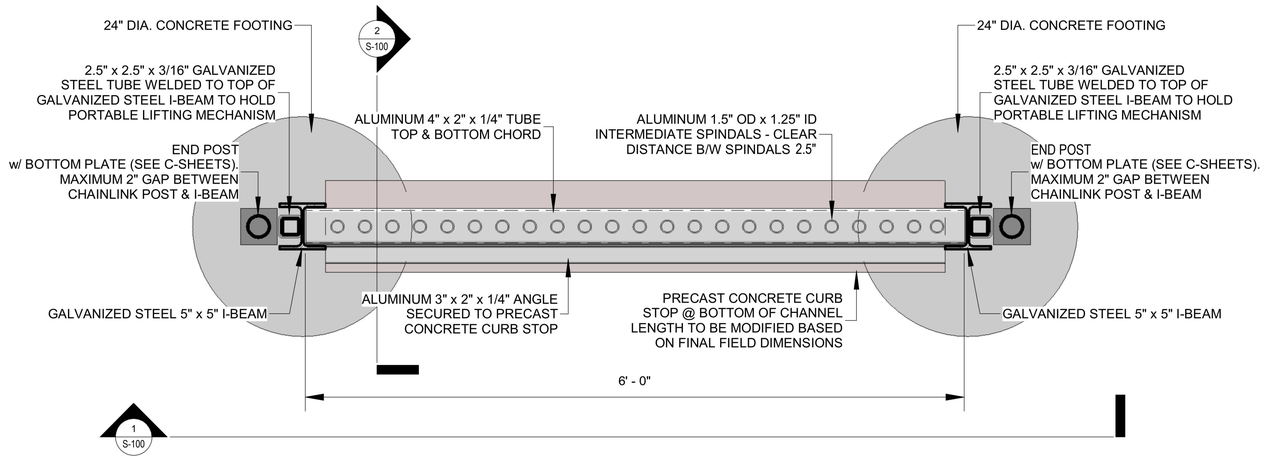
REINFORCEMENT:
- ASTM A615 GRADE 60
- fy = 60,000 PSI
- CLEAR COVER = 3"

