

Clearwater River Restoration & Protection Phase II Project- Final Report



Prepared for:
Clearwater River Watershed District

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Responsive partner.
Exceptional outcomes.

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1.0 Executive Summary

This project was developed and implemented by the Clearwater River Watershed District (CRWD) and were made possible by:

- A Clean Water Partnership grant via the Minnesota Pollution Control Agency
- Contributions from Meeker and Stearns County Soil & Water Conservation Districts
- Landowner contributions via enrollment in CRWD cost-share programming

The Clearwater River upstream of Lake Betsy is currently impaired for bacteria and dissolved oxygen. Data has also identified Total Suspended Solids (TSS) and localized erosion issues in the watershed. Through this project, the CRWD completed a prioritization effort to identify and prioritize areas for implementing projects and practices to reduce bacteria and sediments in the upper watershed. Of the priority projects and practices identified, three were implemented. In addition, significant project development was completed for another priority. The BMP siting report prepared during this project will continue to guide implementation for the CRWD and local partners into the future.

The CRWD began watershed-wide Total Maximum Daily Load (TMDL) studies for all the District's impaired waters in 2003. Studies were approved by the EPA in 2009. The MPCA approved the CRWD's Implementation Plan (Plan) in 2009. A Watershed Restoration and Protection Strategies (WRAPS) Report was approved for the major watershed in 2015.

The Clearwater River Restoration & Protection Phase II project was a continuation of the CRWD's plan to protect and improve water quality and natural resources. Other CRWD projects and programs build upon and continue the improvements achieved by this project:

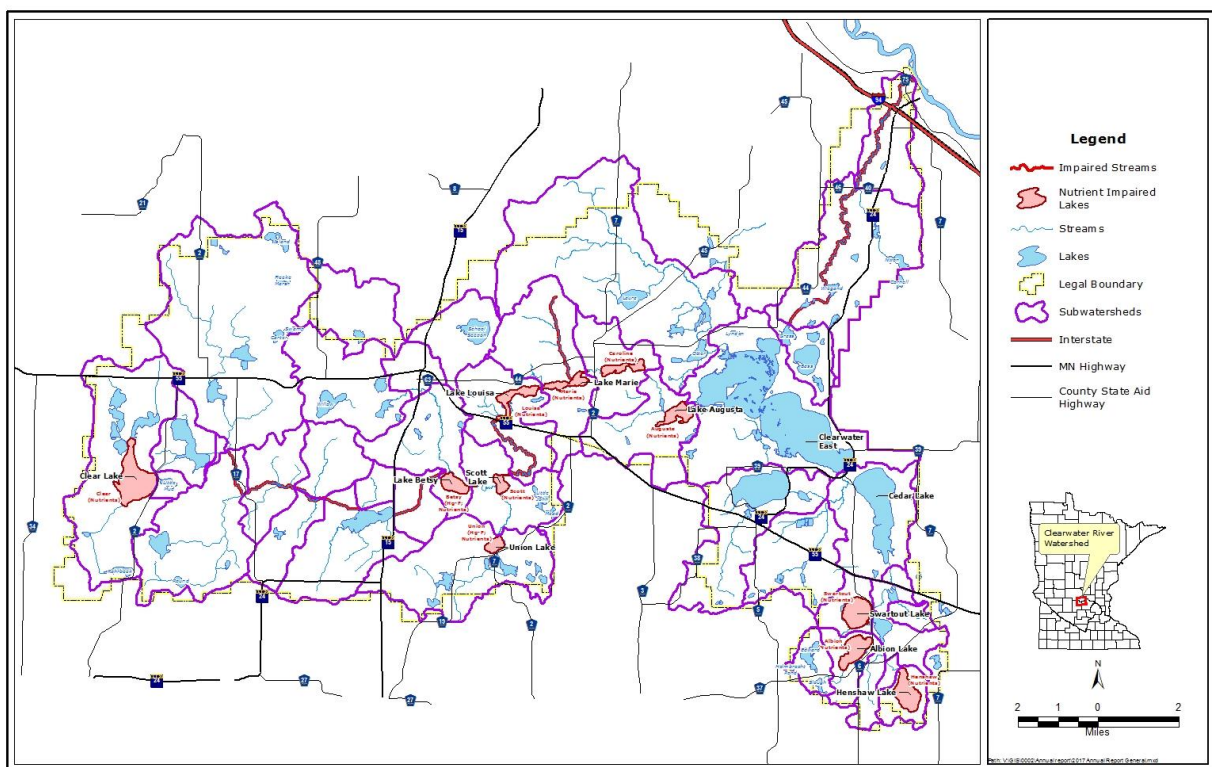
1. **Kingston Wetland Restoration:** The project restored a 500-acre riparian wetland and the adjacent river channel by re-establishing multi-stage meandered baseflow and low flow channels adjacent to the wetland complex. This allows high flows to access the floodplain (wetland) while maintaining higher re-aeration rates and dissolved oxygen in the impaired channel. The restoration reduced the main channel low flow exposure to sediment oxygen demand, reduced soluble phosphorus export to downstream lakes, and maintained the wetland's assimilative capacity of particulate phosphorus in higher flows. The design also resulted in conditions that are closer to a pre-agrarian hydrology and riverine habitat to support a broader range of species. *Complete.*
2. **Targeted Fertilizer Application Reduction Program:** provided cost-share to increase use of precision soil nutrient testing and GPS-aided fertilizer application for agricultural fields in the upper portion of the Clearwater River. 17,728 unique acres enrolled in the program. This translated to providing 10-30% of the 4,100 lbs. targeted load reduction to Lake Betsy from its contributing watershed, assuming only a small percentage of the not-applied phosphorus would have migrated downstream. *Complete.*
3. **Clear Lake South.** A notch weir and iron sand filter were installed on the south side of Clear Lakes to remove soluble P entering Clear Lake. *Complete.*
4. **City of Kimball Stormwater Retrofit Project (Phase I & II).** One of the urban areas within the priority Subwatershed had little or no stormwater management. The District partnered with the City of Kimball to retrofit the city with stormwater

management to protect a trout stream and improve water quality in downstream lakes. The project was completed with funding from two grants from the Minnesota Board of Water and Soil Resources (BSWR). *Complete*

5. **Clearwater River Bank Stabilization Projects:** The District used rapid assessment and design to identify areas along the Clearwater River upstream of the Kingston Wetland which needed stabilization. The District partnered with Minnesota Conservation Crews to stabilize bank and toe and manage riparian vegetation. Several areas of the bank were eroded due to overgrown trees which shaded out stabilizing understory. *Complete.*
6. **Internal Loading Reduction Plans:** Develop, assess, fund, and implement techniques and technologies to address internal loading in several CRWD lakes to meet water quality goals. *Ongoing.*
7. **City of Watkins Area Stormwater Retrofit Project:** Construct a stormwater treatment system to treat runoff from a 6,500-acre urban and agricultural drainage area that drains into the Clearwater River above the Kingston Wetland. *Substantially complete 2017.*

The target implementation area for this project was the upper, western portion of the watershed (Figure 1-1). The CRWD focused implementation efforts in this portion of the watershed for two reasons: the upper watershed exported most of the pollutant loads to downstream waters, and water quality standards in downstream waters could not be met without first achieving water quality goals in the upper watershed.

Figure 1-1: Clearwater River Watershed, Impaired Waters & Upper Watershed



1.1 PROBLEM STATEMENT

Nutrient TMDLs completed for 11 impaired lakes in the CRWD identified the need to reduce phosphorus load from agricultural sources by 80% to meet state water quality standards. The EPA-approved TMDL Implementation Plan identified that aggressive agricultural BMPs are necessary to achieve in-lake water quality standards.

The Clearwater River Watershed is comprised of a chain of lakes on the Clearwater River. The flow-through nature of this system means that load reductions in the upper watershed have positive impact downstream. That is to say, water quality in the lakes upstream is the greatest predictor of water quality in downstream lakes. The watershed-wide approved Plan focuses early efforts on the upper watershed, the headwaters of the CRWD. This project focuses on the two headwater lakes of the Clearwater River (Clear Lake [47-0095] and Lake Betsy [47-0042]) and the upper Clearwater River [07010203-549] and their tributary watersheds. Lake Betsy was added to Minnesota's 303(d) list of impaired waters for aquatic recreation impairment due to nutrients in 2008. The upper Clearwater River was added to the 303(d) list for aquatic life and aquatic recreation impairment due to dissolved oxygen and fecal coliform in 1996.

Building upon the successful projects/ programs previously mentioned, this project had two overarching goals: determine the best locations within the upper portion of the watershed to implement agricultural best management practices to reduce bacteria and sediment loads to the Clearwater River, and then implement as many of these practices as possible. Determining practice locations was achieved using a combination of existing water quality data, desktop geographical analysis, site visits, and level of interest amongst landowner and producers.

The project was to demonstrate the following measurable outcomes for agricultural lands in the CRWD:

- Reduction in total suspended solids and bacteria concentrations as compared to concentrations measured and reported in 2014
- Increased willingness on part of area landowners to implement practices to address sediment and bacteria loading measured by enrollment in District programs.

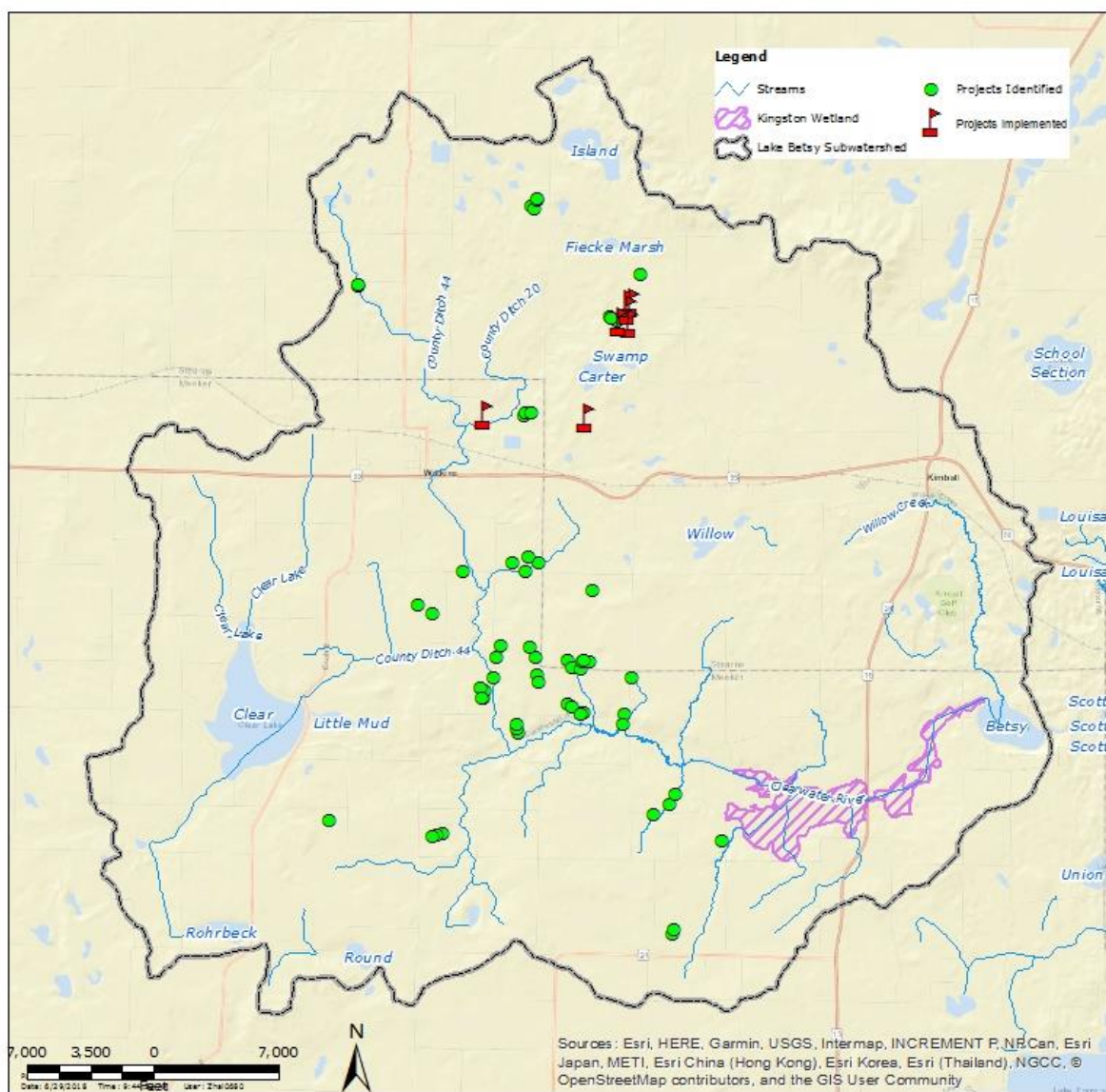
1.2 WATER BODIES IMPROVED

The Latitude/Longitude for Center of Project Area: 45° 15' 48.30"/94°19' 21.53".

Figure 1-2 shows project locations relative to streams, lakes and wetlands. The projects constructed will provide pollutant load reductions on receiving waters and downstream. Projects identified in the BMP Siting Plan which will be constructed in the future should continue to improve District lakes, streams and wetlands.

The water bodies improved are in Meeker County Minnesota in the CRWD, within the Upper Mississippi St. Cloud (HUC: 07010203). Waterbodies are: Clear Lake (47-0095), Lake Betsy (47-0042) and Clearwater River (07010203-549).

Figure 1-2: Lake Betsy Watershed, Projects Identified and Implemented



1.3 RESULTS & PROJECT HIGHLIGHTS

The project began in 2015 to identify and implement agricultural BMPs and /or other projects to reduce sediment, phosphorus, and bacterial loads to the Upper Clearwater River. A desktop analysis identified high potential loading areas and BMPs throughout the upper portion of the Clearwater River Watershed. The BMPs were reviewed and sediment reduction was calculated based on the performance.

Enrollment process began after the completion of the analysis. Several projects were implemented and one designed. These include Water & Sediment Control Basins (WASCOBs), an Animal Waste Treatment System (AWT) and a buffer strip along a non-

public watercourse, non-public ditch. The implement projects were estimated to remove 434.18 lbs. of phosphorus and 352.72 tons of total suspended solids on an annual basis.

1.4 GRANT PROJECT SUMMARY

Project

title: Clearwater River Restoration and Protection Phase II

Organization

(Grantee): Clearwater River Watershed District

Project start

date: 06/19/2015

Project end

date: 6/30/2018

Report

submittal

date: 7/31/2018

Grantee contact

name: Cole Loewen

Title: Administrator

Address: 75 Elm Street East | PO BOX 481

City: Annandale

State: MN

Zip: 55302

Phone

number: 320.274.3935

Fax: 320.274.3975

E-

mail: admin@crwd.org

Basin (Red, Minnesota, St.

Croix, etc.):

Upper Mississippi River

County: Meeker

Project type (check one):

- ☒ Clean Water Partnership (CWP) Diagnostic
- ☐ CWP Implementation
- ☐ Total Maximum Daily Load (TMDL) Development
- ☐ 319 Implementation
- ☐ 319 Demonstration, Education, Research
- ☐ TMDL Implementation

Grant Funding

Final grant

amount: \$70,272.71

Final total

project costs: \$328,248.52

Matching funds:

Final cash: \$47,669.31

Final in-

kind: \$210,306.50

Final

Loan: \$0.00

Contract

SWIFT #54720, PRJ

MPCA project

number: #07899

manager:

Phil Votruba

For TMDL Development or TMDL Implementation Projects only

Impaired reach

name(s): Lake Betsy, Clear Lake, Clearwater River

AUID or DNR Lake

ID(s): 47-0042, 47-0095, 07010203-549

Listed

pollutant(s): Nutrients; Dissolved Oxygen, Fecal Coliform

303(d) List scheduled
start date:

N/A

Scheduled
completion date: N/A

AUID = Assessment Unit ID

DNR = Minnesota Department of Natural Resources

Executive Summary of Project (300 words or less)

Problem: Clear Lake and Lake Betsy were impaired waters for aquatic recreation impairment due to nutrients in 2008. The upper Clearwater River was impaired for aquatic life and aquatic recreation impairment due to dissolved oxygen and fecal coliform in 1996. The dominant land use in the area is row crops (corn and soy beans). Assessing the land condition helps recommend most suitable BMP to the location and maximize cost benefit. Then implementing said BMPs can help reduce loading downstream.

Water Bodies Improved: The Clearwater River Upper Watershed draining into Lake Betsy as well as Lake Betsy and Clear Lake are the direct receiving water bodies within the target program area. However, given the riverine nature of the system, downstream waters also benefit from load reductions in upstream waters.

Project Highlights: This grant project identified 40 BMP locations and ranked them for TSS and TP removal potential. Implementation of these practices will reduce runoff, soil erosion, and sediment loads to the Clearwater River and provides direct benefit of water quality to the receiving water.

Results: This project resulted in implementation of 7 agricultural BMPs, with a total TP reduction to the receiving water of 434.18 lbs. annually, along with a TSS reduction of 352.72 tons annually.

Partnerships (Name all partners and indicate relationship to project)

Several landowners/ producers enrolled their working lands into the project's programming and contributed their own funds to implement BMPs.

Local SWCDs provided technical assist, project management and financial contributions to assist with implementing BMPs.

- Meeker County Soil and Water Conservation District (SWCD)
- Stearns County Soil and Water Conservation District (SWCD)

Clearwater River Watershed District & District Engineer Wenck – Project Owner and Project Engineer

Pictures

Pictures of the water resources are included in submitted documents to MPCA.

2.0 Work Plan Review

The project work plan is included as Appendix A. This section lists each of the goals identified in the work plan and describes the outcomes.

GOAL: Update existing bacteria and Total Suspended Solids (TSS) source inventory through desktop survey and field reconnaissance to identify and prioritize locations to reduce sediment and bacteria loading to the Clearwater River; then, design and implement best management practices (BMPs) at prioritized locations to reduce said loading.

OBJECTIVE 1: Quantify pollutant sources

Task 1.1 Desktop Analysis

Various data sources will be compiled, and analysis will be performed to determine pollutant sources on the landscape. After field reconnaissance, further analysis will be performed to arrive at pollutant source conclusions.

Task 1.2 Field Reconnaissance

Once desktop analysis is complete, staff and consultant will conduct necessary field reconnaissance to fill data gaps and verify desktop analysis.

Task 1.3 Reporting

Once above tasks are complete, a summary report will be developed detailing pollutant sources in targeted watershed, along with suggestions on locations and types of BMPs to address these sources. This report will be used for the remaining objectives.

OBJECTIVE 1 Timeline: August 2015 to June 2016

Responsible Parties: CRWD Staff, Wenck Associates

OUTCOME:

Each task of Objective 1 was completed; 40 potential locations for agricultural BMP were identified and ranked with estimated TSS and TP reduction.

OBJECTIVE 2: Design BMPs for Implementation

Task 2.1 Develop agreements with Property Owners – Since

Since most of the land where corrective BMPs will be placed is privately owned, the CRWD will have to work with said landowners to develop agreements to ensure BMPs can be constructed and are maintained.

Task 2.2 Design BMPs

Each BMP for each targeted location will be designed with engineering and landowner input. This will ensure the BMP will address the pollutant in question, as well as ensure its longevity. Examples of BMPs are listed below (not an exhaustive list):

- Pasture Management: livestock exclusion/fencing, riparian & channel vegetation, harvestable filter strips, etc.

- Manure/Feedlot Management: waste storage, manure spreading, sediment basins, etc.
- Cropland runoff reduction: contour farming, grade stabilization, alternative tile intakes, side inlets, etc.
- Morphology & hydrology restoration: streambank & channel stabilization, gully stabilization, wetland restorations, etc.

OBJECTIVE 2 Timeline: July 2016 to April 2018

Responsible Parties: CRWD Staff, Wenck Associates

OUTCOME:

Each task of Objective 2 was completed – 8 projects were designed.

OBJECTIVE 3: Implementation of BMPs

Task 3.1 Construction/Implementation

BMP(s) is/are implemented on the landscape in targeted locations. Construction oversight is provided to ensure BMP(s) is/are installed correctly.

Objective 3 Timeline: July 2016 to April 2018

Responsible Parties: CRWD Staff, Wenck Associates

OUTCOME:

Each task of Objective 3 was completed. Out of the 8 projects designed, 7 were implemented. These include 5 WASCOBs, 1 seeded buffer, and 1 AWMS.

OBJECTIVE 4: Monitoring & Evaluation

Task 4.1 Water Quality Monitoring

Water quality monitoring & evaluation at two key long-term monitoring locations is continued to quantify reductions in key pollutant concentrations. Parameters monitored in-field are: temperature, dissolved oxygen, pH, and specific conductance. Water samples collected for lab analysis are: total phosphorus (TP), Ortho phosphorus (OP), bacteria (E-coli), and total suspended solids (TSS). The CRWD uses its established relationship with MN Valley Testing Laboratories to complete necessary lab analysis. Analysis of monitoring results is performed to help determine trends.

Task 4.1 Timeline: April 2016 to December 2017

Responsible Parties: CRWD Staff, Wenck Associates

OUTCOME:

Each task of Objective 4 was completed. Data collected was analyzed to be included in the CRWD annual water quality monitoring reports, and data was submitted to EQUIS.

OBJECTIVE 5: Final Project Report

Task 5.1 Final Project Report

A report summarizing the project, including challenges faced, overall results, and recommended further actions.

Task 5.1 Timeline: March 2018 to June 2018

Responsible Parties: CRWD Staff, Wenck Associates

OUTCOME:

Each task of Objective 5 was completed. Report was completed and submitted to the MPCA.

OBJECTIVE 6: Civic Engagement

Task 6.1 Civic Engagement

The CRWD will continue existing outreach efforts to local schools and key stakeholders to promote the value of conservation. Installed BMPs will be used as demonstrations to promote further conservation work in the targeted watershed.

Task 6.1 Timeline: August 2015 to June 2018

Responsible Parties: CRWD Staff, consultant

OUTCOME:

Each task of Objective 6 was completed. Refer to section 4.0 to learn more

OBJECTIVE 7: Administration & Management

Task 7.1 Administration & Management

District staff will perform overall project administration and management. This includes fiscal oversight and project reporting requirements.

Task 7.1 Timeline: August 2015 to June 2018

Responsible Parties: CRWD Staff

OUTCOME:

Each task of Objective 7 was completed.

3.0 Grant Results

This project is an integral element of CRWD's strategy to reduce nutrient loads to impaired lakes and to restore the Clearwater River. The CRWD considers the project a success because of the potential phosphorus reduction through implemented projects. The sections below describe the projects identified and projects implemented.

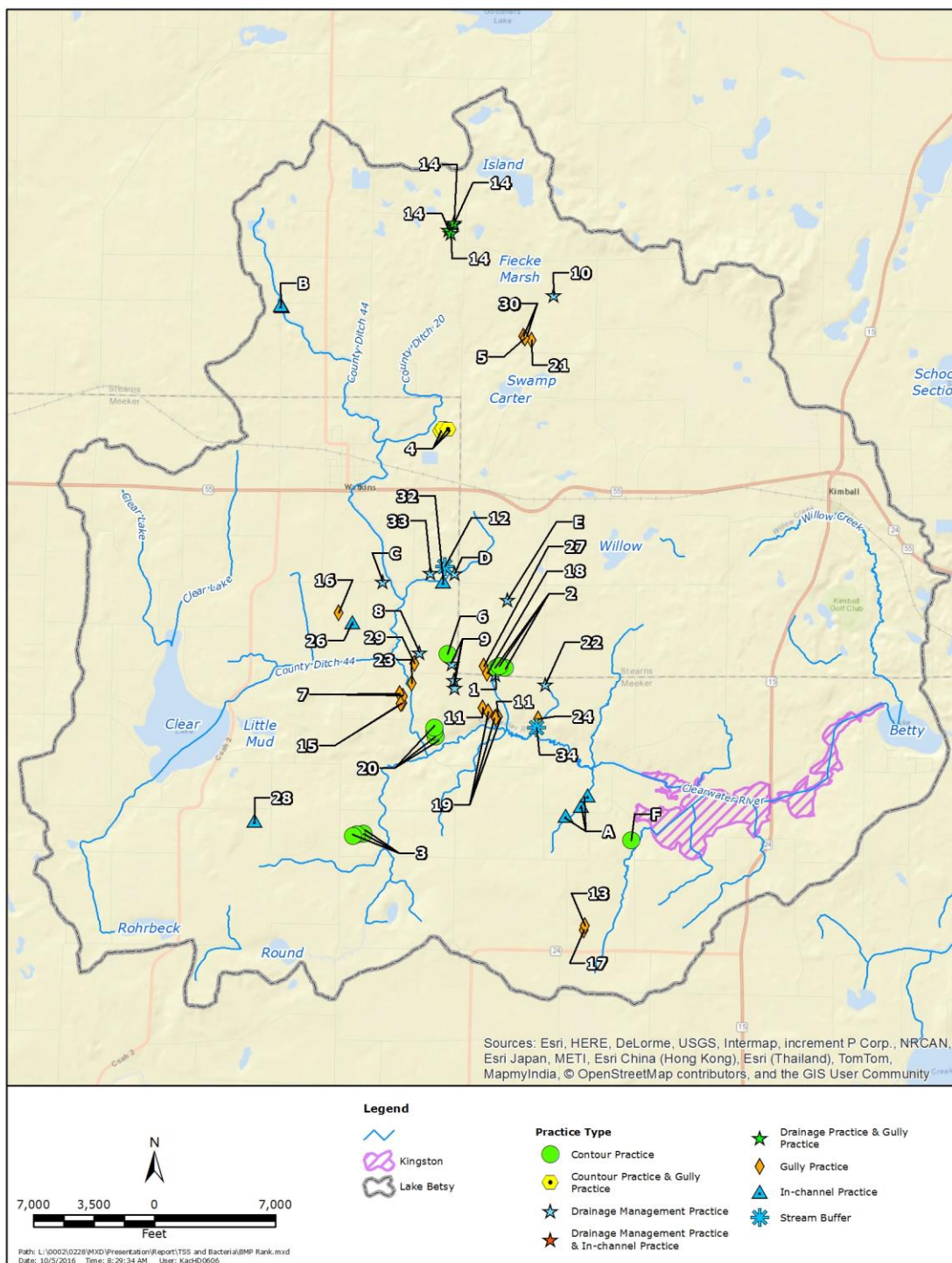
3.1 PROJECTS IDENTIFIED

The project identified the following BMP practices and estimated potential annual load reduction to Clearwater River. Table 3-1 shows the potential TSS and TP removal from each identified BMP and Figure 3-1 shows the identified project locations and ranking.

Table 3-1: Potential BMPs in the Upper Clearwater River Watershed

Rank ¹	Proposed BMP ⁴	Drainage Area to BMP	BMP Distance to Main-stem Clearwater River	Current Sediment Erosion On Site ⁵	Current Sediment Delivery to Clearwater River ⁶	Current Phosphorus Delivery to Clearwater River ⁷	BMP Sediment Reduction to Clearwater River ⁸	BMP Phosphorus Reduction to Clearwater River ⁸
		[Acres]	[miles]	[tons/yr]	[tons/yr]	[lbs/yr]	[tons/yr]	[lbs/yr]
1	ATIs and/or sedimentation basin	146.6	0.57	957	8.6	51.4	6.9	34
2	Contour Buffer	88.1	0.64	645	5.8	34.9	4.5	21.7
3	Contour Buffer	83.8	1.11	565	4.6	27.7	3.6	17.2
4	Contour Buffer Strip and/or Gully BMPs	44.7	2.54	555	3.9	23.2	3.3	15.9
5	Wascob	44	3.54	435	2.8	17.1	2.6	12.8
6	Contour Buffer	34.2	0.49	286	2.9	17.4	2.3	10.8
7	Grassed Waterway	20.8	0.09	242	2.9	17.6	2.3	10.2
8	Contour Buffer	18.5	0.23	228	2.5	14.9	1.9	9.2
9	ATI	45.1	0.42	224	2.3	13.8	1.8	9.1
10	ATI	92.1	3.69	352	2.3	13.6	1.8	9
11	Wascob	13.2	0.12	128	1.5	9.2	1.4	6.9
12	Stream Buffer	45.5	1.14	189	1.5	9.2	1.2	6.1
13	Wascob	18.9	1.73	159	1.2	7.3	1.1	5.5
14	ATI & Grassed Waterway	26.1	4.71	199	1.2	7.3	1	4.5
15	Grassed Waterway	6.1	2.45	94	1.2	7.1	0.9	4.1
16	Grassed Waterway	25.6	0.52	111	1.1	6.5	0.8	3.7
17	Wascob	15.1	1.78	120	0.9	5.4	0.8	4
18	Wascob	9	0.57	93	0.9	5.2	0.8	3.9
19	Wascob	8.8	0.11	68	0.8	5.1	0.8	3.8
20	Contour Buffer and/or Gully BMPs	13.4	0.12	78	0.9	5.7	0.7	3.5
21	Grassed Waterway	25.7	3.6	137	0.9	5.4	0.7	3.1
22	ATI	28.1	3.6	85	0.8	4.9	0.7	3.3
23	Wascob	9	0.56	52	0.7	4.2	0.6	3.2
24	Wascob	3.3	0.03	55	0.6	3.9	0.6	2.9
25	Stream Buffer	2.6	0.16	4	0.8	4.7	0.6	3.2
26	Stream Buffer	47.8	0.39	77	0.8	4.7	0.6	3.2
27	Wascob	5.9	0.39	66	0.6	3.6	0.6	2.7
28	Stream Buffer	15.6	0.65	87	0.7	4.2	0.5	2.8
29	Grassed Waterway	4.5	1.27	48	0.6	3.6	0.5	2.1
30	Grassed Waterway & Wascob	7.3	0.12	68	0.4	2.7	0.4	1.8
31	Stream Buffer	2	3.68	8	0.5	3	0.4	2
32	Stream Buffer	13.9	1.13	57	0.5	3	0.4	2
33	ATI	9.7	1	43	0.4	2.2	0.3	1.5
34	Stream Buffer	2.7	1.01	22	0.3	2	0.2	1.3
A	Stream Buffer	1	0.43	-	-	-	-	-
B	Two Stage Ditch	45.9	3.93	-	-	-	-	-
C	Side Inlet	4.8	0.84	20	0.2	1	-	-
D	Wetland Restoration	661.4	1.13	2,341	17.7	106.2	-	-
E	Wetland Restoration	147.3	1.35	1,223	9.7	58.4	-	-
F	Contour Farming	2.8	0.71	69	0.6	3.8	-	-

Figure 3-1: Projects Identified with Rankings in Betsy Lake Watershed



3.2 PROJECTS IMPLEMENTED

The location and type of BMPs implemented are shown in Figure 3-1. Estimated TP reduction from each BMP is summarized in table 3-2 below. The implemented projects were estimated to remove 352.72 tons of TSS per year and 434.18 lbs. of TP per year. Lake Betsy and the Clearwater River reach benefited from the upper watershed restoration effort and significant water quality improvement was observed. Figures 3-3 and 3-4 show the measurable water quality improvement reflected in the lake and Clearwater River reach.