ALUMINUM SECTIONS:
- 6061-T6

STEEL SECTIONS:
- HOT DIPPED GALVANIZED
- YIELD STRENGTH 50 KSI

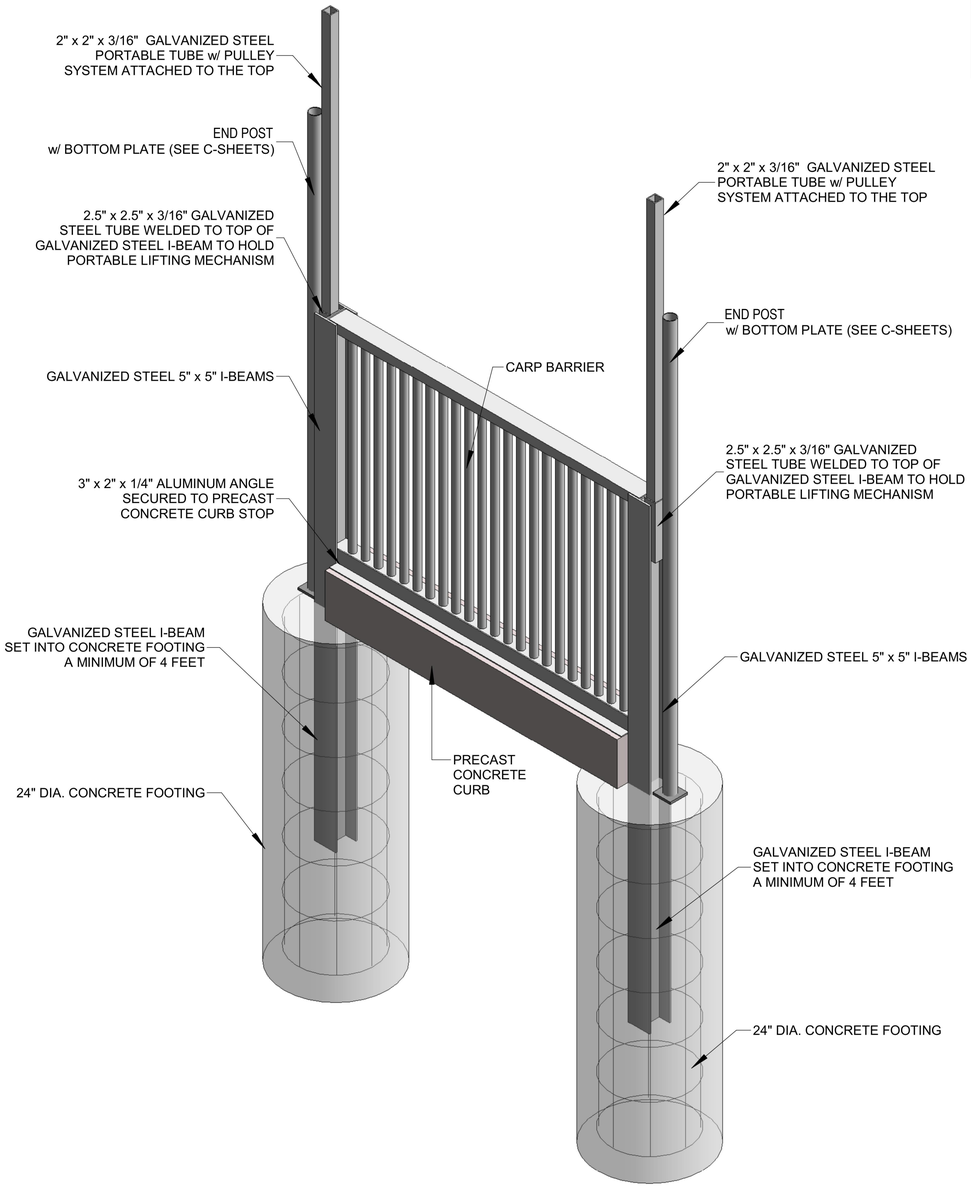
LIFTING MECHANISM:
- MECHANISM IS TO CONSIST OF A PULLEY SYSTEM
- MECHANSIM IS TO HAVE A 210 LBS LIFTING WEIGHT CAPACITY
- MECHANISM IS TO BE ABLE TO LOCK IN PLACE AT VARIOUS LIFTING HEIGHTS

BARRIER & LIFTING MECHANISM SECURITY:
- BARRIERS ARE TO HAVE THE CAPABILITY TO BE SECURELY LOCKED IN-PLACE TO PREVENT STEALING AND VANDALISM IN BOTH DOWN AND UP POSITIONS.
- LIFTING MECHANISM IS TO HAVE THE CAPABILITY TO BE SECURELY LOCKED IN-PLACE TO PREVENT STEALING AND VANDALISM.



NOT TO SCALE

1 S-100 PLAN VIEW - LAKE AUBURN CARP BARRIER
NOT TO SCALE



NOT TO SCALE

2 S-100 ISOMETRIC VIEW - LAKE AUBURN CARP BARRIER
NOT TO SCALE

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MINNEHAHA CREEK WATERSHED DISTRICT
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PROJECT NO.: 0185-0123