Table 3-2: Estimated TP Reduction from Projects Implemented

Project name	Practice type	Sediment (TSS) reduction annual (tons)	Phosphorus reduction annual (lbs.)
Ron Kuechle WASCObS	WASCObS 5	336.6	286.11
Dennis Libbesmeier AWTS- Engineering & Construction	Design & construct AWTS	NA	128
Jerome Kuechle Seeded Buffer	Seeded buffer, ~3 acres	16.16	20.07

Figure 3-2: Projects Implemented in Betsy Lake Watershed

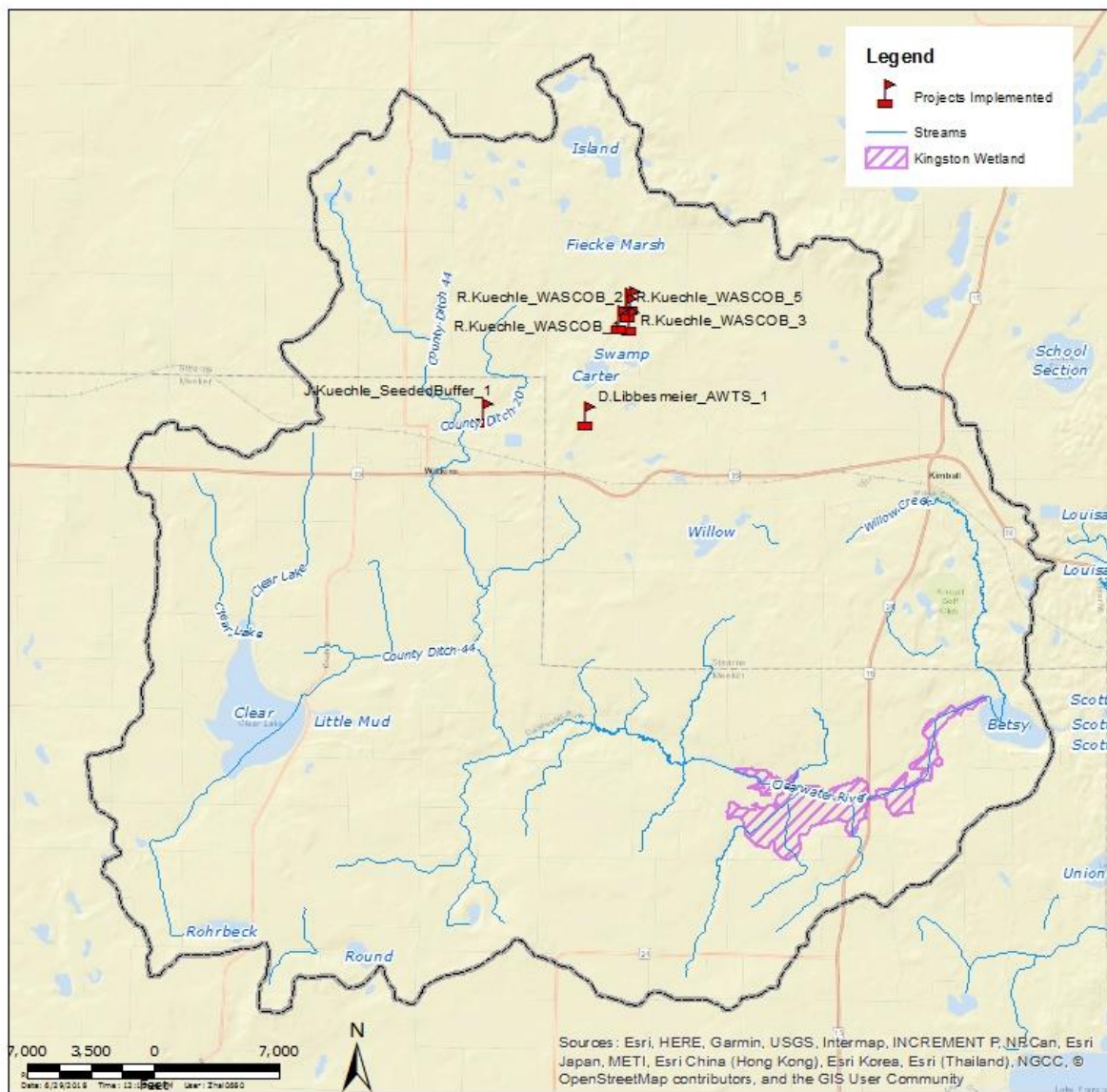


Figure 3-3: Lake Betsy Water Quality Trend

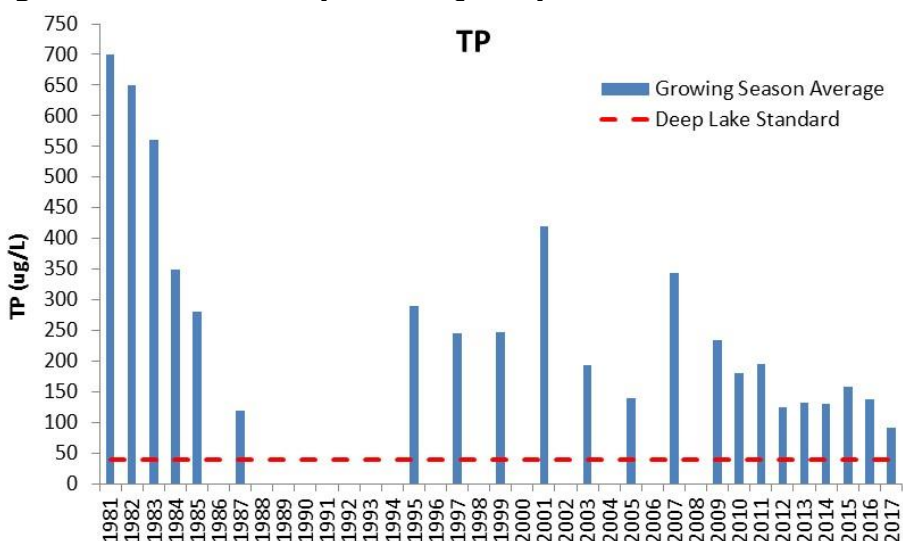
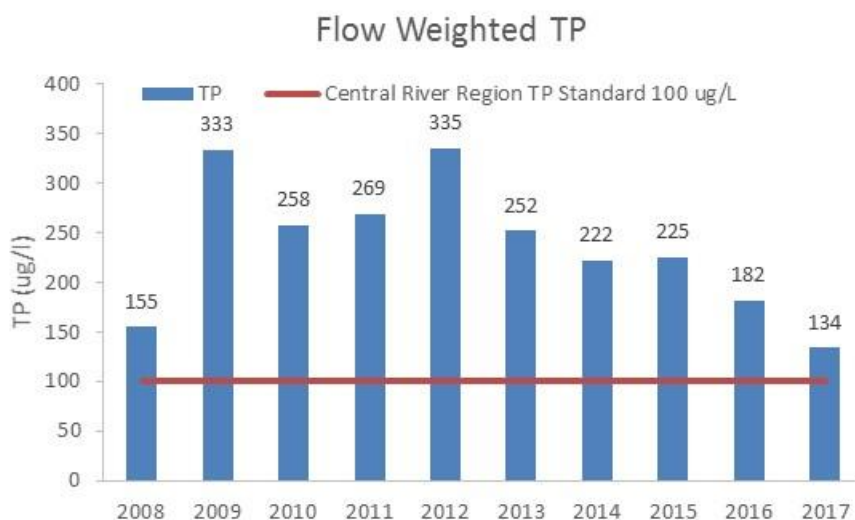


Figure 3-4: CR 28.2 Water Quality Trend



3.3 SUMMARY & RECOMENDATIONS

The project began in 2015 to identify and implement agricultural BMPs and /or other projects to reduce sediment, phosphorus, and bacterial loads to the Upper Clearwater River. A desktop analysis identified high potential loading areas and BMPs throughout the upper portion of the Clearwater River Watershed. The BMPs were reviewed and sediment reduction was calculated based on the performance.

Enrollment process began after the completion of the project. Several projects were implemented and one designed. These include Water & Sediment Control Basins (WASCOBs), an Animal Waste Treatment System (AWT) and a buffer strip along a non-

public watercourse, non-public ditch. The implement projects were estimated to remove 434.18 lbs. of phosphorus and 352.72 tons of total suspended solids on an annual basis.

The Clearwater River Watershed District (CRWD) considers the project a success and continues its partnerships with the local SWCDs to continue implementing the remaining priority BMP locations. Landowners and producers continue to show interest in continuing to implement BMPs in said locations.

4.0 Public Outreach and Education

The District integrates education and outreach, or civic engagement, in each project and program to leverage each dollar spent to protect and improve the water and natural resources in the District. The District reached out to and engaged with land owners and will continue to do so.

CRWD regular civic engagement involves hosting a bi-annual watershed tour, as well as giving presentations at board meetings, lake associations, local conferences and expos. The District also has a website and social media outlets. This project was featured at each of these outlets. Informal discussions with targeted audiences indicates engagement efforts were successful in educating audiences on purposes and results of the project, as well as increasing knowledge of watershed concepts.

4.1 EDUCATION & OUTREACH

Activities specific to this project included:

- ▲ Summer 2016: Tour for citizens of watershed
- ▲ Spring 2016-18: Annandale & Kimball Business Expos
- ▲ 2016-18: Annual Brochures
- ▲ 2015-18: School-age educational programming in partnership with Sauk River Watershed District
- ▲ February 2017: Joint lunch event with SWCD partners for local producers to learn about opportunities to address erosion concerns
- ▲ February 2017: Press release
- ▲ June 2018: Press release

5.0 Final Expenditures

PROJECT BUDGET AND EXPENDITURE REPORT						[PROJECT NAME]										PERIOD ENDING []		
Cost Category	Unit Cost	Quantity (Hours/Amount) Exp./Budget		Subtotals In-Kind	I. Match Cash	Loan Funds	Grant Cash	II. Total Budget	III.A. 2015 Jan 1 - Jun 30 Expended	III.B. 2015 Jul 1 - Dec 31 Expended	III.C. 2016 Jan 1 - Jun 30 Expended	III.D. 2016 Jul 1 - Dec 31 Expended	III.E. 2017 Jan 1 - Jun 30 Expended	III.F. 2017 Jul 1 - Dec 31 Expended	III.G. 2018 Jan 1 - Jun 30 Expended	III.H. 2018 Jul 1 - Dec 31 Expended	iV. Cumulative Expend. (III.A. thr H.)	V. Budget Balance (IV - II)
OBJECTIVE 1 - Quantify Pollutant Sources																		
A) Desktop Analysis																		
CRWD																		
Staff	40.00	/hr.	0 / 10	hrs.	200.00		200.00	400.00	0.00	0.00	32.51	0.00	0.00	0.00	0.00	0.00	32.51	367.49
Wenck Associates	150.00	/hr.	0 / 24	hrs.	1,800.00		1,800.00	3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	3,600.00	0.00
Supplies	200.00	lump	0 / 1	lump	200.00		200.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00
SUBTOTAL				0.00	2,200.00	0.00	2,000.00	4,200.00	0.00	0.00	3,632.51	0.00	0.00	0.00	0.00	0.00	3,632.51	567.49
B) Field Reconnaissance																		
CRWD																		
Staff	40.00	/hr.	0 / 16	hrs.	320.00		320.00	640.00	0.00	0.00	195.00	0.00	0.00	0.00	0.00	0.00	195.00	445.00
Wenck Associates	150.00	/hr.	0 / 16	hrs.	1,200.00		1,200.00	2,400.00	0.00	0.00	2,459.25	0.00	0.00	0.00	0.00	0.00	2,459.25	(59.25)
Supplies	450.00	lump	0 / 1	lump	400.00		50.00	450.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	450.00
Transportation	0.57	/mi.	0 / 283.19	mi.	160.00			160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	160.00
SUBTOTAL				0.00	2,080.00	0.00	1,570.00	3,650.00	0.00	0.00	2,654.25	0.00	0.00	0.00	0.00	0.00	2,654.25	995.75
C) Reporting																		
CRWD																		
Staff	40.00	/hr.	0 / 10	hrs.	200.00		200.00	400.00	0.00	0.00	186.88	0.00	0.00	0.00	0.00	0.00	186.88	213.12
Wenck Associates	150.00	/hr.	0 / 15	hrs.	1,120.00		1,130.00	2,250.00	0.00	0.00	5,260.40	13,277.60	0.00	0.00	0.00	0.00	18,538.00	(16,288.00)
Supplies	400.00	lump	0 / 1	lump	400.00		100.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	500.00
SUBTOTAL				0.00	1,720.00	0.00	1,430.00	3,150.00	0.00	0.00	5,447.28	13,277.60	0.00	0.00	0.00	0.00	18,724.88	(15,574.88)
OBJECTIVE 1 - TOTAL				0.00	6,000.00	0.00	5,000.00	11,000.00	0.00	0.00	11,734.04	13,277.60	0.00	0.00	0.00	0.00	25,011.64	(14,011.64)
OBJECTIVE 2 - Design BMP(s) for Implementation																		
A) Develop Agreements with Property Owners																		
CRWD																		
Staff	40.00	/hr.	0 / 50	hrs.	1,000.00		1,000.00	2,000.00	0.00	0.00	0.00	495.63	1,694.88	0.00	0.00	0.00	2,190.51	(190.51)
Supplies	220.00	lump	0 / 1	lump	220.00			220.00	0.00	0.00	0.00	0.00	220.00	0.00	0.00	0.00	220.00	0.00
Transportation	0.58	/mi.	0 / 243.48	mi.	140.00			140.00	0.00	0.00	0.00	17.82	10.70	0.00	0.00	0.00	28.52	111.48
SUBTOTAL				0.00	1,360.00	0.00	1,000.00	2,360.00	0.00	0.00	0.00	513.45	1,925.58	0.00	0.00	0.00	2,439.03	(79.03)
B) Design BMP(s)																		
CRWD																		
Staff	40.00	/hr.	0 / 25	hrs.			1,000.00	1,000.00	0.00	0.00	0.00	0.00	0.00	514.27	485.73	0.00	1,000.00	0.00
Wenck Associates	150.00	/hr.	0 / 75	hrs.	6,250.00		5,000.00	11,250.00	0.00	0.00	0.00	533.00	1,950.00	0.00	2,517.00	0.00	5,000.00	6,250.00
Supplies	250.00	lump	0 / 1	lump	250.00			250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	250.00
Transportation	0.58	/mi.	0 / 243.48	mi.	140.00			140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00
SUBTOTAL				0.00	6,640.00	0.00	6,000.00	12,640.00	0.00	0.00	0.00	533.00	1,950.00	514.27	3,002.73	0.00	6,000.00	6,640.00
OBJECTIVE 2 - TOTAL				0.00	8,000.00	0.00	7,000.00	15,000.00	0.00	0.00	0.00	1,046.45	3,875.58	514.27	3,002.73	0.00	8,439.03	6,560.97
OBJECTIVE 3 - Implementation of BMP(s)																		
A) Construction / Implementation																		
CRWD																		
Staff	40.00	/hr.	0 / 25	hrs.	500.00		500.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	1,000.00	0.00	1,000.00	0.00
Wenck Associates	150.00	/hr.	0 / 50	hrs.	3,500.00		4,000.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00	7,282.47	0.00	7,282.47	217.53
Transportation	0.58	/mi.	0 / 243.48	mi.			140.00	140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	140.00
Contractor	81,360.00	lump	0 / 1	lump	31,000.00		50,360.00	81,360.00	0.00	0.00	0.00	0.00	0.00	0.00	267,841.20	0.00	267,841.20	(186,481.20)
SUBTOTAL				0.00	35,000.00	0.00	55,000.00	90,000.00	0.00	0.00	0.00	0.00	0.00	0.00	276,123.67	0.00	276,123.67	(186,123.67)

PROJECT BUDGET AND EXPENDITURE REPORT					[PROJECT NAME]										PERIOD ENDING []		
Cost Category	Unit Cost	Quantity (Hours/Amount) Exp./Budget	Subtotals In-Kind	I. Match Cash	Loan Funds	Grant Cash	II. Total Budget	III.A. 2015 Jan 1 - Jun 30 Expended	III.B. 2015 Jul 1 - Dec 31 Expended	III.C. 2016 Jan 1 - Jun 30 Expended	III.D. 2016 Jul 1 - Dec 31 Expended	III.E. 2017 Jan 1 - Jun 30 Expended	III.F. 2017 Jul 1 - Dec 31 Expended	III.G. 2018 Jan 1 - Jun 30 Expended	III.H. 2018 Jul 1 - Dec 31 Expended	IV. Cumulative Expend. (III.A. thr H.)	V. Budget Balance (IV - II)
OBJECTIVE 3 - TOTAL			0.00	35,000.00	0.00	55,000.00	90,000.00	0.00	0.00	0.00	0.00	0.00	0.00	276,123.67	0.00	276,123.67	(186,123.67)
OBJECTIVE 4 - Monitoring & Evaluation																	
A) Water Quality Monitoring & Evaluation																	
CRWD																	
Staff	40.00 /hr.	0 / 55 hrs.		1,000.00		1,200.00	2,200.00	0.00	0.00	56.88	1,007.50	0.00	0.00	973.90	0.00	2,038.28	161.72
Wenck Associates	150.00 /hr.	0 / 20 hrs.		2,500.00		500.00	3,000.00	0.00	0.00	862.00	0.00	0.00	0.00	1,735.50	0.00	2,597.50	402.50
Supplies	400.00 lump	0 / 1 lump		400.00			400.00	0.00	0.00	0.00	0.00	0.00	0.00	1,449.25	0.00	1,449.25	(1,049.25)
Transportation	0.58 /mi.	0 / 260.87 mi.		100.00		50.00	150.00	0.00	0.00	0.00	179.28	0.00	0.00	61.59	0.00	240.87	(90.87)
MVTL, Inc.																	
Lab Costs	75.00 /sample	0 / 50 samples		2,000.00		1,750.00	3,750.00	0.00	0.00	0.00	0.00	0.00	0.00	600.50	0.00	600.50	3,149.50
Water Laboratories, Inc.																	
Lab Costs	100.00 /sample	0 / 35 samples		2,000.00		1,500.00	3,500.00	0.00	0.00	750.00	1,025.00	0.00	0.00	0.00	0.00	1,775.00	1,725.00
OBJECTIVE 4 - TOTAL			0.00	8,000.00	0.00	5,000.00	13,000.00	0.00	0.00	1,668.88	2,211.78	0.00	0.00	4,820.74	0.00	8,701.40	4,298.60
OBJECTIVE 5 - Final Project Report																	
A) Final Project Report																	
CRWD																	
Staff	40.00 /hr.	0 / 15 hrs.		600.00			600.00	0.00	0.00	0.00	0.00	0.00	0.00	600.00	0.00	600.00	0.00
Wenck Associates	150.00 /hr.	0 / 32 hrs.		4,800.00			4,800.00	0.00	0.00	0.00	0.00	0.00	0.00	2,964.00	0.00	2,964.00	1,836.00
Supplies	600.00 lump	0 / 1 lump		600.00			600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	600.00
OBJECTIVE 5 - TOTAL			0.00	6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00	3,564.00	0.00	3,564.00	2,436.00
OBJECTIVE 6 - Civic Engagement																	
A) Civic Engagement																	
CRWD																	
Staff	40.00 /hr.	0 / 15 hrs.		600.00			600.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	30.00	570.00
Supplies	500.00 lump	0 / 1 lump		500.00			500.00	0.00	0.00	0.00	0.00	0.00	0.00	500.00	0.00	500.00	0.00
Transportation	0.58 /mi.	0 / 173.91 mi.		100.00			100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Contractor	3,800.00 lump	0 / 1 lump		3,800.00			3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	3,800.00	0.00	3,800.00	0.00
OBJECTIVE 6 - TOTAL			0.00	5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	4,330.00	0.00	4,330.00	670.00
OBJECTIVE 7 - Administration & Management																	
A) Administration & Management																	
CRWD																	
Staff	40.00 /hr.	0 / 95 hrs.		3,800.00			3,800.00	0.00	368.13	121.88	414.39	528.13	281.25	365.00	0.00	2,078.78	1,721.22
Supplies	200.00 lump	0 / 1 lump		200.00			200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	200.00
OBJECTIVE 7 - TOTAL			0.00	4,000.00	0.00	0.00	4,000.00	0.00	368.13	121.88	414.39	528.13	281.25	365.00	0.00	2,078.78	1,921.22
ITEMIZED BUDGET																	
OBJECTIVE 1 - TOTAL			0.00	6,000.00	0.00	5,000.00	11,000.00	0.00	0.00	11,734.04	13,277.60	0.00	0.00	0.00	0.00	25,011.64	(14,011.64)
OBJECTIVE 2 - TOTAL			0.00	8,000.00	0.00	7,000.00	15,000.00	0.00	0.00	0.00	1,046.45	3,875.58	514.27	3,002.73	0.00	8,439.03	6,560.97

PROJECT BUDGET AND EXPENDITURE REPORT				[PROJECT NAME]										PERIOD ENDING []			
Cost Category	Unit Cost	Quantity (Hours/Amount) Exp./Budget	Subtotals In-Kind	I. Match Cash	Loan Funds	Grant Cash	II. Total Budget	III.A. 2015 Jan 1 - Jun 30 Expended	III.B. 2015 Jul 1 - Dec 31 Expended	III.C. 2016 Jan 1 - Jun 30 Expended	III.D. 2016 Jul 1 - Dec 31 Expended	III.E. 2017 Jan 1 - Jun 30 Expended	III.F. 2017 Jul 1 - Dec 31 Expended	III.G. 2018 Jan 1 - Jun 30 Expended	III.H. 2018 Jul 1 - Dec 31 Expended	iV. Cumulative Expend. (III.A. thr H.)	V. Budget Balance (IV - II)
OBJECTIVE 3 - TOTAL			0.00	35,000.00	0.00	55,000.00	90,000.00	0.00	0.00	0.00	0.00	0.00	0.00	276,123.67	0.00	276,123.67	(186,123.67)
OBJECTIVE 4 - TOTAL			0.00	8,000.00	0.00	5,000.00	13,000.00	0.00	0.00	1,668.88	2,211.78	0.00	0.00	4,820.74	0.00	8,701.40	4,298.60
OBJECTIVE 5 - TOTAL			0.00	6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00	3,564.00	0.00	3,564.00	2,436.00
OBJECTIVE 6 - TOTAL			0.00	5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	4,330.00	0.00	4,330.00	670.00
OBJECTIVE 7 - TOTAL			0.00	4,000.00	0.00	0.00	4,000.00	0.00	368.13	121.88	414.39	528.13	281.25	365.00	0.00	2,078.78	1,921.22
			0.00														
GRAND TOTAL			0.00	72,000.00	0.00	72,000.00	144,000.00	0.00	368.13	13,524.80	16,950.22	4,403.71	795.52	292,206.14	0.00	328,248.52	(184,248.52)