DWN BY:	CHK'D BY:	APP'D BY:
MJK	ERM	CJM

ISSUE DATE: 11/11/2020

ISSUE NO.: 3

SHEET TITLE:
BARRIER PLAN AND ISO VIEW

SHEET NO.:
S-100

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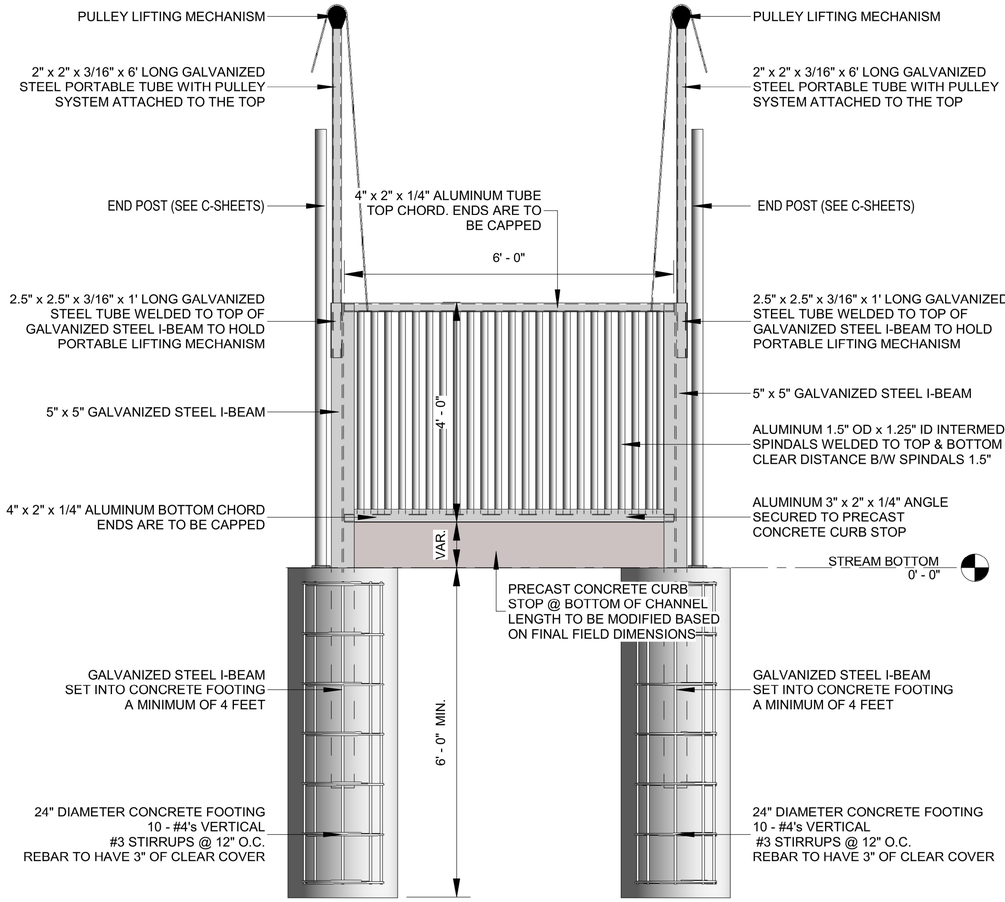
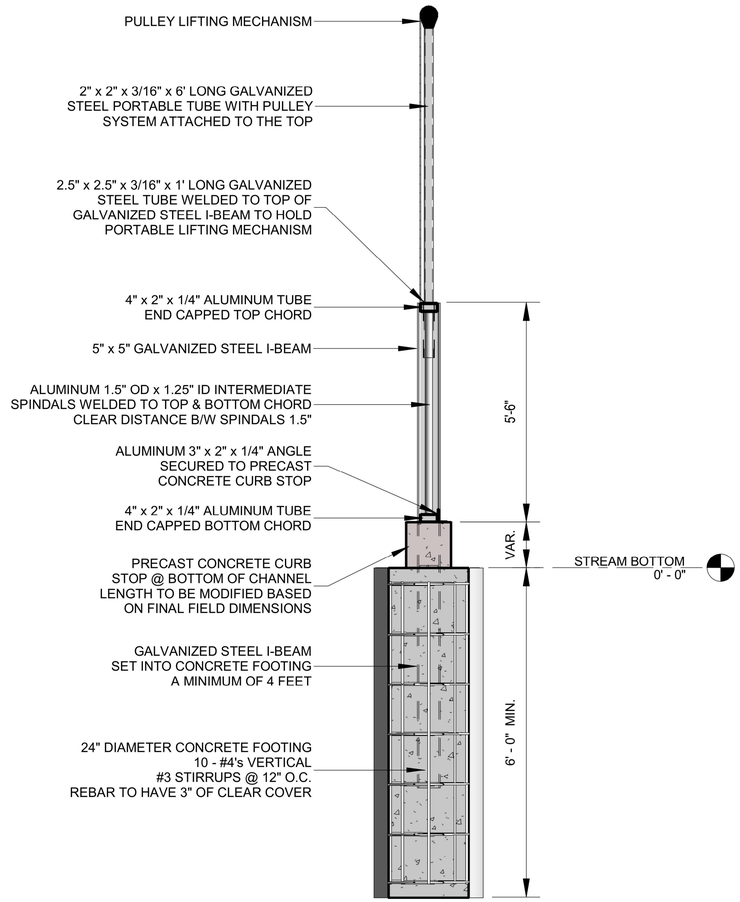


1 S-101 ELEVATION - LAKE AUBURN CARP BARRIER
NOT TO SCALE



2 S-101 SECTION - LAKE AUBURN CARP BARRIER
NOT TO SCALE

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ISSUE DATE: 11/11/2020
ISSUE NO.: 3
SHEET TITLE: BARRIER DETAILS
SHEET NO.: S-101

SMCHB Habitat Restoration Program: Phase One – Carp Management

Waterbody Crossings and Structures

Statement of Public Benefit

The purpose of this project is to manage common carp in the Six Mile Creek-Halsted Bay (SMCHB) Subwatershed. Common Carp are an invasive species present in very high concentrations throughout the SMCHB subwatershed and are a significant driver of habitat degradation in the 14 deep and shallow lakes they inhabit in this subwatershed – uprooting aquatic vegetation, increasing turbidity, and modifying ecosystems to the detriment of native fish.

A study completed in 2017 by University of Minnesota's AIS research center in partnership with the Minnehaha Creek Watershed District (MCWD) identified carp concentrations across the 14 lake system, reproduction areas, and major migratory corridors for common carp. MCWD has been awarded funding from the Lessard Sams Outdoor Heritage Council (LSOHC) to implement a management strategy based on this study. When fully implemented, this project will result in the restoration of 2,488 acres of deep and shallow lake habitat. This project not only directly benefits aquatic resources in the SMCHB subwatershed, but also will allow subsequent management activities to be more effective, such as alum treatment and watershed load management.

Carp barriers are a primary strategy in this LSOHC funded management plan. This is the fourth and final barrier installation occurring along major migratory corridors for invasive common carp. Installation of barriers at these locations provide several benefits: 1. They prevent adult carp from returning to spawning areas, decreasing population growth; 2. They create smaller management units for carp removal and; 3. They will aid direction in carp removal from the stream channel.

Alternatives Analysis

Alternative 1: Do Nothing

One alternative would be to not install fish barriers in the SMCHB subwatershed. This is not a viable alternative because carp are a significant driver of degrading conditions within the SMCHB subwatershed, not only directly driving degrading ecological conditions, but also rendering other management strategies, such as alum treatment in shallow lakes, unviable. Reducing the number of carp and limiting their ability to freely move between lakes and into their spawning areas are a critical first step in restored this 27 square mile subwatershed that is the headwaters of Lake Minnetonka. The benefit to aquatic resources facilitated by these barriers substantially outweighs the do nothing alternative.

Alternative 2: Temporary Barriers

Temporary barriers have previously been utilized in the SMCHB subwatershed under DNR permits in both 2017 and 2018. This alternative, however, is not viable for long term management because:

- Carp management in this subwatershed will be permanent and ongoing, and reinstallation of temporary barriers annually cannot ensure the level of needed protection as carp migration can be unpredictable, and some movement occurs throughout the year. In particular, spring melt timing and site conditions can often render it not feasible to install temporary barriers before

the spring migration, which can be a substantial source of new carp entering SMCHB from the Lake Minnetonka system and spawning.