Clearwater River Restoration & Protection Phase II					II.A.	II.B.	II.C.	II.D.	II.E.	III.A.1.	III.A.2	III.A.3.	III.A.4.	III.A.5.	III.B.1.
Clearwater River Watershed District										Year 1	Year 1	Year 1	Year 1	Year 1	Year 1
										2015	2015	2015	2015	2015	2015
ITEMIZED PROJECT BUDGET AND EXPENDITURES						Cash	In-Kind	SRF	Budget	Jan 1 - Jun 30	Jan 1 - Jun 30	Jan 1 - Jun 30	Jan 1 - Jun 30	Jan 1 - Jun 30	Jul 1 - Dec 31
Objective	Cost Category	Unit Cost	Rate	Quantity	Grant	Match	Match	Loan	Total	Grant Expended	Cash Match	In-kind Expended	SRF Expended	Total Expended	Grant Expended
											Expended				
OBJECTIVE 1 - Quantify Pollutant Sources															
Desktop Analysis	Staff	40.00	/hr.	10.00	200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	24.00	1800.00	\$ 1,800.00			\$ 3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	200.00	lump	1.00	0.00	\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00
Field Reconnaissance	Staff	40.00	/hr.	16.00	320.00	\$ 320.00			\$ 640.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	16.00	1200.00	\$ 1,200.00			\$ 2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	450.00	/hr.	1.00	50.00	\$ 400.00			\$ 450.00	0.00	0.00	0.00	0.00	0.00	0.00
Reporting	Transportation	0.58	/mile	283.19	0.00	\$ 160.00			\$ 160.00	0.00	0.00	0.00	0.00	0.00	0.00
	Staff	40.00	/hr.	10.00	\$ 200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	15.00	\$ 1,130.00	\$ 1,120.00			\$ 2,250.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	400.00	lump	1.00	\$ 100.00	\$ 400.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 1 - TOTAL					\$ 5,000.00	\$ 6,000.00	\$ -	\$ -	\$ 11,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 2 - Design BMP(s) for Implementation															
Develop Agreements with Property Owners	Staff	40.00	/hr.	50.00	\$ 1,000.00	\$ 1,000.00			\$ 2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	220.00	lump	1.00		\$ 220.00			\$ 220.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00
Design BMPs	Staff	40.00	/hr.	25.00	\$ 1,000.00				\$ 1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	75.00	\$ 5,000.00	\$ 6,250.00			\$ 11,250.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	250.00	lump	1.00		\$ 250.00			\$ 250.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 2 - TOTAL					\$ 7,000.00	\$ 8,000.00	\$ -	\$ -	\$ 15,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 3 - Implementation of BMP(s)															
Construction / Implementation	Staff	40.00	/hr.	25.00	\$ 500.00	\$ 500.00			\$ 1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	50.00	\$ 4,000.00	\$ 3,500.00			\$ 7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48	\$ 140.00				\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor	81360.00	lump	1.00	\$ 50,360.00	\$ 31,000.00			\$ 81,360.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 3 - TOTAL					\$ 55,000.00	\$ 35,000.00	\$ -	\$ -	\$ 90,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 4 - Monitoring & Evaluation															
Water Quality Monitoring & Evaluation	Staff	40.00	/hr.	55.00	\$ 1,200.00	\$ 1,000.00			\$ 2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	20.00	\$ 500.00	\$ 2,500.00			\$ 3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	400.00	lump	1.00		\$ 400.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00
MVTL, Inc.	Transportation	0.58	/mile	260.87	\$ 50.00	\$ 100.00			\$ 150.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lab Costs	75.00	/sample	50.00	\$ 1,750.00	\$ 2,000.00			\$ 3,750.00	0.00	0.00	0.00	0.00	0.00	0.00
	Water Laboratories, Inc.	Lab Costs	100.00	/sample	35.00	\$ 1,500.00	\$ 2,000.00			\$ 3,500.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 3 - TOTAL					\$ 5,000.00	\$ 8,000.00	\$ -	\$ -	\$ 13,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 5 - Final Project Report															
Final Project Report	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	32.00		\$ 4,800.00			\$ 4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	600.00	lump	1.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 6,000.00	\$ -	\$ -	\$ 6,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 6 - Civic Engagement															
Civic Engagement	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	500.00	lump	1.00		\$ 500.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	173.91		\$ 100.00			\$ 100.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor	3800.00	lump	1.00		\$ 3,800.00			\$ 3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 6 - TOTAL					\$ -	\$ 5,000.00	\$ -	\$ -	\$ 5,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 7 - Administration & Management															
Administration & Management	Staff	40.00	/hr.	95.00		\$ 3,800.00			\$ 3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	200.00	lump	1.00		\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 4,000.00	\$ -	\$ -	\$ 4,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	TOTAL				\$ 72,000.00	\$ 72,000.00	\$ -	\$ -	\$ 144,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Clearwater River Restoration & Protection Phase II					II.A.	II.B.	II.C.	II.D.	II.E.	III.B.2	III.B.3.	III.B.4.	III.B.5.	III.C.1.	III.C.2.
Clearwater River Watershed District										Year 1	Year 1	Year 1	Year 1	Year 2	Year 2
										2015	2015	2015	2015	2016	2016
ITEMIZED PROJECT BUDGET AND EXPENDITURES						Cash	In-Kind	SRF	Budget	Jul 1 - Dec 31	Jul 1 - Dec 31	Jul 1 - Dec 31	Jul 1 - Dec 31	Jan 1 - Jun 30	Jan 1 - Jun 30
Objective	Cost Category	Unit Cost	Rate	Quantity	Grant	Match	Match	Loan	Total	Cash Match	In-kind Expended	SRF Expended	Total Expended	Grant Expended	Cash Match
										Expended					Expended
OBJECTIVE 1 - Quantify Pollutant Sources															
Desktop Analysis	Staff	40.00	/hr.	10.00	200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	0.00	32.51	0.00
	Wenck Associates	150.00	/hr.	24.00	1800.00	\$ 1,800.00			\$ 3,600.00	0.00	0.00	0.00	0.00	1,800.00	1,800.00
	Supplies	200.00	lump	1.00	0.00	\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00
Field Reconnaissance	Staff	40.00	/hr.	16.00	320.00	\$ 320.00			\$ 640.00	0.00	0.00	0.00	0.00	195.00	0.00
	Wenck Associates	150.00	/hr.	16.00	1200.00	\$ 1,200.00			\$ 2,400.00	0.00	0.00	0.00	0.00	1,200.00	1,259.25
	Supplies	450.00	/hr.	1.00	50.00	\$ 400.00			\$ 450.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	283.19	0.00	\$ 160.00			\$ 160.00	0.00	0.00	0.00	0.00	0.00	0.00
Reporting	Staff	40.00	/hr.	10.00	\$ 200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	0.00	186.88	0.00
	Wenck Associates	150.00	/hr.	15.00	\$ 1,130.00	\$ 1,120.00			\$ 2,250.00	0.00	0.00	0.00	0.00	1,130.00	4,130.40
	Supplies	400.00	lump	1.00	\$ 100.00	\$ 400.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 1 - TOTAL					\$ 5,000.00	\$ 6,000.00	\$ -	\$ -	\$ 11,000.00	\$ -	\$ -	\$ -	\$ -	\$ 4,544.39	\$ 7,189.65
OBJECTIVE 2 - Design BMP(s) for Implementation															
Develop Agreements with Property Owners	Staff	40.00	/hr.	50.00	\$ 1,000.00	\$ 1,000.00			\$ 2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	220.00	lump	1.00		\$ 220.00			\$ 220.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00
Design BMPs	Staff	40.00	/hr.	25.00	\$ 1,000.00				\$ 1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	75.00	\$ 5,000.00	\$ 6,250.00			\$ 11,250.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	250.00	lump	1.00		\$ 250.00			\$ 250.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 2 - TOTAL					\$ 7,000.00	\$ 8,000.00	\$ -	\$ -	\$ 15,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 3 - Implementation of BMP(s)															
Construction / Implementation	Staff	40.00	/hr.	25.00	\$ 500.00	\$ 500.00			\$ 1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	50.00	\$ 4,000.00	\$ 3,500.00			\$ 7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48	\$ 140.00				\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor	81360.00	lump	1.00	\$ 50,360.00	\$ 31,000.00			\$ 81,360.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 3 - TOTAL					\$ 55,000.00	\$ 35,000.00	\$ -	\$ -	\$ 90,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 4 - Monitoring & Evaluation															
Water Quality Monitoring & Evaluation	Staff	40.00	/hr.	55.00	\$ 1,200.00	\$ 1,000.00			\$ 2,200.00	0.00	0.00	0.00	0.00	56.88	0.00
	Wenck Associates	150.00	/hr.	20.00	\$ 500.00	\$ 2,500.00			\$ 3,000.00	0.00	0.00	0.00	0.00	500.00	362.00
	Supplies	400.00	lump	1.00		\$ 400.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	260.87	\$ 50.00	\$ 100.00			\$ 150.00	0.00	0.00	0.00	0.00	0.00	0.00
MVTL, Inc.	Lab Costs	75.00	/sample	50.00	\$ 1,750.00	\$ 2,000.00			\$ 3,750.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Laboratories, Inc.	Lab Costs	100.00	/sample	35.00	\$ 1,500.00	\$ 2,000.00			\$ 3,500.00	0.00	0.00	0.00	0.00	750.00	0.00
OBJECTIVE 3 - TOTAL					\$ 5,000.00	\$ 8,000.00	\$ -	\$ -	\$ 13,000.00	\$ -	\$ -	\$ -	\$ -	\$ 1,306.88	\$ 362.00
OBJECTIVE 5 - Final Project Report															
Final Project Report	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	32.00		\$ 4,800.00			\$ 4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	600.00	lump	1.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 6,000.00	\$ -	\$ -	\$ 6,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 6 - Civic Engagement															
Civic Engagement	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	500.00	lump	1.00		\$ 500.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	173.91		\$ 100.00			\$ 100.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor	3800.00	lump	1.00		\$ 3,800.00			\$ 3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 6 - TOTAL					\$ -	\$ 5,000.00	\$ -	\$ -	\$ 5,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 7 - Administration & Management															
Administration & Management	Staff	40.00	/hr.	95.00		\$ 3,800.00			\$ 3,800.00	368.13	0.00	0.00	368.13	0.00	121.88
	Supplies	200.00	lump	1.00		\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 4,000.00	\$ -	\$ -	\$ 4,000.00	\$ 368.13	\$ -	\$ -	\$ 368.13	\$ -	\$ 121.88
	TOTAL				\$ 72,000.00	\$ 72,000.00	\$ -	\$ -	\$ 144,000.00	\$ 368.13	\$ -	\$ -	\$ 368.13	\$ 5,851.27	\$ 7,673.53

Clearwater River Restoration & Protection Phase II					II.A.	II.B.	II.C.	II.D.	II.E.	III.C.3.	III.C.4.	III.C.5.	III.D.1.	III.D.2	III.D.3.
Clearwater River Watershed District										Year 2	Year 2	Year 2	Year 2	Year 2	Year 2
										2016	2016	2016	2016	2016	2016
ITEMIZED PROJECT BUDGET AND EXPENDITURES						Cash	In-Kind	SRF	Budget	Jan 1 - Jun 30	Jan 1 - Jun 30	Jan 1 - Jun 30	Jul 1 - Dec 31	Jul 1 - Dec 31	Jul 1 - Dec 31
Objective	Cost Category	Unit Cost	Rate	Quantity	Grant	Match	Match	Loan	Total	In-kind Expended	SRF Expended	Total Expended	Grant Expended	Cash Match	In-kind Expended
														Expended	
OBJECTIVE 1 - Quantify Pollutant Sources															
Desktop Analysis	Staff	40.00	/hr.	10.00	200.00	\$ 200.00			\$ 400.00	0.00	0.00	32.51	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	24.00	1800.00	\$ 1,800.00			\$ 3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00
	Supplies	200.00	lump	1.00	0.00	\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00
Field Reconnaissance	Staff	40.00	/hr.	16.00	320.00	\$ 320.00			\$ 640.00	0.00	0.00	195.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	16.00	1200.00	\$ 1,200.00			\$ 2,400.00	0.00	0.00	2,459.25	0.00	0.00	0.00
	Supplies	450.00	/hr.	1.00	50.00	\$ 400.00			\$ 450.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	283.19	0.00	\$ 160.00			\$ 160.00	0.00	0.00	0.00	0.00	0.00	0.00
Reporting	Staff	40.00	/hr.	10.00	\$ 200.00	\$ 200.00			\$ 400.00	0.00	0.00	186.88	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	15.00	\$ 1,130.00	\$ 1,120.00			\$ 2,250.00	0.00	0.00	5,260.40	0.00	13,277.60	0.00
	Supplies	400.00	lump	1.00	\$ 100.00	\$ 400.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 1 - TOTAL					\$ 5,000.00	\$ 6,000.00	\$ -	\$ -	\$ 11,000.00	\$ -	\$ -	\$ 11,734.04	\$ -	\$ 13,277.60	\$ -
OBJECTIVE 2 - Design BMP(s) for Implementation															
Develop Agreements with Property Owners	Staff	40.00	/hr.	50.00	\$ 1,000.00	\$ 1,000.00			\$ 2,000.00	0.00	0.00	0.00	495.63	0.00	0.00
	Supplies	220.00	lump	1.00		\$ 220.00			\$ 220.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	17.82	0.00	0.00
Design BMPs	Staff	40.00	/hr.	25.00	\$ 1,000.00				\$ 1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	75.00	\$ 5,000.00	\$ 6,250.00			\$ 11,250.00	0.00	0.00	0.00	533.00	0.00	0.00
	Supplies	250.00	lump	1.00		\$ 250.00			\$ 250.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 2 - TOTAL					\$ 7,000.00	\$ 8,000.00	\$ -	\$ -	\$ 15,000.00	\$ -	\$ -	\$ -	\$ 1,046.45	\$ -	\$ -
OBJECTIVE 3 - Implementation of BMP(s)															
Construction / Implementation	Staff	40.00	/hr.	25.00	\$ 500.00	\$ 500.00			\$ 1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	50.00	\$ 4,000.00	\$ 3,500.00			\$ 7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48	\$ 140.00				\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor	81360.00	lump	1.00	\$ 50,360.00	\$ 31,000.00			\$ 81,360.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 3 - TOTAL					\$ 55,000.00	\$ 35,000.00	\$ -	\$ -	\$ 90,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 4 - Monitoring & Evaluation															
Water Quality Monitoring & Evaluation	Staff	40.00	/hr.	55.00	\$ 1,200.00	\$ 1,000.00			\$ 2,200.00	0.00	0.00	56.88	1,007.50	0.00	0.00
	Wenck Associates	150.00	/hr.	20.00	\$ 500.00	\$ 2,500.00			\$ 3,000.00	0.00	0.00	862.00	0.00	0.00	0.00
	Supplies	400.00	lump	1.00		\$ 400.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	260.87	\$ 50.00	\$ 100.00			\$ 150.00	0.00	0.00	0.00	50.00	129.28	0.00
MVTL, Inc.	Lab Costs	75.00	/sample	50.00	\$ 1,750.00	\$ 2,000.00			\$ 3,750.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Laboratories, Inc.	Lab Costs	100.00	/sample	35.00	\$ 1,500.00	\$ 2,000.00			\$ 3,500.00	0.00	0.00	750.00	750.00	275.00	0.00
OBJECTIVE 3 - TOTAL					\$ 5,000.00	\$ 8,000.00	\$ -	\$ -	\$ 13,000.00	\$ -	\$ -	\$ 1,668.88	\$ 1,807.50	\$ 404.28	\$ -
OBJECTIVE 5 - Final Project Report															
Final Project Report	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	32.00		\$ 4,800.00			\$ 4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	600.00	lump	1.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 6,000.00	\$ -	\$ -	\$ 6,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 6 - Civic Engagement															
Civic Engagement	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	500.00	lump	1.00		\$ 500.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	173.91		\$ 100.00			\$ 100.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor	3800.00	lump	1.00		\$ 3,800.00			\$ 3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 6 - TOTAL					\$ -	\$ 5,000.00	\$ -	\$ -	\$ 5,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 7 - Administration & Management															
Administration & Management	Staff	40.00	/hr.	95.00		\$ 3,800.00			\$ 3,800.00	0.00	0.00	121.88	0.00	414.39	0.00
	Supplies	200.00	lump	1.00		\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 4,000.00	\$ -	\$ -	\$ 4,000.00	\$ -	\$ -	\$ 121.88	\$ -	\$ 414.39	\$ -
	TOTAL				\$ 72,000.00	\$ 72,000.00	\$ -	\$ -	\$ 144,000.00	\$ -	\$ -	\$ 13,524.80	\$ 2,853.95	\$ 14,096.27	\$ -

Clearwater River Restoration & Protection Phase II						II.A.	II.B.	II.C.	II.D.	II.E.	III.F.1.	III.F.2	III.F.3.	III.F.4.	III.F.5.	III.G.1.
Clearwater River Watershed District											Year 3	Year 3	Year 3	Year 3	Year 3	Year 4
											2017	2017	2017	2017	2017	2018
ITEMIZED PROJECT BUDGET AND EXPENDITURES							Cash	In-Kind	SRF	Budget	Jul 1 - Dec 31	Jul 1 - Dec 31	Jul 1 - Dec 31	Jul 1 - Dec 31	Jul 1 - Dec 31	Jan 1 - Jun 30
Objective	Cost Category	Unit Cost	Rate	Quantity	Grant	Match	Match	Loan	Total	Grant Expended	Cash Match	In-kind Expended	SRF Expended	Total Expended	Grant Expended	
											Expended					
OBJECTIVE 1 - Quantify Pollutant Sources																
Desktop Analysis	Staff	40.00	/hr.	10.00	200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	24.00	1800.00	\$ 1,800.00			\$ 3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	200.00	lump	1.00	0.00	\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Field Reconnaissance	Staff	40.00	/hr.	16.00	320.00	\$ 320.00			\$ 640.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	16.00	1200.00	\$ 1,200.00			\$ 2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	450.00	/hr.	1.00	50.00	\$ 400.00			\$ 450.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	283.19	0.00	\$ 160.00			\$ 160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reporting	Staff	40.00	/hr.	10.00	\$ 200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	15.00	\$ 1,130.00	\$ 1,120.00			\$ 2,250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	400.00	lump	1.00	\$ 100.00	\$ 400.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 1 - TOTAL					\$ 5,000.00	\$ 6,000.00	\$ -	\$ -	\$ 11,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 2 - Design BMP(s) for Implementation																
Develop Agreements with Property Owners	Staff	40.00	/hr.	50.00	\$ 1,000.00	\$ 1,000.00			\$ 2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	220.00	lump	1.00		\$ 220.00			\$ 220.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Design BMPs	Staff	40.00	/hr.	25.00	\$ 1,000.00				\$ 1,000.00	514.27	0.00	0.00	0.00	514.27	485.73	
	Wenck Associates	150.00	/hr.	75.00	\$ 5,000.00	\$ 6,250.00			\$ 11,250.00	0.00	0.00	0.00	0.00	0.00	0.00	2,517.00
	Supplies	250.00	lump	1.00		\$ 250.00			\$ 250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 2 - TOTAL					\$ 7,000.00	\$ 8,000.00	\$ -	\$ -	\$ 15,000.00	\$ 514.27	\$ -	\$ -	\$ -	\$ -	\$ 514.27	\$ 3,002.73
OBJECTIVE 3 - Implementation of BMP(s)																
Construction / Implementation	Staff	40.00	/hr.	25.00	\$ 500.00	\$ 500.00			\$ 1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	500.00
	Wenck Associates	150.00	/hr.	50.00	\$ 4,000.00	\$ 3,500.00			\$ 7,500.00	0.00	0.00	0.00	0.00	0.00	0.00	4,000.00
	Transportation	0.58	/mile	243.48	\$ 140.00				\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor	81360.00	lump	1.00	\$ 50,360.00	\$ 31,000.00			\$ 81,360.00	0.00	0.00	0.00	0.00	0.00	0.00	50,360.00
OBJECTIVE 3 - TOTAL					\$ 55,000.00	\$ 35,000.00	\$ -	\$ -	\$ 90,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 54,860.00
OBJECTIVE 4 - Monitoring & Evaluation																
Water Quality Monitoring & Evaluation	Staff	40.00	/hr.	55.00	\$ 1,200.00	\$ 1,000.00			\$ 2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	135.62
	Wenck Associates	150.00	/hr.	20.00	\$ 500.00	\$ 2,500.00			\$ 3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	400.00	lump	1.00		\$ 400.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	260.87	\$ 50.00	\$ 100.00			\$ 150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MVTL, Inc.	Lab Costs	75.00	/sample	50.00	\$ 1,750.00	\$ 2,000.00			\$ 3,750.00	0.00	0.00	0.00	0.00	0.00	0.00	600.50
Water Laboratories, Inc.	Lab Costs	100.00	/sample	35.00	\$ 1,500.00	\$ 2,000.00			\$ 3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 3 - TOTAL					\$ 5,000.00	\$ 8,000.00	\$ -	\$ -	\$ 13,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 736.12
OBJECTIVE 5 - Final Project Report																
Final Project Report	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	32.00		\$ 4,800.00			\$ 4,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	600.00	lump	1.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 6,000.00	\$ -	\$ -	\$ 6,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 6 - Civic Engagement																
Civic Engagement	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Supplies	500.00	lump	1.00		\$ 500.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	173.91		\$ 100.00			\$ 100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Contractor	3800.00	lump	1.00		\$ 3,800.00			\$ 3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 6 - TOTAL					\$ -	\$ 5,000.00	\$ -	\$ -	\$ 5,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OBJECTIVE 7 - Administration & Management																
Administration & Management	Staff	40.00	/hr.	95.00		\$ 3,800.00			\$ 3,800.00	0.00	281.25	0.00	0.00	281.25	0.00	0.00
	Supplies	200.00	lump	1.00		\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 4,000.00	\$ -	\$ -	\$ 4,000.00	\$ -	\$ 281.25	\$ -	\$ -	\$ 281.25	\$ -	\$ -
TOTAL					\$ 72,000.00	\$ 72,000.00	\$ -	\$ -	\$ 144,000.00	\$ 514.27	\$ 281.25	\$ -	\$ -	\$ 795.52	\$ 58,598.85	

Clearwater River Restoration & Protection Phase II									II.A.	II.B.	II.C.	II.D.	II.E.	III.G.2	III.G.3.	III.G.4.	III.G.5.	III.H.1.	III.H.2
Clearwater River Watershed District														Year 4	Year 4	Year 4	Year 4	Year 4	Year 4
														2018	2018	2018	2018	2018	2018
ITEMIZED PROJECT BUDGET AND EXPENDITURES										Cash	In-Kind	SRF	Budget	Jan 1 - Jun 30	Jan 1 - Jun 30	Jan 1 - Jun 30	Jan 1 - Jun 30	Jul 1 - Dec 31	Jul 1 - Dec 31
Objective	Cost Category	Unit Cost	Rate	Quantity	Grant	Match	Match	Loan	Total	Cash Match	In-kind Expended	SRF Expended	Total Expended	Grant Expended	Cash Match				
										Expended					Expended				
OBJECTIVE 1 - Quantify Pollutant Sources																			
Desktop Analysis	Staff	40.00	/hr.	10.00	200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Wenck Associates	150.00	/hr.	24.00	1800.00	\$ 1,800.00			\$ 3,600.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Supplies	200.00	lump	1.00	0.00	\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00				
Field Reconnaissance	Staff	40.00	/hr.	16.00	320.00	\$ 320.00			\$ 640.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Wenck Associates	150.00	/hr.	16.00	1200.00	\$ 1,200.00			\$ 2,400.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Supplies	450.00	/hr.	1.00	50.00	\$ 400.00			\$ 450.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Transportation	0.58	/mile	283.19	0.00	\$ 160.00			\$ 160.00	0.00	0.00	0.00	0.00	0.00	0.00				
Reporting	Staff	40.00	/hr.	10.00	\$ 200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Wenck Associates	150.00	/hr.	15.00	\$ 1,130.00	\$ 1,120.00			\$ 2,250.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Supplies	400.00	lump	1.00	\$ 100.00	\$ 400.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00				
OBJECTIVE 1 - TOTAL					\$ 5,000.00	\$ 6,000.00	\$ -	\$ -	\$ 11,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -				
OBJECTIVE 2 - Design BMP(s) for Implementation																			
Develop Agreements with Property Owners	Staff	40.00	/hr.	50.00	\$ 1,000.00	\$ 1,000.00			\$ 2,000.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Supplies	220.00	lump	1.00		\$ 220.00			\$ 220.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00				
Design BMPs	Staff	40.00	/hr.	25.00	\$ 1,000.00				\$ 1,000.00	0.00	0.00	0.00	0.00	485.73	0.00				
	Wenck Associates	150.00	/hr.	75.00	\$ 5,000.00	\$ 6,250.00			\$ 11,250.00	0.00	0.00	0.00	0.00	2,517.00	0.00				
	Supplies	250.00	lump	1.00		\$ 250.00			\$ 250.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00				
OBJECTIVE 2 - TOTAL					\$ 7,000.00	\$ 8,000.00	\$ -	\$ -	\$ 15,000.00	\$ -	\$ -	\$ -	\$ -	\$ 3,002.73	\$ -	\$ -			
OBJECTIVE 3 - Implementation of BMP(s)																			
Construction / Implementation	Staff	40.00	/hr.	25.00	\$ 500.00	\$ 500.00			\$ 1,000.00	500.00	0.00	0.00	0.00	1,000.00	0.00				
	Wenck Associates	150.00	/hr.	50.00	\$ 4,000.00	\$ 3,500.00			\$ 7,500.00	3,282.47	0.00	0.00	0.00	7,282.47	0.00				
	Transportation	0.58	/mile	243.48	\$ 140.00				\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Contractor	81360.00	lump	1.00	\$ 50,360.00	\$ 31,000.00			\$ 81,360.00	7,174.70	210,306.50	0.00	0.00	267,841.20	0.00				
OBJECTIVE 3 - TOTAL					\$ 55,000.00	\$ 35,000.00	\$ -	\$ -	\$ 90,000.00	\$ 10,957.17	\$ 210,306.50	\$ -	\$ 276,123.67	\$ -	\$ -				
OBJECTIVE 4 - Monitoring & Evaluation																			
Water Quality Monitoring & Evaluation	Staff	40.00	/hr.	55.00	\$ 1,200.00	\$ 1,000.00			\$ 2,200.00	838.28	0.00	0.00	0.00	973.90	0.00				
	Wenck Associates	150.00	/hr.	20.00	\$ 500.00	\$ 2,500.00			\$ 3,000.00	1,735.50	0.00	0.00	0.00	1,735.50	0.00				
	Supplies	400.00	lump	1.00		\$ 400.00			\$ 400.00	1,449.25	0.00	0.00	0.00	1,449.25	0.00				
	Transportation	0.58	/mile	260.87	\$ 50.00	\$ 100.00			\$ 150.00	61.59	0.00	0.00	0.00	61.59	0.00				
MVTL, Inc.	Lab Costs	75.00	/sample	50.00	\$ 1,750.00	\$ 2,000.00			\$ 3,750.00	0.00	0.00	0.00	0.00	600.50	0.00				
Water Laboratories, Inc.	Lab Costs	100.00	/sample	35.00	\$ 1,500.00	\$ 2,000.00			\$ 3,500.00	0.00	0.00	0.00	0.00	0.00	0.00				
OBJECTIVE 3 - TOTAL					\$ 5,000.00	\$ 8,000.00	\$ -	\$ -	\$ 13,000.00	\$ 4,084.62	\$ -	\$ -	\$ 4,820.74	\$ -	\$ -				
OBJECTIVE 5 - Final Project Report																			
Final Project Report	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	600.00	0.00	0.00	0.00	600.00	0.00				
	Wenck Associates	150.00	/hr.	32.00		\$ 4,800.00			\$ 4,800.00	2,964.00	0.00	0.00	0.00	2,964.00	0.00				
	Supplies	600.00	lump	1.00		\$ 600.00			\$ 600.00	0.00	0.00	0.00	0.00	0.00	0.00				
OBJECTIVE 5 - TOTAL					\$ -	\$ 6,000.00	\$ -	\$ -	\$ 6,000.00	\$ 3,564.00	\$ -	\$ -	\$ 3,564.00	\$ -	\$ -				
OBJECTIVE 6 - Civic Engagement																			
Civic Engagement	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	30.00	0.00	0.00	0.00	30.00	0.00				
	Supplies	500.00	lump	1.00		\$ 500.00			\$ 500.00	500.00	0.00	0.00	0.00	500.00	0.00				
	Transportation	0.58	/mile	173.91		\$ 100.00			\$ 100.00	0.00	0.00	0.00	0.00	0.00	0.00				
	Contractor	3800.00	lump	1.00		\$ 3,800.00			\$ 3,800.00	3,800.00	0.00	0.00	0.00	3,800.00	0.00				
OBJECTIVE 6 - TOTAL					\$ -	\$ 5,000.00	\$ -	\$ -	\$ 5,000.00	\$ 4,330.00	\$ -	\$ -	\$ 4,330.00	\$ -	\$ -				
OBJECTIVE 7 - Administration & Management																			
Administration & Management	Staff	40.00	/hr.	95.00		\$ 3,800.00			\$ 3,800.00	365.00	0.00	0.00	0.00	365.00	0.00				
	Supplies	200.00	lump	1.00		\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00				
OBJECTIVE 5 - TOTAL					\$ -	\$ 4,000.00	\$ -	\$ -	\$ 4,000.00	\$ 365.00	\$ -	\$ -	\$ 365.00	\$ -	\$ -				
TOTAL					\$ 72,000.00	\$ 72,000.00	\$ -	\$ -	\$ 144,000.00	\$ 23,300.79	\$ 210,306.50	\$ -	\$ 292,206.14	\$ -	\$ -				

Clearwater River Restoration & Protection Phase II					II.A.	II.B.	II.C.	II.D.	II.E.	III.H.3.	III.H.4.	III.H.5.	IV.A.	IV.B.	IV.C.	IV.D.
Clearwater River Watershed District										Year 4	Year 4	Year 4	Cumulative	Cumulative	Cumulative	Cumulative
										2018	2018	2018				
ITEMIZED PROJECT BUDGET AND EXPENDITURES						Cash	In-Kind	SRF	Budget	Jul 1 - Dec 31	Jul 1 - Dec 31	Jul 1 - Dec 31	Grant	Cash Match	In-kind	SRF Loan
Objective	Cost Category	Unit Cost	Rate	Quantity	Grant	Match	Match	Loan	Total	In-kind Expended	SRF Expended	Total Expended	(III.A.1. thr I.1.)	(III.A.2. thr I.2.)	(III.A.3. thr I.3.)	(III.A.4. thr I.4.)
OBJECTIVE 1 - Quantify Pollutant Sources																
Desktop Analysis	Staff	40.00	/hr.	10.00	200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	32.51	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	24.00	1800.00	\$ 1,800.00			\$ 3,600.00	0.00	0.00	0.00	1,800.00	1,800.00	0.00	0.00
	Supplies	200.00	lump	1.00	0.00	\$ 200.00			\$ 200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Field Reconnaissance	Staff	40.00	/hr.	16.00	320.00	\$ 320.00			\$ 640.00	0.00	0.00	0.00	195.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	16.00	1200.00	\$ 1,200.00			\$ 2,400.00	0.00	0.00	0.00	1,200.00	1,259.25	0.00	0.00
	Supplies	450.00	/hr.	1.00	50.00	\$ 400.00			\$ 450.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	283.19	0.00	\$ 160.00			\$ 160.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reporting	Staff	40.00	/hr.	10.00	\$ 200.00	\$ 200.00			\$ 400.00	0.00	0.00	0.00	186.88	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	15.00	\$ 1,130.00	\$ 1,120.00			\$ 2,250.00	0.00	0.00	0.00	1,130.00	17,408.00	0.00	0.00
	Supplies	400.00	lump	1.00	\$ 100.00	\$ 400.00			\$ 500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 1 - TOTAL					\$ 5,000.00	\$ 6,000.00	\$ -	\$ -	\$ 11,000.00	\$ -	\$ -	\$ -	\$ 4,544.39	\$ 20,467.25	\$ -	\$ -
OBJECTIVE 2 - Design BMP(s) for Implementation																
Develop Agreements with Property Owners	Staff	40.00	/hr.	50.00	\$ 1,000.00	\$ 1,000.00			\$ 2,000.00	0.00	0.00	0.00	1,000.00	1,190.51	0.00	0.00
	Supplies	220.00	lump	1.00		\$ 220.00			\$ 220.00	0.00	0.00	0.00	0.00	220.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	17.82	10.70	0.00	0.00
Design BMPs	Staff	40.00	/hr.	25.00	\$ 1,000.00				\$ 1,000.00	0.00	0.00	0.00	1,000.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	75.00	\$ 5,000.00	\$ 6,250.00			\$ 11,250.00	0.00	0.00	0.00	5,000.00	0.00	0.00	0.00
	Supplies	250.00	lump	1.00		\$ 250.00			\$ 250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 2 - TOTAL					\$ 7,000.00	\$ 8,000.00	\$ -	\$ -	\$ 15,000.00	\$ -	\$ -	\$ -	\$ 7,017.82	\$ 1,421.21	\$ -	\$ -
OBJECTIVE 3 - Implementation of BMP(s)																
Construction / Implementation	Staff	40.00	/hr.	25.00	\$ 500.00	\$ 500.00			\$ 1,000.00	0.00	0.00	0.00	500.00	500.00	0.00	0.00
	Wenck Associates	150.00	/hr.	50.00	\$ 4,000.00	\$ 3,500.00			\$ 7,500.00	0.00	0.00	0.00	4,000.00	3,282.47	0.00	0.00

Clearwater River Restoration & Protection Phase II					II.A.	II.B.	II.C.	II.D.	II.E.	IV.E.	V.A.	V.B	V.C.	V.D.	V.E.
Clearwater River Watershed District										Cumulative	Budget Balance	Budget Balance	Budget Balance	Budget Balance	Budget Balance
ITEMIZED PROJECT BUDGET AND EXPENDITURES						Cash	In-Kind	SRF	Budget	Total Expended	Grant	Cash Match	In-kind	SRF Loan	Cumulative
Objective	Cost Category	Unit Cost	Rate	Quantity	Grant	Match	Match	Loan	Total	(III.A.5. thr I.5.)	(II.A. - IV.A.)	(II.B. - IV.B.)	(II.C. - IV.C.)	(II.D. - IV.D.)	(II.E. - IV.E.)
OBJECTIVE 1 - Quantify Pollutant Sources															
Desktop Analysis	Staff	40.00	/hr.	10.00	200.00	\$ 200.00			\$ 400.00	32.51	167.49	200.00	0.00	0.00	367.49
	Wenck Associates	150.00	/hr.	24.00	1800.00	\$ 1,800.00			\$ 3,600.00	3,600.00	0.00	0.00	0.00	0.00	0.00
	Supplies	200.00	lump	1.00	0.00	\$ 200.00			\$ 200.00	0.00	0.00	200.00	0.00	0.00	200.00
Field Reconnaissance	Staff	40.00	/hr.	16.00	320.00	\$ 320.00			\$ 640.00	195.00	125.00	320.00	0.00	0.00	445.00
	Wenck Associates	150.00	/hr.	16.00	1200.00	\$ 1,200.00			\$ 2,400.00	2,459.25	0.00	(59.25)	0.00	0.00	(59.25)
	Supplies	450.00	/hr.	1.00	50.00	\$ 400.00			\$ 450.00	0.00	50.00	400.00	0.00	0.00	450.00
	Transportation	0.58	/mile	283.19	0.00	\$ 160.00			\$ 160.00	0.00	0.00	160.00	0.00	0.00	160.00
Reporting	Staff	40.00	/hr.	10.00	\$ 200.00	\$ 200.00			\$ 400.00	186.88	13.12	200.00	0.00	0.00	213.12
	Wenck Associates	150.00	/hr.	15.00	\$ 1,130.00	\$ 1,120.00			\$ 2,250.00	18,538.00	0.00	(16,288.00)	0.00	0.00	(16,288.00)
	Supplies	400.00	lump	1.00	\$ 100.00	\$ 400.00			\$ 500.00	0.00	100.00	400.00	0.00	0.00	500.00
OBJECTIVE 1 - TOTAL					\$ 5,000.00	\$ 6,000.00	\$ -	\$ -	\$ 11,000.00	\$ 25,011.64	\$ 455.61	\$ (14,467.25)	\$ -	\$ -	\$ (14,011.64)
OBJECTIVE 2 - Design BMP(s) for Implementation															
Develop Agreements with Property Owners	Staff	40.00	/hr.	50.00	\$ 1,000.00	\$ 1,000.00			\$ 2,000.00	2,190.51	0.00	(190.51)	0.00	0.00	(190.51)
	Supplies	220.00	lump	1.00		\$ 220.00			\$ 220.00	220.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	28.52	(17.82)	129.30	0.00	0.00	111.48
Design BMPs	Staff	40.00	/hr.	25.00	\$ 1,000.00				\$ 1,000.00	1,000.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	75.00	\$ 5,000.00	\$ 6,250.00			\$ 11,250.00	5,000.00	0.00	6,250.00	0.00	0.00	6,250.00
	Supplies	250.00	lump	1.00		\$ 250.00			\$ 250.00	0.00	0.00	250.00	0.00	0.00	250.00
	Transportation	0.58	/mile	243.48		\$ 140.00			\$ 140.00	0.00	0.00	140.00	0.00	0.00	140.00
OBJECTIVE 2 - TOTAL					\$ 7,000.00	\$ 8,000.00	\$ -	\$ -	\$ 15,000.00	\$ 8,439.03	\$ (17.82)	\$ 6,578.79	\$ -	\$ -	\$ 6,560.97
OBJECTIVE 3 - Implementation of BMP(s)															
Construction / Implementation	Staff	40.00	/hr.	25.00	\$ 500.00	\$ 500.00			\$ 1,000.00	1,000.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	50.00	\$ 4,000.00	\$ 3,500.00			\$ 7,500.00	7,282.47	0.00	217.53	0.00	0.00	217.53
	Transportation	0.58	/mile	243.48	\$ 140.00				\$ 140.00	0.00	140.00	0.00	0.00	0.00	140.00
	Contractor	81360.00	lump	1.00	\$ 50,360.00	\$ 31,000.00			\$ 81,360.00	267,841.20	0.00	23,825.30	(210,306.50)	0.00	(186,481.20)
OBJECTIVE 3 - TOTAL					\$ 55,000.00	\$ 35,000.00	\$ -	\$ -	\$ 90,000.00	\$ 276,123.67	\$ 140.00	\$ 24,042.83	\$ (210,306.50)	\$ -	\$ (186,123.67)
OBJECTIVE 4 - Monitoring & Evaluation															
Water Quality Monitoring & Evaluation	Staff	40.00	/hr.	55.00	\$ 1,200.00	\$ 1,000.00			\$ 2,200.00	2,038.28	0.00	161.72	0.00	0.00	161.72
	Wenck Associates	150.00	/hr.	20.00	\$ 500.00	\$ 2,500.00			\$ 3,000.00	2,597.50	0.00	402.50	0.00	0.00	402.50
	Supplies	400.00	lump	1.00		\$ 400.00			\$ 400.00	1,449.25	0.00	(1,049.25)	0.00	0.00	(1,049.25)
	Transportation	0.58	/mile	260.87	\$ 50.00	\$ 100.00			\$ 150.00	240.87	0.00	(90.87)	0.00	0.00	(90.87)
MVTL, Inc.	Lab Costs	75.00	/sample	50.00	\$ 1,750.00	\$ 2,000.00			\$ 3,750.00	600.50	1,149.50	2,000.00	0.00	0.00	3,149.50
Water Laboratories, Inc.	Lab Costs	100.00	/sample	35.00	\$ 1,500.00	\$ 2,000.00			\$ 3,500.00	1,775.00	0.00	1,725.00	0.00	0.00	1,725.00
OBJECTIVE 3 - TOTAL					\$ 5,000.00	\$ 8,000.00	\$ -	\$ -	\$ 13,000.00	\$ 8,701.40	\$ 1,149.50	\$ 3,149.10	\$ -	\$ -	\$ 4,298.60
OBJECTIVE 5 - Final Project Report															
Final Project Report	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	600.00	0.00	0.00	0.00	0.00	0.00
	Wenck Associates	150.00	/hr.	32.00		\$ 4,800.00			\$ 4,800.00	2,964.00	0.00	1,836.00	0.00	0.00	1,836.00
	Supplies	600.00	lump	1.00		\$ 600.00			\$ 600.00	0.00	0.00	600.00	0.00	0.00	600.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 6,000.00	\$ -	\$ -	\$ 6,000.00	\$ 3,564.00	\$ -	\$ 2,436.00	\$ -	\$ -	\$ 2,436.00
OBJECTIVE 6 - Civic Engagement															
Civic Engagement	Staff	40.00	/hr.	15.00		\$ 600.00			\$ 600.00	30.00	0.00	570.00	0.00	0.00	570.00
	Supplies	500.00	lump	1.00		\$ 500.00			\$ 500.00	500.00	0.00	0.00	0.00	0.00	0.00
	Transportation	0.58	/mile	173.91		\$ 100.00			\$ 100.00	0.00	0.00	100.00	0.00	0.00	100.00
	Contractor	3800.00	lump	1.00		\$ 3,800.00			\$ 3,800.00	3,800.00	0.00	0.00	0.00	0.00	0.00
OBJECTIVE 6 - TOTAL					\$ -	\$ 5,000.00	\$ -	\$ -	\$ 5,000.00	\$ 4,330.00	\$ -	\$ 670.00	\$ -	\$ -	\$ 670.00
OBJECTIVE 7 - Administration & Management															
Administration & Management	Staff	40.00	/hr.	95.00		\$ 3,800.00			\$ 3,800.00	2,078.78	0.00	1,721.22	0.00	0.00	1,721.22
	Supplies	200.00	lump	1.00		\$ 200.00			\$ 200.00	0.00	0.00	200.00	0.00	0.00	200.00
OBJECTIVE 5 - TOTAL					\$ -	\$ 4,000.00	\$ -	\$ -	\$ 4,000.00	\$ 2,078.78	\$ -	\$ 1,921.22	\$ -	\$ -	\$ 1,921.22
	TOTAL				\$ 72,000.00	\$ 72,000.00	\$ -	\$ -	\$ 144,000.00	\$ 328,248.52	\$ 1,727.29	\$ 24,330.69	\$ (210,306.50)	\$ -	\$ (184,248.52)

Project Work Plan


**Minnesota Pollution
Control Agency**

520 Lafayette Road North
St. Paul, MN 55155-4194

Clean Water Partnership Project Work Plan

Doc Type: Contract

MPCA Use Only	
Swift #:	
CR #:	

Project Title: Clearwater River Restoration & Protection Phase II Project

1. Project Summary:

Organization: Clearwater River Watershed District
Contractor contact name: Cole Loewen
Title: Administrator
Address: 75 Elm Street East | PO BOX 481
 Annandale, MN 55302
Phone: 320.274.3935
Fax: 320.274.3975
E-mail: cole.loewen@crwd.org

Subcontractor(s)/Partner(s):

Organization: Wenck Associates, Inc.
Type of organization: Engineering and Consulting Firm
Project manager: Rebecca Kluckhohn, PE
Address: 7500 Olson Memorial Highway | Suite #300
 Golden Valley, MN 55427
Phone: 763.252.6824
Fax: 952.831.1268
E-mail: rkluckhohn@wenck.com

MPCA contact(s):

MPCA project manager: Phil Votruba
Title: Project Manager
Address: 7678 College Road | Suite 105
 Baxter, MN 56425
Phone: 218.316.3901
Fax: 218.828.2594
E-mail: phil.votruba@state.mn.us

Major watershed(s):

Major watershed/HUC Code: Upper Mississippi River, Mississippi River – St. Cloud / 01070203
Latitude/Longitude for project: Not specified
County: Meeker, Stearns

**Project start/End
dates:**

June 19, 2015 / June 30, 2018

**Project Funding Type
(check one):**

☐ CWP Resource
Investigation

☒ CWP
Implementation

**Grant Amount:
\$72,000.00**

**Proposed Cash Match
Funds: \$72,000.00**

**Proposed Inkind Match
Funds: \$0.00**

**Proposed Loan Funds:
\$0.00**

**Total project cost:
\$144,000.00**

2. Statement of Problems, Opportunities, and Existing Conditions

The Clearwater River flows through a chain of high value recreational lakes and an iconic Minnesota agricultural landscape to the Mississippi River. The river is an order 4 stream between its headwaters of Clear Lake and Clearwater Lake, and an order 5 stream from Clearwater Lake to the Mississippi River.

The Clearwater River is currently impaired for bacteria and dissolved oxygen. Eight of the river's lakes in its chain are nutrient impaired. These lakes are: Clear Lake, Lake Betsy, Scott Lake, Union Lake, Lake Louisa, Lake Marie, Lake Augusta, and Lake Caroline. All flow into (non-impaired) Clearwater Lake, and then on to the Mississippi River. In 2003, the Clearwater River Watershed District (CRWD) secured funding from the Minnesota Pollution Control Agency to begin Total Maximum Daily Load (TMDL) studies for the impaired sections of the river and its lakes. Both the TMDLs and Implementation Plan were approved in 2009.

Through these studies, the CRWD identified sources of bacteria, sediment and oxygen demand to the River and lakes. Bacteria concentrations are driven by a very limited number of small animals riparian to the Clearwater River. Sediment sources are generally localized. Map and windshield surveys will identify these locations and inform BMP implementation.

3. Goals, Objectives, Tasks, and Subtasks

Goal: Update existing bacteria and Total Suspended Solids (TSS) source inventory through desktop survey and field reconnaissance to identify and prioritize locations to reduce sediment and bacteria loading to the Clearwater River; then, design and implement best management practices (BMPs) at prioritized locations to reduce said loading.

Objective 1: Quantify pollutant sources

Task A: Desktop Analysis – various data sources will be compiled and analysis will be performed to determine pollutant sources on the landscape. After field reconnaissance, further analysis will be performed to arrive at pollutant source conclusions.

Responsible Party: CRWD Staff, Wenck Associates

Task B: Field Reconnaissance – Once desktop analysis is complete, staff and consultant will conduct necessary field reconnaissance to fill data gaps and verify desktop analysis.

Responsible Party: CRWD Staff, Wenck Associates

Task C: Reporting – Once above tasks are complete, a summary report will be developed detailing pollutant sources in targeted watershed, along with suggestions on locations and types of BMPs to address these sources. This report will be used for the remaining objectives.

Responsible Party(ies): CRWD staff, Wenck Associates

Objective 1 Timeline: August 2015 to June 2016

Objective 1 Cost: \$11,000.00

Objective 1 Deliverables: Report summarizing pollutant sources in targeted watershed, along with corrective actions

Objective 2: Design BMPs for Implementation

Task A: Develop agreements with Property Owners – Since most of the land where corrective BMPs will be placed is privately owned, the CRWD will have to work with said landowners to develop agreements to ensure BMPs can be constructed and are maintained.

Responsible Party: CRWD Staff, Wenck Associates

Task B: Design BMPs – Each BMP for each targeted location will be designed with engineering and landowner input. This will ensure the BMP will address the pollutant in question, as well as ensure its longevity. Examples of BMPs are listed below (not an exhaustive list):

- Pasture Management: livestock exclusion/fencing, riparian & channel vegetation, harvestable filter strips, etc.
- Manure/Feedlot Management: waste storage, manure spreading, sediment basins, etc.
- Cropland runoff reduction: contour farming, grade stabilization, alternative tile intakes, side inlets, etc.
- Morphology & hydrology restoration: streambank & channel stabilization, gully stabilization, wetland restorations, etc.

Responsible Party: CRWD Staff, Wenck Associates

Objective 2 Timeline: July 2016 to April 2018

Objective 2 Cost: \$15,000.00

Objective 2 Deliverables: Agreements with landowners for BMP(s) placement; Custom designed BMP(s)

Objective 3: Implementation of BMPs

Task A: Construction / Implementation – BMP(s) is/are implemented on the landscape in targeted locations. Construction oversight is provided to ensure BMP(s) is/are installed correctly.

Responsible Party: CRWD Staff, Wenck Associates

Objective 3 Timeline: July 2016 to April 2018

Objective 3 Cost: \$90,000.00

Objective 3 Deliverables: Identified BMP(s) installed

Objective 4: Monitoring & Evaluation

Task A: Water Quality Monitoring – Water quality monitoring & evaluation at two key long-term monitoring locations is continued to quantify reductions in key pollutant concentrations. Parameters monitored in-field are: temperature, dissolved oxygen, pH, and specific conductance. Water samples collected for lab analysis are: total phosphorus (TP), Ortho phosphorus (OP), bacteria (E-coli), and total suspended solids (TSS). The CRWD uses its established relationship with MN Valley Testing Laboratories to complete necessary lab analysis. Analysis of monitoring results is performed to help determine trends.

Responsible Party: CRWD Staff, Wenck Associates

Objective 4 Timeline: April 2016 to December 2017

Objective 4 Cost: \$13,000.00

Objective 4 Deliverables: Data submitted to EQulS, analysis performed and included in CRWD's annual water quality monitoring reports.

Objective 5: Final Project Report

Task A: Final Project Report – A report summarizing the project, including challenges faced, overall results, and recommended further actions.

Responsible Party: CRWD Staff, Wenck Associates

Objective 5 Timeline: March 2018 to June 2018

Objective 5 Cost: \$6,000.00

Objective 5 Deliverables: Final project report

Objective 6: Civic Engagement

Task A: Civic Engagement – The CRWD will continue existing outreach efforts to local schools and key stakeholders to promote the value of conservation. Installed BMPs will be used as demonstrations to promote further conservation work in the targeted watershed.

Responsible Party: CRWD staff, consultant

Objective 6 Timeline: August 2015 to June 2018

Objective 6 Cost: \$5,000.00

Objective 6 Deliverables: Outreach program to local schools continues; BMPs used as demonstrations; press releases developed and disseminated; existing social media outlets leveraged to promote BMPs and conservation

Objective 7: Administration & Management

Task A: Administration & Management – District staff will perform overall project administration and management. This includes fiscal oversight and project reporting requirements.

Responsible Party: CRWD Staff

Objective 7 Timeline: August 2015 to June 2018

Objective 7 Cost: \$4,000.00

Objective 7 Deliverables: All required reporting is completed; overall project management is completed

4. Measurable Outcomes

Measureable outcomes include:

1. Reduction in TSS concentrations as compared to concentrations measured and reported in 2014
2. Reduction in bacteria concentrations as compared to concentrations measured and reported in 2014
3. Increased willingness on part of area landowners to implement BMPs to address sediment and bacteria loading to receiving waters measured by enrollment in District programs.

5. Gantt charts (see attached)

6. Project Budget (see attached)

Clearwater River Restoration & Protection Phase II- Sub-watershed Analysis

Clearwater River BMP Siting – Draft Report



Prepared for:
Clearwater River Watershed District



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Responsive partner.
Exceptional outcomes.

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APPENDICES

Appendix A: Individual BMP Maps

1.0 Purpose and Scope

There are currently eight lakes located along the Clearwater River Chain of Lakes that are impaired for nutrients. The Upper Clearwater River, between County Ditch #20 North and Lake Betsy (Figure 1), is impaired for bacteria and dissolved oxygen (DO). Additionally, monitored total suspended sediment (TSS) and phosphorus concentrations in the Upper Clearwater River are high and occasionally exceed state water quality standards. Total Maximum Daily Load (TMDL) studies and implementation plans for the impaired lakes and river reaches in the Upper Clearwater Watershed were completed in 2009. Since the completion of the TMDL studies, the Clearwater River Watershed District (CRWD) has implemented several water quality improvement projects in the Upper Clearwater River Watershed. These projects include:

- Kingston Wetland Restoration
- targeted, variable rate fertilizer application
- stream bank protection and stabilization projects
- Kimball Stormwater Retrofit Phase I & Phase II
- various agricultural best management practices (BMPs)

Despite the work and projects already completed in the Upper Clearwater River Watershed, further nutrient, sediment and bacteria load reductions are needed to meet state water quality standards and TMDL goals. The CRWD has identified landscape agricultural practices and in-stream erosion due to altered hydrology as the primary sources of sediment, phosphorus, and bacteria to the Upper Clearwater River. The CRWD's comprehensive plan identified the direct tributary areas between Clear Lake and Lake Betsy as a high-priority implementation area with respect to restoration and surface water protection in the Upper Clearwater River Watershed.

In 2015, the CRWD received a Clean Water Partnership (CWP) grant to identify and implement agricultural BMPs and/or other projects to reduce sediment, phosphorus, and bacteria loads to the Upper Clearwater River. Through this project, the CRWD updated the existing 2008 field reconnaissance of high priority sediment and bacteria sources through desktop review/analysis and field visits. Sites with the highest potential export were prioritized for implementation projects. Combinations of agricultural BMPs and/or stream stabilization techniques are recommended to reduce sediment, phosphorus, and bacteria loads to the Clearwater River.

This report presents the results of the desktop analysis, site visits, and BMP identification and prioritization portion of the CWP grant. This information is intended to help provide the CRWD staff and Board with the necessary information to decide which BMPs they would like to pursue for the implementation phase of the project.

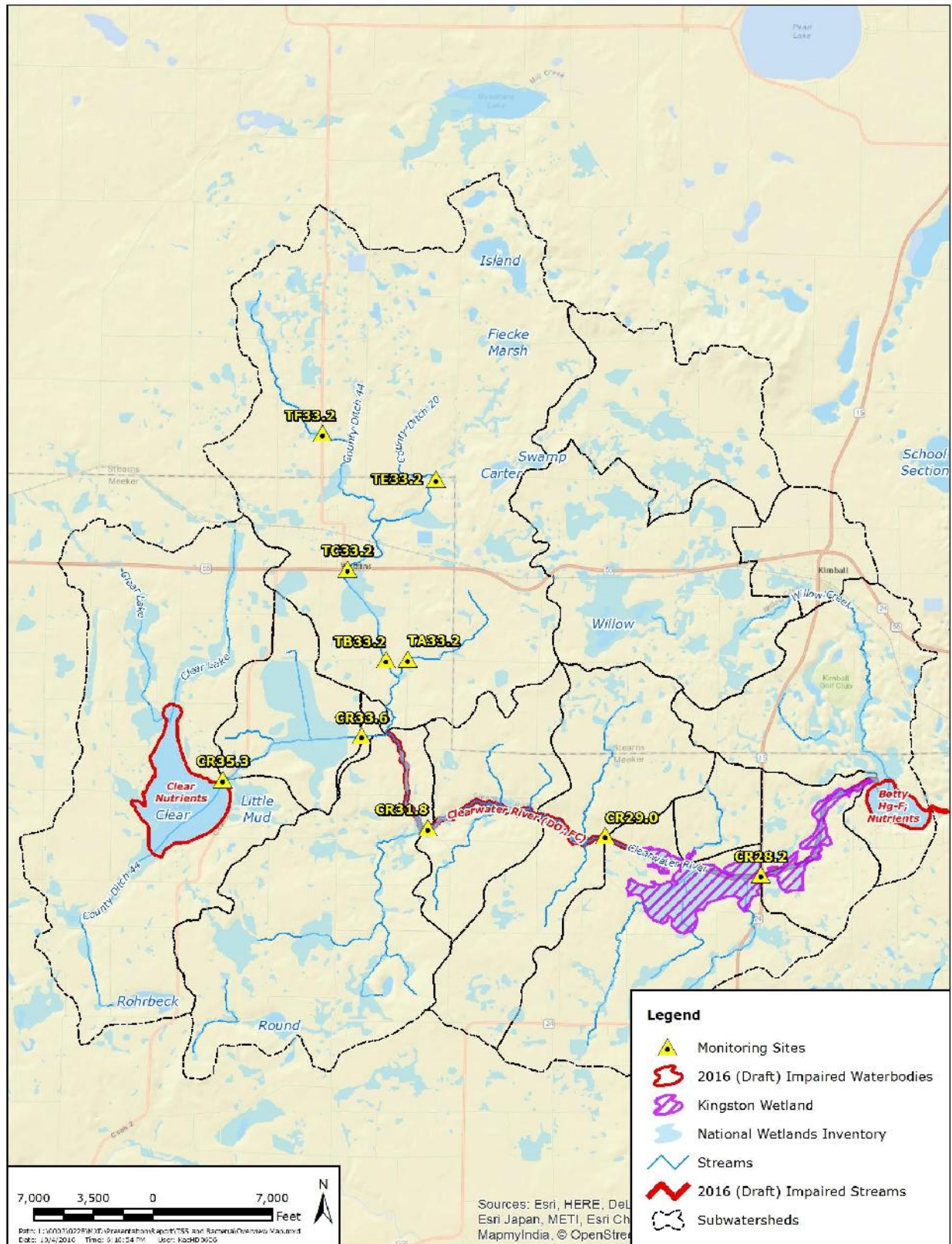


Figure 1. Upper Clearwater River Watershed.

2.0 Water Quality Summary

2.1 TSS DATA

CRWD staff has collected TSS data at several monitoring stations throughout the Upper Clearwater River Watershed. Stations CR29.0 and CR28.2 are the two long-term routine monitoring stations in the upper watershed. CR29.0 is located upstream of the Kingston Wetland, while CR28.2 is located at the downstream end of the wetland (Figure 1). TSS data has also been collected at two other mainstem stations (CR33.6 and CR31.8) and two tributary stations (TB33.2 and TC33.2) along County Ditch #20 North. TSS data from all stations is summarized in Table 1 and presented as box plots in Figure 2. Figure 3 shows TSS concentrations since 2005 by flow regime at station CR29.0. The data shows high TSS levels typically occur during high flow conditions and the biggest increase in TSS occurs between stations CR31.8 and CR29.0. This suggests BMP implementation efforts should focus on this stretch of the Upper Clearwater River Watershed.

Table 1. TSS monitoring in the Upper Clearwater River Watershed (2005-2015)

Station	Samples Collected	Average TSS [mg/L]	Samples >30 mg/L	Percent >30 mg/L
CR33.6	8	12	1	13%
CR31.8	10	47	2	20%
CR29.0	64	35	30	47%
CR28.2	100	12	10	10%
TB33.2	27	8	1	4%
TC33.2	22	12	1	5%

2.2 BACTERIA DATA

CRWD staff has collected *E. coli* data at several monitoring stations throughout the Upper Clearwater River Watershed. Three *E. coli* longitudinal surveys were performed during the summer of 2016 to determine potential sources and locations of high bacteria levels in the upper watershed (Figure 4). Results of these surveys indicate *E. coli* levels are low coming out of Clear Lake (station CR35.3) and usually above the standard at all other monitoring stations in the watershed. The largest increases in *E. coli* concentration along the mainstem Clearwater River occurs between CR33.6 and CR29.0. County Ditch #20 North *E. coli* concentrations are consistently high and are a significant source of bacteria to the mainstem Clearwater River. *E. coli* concentrations at the two County Ditch #20 North and the three ditch tributary monitoring stations did not show any spatial patterns between stations during the three longitudinal surveys. Figure 5 presents *E. coli* concentrations by season and flow regime at station CR29.0. This data shows *E. coli* is high and above state standards during all seasons and flow conditions.