- Temporary barriers may have a higher ecosystem impact than permanent barriers. We have found in two years of temporary barrier installation that carp will try to dig around these structures, causing sediment suspension and modification to the stream bed. This barrier will be reinforced with rip-rap and precast concrete minimizing secondary damage to the channel.

Wildlife Passage

MCWD will be seeking an exception to the wildlife passage criterial under the Waterbody Crossings and Structure Rule. In order to achieve the project purpose of preventing carp migration it is infeasible to provide for offset culverts or other means to facilitate barrier passage in the design of the barrier.

MCWD staff will facilitate wildlife passage of other species through routine inspection. Staff will inspect barriers 1 to 2 times per week, or as needed based on flow and site conditions. Staff will have two means available to facilitate crossings: manually, by net (turtles) or by utilizing a backback electro-shocker and net (gamefish); or utilizing a pulley system that will be affixed to the barrier to remove and reinstall sections as needed (See barrier details, S100 through S105). The pulley system will be used primary to support Northern Pike spawning. Since Northern Pike often spawn earlier than common carp in the spring, we will open one section of the barrier to allow Northern Pike to pass, then put the section back in place prior to carp migration.

Maintenance

The District and/or its partners will manage carp barriers placed within the Six Mile Creek – Halsted Bay Subwatershed. The barriers are a necessary part of a comprehensive strategy to manage carp in the system and restore aquatic habitat. Staff will conduct routine maintenance to clean debris and inspect for damage and other issues during the open-water season. This will occur 1 to 2 times per week, or as needed based on conditions. Low flow periods may provide little debris accumulation and maintenance won't be needed as frequently. Higher flow conditions may require more frequent inspection. During this routine maintenance, we will also facilitate wildlife passage as we are able.

Construction Schedule

Project construction will occur between January 18, 2021 and March 31, 2021.

List of Attachments

1. Construction Plan Set
2. No Rise Certificate
3. Exception Request

REQUEST FOR EXCEPTION FROM A RULE PROVISION

MINNEHAHA CREEK WATERSHED DISTRICT (MCWD)
15320 MINNETONKA BLVD. **Phone: 952-471-0590**
MINNETONKA, MN 55345 **Fax: 952-471-0682**

A request for an exception must be accompanied by a MCWD Water Resources Application

Project Details:

Project address: 6825 Carver Park Rd City: Victoria State: MN Zip: 55386

County: Carver Property ID number (PID): 070100100

The Board of Managers may grant an exception from a provision of the rules on a determination that the proposed application will achieve a greater degree of water resource protection than would strict compliance with the provision. An exception must be approved by a two-thirds majority of managers voting.

Exception Requested From MCWD Rule(s):

- ☐ Erosion Control
- ☐ Floodplain Alteration
- ☐ Wetland Protection
- ☐ Shoreline & Streambank Stabilization
- ☒ Waterbody Crossings & Structures
- ☐ Stormwater Management
- ☐ Appropriations
- ☐ Illicit Discharge

Provision(s) and Requirement(s) of the Rule(s):

The permittee requests and exception to MCWD Waterbody Crossing & Structure Rule wildlife passage rule (3.d)

Requested Exception:

The nature of the project is to construct a barrier to prevent the movement of common carp between West Auburn and downstream lakes. In order to achieve the project purpose of preventing carp migration it is infeasible to provide for offset culverts or other means to facilitate barrier passage in the design of the barrier.

Describe how the proposed design will achieve a greater degree of water resource protection than strict compliance with the provision, referring to the impacts on water quality, water quantity, and ecological integrity. Quantify water resource protection as much as possible (pounds of pollutant removal, acres of habitat creation, etc).

This carp barrier is an essential component of MCWD's Six Mile Creek-Halsted Bay Habitat Restoration Program, an multi-year project which will restore 2,488 acres of deep and shallow lake habitat through the management and removal of common carp across the Six Mile Creek-Halsted Bay Subwatershed. A detailed overview of the project benefits is provided in the project narrative attachment.