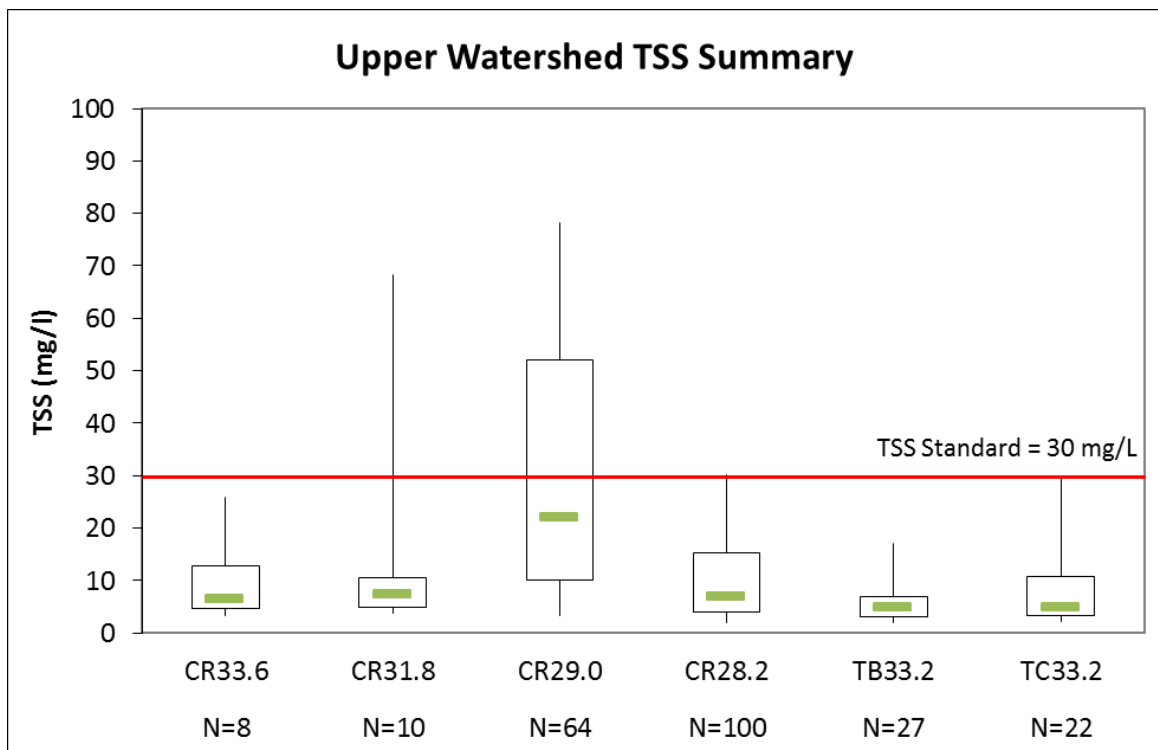


Figure 2. Upper Clearwater River TSS data by site (2005-2015)

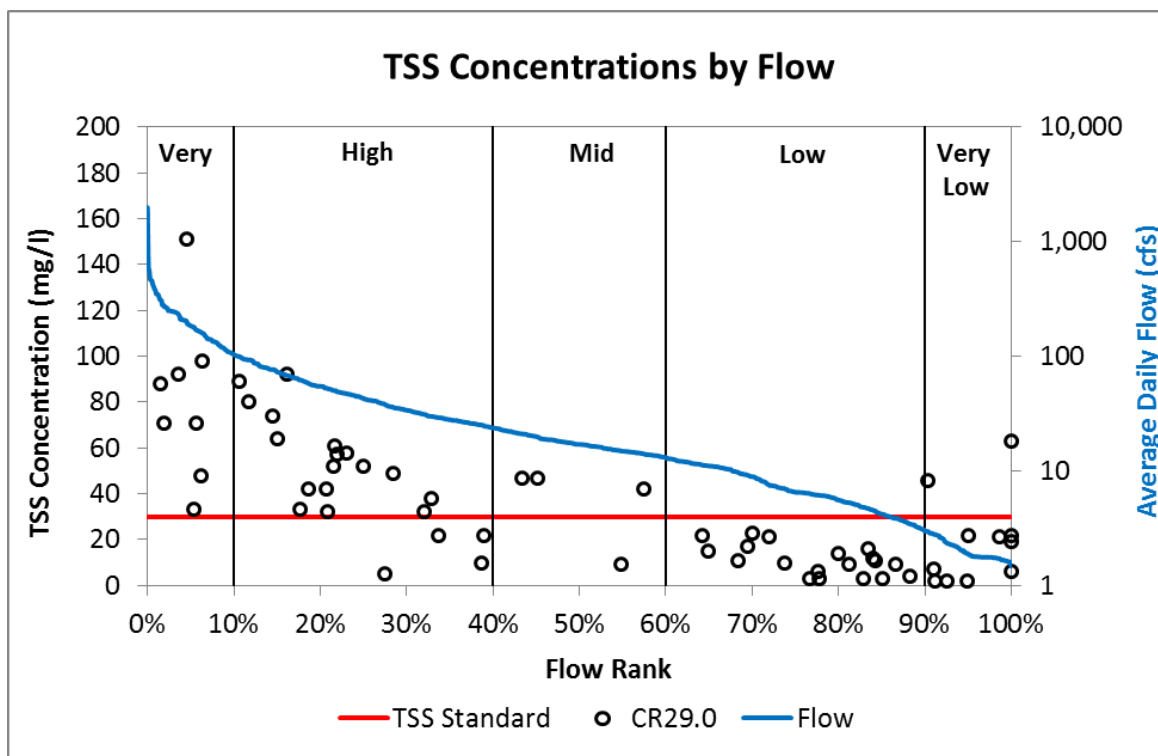


Figure 3. TSS data for station CR29.0 by flow regime (2005-2015)

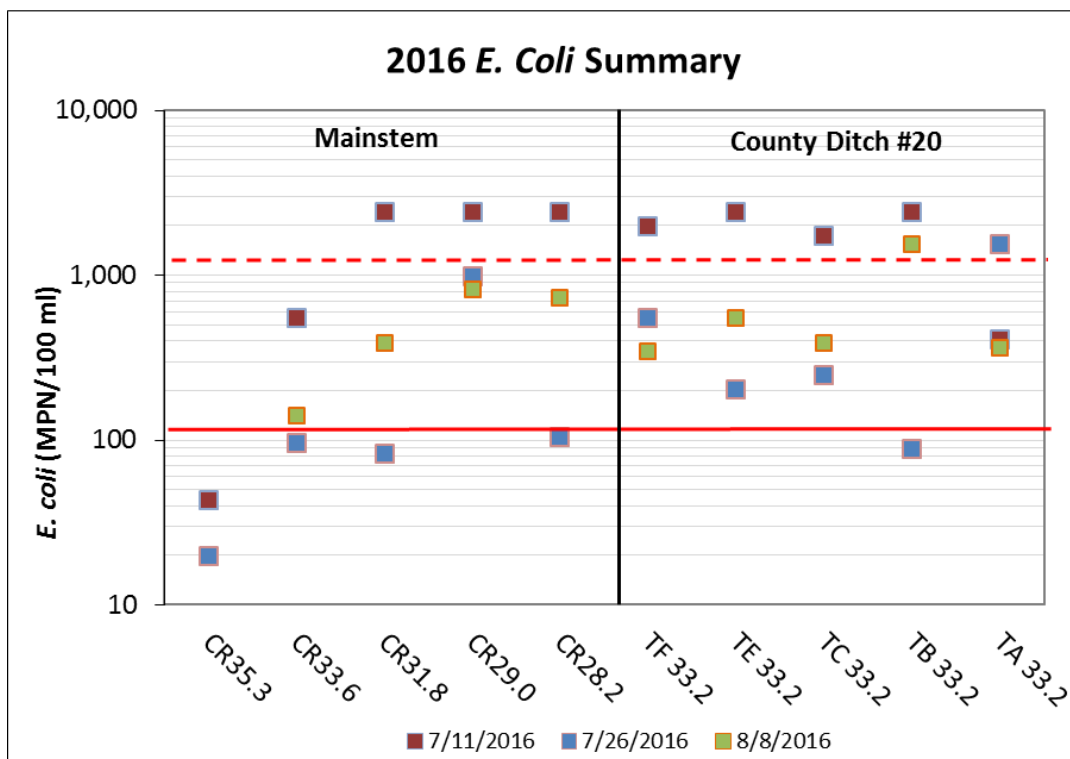


Figure 4. 2016 Clearwater River *E. coli* longitudinal surveys.

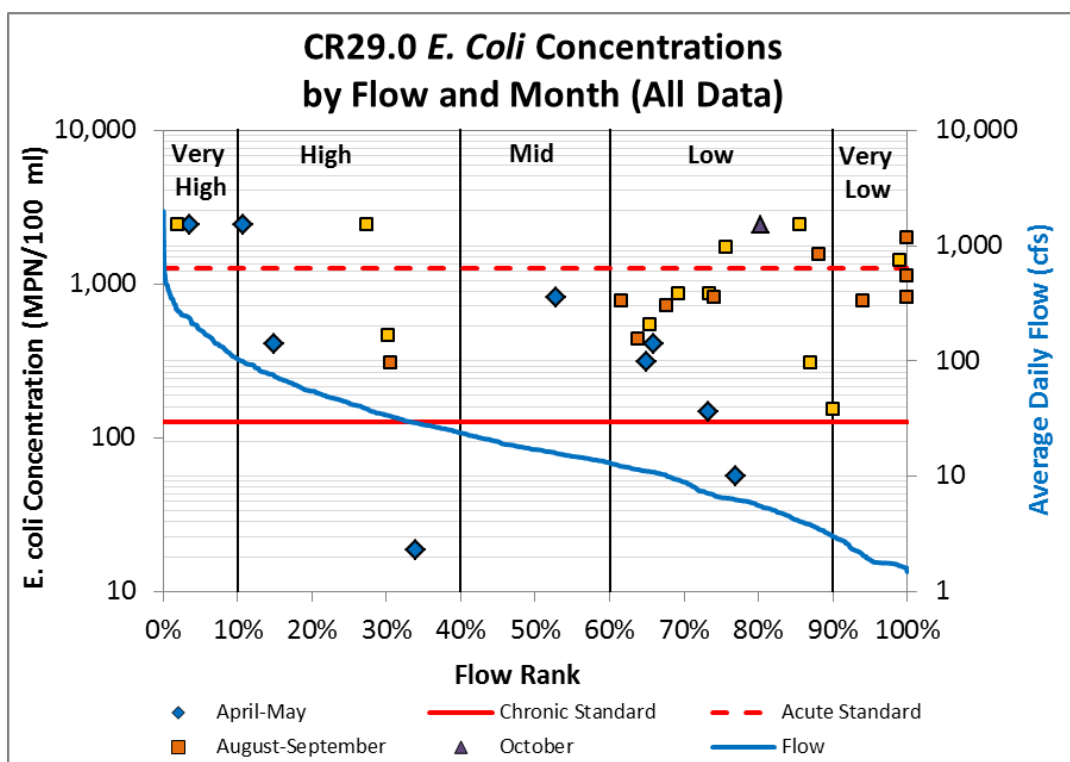


Figure 5. *E. coli* data for station CR29.0 by season and flow regime (2005-2015)

3.0 TSS BMP Identification

This section presents the methodology Wenck and CRWD staff used to identify and prioritize potential BMP projects to address TSS loading in the Upper Clearwater River Watershed. The BMP identification process included a combination of desktop GIS analysis and windshield surveys. Both of these are described below in more detail.

3.1 DESKTOP GIS ANALYSIS

There were several GIS layers and tools used to identify high potential loading areas and BMPs throughout the upper portion of the Clearwater River Watershed. A description of each GIS tool/layer used in this project is provided below.

Light Detection and Ranging (LiDAR)

Light detection and ranging (LiDAR) uses pulses of energy to record elevation values of the landscape. Within a LiDAR point cloud, returns are generated based on the number of objects detected. In areas of high forest canopy multiple returns are created for each penetration of energy. Values are separated into classes and a digital elevation surface is created from the bare earth points.

For this study, Wenck utilized two foot contours derived from a LiDAR DEM to delineate drainage areas for each of the proposed BMPs. Wenck also used LiDAR DEMs to calculate several topographic variables that were used as part of the RUSLE, SPI, Depression Area, and RWI analyses, as described below.

Air Photos

Wenck relied heavily on aerial photographs to determine BMP placement and type. Imagery is readily available through the Minnesota Geospatial (MN GEO) Information Office via a web mapping server. MN GEO provides streaming of Farm Service Administration (FSA) imagery [one-meter resolution] for available years and high resolution imagery collected by participating counties. The 2015 FSA, 2013 Meeker County, and 2015 Stearns county imagery were used to aid in placing BMPs. Stearns County provides imagery through a hosted service on ArcGIS Online.

Revised Universal Soil Loss Equation (RUSLE)

The RUSLE was used to estimate average upland sediment loss throughout the Upper Clearwater River Watershed. RUSLE provides a general assessment of existing soil loss from upland sources using the following factors: rainfall pattern, soil type, topography, land use and land management practices. The general form of the RUSLE has been widely used in predicting field erosion and is calculated according to the following equation:

$$A = R \times K \times LS \times C \times P$$

Where A represents the potential long term average soil loss (tons/acre) and is a function of the rainfall erosivity index (R), soil erodibility factor (K), slope-length gradient factor (LS), crop/vegetation management factor (C) and the conservation/support practice factor (P). RUSLE only predicts soil loss from sheet or rill erosion on a single slope; it does not account for potential losses from gully, wind, or streambank erosion.

For this exercise, it was assumed all agricultural practices are subject to maximum soil loss from fall plow tillage methods, and no BMPs and sediment support practices exist (P-factor = 1.00). Raster layers of each RUSLE factor were constructed in ArcGIS for the Upper Clearwater River Watershed and then multiplied together to estimate the average annual potential soil loss for each grid cell. It is important to note that this RUSLE model is intended to represent the maximum amount of soil loss that could be expected under existing conditions; it is not calibrated to field observations or observed/monitored data. Thus, the model results are intended to provide a first cut in identifying potential field erosion hot spots based on local slope, landuse and soil attributes.

Since RUSLE does not take into account a stream's ability to transport suspended sediment, a sediment delivery ratio (SDR) was used to estimate how much upland soil is delivered to downstream resources of concern such as tributaries, streams, and lakes. The SDR for the Upper Clearwater River Watershed was established using the methodology outlined by the Minnesota Phosphorus Index (UMN Extension, 2006) with equations borrowed from RUSLE2. Since the primary focus of this study is to reduce sediment loading to the Upper Clearwater River, the SDR applied to each RUSLE grid cell was calculated based on distance to the main-stem Clearwater River.

Even with the SDR, field sediment delivery to the stream channel is often over-estimated, since the SDR-adjusted RUSLE model does not take into account wetlands, lakes, and other areas of depressional storage. Average annual monitored TSS loads at station CR29.0 were significantly lower when compared to the SDR-adjusted RUSLE sediment loads for the Upper Clearwater River Watershed. Thus, an additional adjustment factor (approx. 0.05) was applied to the SDR so that the RUSLE model more accurately reflects the sediment loads observed in the main-stem Clearwater River.

Stream Power Index (SPI)

The stream power index examines the erosive power of water on the landscape. Although this exercise does not quantify the amount of sediment being eroded from the land, SPI can be used to find high concentration flow paths to identify rill and gully networks. SPI values were calculated using ArcGIS Spatial Analyst extension. After preconditioning the LiDAR-derived DEM, flow direction, flow accumulation and slope percent were derived. The final calculation is based on the Minnesota Department of Agriculture's evaluation of SPI using GIS (Galzki et. al., 2007). The equation as follows:

$$\ln((\text{flow_accumulation_grid} + .001) * ((\text{slope_percent_grid} / 100) + .001))$$

Where:

Ln = Natural log; flow_accumulation_grid = number of contributing cells; slope_percent_grid = slope percent; and .001 is added to each cell to avoid zero SPI values. Following calculation of the SPI, values were reclassified into percentiles from the 80th to 95th. Aggregating the data separates values in low lying areas where ponding may occur (see depression analysis below). These values were used in Galzki et. al. (2007) as corresponding with visible erosion pathways.

Depression Area Analysis

Depressions in the Upper Clearwater River Watershed were identified using GIS processing tools from the Agricultural Conservation Practice Framework (ACPF). The Depression analysis uses an unfilled LiDAR DEM, field boundaries created by the FSA, soil attributes from the Soil Survey Geographic Database (SSURGO), and stream reaches created from the

DEM. The DEM is filled and the depth of the depression is extracted. Hydric soils from SSURGO are used as secondary criteria for identifying areas with probability of wetland soils. The final product of the tool shows the ponding area based on water depth and direct contributing area thresholds set by the user. This data was used to aid in identifying areas where potential tile intakes may be located and where BMPs such as alternative tile intake (ATI) and wetland restorations may be appropriate.

Restorable Wetlands Index (RWI)

The RWI was developed by the Natural Resources Institute at the University of Minnesota Duluth. The tool uses a DEM to derive the topographic wetness index (TWI) or compound topographic index (CTI) in finding areas of flow accumulation to a depression area. Drainage classes in the poor and very poor categories are used in determining if the landscape is potentially tile drained. Finally, wetlands in the National Wetland Inventory (NWI) are intersected with the layer and removed since the tract of land is currently classified as a wetland. This layer was used in determining if a wetland restoration was suitable in the BMP derivation process.

3.2 WINDSHIELD SURVEYS

Windshield surveys and site visits were performed by CRWD and Wenck staff in March 2016 to identify potential locations for BMPs in the Upper Clearwater River Watershed. Prior to the windshield surveys, a series of field erosion “heat” maps (mapbooks) were created by Wenck using results of the RUSLE desktop analysis. These maps showed high potential areas of field erosion in the upper watershed that were used by CRWD and Wenck staff to focus and prioritize their time in the field. Results of the RUSLE analysis showed several potential sediment loading hotspots located in the high-sloped areas near the main-stem Clearwater River and the County Ditch #20 North system. As a result, much of the windshield survey was focused in these areas. While in the field, CRWD and Wenck staff collected field notes and marked GIS locations at approximately 39 sites where they observed obvious signs of field erosion and soil loss. The field notes and GIS locations were later compiled and entered into a GIS database by Wenck staff.

3.3 BMPS CONSIDERED

Based on the desktop analysis and windshield surveys, there are four general types of BMPs that are most appropriate to help reduce sediment loading to the upper Clearwater River: gully practices, contour practices, drainage management practices, and in-channel practices. Table 2 presents a suite of potential BMPs that fall within each of the four general BMP categories, along with potential TSS and TP reductions and rough cost estimates for each specific BMP type.

Table 2. Potential BMPs in the Upper Clearwater River Watershed

BMP Type	Potential BMPs	Sediment Reductions	Phosphorus Reductions	General Cost Range
Gully Practices	Water & Sediment Control Basin (WASCOB)	92% ¹	75% ³	\$100 to \$150 per linear foot ⁷
	Grassed Waterway	77% ¹	58% ²	\$2,000 to \$3,000 per acre ⁷
Contour Practices	Contour Buffer Strip	78% ¹	62% ¹	\$1,500 to \$2,000 per acre for

BMP Type	Potential BMPs	Sediment Reductions	Phosphorus Reductions	General Cost Range
				native prairie ⁷
	Terrace	NA ⁵	65% ⁸	\$100 to \$150 per linear foot ⁷
Drainage Mgt. Practices	Alternative Tile Intake (ATI)	80% ¹	66% ⁴	\$1,200 to \$2,000 ⁷
	Side Inlet	NA ⁵	NA ⁵	NA ⁵
	Wetland Restoration	NA ⁵	NA ⁵	\$12,000 to \$17,000 per acre ⁷
In-channel Practices	Two-staged Ditch	70% ⁶	36% ⁶	New construction: \$75 to \$100; Channel modification: \$25 to \$40
	Stream Buffer Enhancement	53% to 98% ¹	41% to 93% ¹	\$125 to \$175 per linear foot

¹ MDA, 2012.

² MPCA, 2014.

³ McKenna, D.

⁴ Wilson et al, 1999.

⁵ Removal efficiencies are not available or the numbers vary.

⁶ Hodaj et al. 2015

⁷ University of Minnesota Extension, 2015.

⁸ Alabama Cooperative Extension System.

3.4 FINAL BMP DETERMINATION

Wenck reviewed all of the aforementioned GIS layers/tools and field notes to determine which general BMP type would be most appropriate for each of the 39 sites identified during the windshield survey (see Figure 6 and Table 3). In addition to the general BMP type, a specific BMP was proposed for each of the 39 sites. It should be pointed out that the proposed BMP is one of several options available to the landowner (see Table 2 for other BMP options). For example, SPI, LiDAR, and air photo analysis of Site SH-T122-R29-S31 suggests this site has a high potential for gully erosion and that some sort of gully practice would be most appropriate for this site. Table 3 proposes a WASCOB, however other BMP options such as a grassed waterway could be implemented depending on landowner preference, cost, feasibility, specific site conditions, etc..

Once the BMP was selected, each BMP's upslope contributing area was delineated in GIS using LiDAR, and the RUSLE model was used to estimate each site's potential soil loss and sediment delivery to the main-stem Clearwater River. Sediment reductions based on BMP performance (Table 2) were then calculated for each site in order to evaluate which BMPs have the biggest potential impact on sediment loading to the Clearwater River. Table 3 also estimates current phosphorus loads and potential phosphorus load reductions to the Clearwater River. The phosphorus loading estimates were calculated based on the long-term average annual observed TP:TSS ratio (approx. 0.003) at CR29.0. BMP volume reduction benefits were not calculated since most of the practices identified fall within the gully, contour, and drainage management BMP categories. Specific BMPs in these categories are designed to decrease soil loss through filtration, rate control, and slowing the flow of water



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on the landscape. While these practices may have some secondary volume reduction benefits, they are not intended to be designed or considered infiltration and/or long-term water storage practices. The two wetland restorations identified in this study may provide direct water storage and/or volume reductions; however, a more in-depth feasibility study and hydrologic analysis will be needed in order to quantify these benefits.

Table 3 and the figures in Appendix A describe each of the 39 sites evaluated, proposed BMP type, current sediment delivery, and estimated sediment reduction based on BMP type. Each of the 39 sites in Table 3 were ranked and presented in order of potential sediment reduction to the Clearwater River in tons/year (column 10). Sediment reductions were not calculated for six sites listed at the end of Table 3. Proposed BMPs for these sites include large scale stream buffer enhancements, two-staged ditch, side inlet, wetland restorations, and contour farming. A more detailed monitoring and/or feasibility study would need to be performed to estimate potential sediment reductions and other benefits for these BMPs.

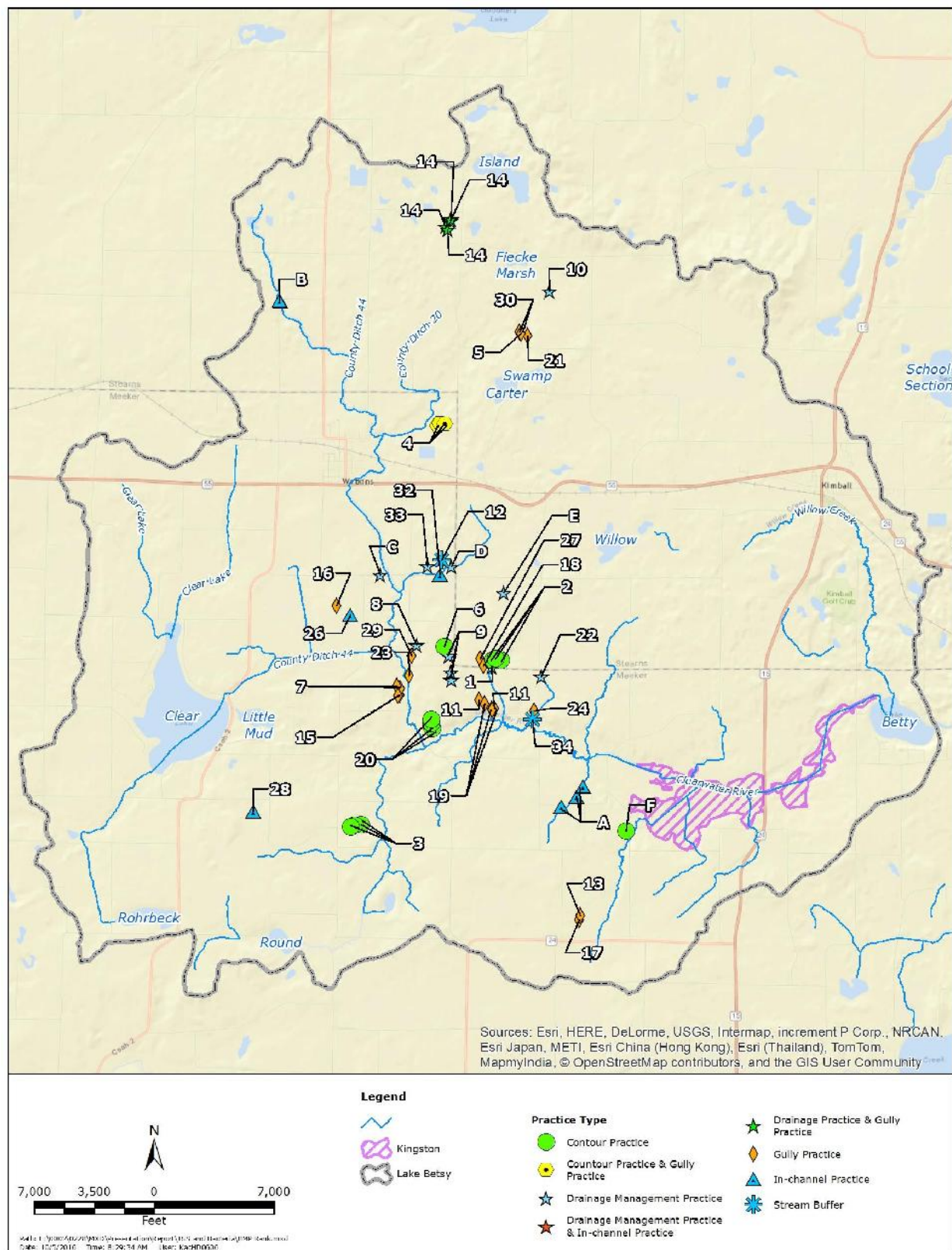


Figure 6. Proposed BMPs in the Upper Clearwater River Watershed.

Table 3. Potential BMPs in the Upper Clearwater River Watershed.

Rank ¹	Site ID ²	BMP Type ³	Proposed BMP ⁴	Drainage Area to BMP [Acres]	BMP Distance to Main-stem Clearwater River [miles]	Current Sediment Erosion On Site ⁵ [tons/yr]	Current Sediment Delivery to Clearwater River ⁶ [tons/yr]	Current Phosphorus Delivery to Clearwater River ⁷ [lbs/yr]	BMP Sediment Reduction to Clearwater River ⁸ [tons/yr]	BMP Phosphorus Reduction to Clearwater River ⁸ [lbs/yr]
1	SH-T121-R29-S18-1	Drainage Management	ATIs and/or sedimentation basin	146.6	0.57	957	8.6	51.4	6.9	34.0
2	SH-T121-R29-S18-2	Contour	Contour Buffer	88.1	0.64	645	5.8	34.9	4.5	21.7
3	SESE-T121-R30-S26-1	Contour	Contour Buffer	83.8	1.11	565	4.6	27.7	3.6	17.2
4	NE-T121-R30-S1	Countour and/or Gully	Contour Buffer Strip and/or Gully BMPs	44.7	2.54	555	3.9	23.2	3.3	15.9
5	SH-T122-R29-S31	Gully	Wascob	44.0	3.54	435	2.8	17.1	2.6	12.8
6	SESE-T121-R30-S13-1	Contour	Contour Buffer	34.2	0.49	286	2.9	17.4	2.3	10.8
7	NW-T121-R30-S24-1	Gully	Grassed Waterway	20.8	0.09	242	2.9	17.6	2.3	10.2
8	WH-SE-T121-R30-S13-1	Contour	Contour Buffer	18.5	0.23	228	2.5	14.9	1.9	9.2
9	NENE-T121-R30-S24-1	Drainage Management	ATI	45.1	0.42	224	2.3	13.8	1.8	9.1
10	SH-T122-R29-S30-1	Drainage Management	ATI	92.1	3.69	352	2.3	13.6	1.8	9.0
11	SENW-T121-R29-S19-2	Gully	Wascob	13.2	0.12	128	1.5	9.2	1.4	6.9
12	SE-T121-R30-S12-1	In-channel	Stream Buffer	45.5	1.14	189	1.5	9.2	1.2	6.1
13	NESW-T121-R29-S32-1	Gully	Wascob	18.9	1.73	159	1.2	7.3	1.1	5.5
14	NENE-T122-R30-S25-1	Drainage & Gully	ATI & Grassed Waterway	26.1	4.71	199	1.2	7.3	1.0	4.5
15	SENW-T121-R30-S24-1	Gully	Grassed Waterway	6.1	2.45	94	1.2	7.1	0.9	4.1
16	SWNE-T121-R30-S14-1	Gully	Grassed Waterway	25.6	0.52	111	1.1	6.5	0.8	3.7
17	SESW-T121-R29-S32-1	Gully	Wascob	15.1	1.78	120	0.9	5.4	0.8	4.0
18	SESW-T121-R29-S18-2	Gully	Wascob	9.0	0.57	93	0.9	5.2	0.8	3.9
19	SENW-T121-R29-S19-1	Gully	Wascob	8.8	0.11	68	0.8	5.1	0.8	3.8
20	SE-T121-R30-S24-1	Contour and/or Gully	Contour Buffer and/or Gully BMPs	13.4	0.12	78	0.9	5.7	0.7	3.5
21	SENE-T122-R29-S31-1	Gully	Grassed Waterway	25.7	3.60	137	0.9	5.4	0.7	3.1
22	NWNW-T121-R29-S20-1	Drainage Management	ATI	28.1	3.60	85	0.8	4.9	0.7	3.3
23	NWNE-T121-R30-S24-1	Gully	Wascob	9.0	0.56	52	0.7	4.2	0.6	3.2
24	SENE-T121-R29-S19	Gully	Wascob	3.3	0.03	55	0.6	3.9	0.6	2.9
25	EH-T121-R30-S14-1	In-channel	Stream Buffer	2.6	0.16	4	0.8	4.7	0.6	3.2
26	EH-T121-R30-S14-1	In-channel	Stream Buffer	47.8	0.39	77	0.8	4.7	0.6	3.2
27	SESW-T121-R29-S18-1	Gully	Wascob	5.9	0.39	66	0.6	3.6	0.6	2.7
28	NESE-T121-R30-S27-1	In-channel	Stream Buffer	15.6	0.65	87	0.7	4.2	0.5	2.8
29	SWSE-T121-R30-S13-1	Gully	Grassed Waterway	4.5	1.27	48	0.6	3.6	0.5	2.1

Rank ¹	Site ID ²	BMP Type ³	Proposed BMP ⁴	Drainage Area to BMP [Acres]	BMP Distance to Main-stem Clearwater River [miles]	Current Sediment Erosion On Site ⁵ [tons/yr]	Current Sediment Delivery to Clearwater River ⁶ [tons/yr]	Current Phosphorus Delivery to Clearwater River ⁷ [lbs/yr]	BMP Sediment Reduction to Clearwater River ⁸ [tons/yr]	BMP Phosphorus Reduction to Clearwater River ⁸ [lbs/yr]
30	SWNE-T122-R29-S31-1	Gully	Grassed Waterway & Wascob	7.3	0.12	68	0.4	2.7	0.4	1.8
31	SWSE-T121-R30-S12-1	In-channel	Stream Buffer	2.0	3.68	8	0.5	3.0	0.4	2.0
32	SWSE-T121-R30-S12-1	In-channel	Stream Buffer	13.9	1.13	57	0.5	3.0	0.4	2.0
33	SWSE-T121-R30-S12-2	Drainage Management	ATI	9.7	1.00	43	0.4	2.2	0.3	1.5
34	NESE-T121-R29-S19	In-channel	Stream Buffer	2.7	1.01	22	0.3	2.0	0.2	1.3
A	NESE-T121-R29-S19-1	In-channel	Stream Buffer	1.0	0.43	-	-	-	-	-
B	NW-T122-R30-S35-1	In-channel	Two Stage Ditch	45.9	3.93	-	-	-	-	-
C	SWSW-T121-R30-S12-1	Drainage Management	Side Inlet	4.8	0.84	20	0.2	1.0	-	-
D	SESE-T121-R30-S12-1	Drainage Management	Wetland Restoration	661.4	1.13	2,341	17.7	106.2	-	-
E	NE-T121-R29-S18-1	Drainage Management	Wetland Restoration	147.3	1.35	1,223	9.7	58.4	-	-
F	SESE-T121-R29-S29-1	Contour	Contour Farming	2.8	0.71	69	0.6	3.8	-	-

¹ Rank based on BMP’s estimated sediment reduction to Clearwater River

² Site ID naming convention: ¼ Section – Township – Range – Section – BMP# at given site

³ BMP type determined based on GIS layer/tool analysis (see section 3.1)

⁴ Proposed BMP selected by Wenck staff in order to estimate potential reductions. Other BMP options based on general BMP type are presented in Table 2

⁵ Calculated using RUSLE (no SDR applied)

⁶ Calculated using RUSLE (with SDR applied)

⁷ Calculated based on TP:TSS ratio measured at station CR29.0

⁸ Calculated using general BMP reductions presented in Table 2

4.0 Bacteria BMP Identification

Below is a general summary and description of the potential sources of bacteria in the Upper Clearwater River Watershed.

4.1 FEEDLOT FACILITIES

Livestock can contribute bacteria to the river through runoff from feedlot facilities and cropland with surface applied manure. According to the Meeker and Stearns County feedlot database, there are approximately 61 active feedlot facilities with over 8,705 livestock animal units throughout the Upper Clearwater River Watershed (Figure 7). A majority of the livestock operations throughout the watershed are cattle, however there are swine operations located near the City of Watkins. There are 14 feedlots located within 1,000 feet of a lake or 300 feet of a stream or river, an area generally defined as shoreland. Eleven of the feedlots in shoreland areas have open lots. Open lots present a potential pollution hazard if the runoff from the open lots is not treated prior to reaching surface water. Manure from all feedlots in the upper watershed is typically applied as fertilizer to agricultural fields and is discussed below.

4.2 MANURE

Manure is a by-product of animal production and large numbers of animals create large quantities of manure. This manure is usually stockpiled and then spread over agricultural fields to help fertilize the soil. During this time the manure can be a source of *E. coli* in rivers and streams, especially during precipitation events.

4.3 SSTS

Failing or nonconforming septic systems, or subsurface sewage treatment systems (SSTS) near waterways can also be a source of bacteria to streams, especially during low flow periods when these sources continue to discharge and runoff driven sources are not active. Currently, the exact number and status of SSTSs in the Upper Clearwater River Watershed are unknown. MPCA's 2012 SSTS Annual Report (MPCA, 2013) includes some general information regarding the performance of SSTSs in the upper watershed. This study provides county annual reports that include estimated failure rates for each county in the state of Minnesota. The MPCA report differentiates between systems that are generally failing and those that are an imminent threat to public health and safety (ITPHS). Generally failing systems are those that do not provide adequate treatment and may contaminate groundwater. For example, a generally failing system may have a functioning, intact tank and soil absorption system, but fails to protect ground water by providing a less than sufficient amount of unsaturated soil between where the sewage is discharged and the ground water or bedrock. Systems considered ITPHS are severely failing or were never designed to provide adequate raw sewage treatment. Examples include SSTSs that discharge directly to surface water bodies such as ditches, streams or lakes. SSTS failure rates for counties in the Upper Clearwater River Watershed are summarized in Table 4. During the TMDL studies optical brightener surveys were conducted in the upper watershed and no optical brighteners were found in surface waters evaluated.

Table 4. SSTS failure rates by county.

County	Generally Failing SSTSs	ITPHS SSTSs
Meeker	15%	22%
Stearns	2%	10%

4.4 URBAN RUNOFF

There are currently no MS4s located in the Upper Clearwater River Watershed. There are also no communities likely to become subject to MS4 permit requirements in the near future. There is, however, one non-MS4 community (City of Watkins) located in the upper watershed study area. This urban area may contribute bacteria to surface waters through mismanaged pet waste, wildlife (particularly geese and other waterfowl) congregating in stormwater ponds/wetlands/stream corridors, and poorly buffered areas near streams.

4.5 NATURAL REPRODUCTION

It has been suggested that *E. coli* bacteria has the capability to reproduce naturally in water and sediment and therefore should be taken into account when identifying bacteria sources. Two Minnesota studies describe the presence and growth of “naturalized” or “indigenous” strains of *E. coli* in watershed soils (Ishii et al. 2006), and ditch sediment and water (Sadowsky et al. 2010). The latter study, supported with Clean Water Land and Legacy funding, was conducted in the Seven Mile Creek watershed, an agricultural landscape in southwest Minnesota. DNA fingerprinting of *E. coli* from sediment and water samples collected in Seven Mile Creek from 2008-2010 resulted in the identification of 1,568 isolates comprised of 452 different *E. coli* strains. Of these strains, 63.5% were represented by a single isolate, suggesting new or transient sources of *E. coli*. The remaining 36.5% of strains were represented by multiple isolates, suggesting persistence of specific *E. coli*. Discussions with the primary author of the Seven Mile Creek study suggest that while 36% might be used as a rough indicator of “background” levels of bacteria at this site during the study period, this percentage is not directly transferable to the concentration and count data of *E. coli* used in water quality standards and TMDLs. Additionally, because the study is not definitive as to the ultimate origins of this bacteria, it would not be appropriate to consider it as “natural” background. Finally, the author cautioned about extrapolating results from the Seven Mile Creek watershed to other watersheds without further studies.

4.6 RECOMMENDATIONS

All of the BMPs identified in Section 3 of this report are intended to reduce runoff, soil erosion, and sediment loads to the Clearwater River and therefore should also result in bacteria load reductions. Local feedlot officers, SWCDs, and the CRWD should continue to educate and work with producers to construct livestock access control points, develop manure management plans, and implement responsible manure spreading and pasture management throughout the watershed. Based on the *E. coli* monitoring data presented in Section 2.2, implementation should focus on riparian areas in the County Ditch #20 North subwatershed and the mainstem Clearwater River between CR33.6 and CR29.0. Below is a list of potential livestock BMPs that should be considered throughout the upper watershed. Refer to the [Agricultural BMP Handbook for Minnesota \(MDA, 2012\)](#) for descriptions of each of these BMPs along with discussion of their water quality benefits, design/implementation considerations, and cost information.

- Livestock Exclusion/Fencing
- Waste storage facilities
- Rotational grazing
- Feedlot runoff controls
- Feedlot/wastewater filter strips
- Clean runoff water diversion

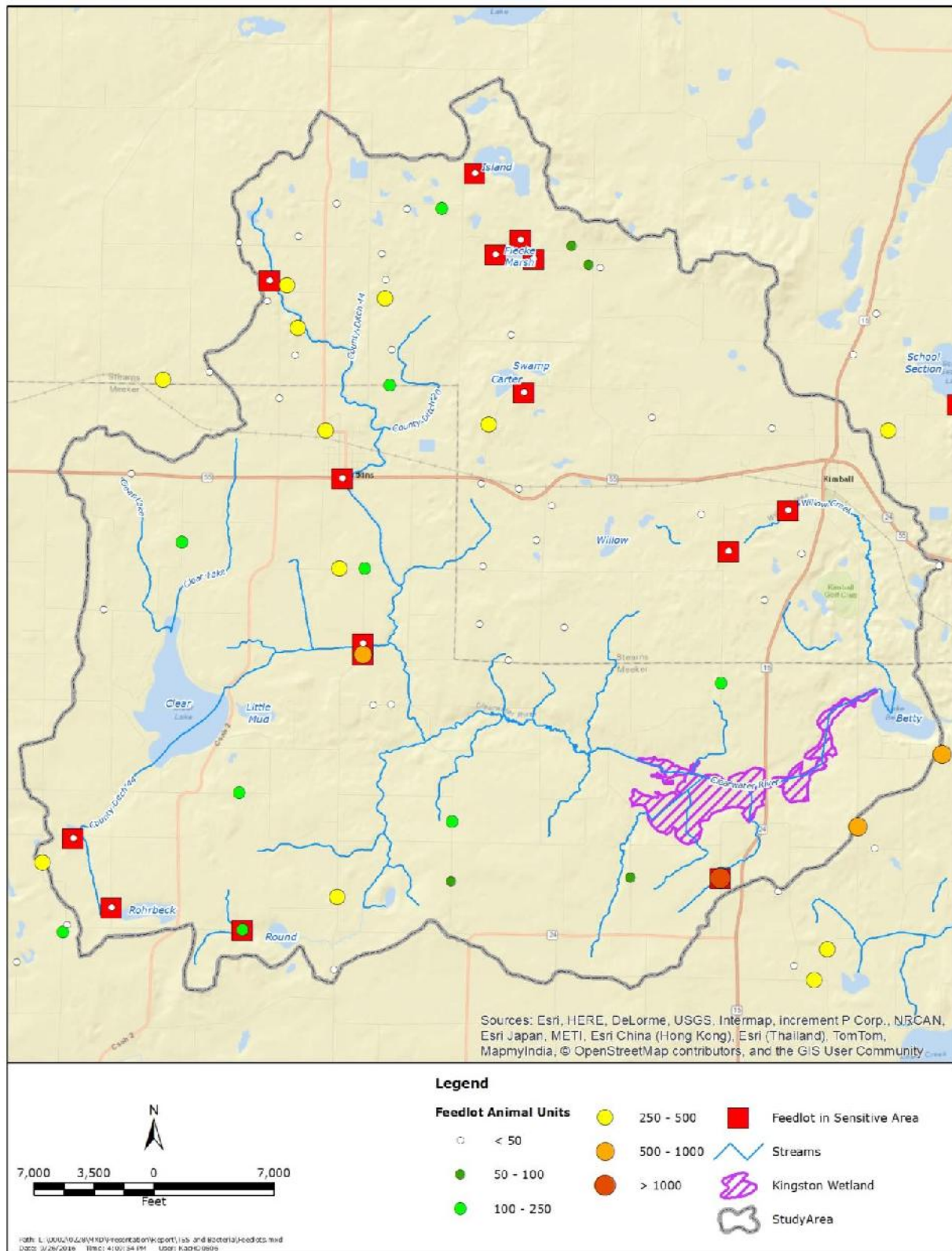


Figure 7. Feedlots in the Upper Clearwater River Watershed.

5.0 Final Recommendations

Wenck recommends that CRWD staff review the proposed BMPs listed in Table 3 to identify which practices they wish to pursue for final design and construction, and then begin contacting land owners to find willing parties for implementation.

6.0 References

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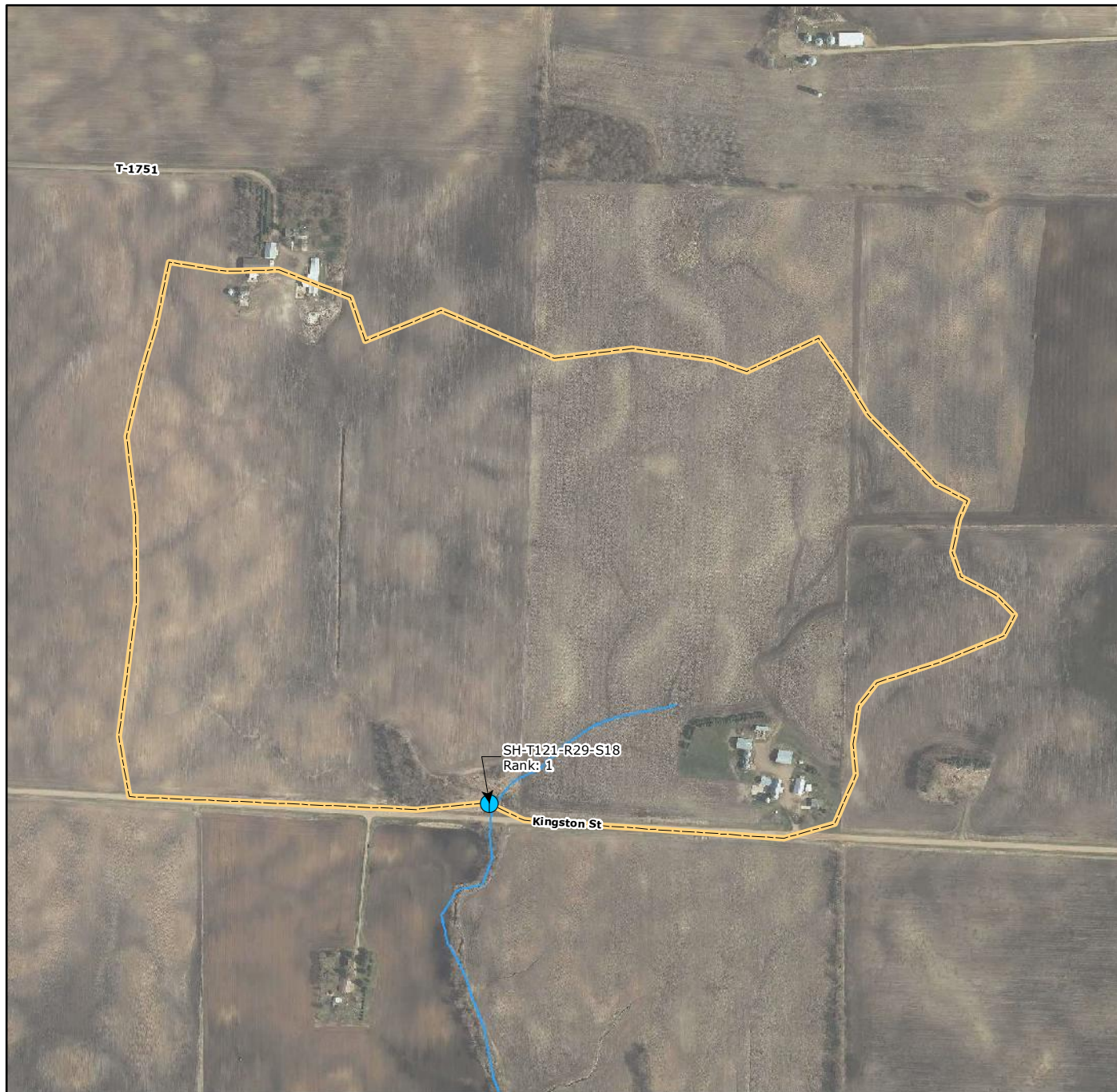
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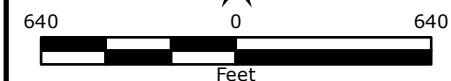
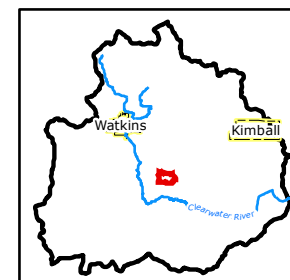
Individual BMP Maps

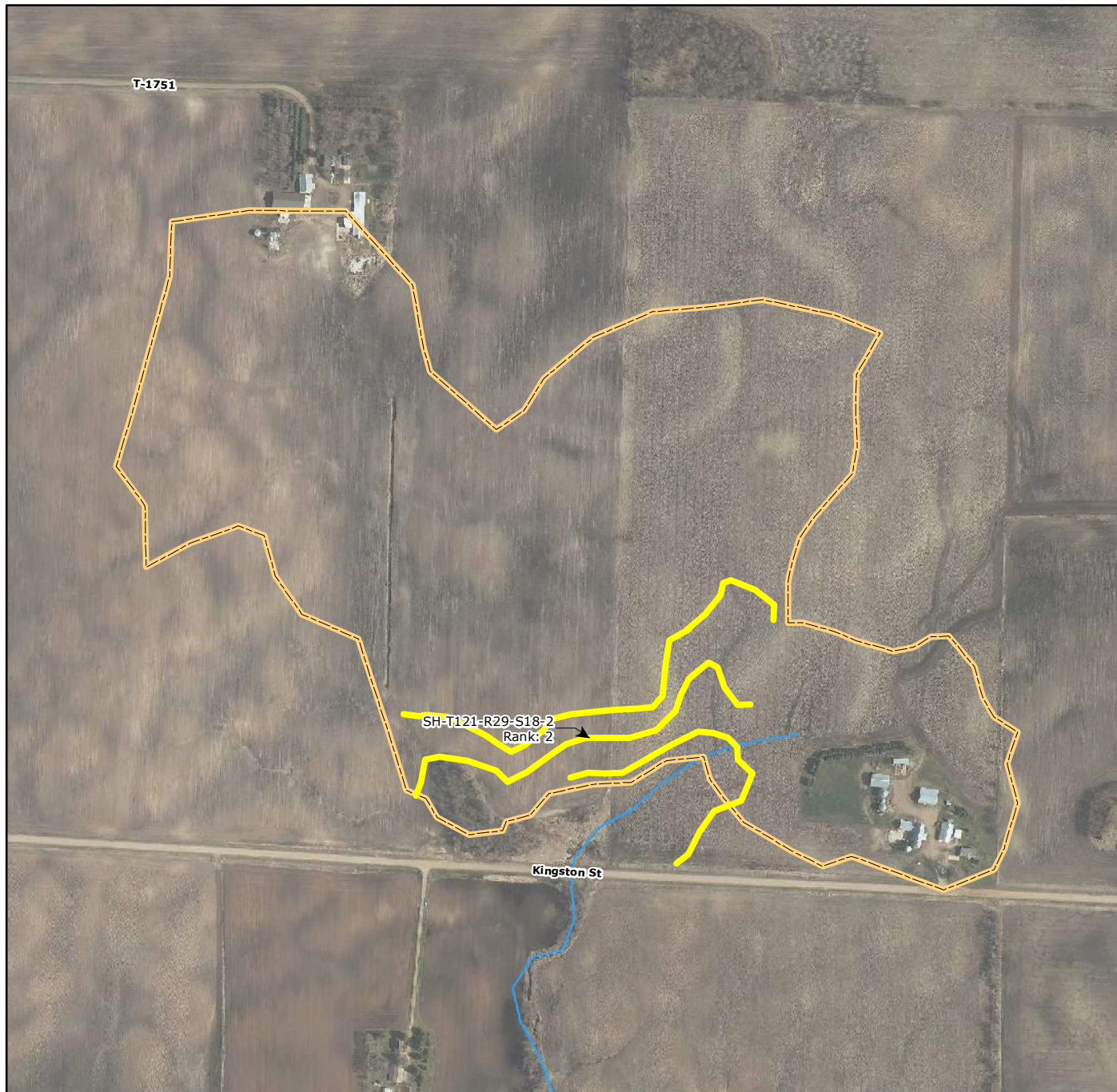


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Drainage Management Practice
SH-T121-R29-S18-1**

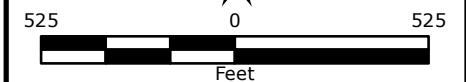
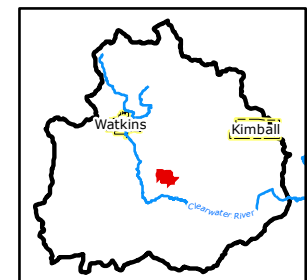


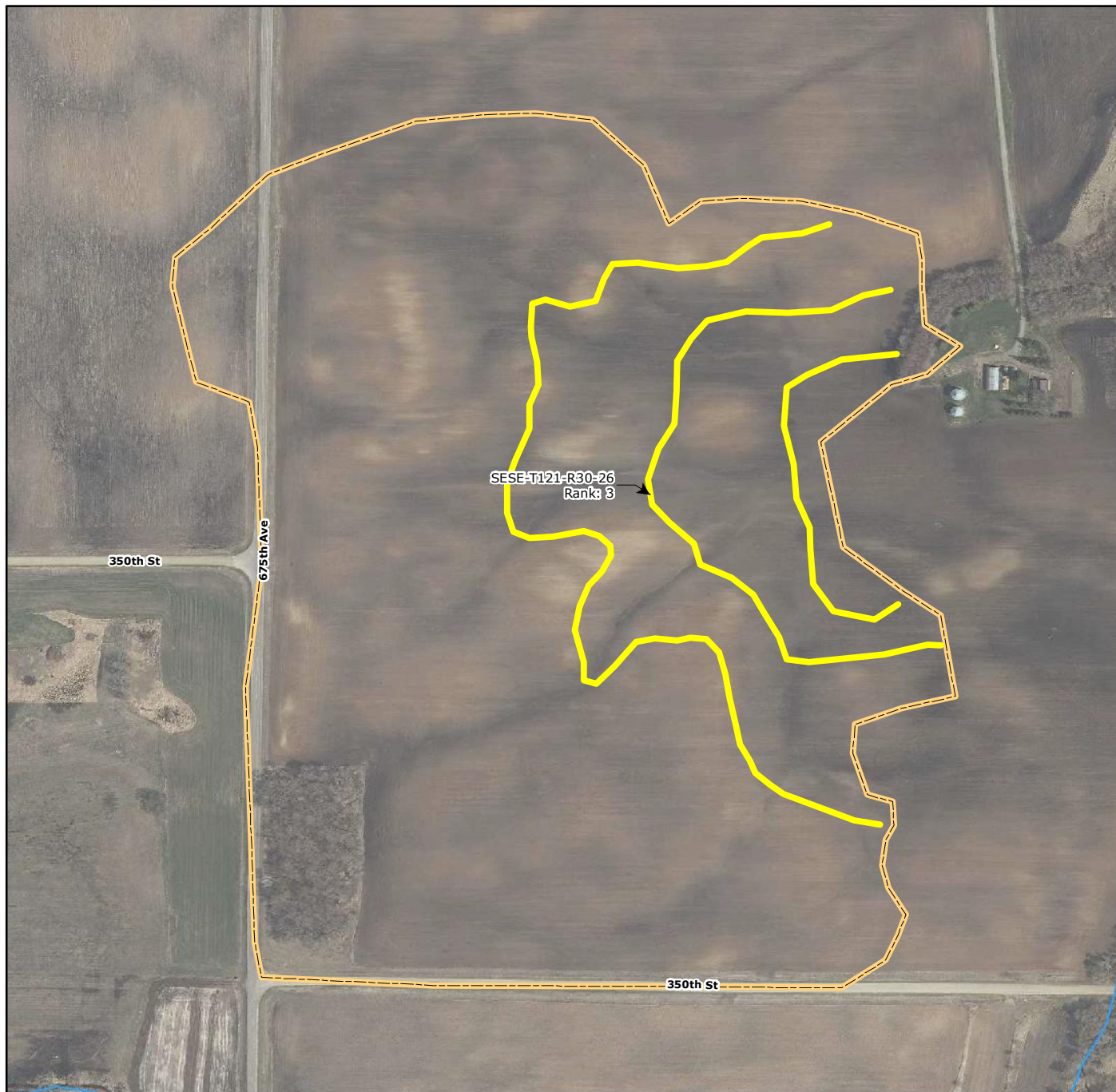


Legend

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**Generalized BMP:
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SH-T121-R29-S18-2**

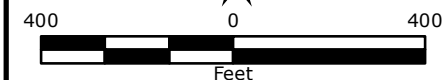
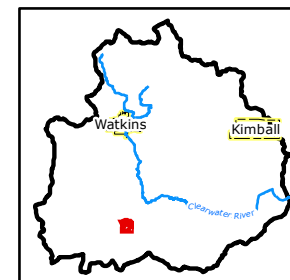




Legend

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- Stream Buffer
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- Catchment Area

**Generalized BMP:
Contour Practice
SESE-T121-R30-S26-1**

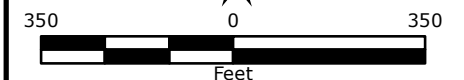
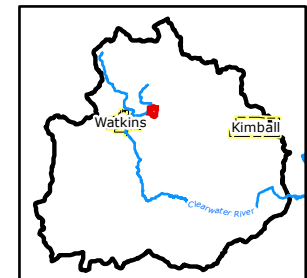




Legend

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- 🍷 Catchment Area

Generalized BMP: Countour Practice & Gully Practice NE-T121-R30-S1

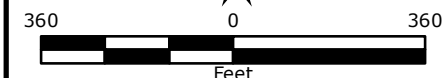
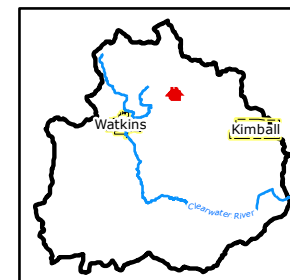




Legend

- ★ Alternative Tile Intake
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- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
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SH-T122-R29-S31**

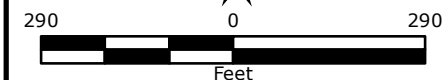
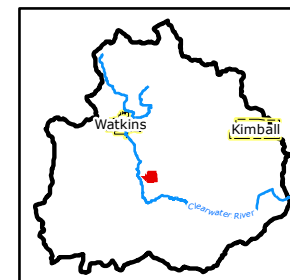




Legend

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- 🍷 Stream Buffer
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- 🍷 Catchment Area

**Generalized BMP:
Contour Practice
SESE-T121-R30-S13-1**

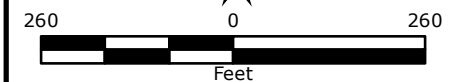
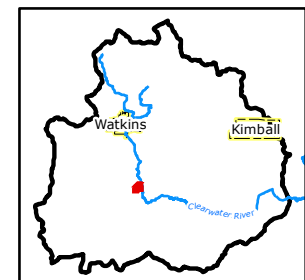


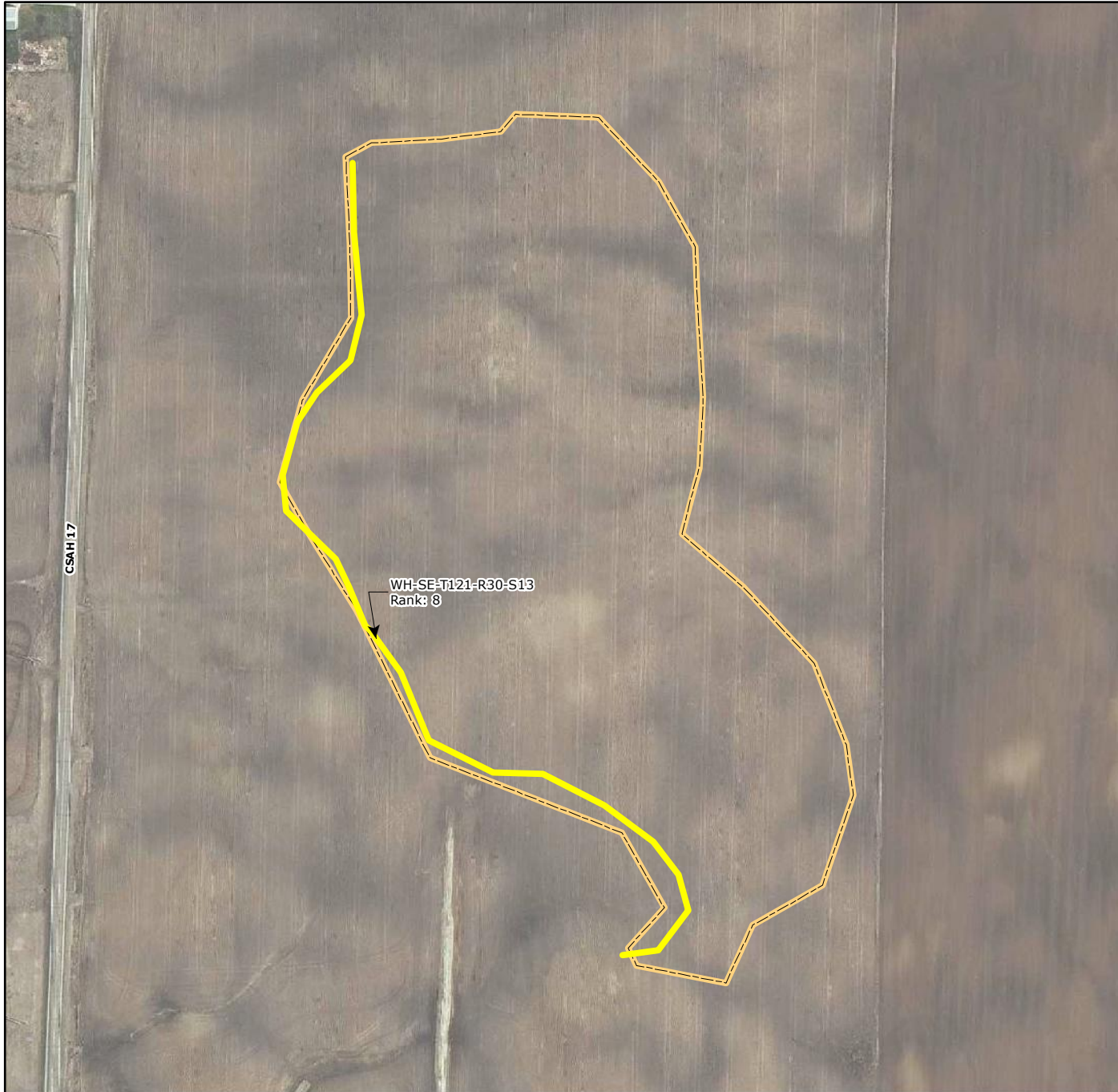


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Generalized BMP: Gully Practice NW-T121-R30-S24-1

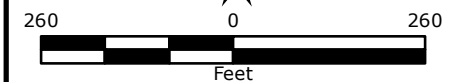
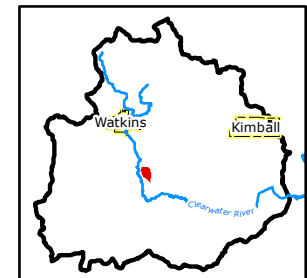




Legend










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- 🍃 Two Stage Ditch
- 🍃 Catchment Area

**Generalized BMP:
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WH-SE-T121-R30-S13-1**

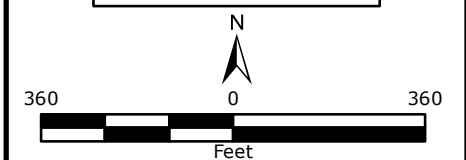
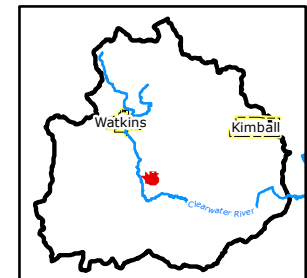




Legend

-  Alternative Tile Intake
-  Ditch Maintenance
-  Multiple
-  Sedimentation Basin
-  Side Inlet
-  Wascob
-  Wetland Restoration
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-  Catchment Area

Generalized BMP: Drainage Management Practice NENE-T121-R30-S24-1

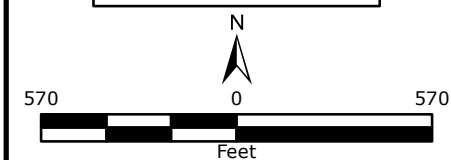
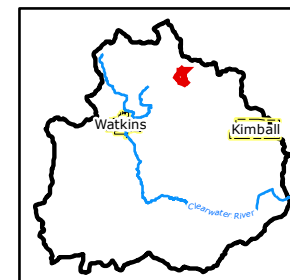


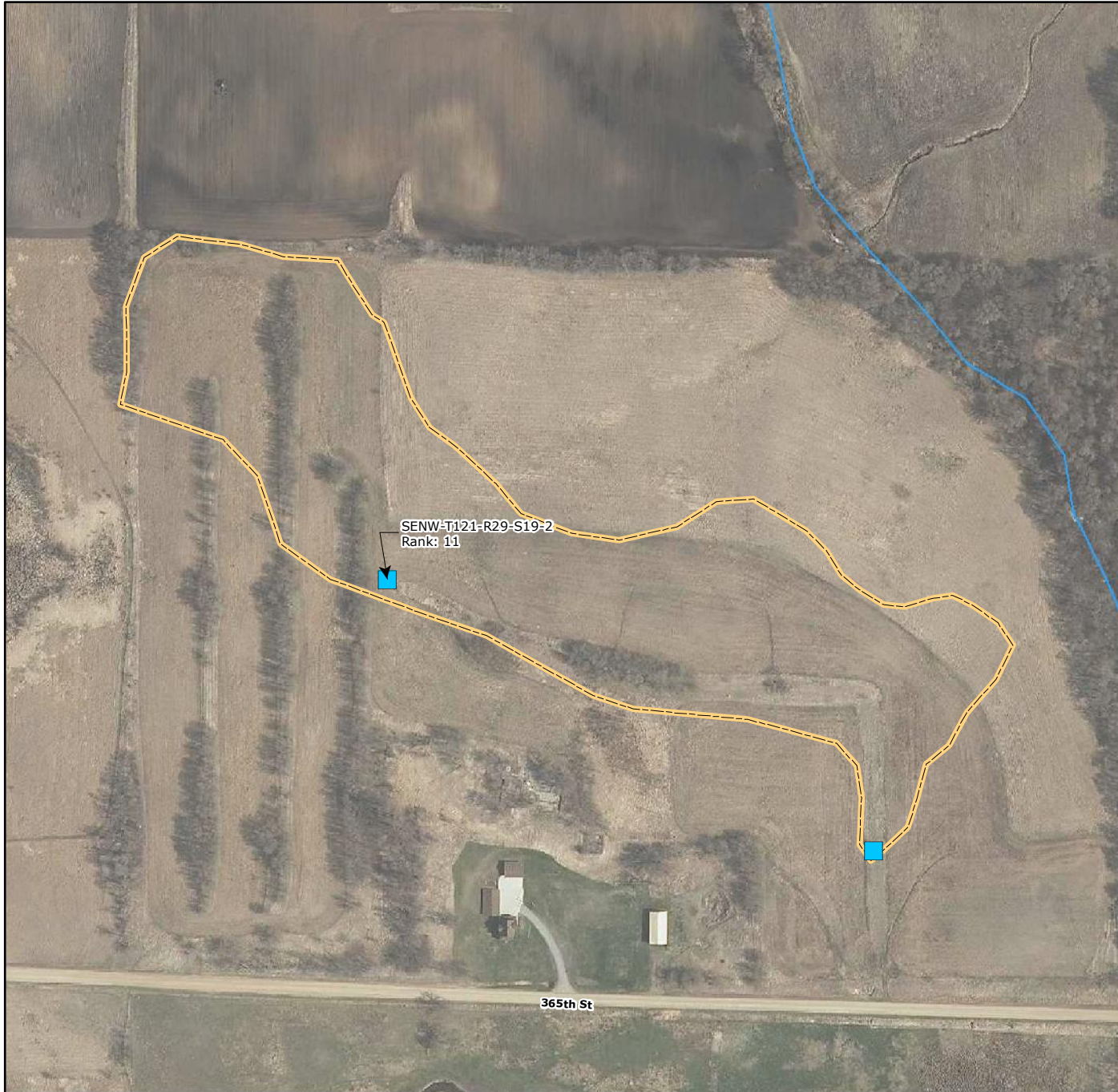


Legend

- Alternative Tile Intake
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- Grassed Waterway
- Stream Buffer
- Two Stage Ditch
- Catchment Area

Generalized BMP:
Drainage Management Practice
SH-T122-R29-S30-1

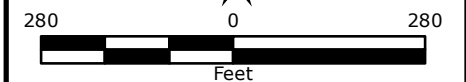
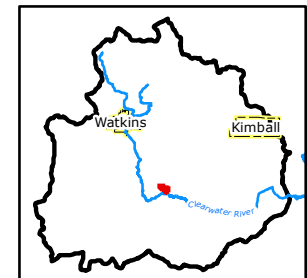




Legend

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**Generalized BMP:
Gully Practice
SENW-T121-R29-S19-2**

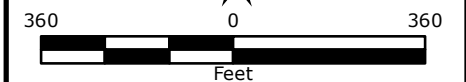
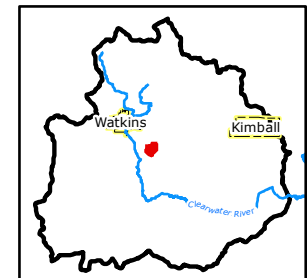


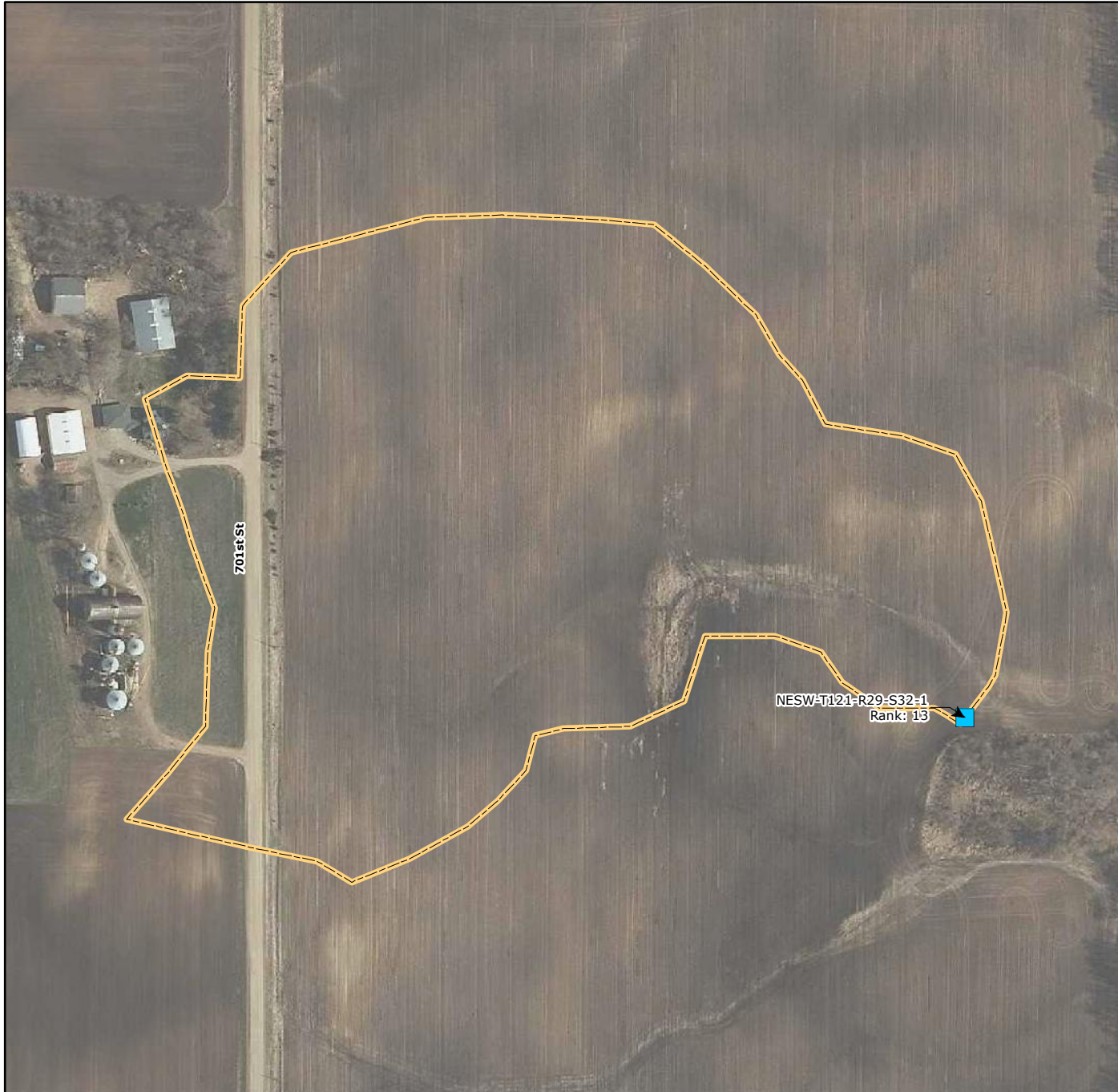


Legend

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Generalized BMP:
Stream Buffer
SE-T121-R30-S12-1

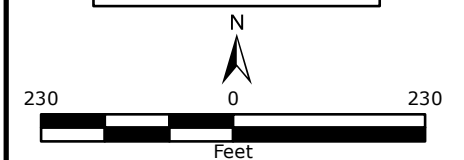
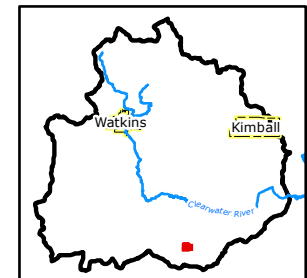




Legend

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**Generalized BMP:
Gully Practice
NESW-T121-R29-S32-1**

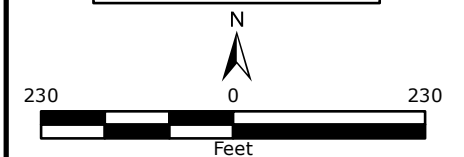
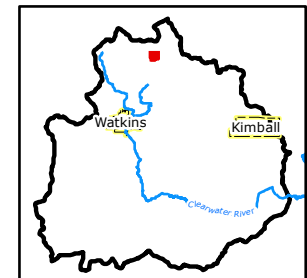


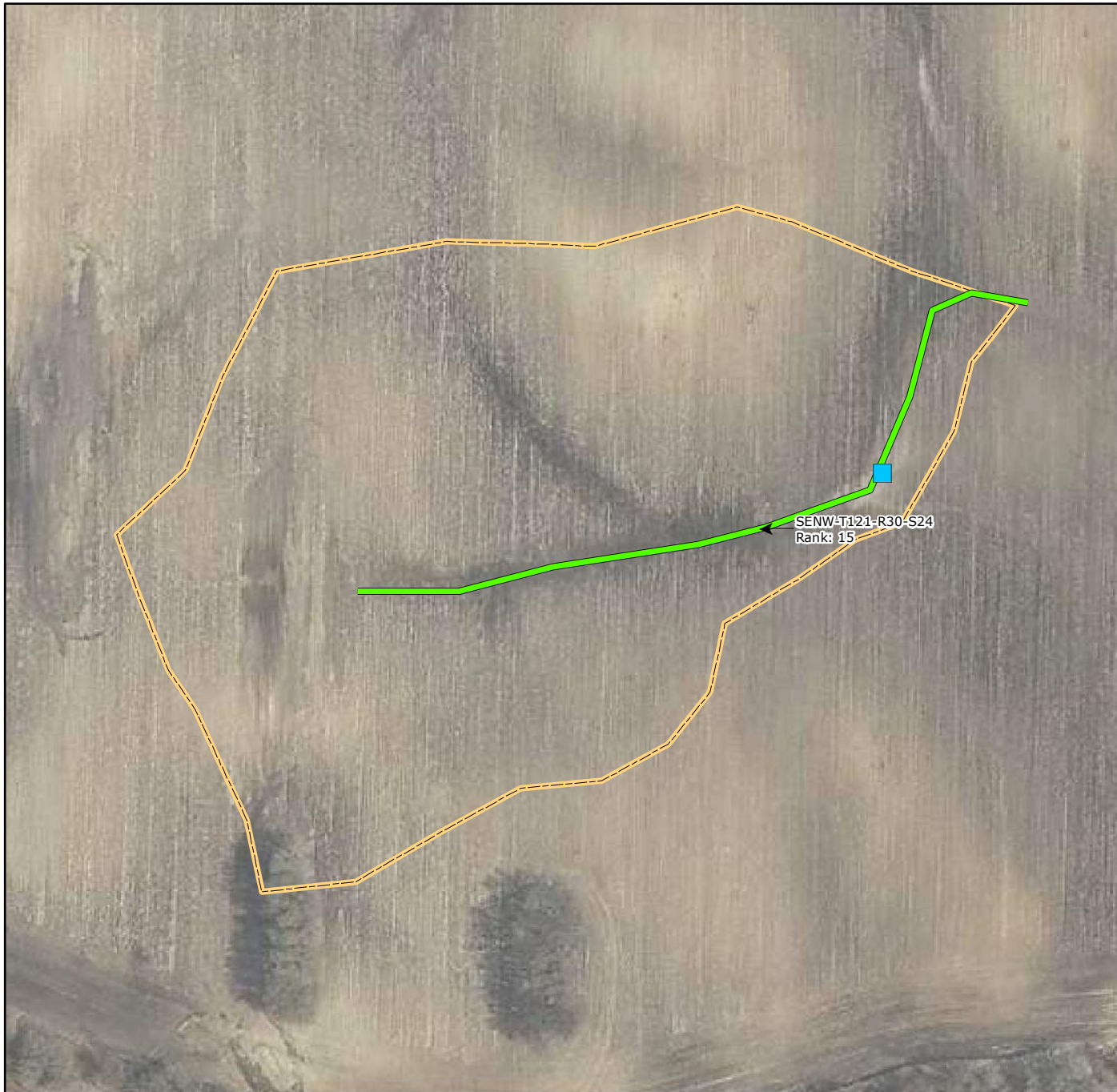


Legend

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- ▲ Ditch Maintenance
- M** Multiple
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Generalized BMP: Drainage Practice & Gully Practice NENE-T122-R30-S25-1

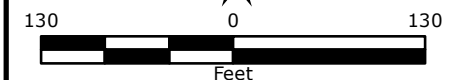
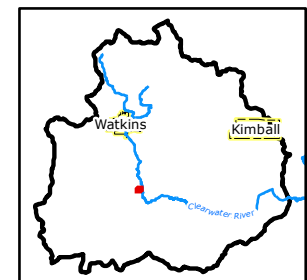


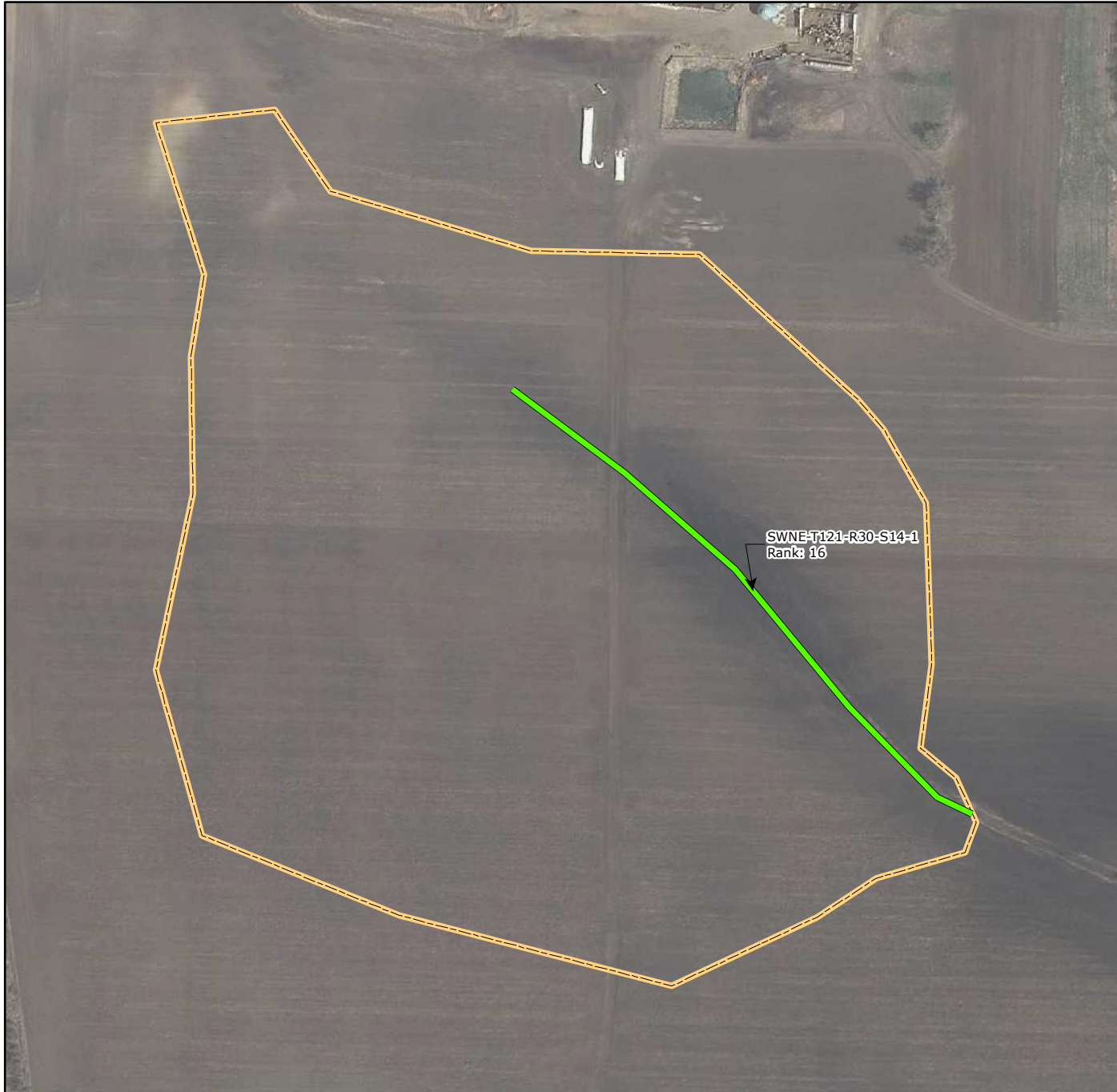


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Gully Practice
SENW-T121-R30-S24-1**

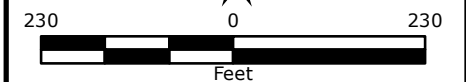
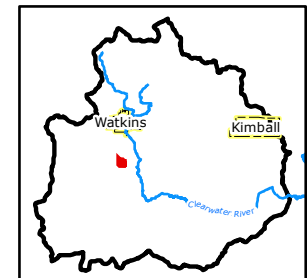


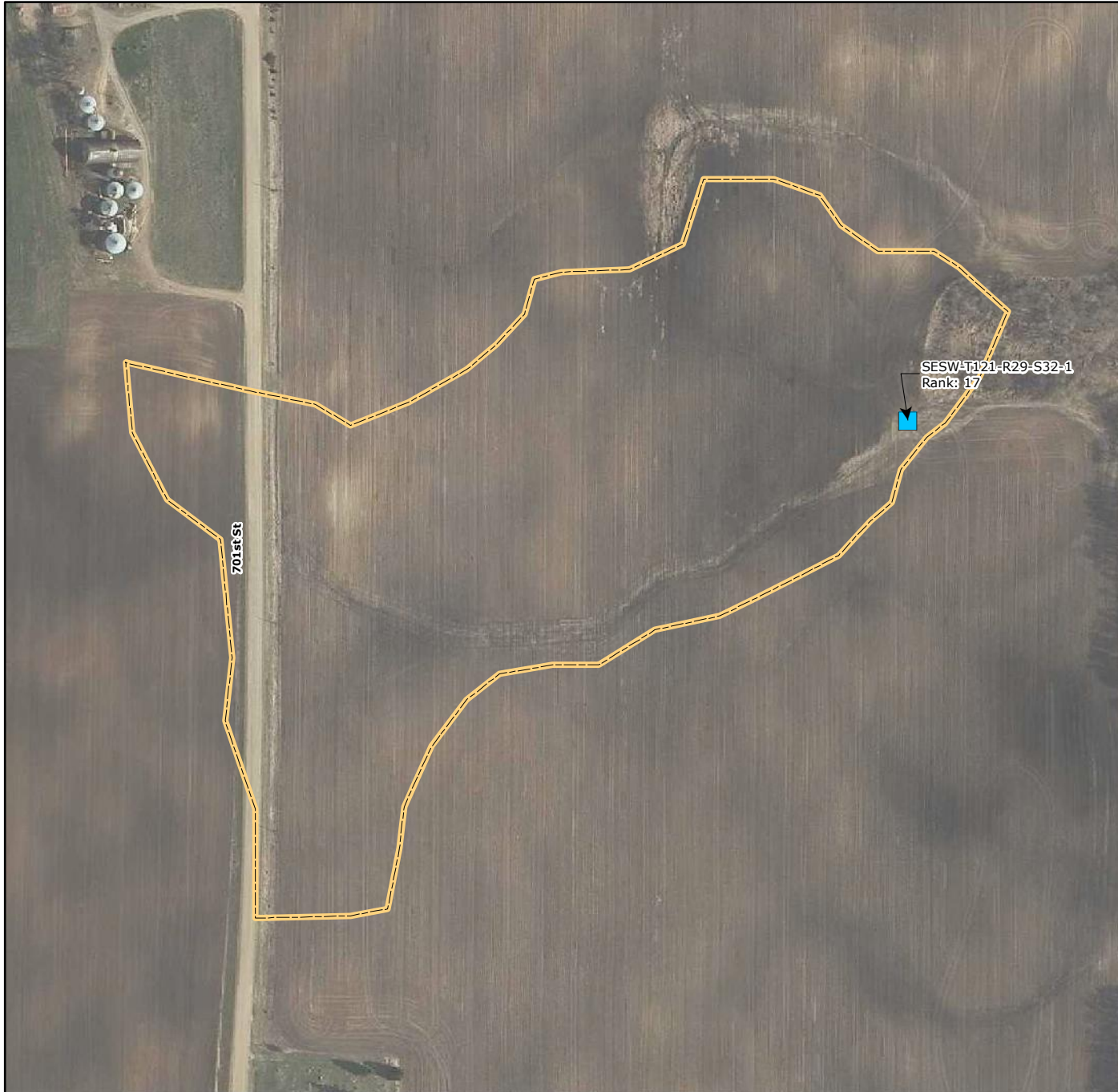


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Gully Practice
SWNE-T121-R30-S14-1**

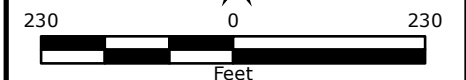
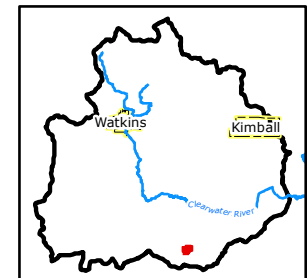


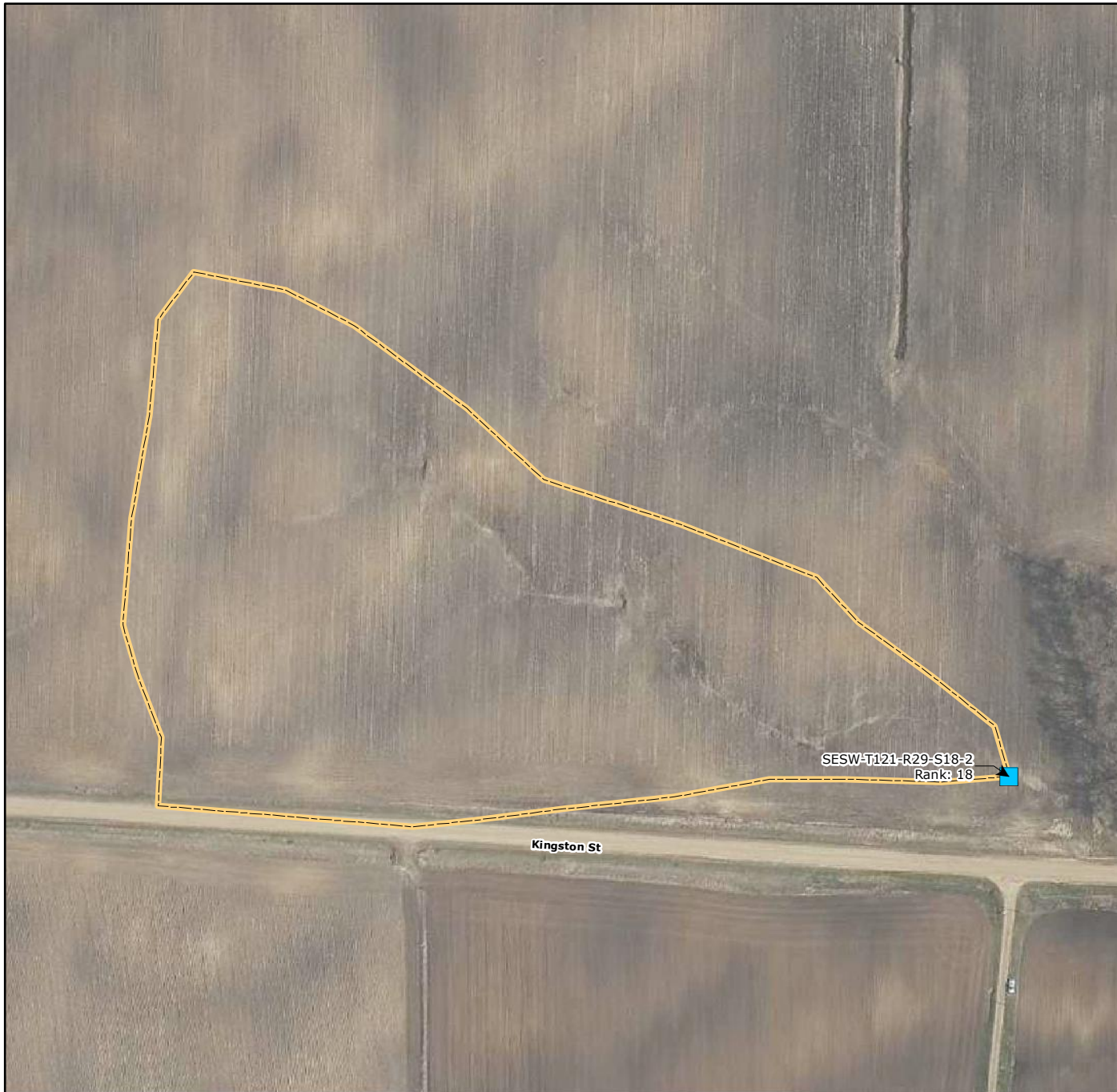


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Gully Practice
SESW-T121-R29-S32-1**

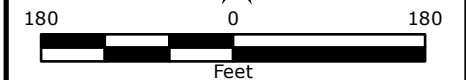
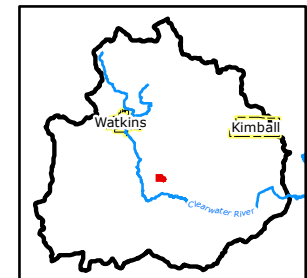


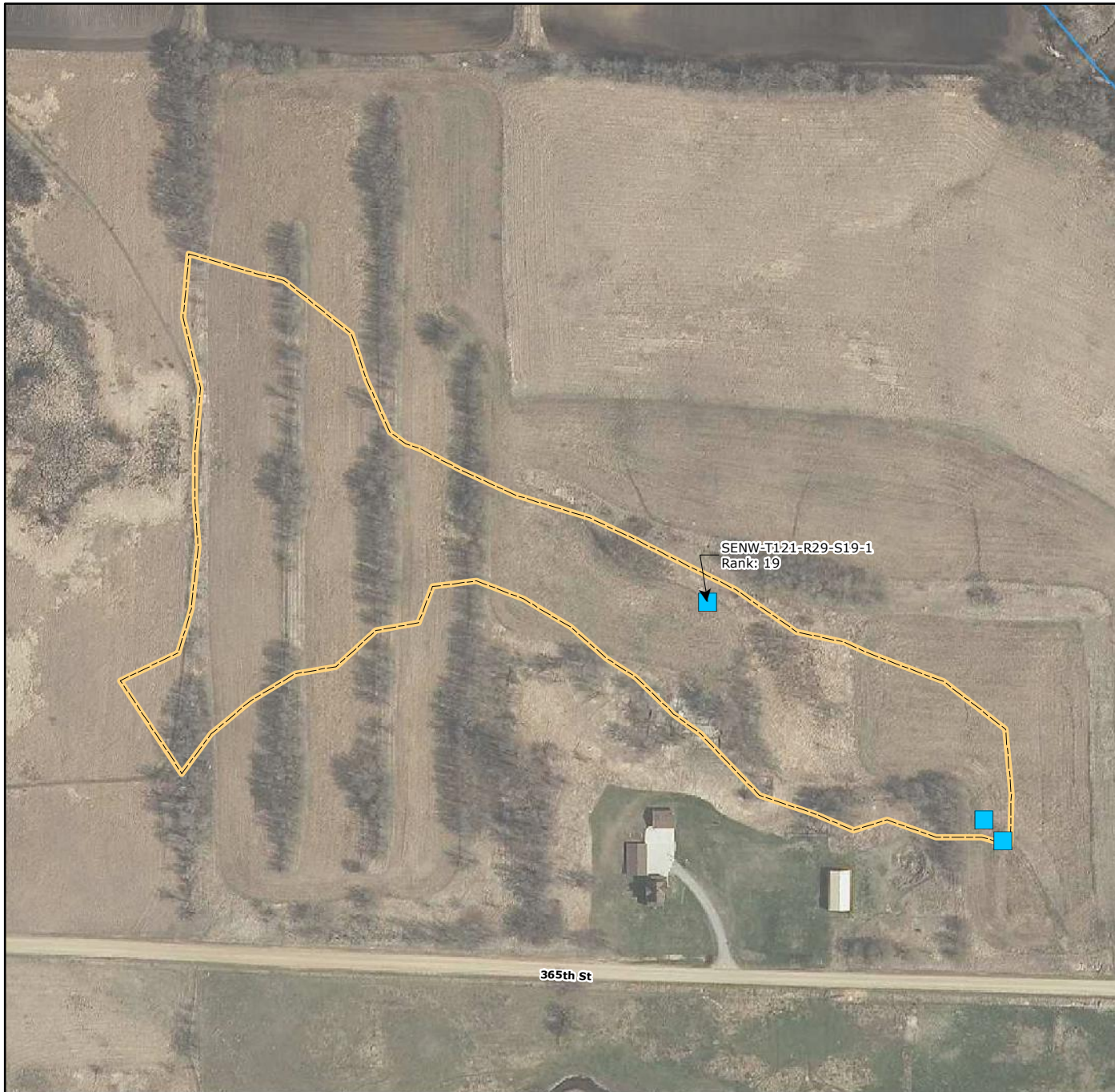


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Gully Practice
SESW-T121-R29-S18-2**

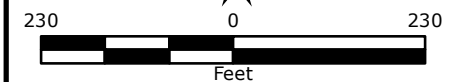
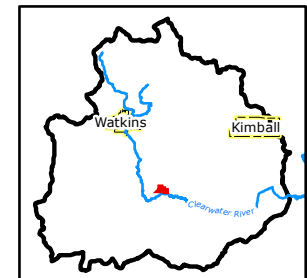




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Gully Practice
SENW-T121-R29-S19-1**

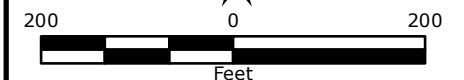
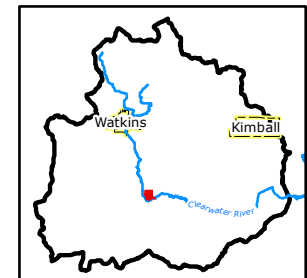


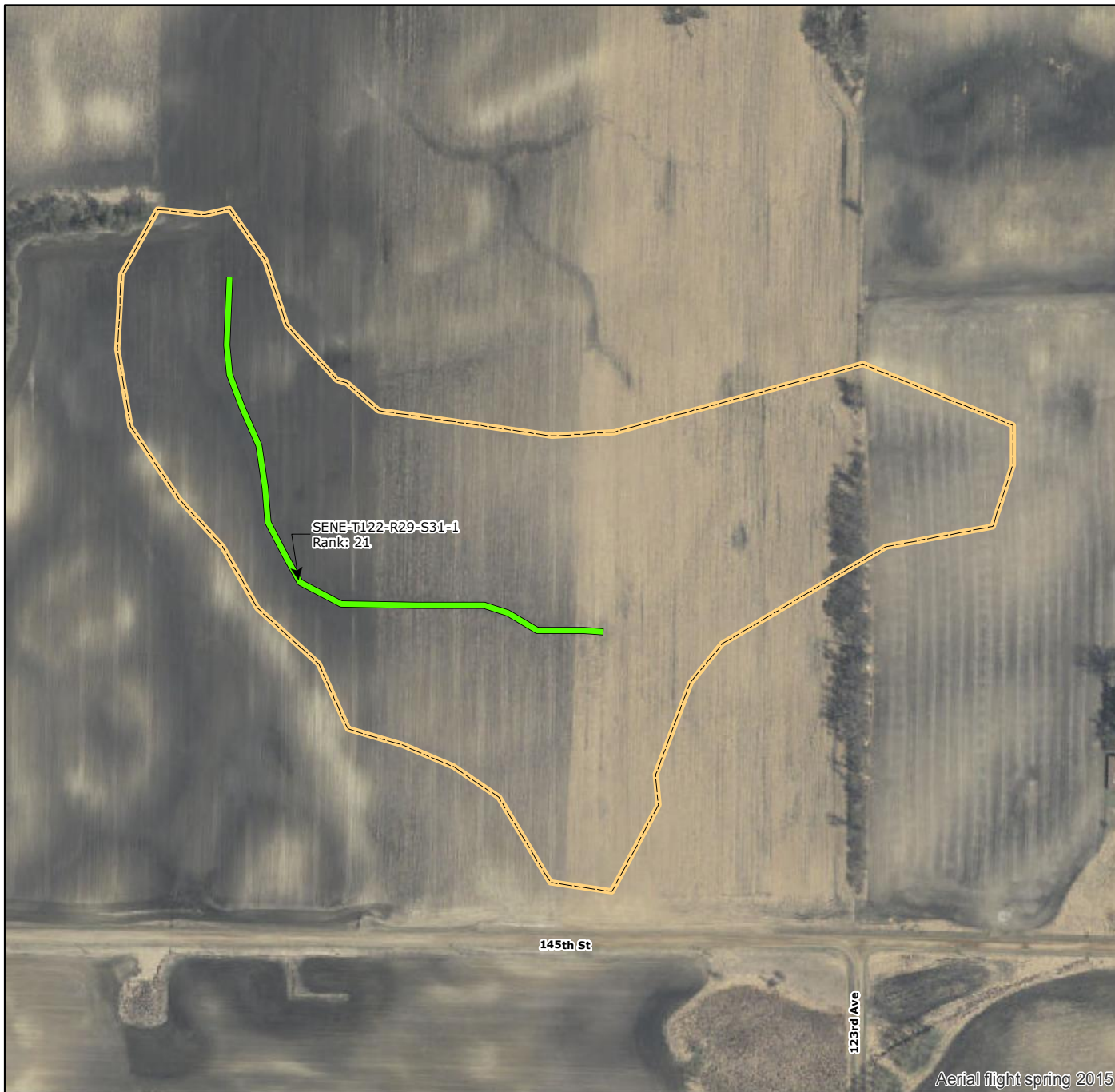


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Contour Practice
SE-T121-R30-S24-1**

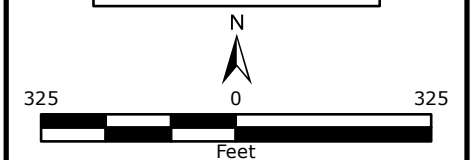
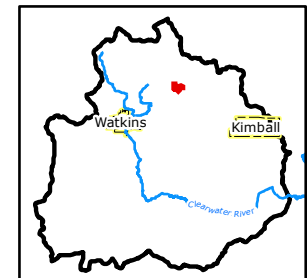




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Gully Practice
SENE-T122-R29-S31-1**

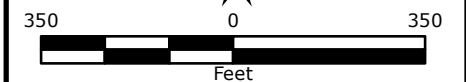
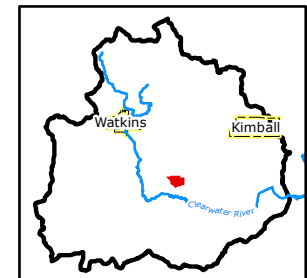




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: Drainage Management Practice NWNW-T121-R29-S20-1

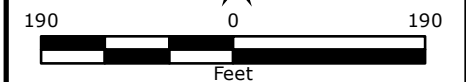
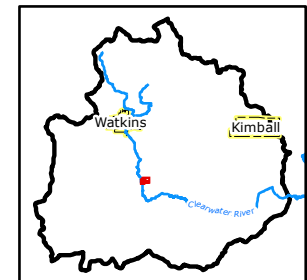




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍃 Stream Buffer
- 🍃 Two Stage Ditch
- 🍃 Catchment Area

**Generalized BMP:
Gully Practice
NWNE-T121-R30-S24-1**

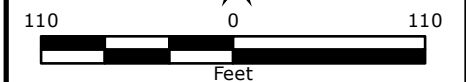
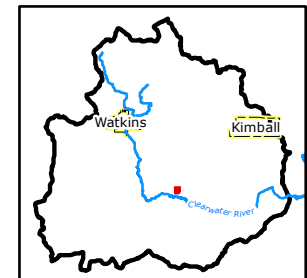




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: Gully Practice SENE-T121-R29-S19

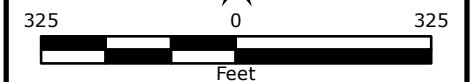
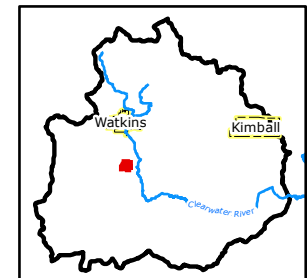




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
In-channel Practice
EH-T121-R30-S14-1**

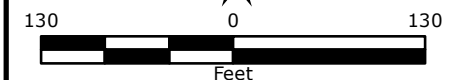
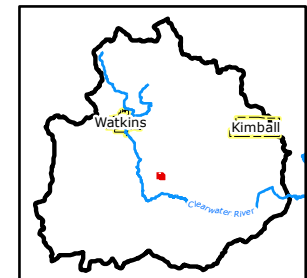




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: Gully Practice SESW-T121-R29-S18-1

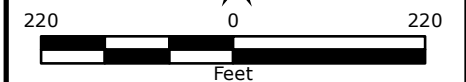
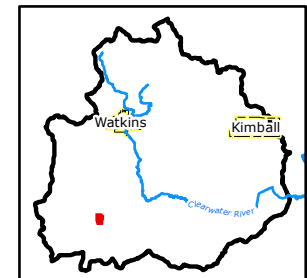




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: In-channel Practice NESE-T121-R30-S27-1

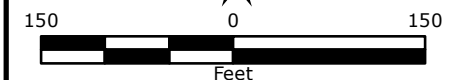
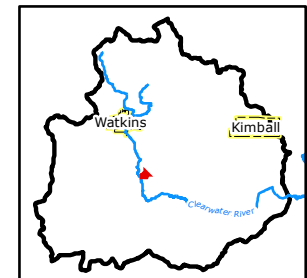




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Gully Practice
SWSE-T121-R30-S13-1**

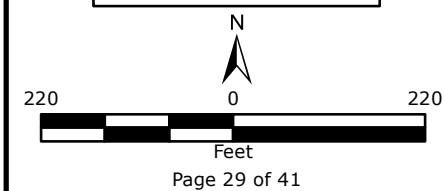
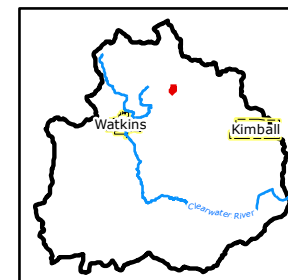


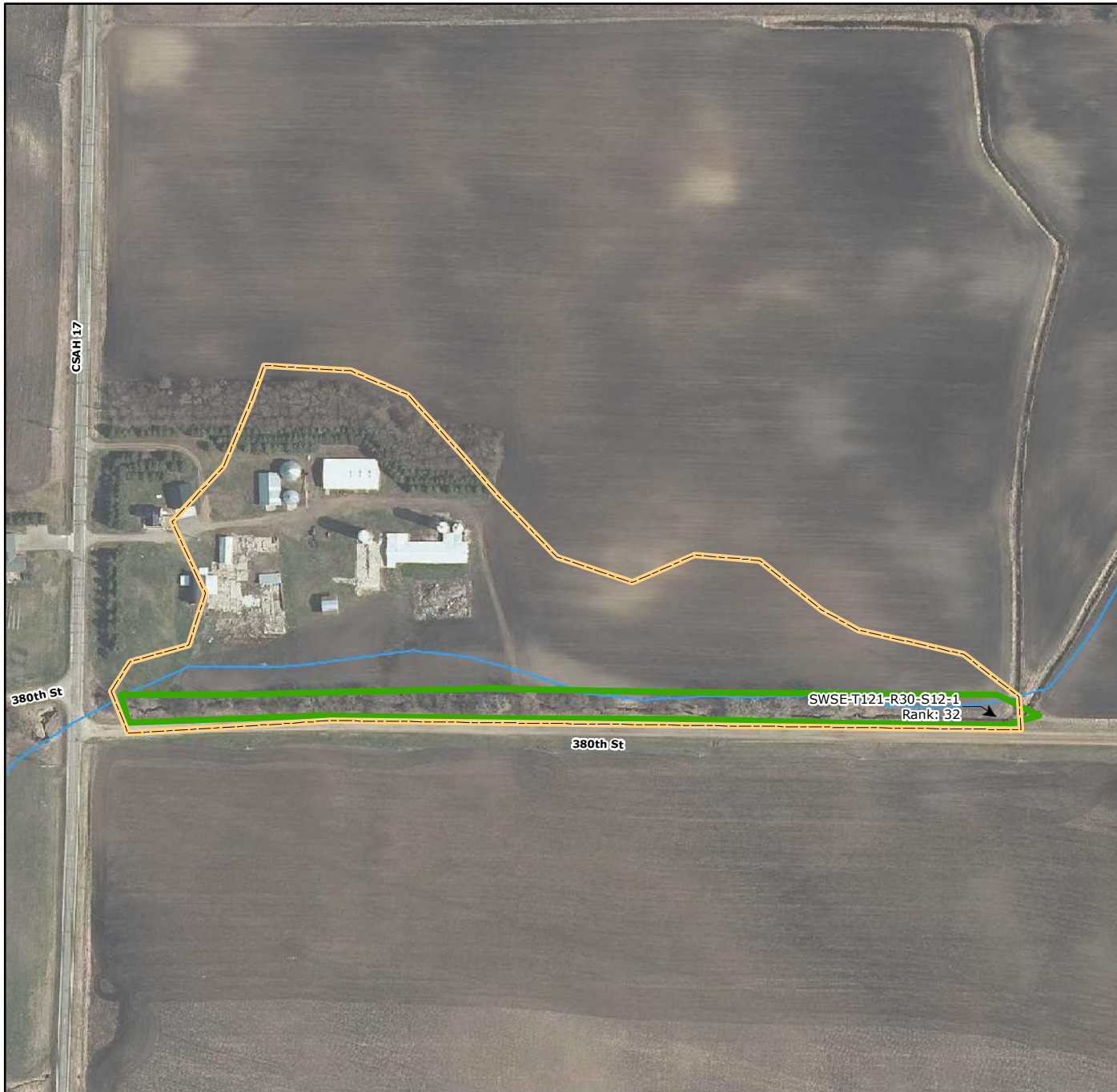


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Gully Practice
SWNE-T122-R29-S31-1**

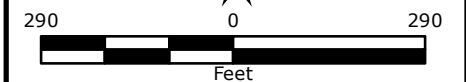
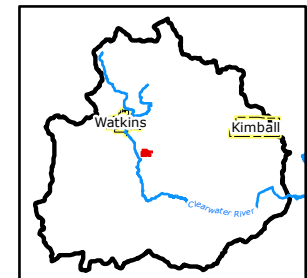




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: In-channel Practice SWSE-T121-R30-S12-1

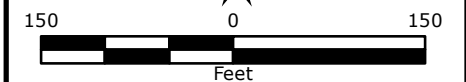
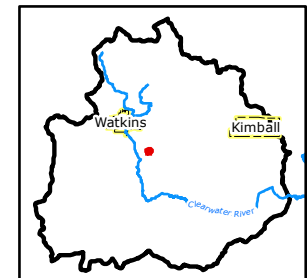




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: Drainage Management Practice SWSE-T121-R30-S12-2

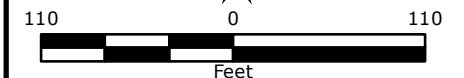
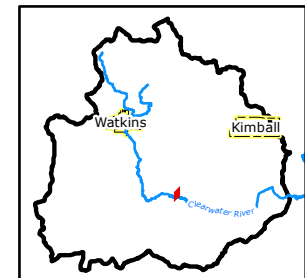


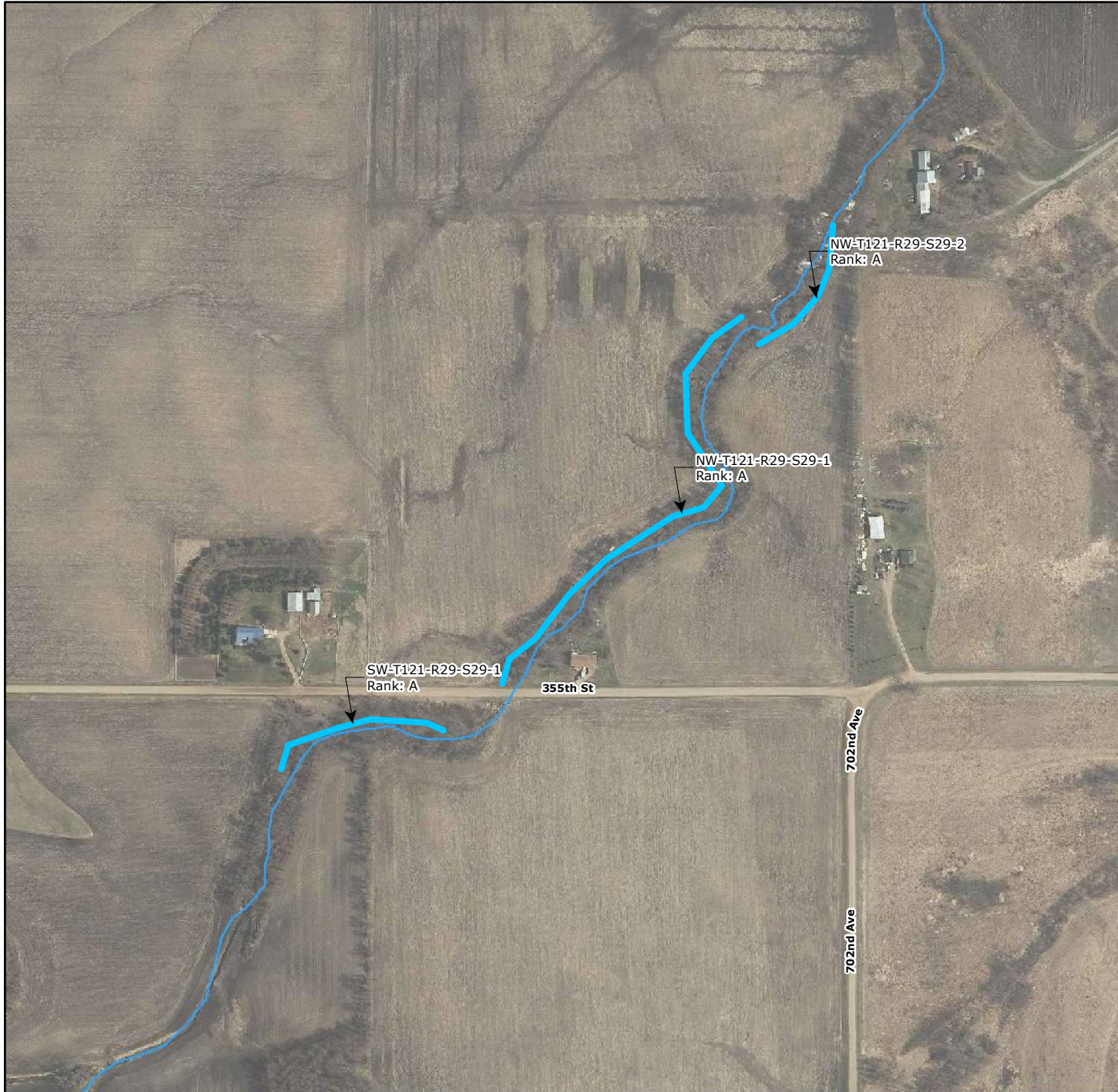


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: Stream Buffer NESE-T121-R29-S19

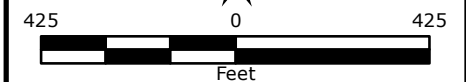
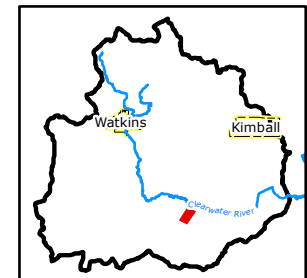


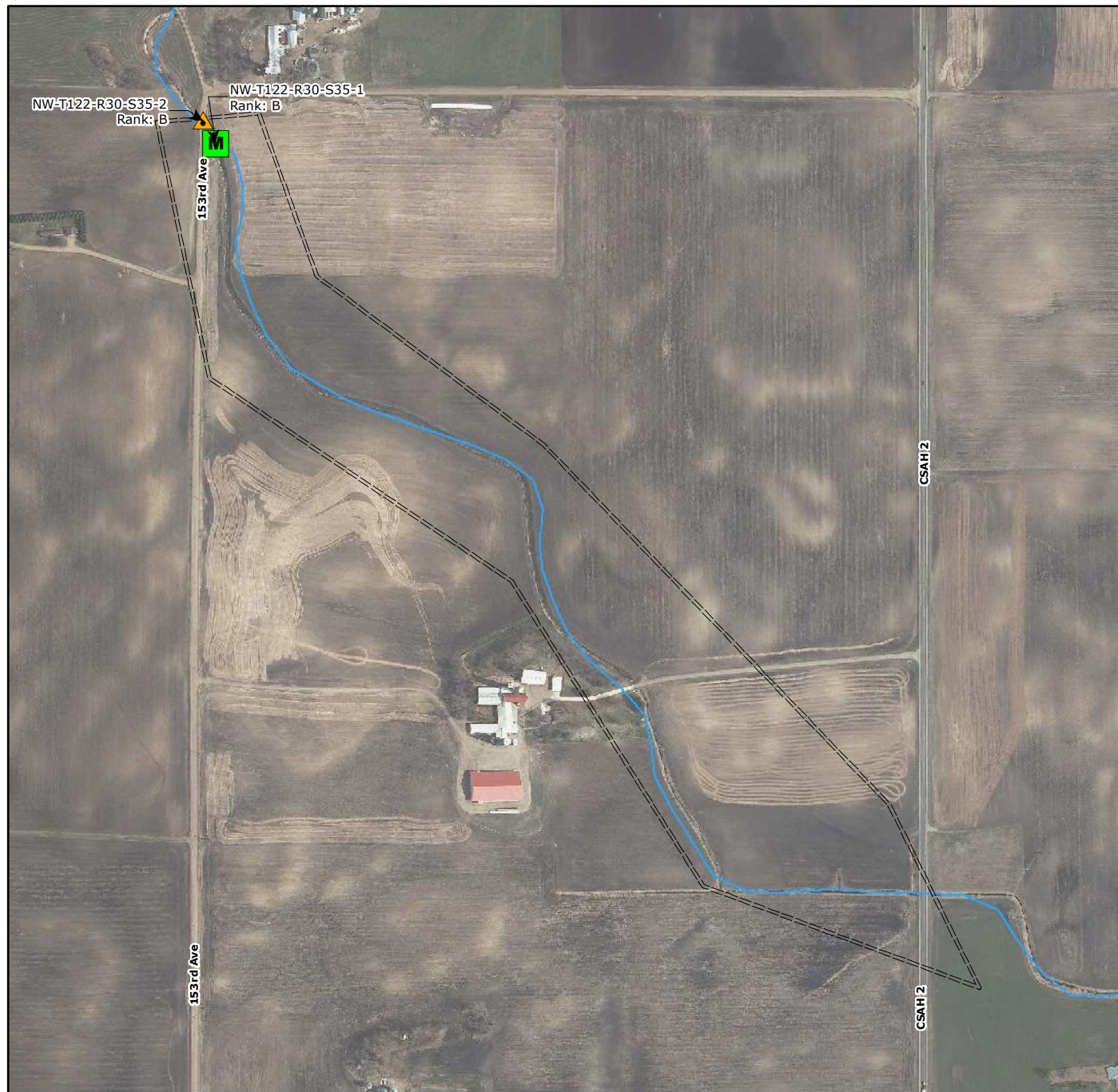


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: Stream Buffer NW-T121-R29-S29-1

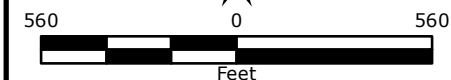
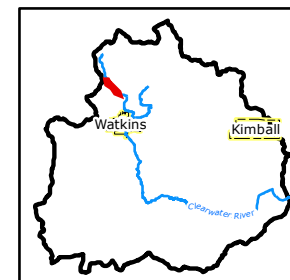




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: In-channel Practice NW-T122-R30-S35-1

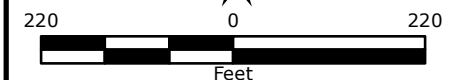
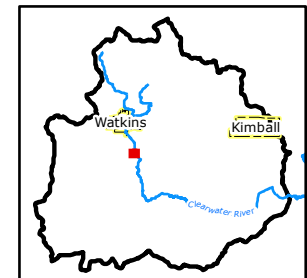


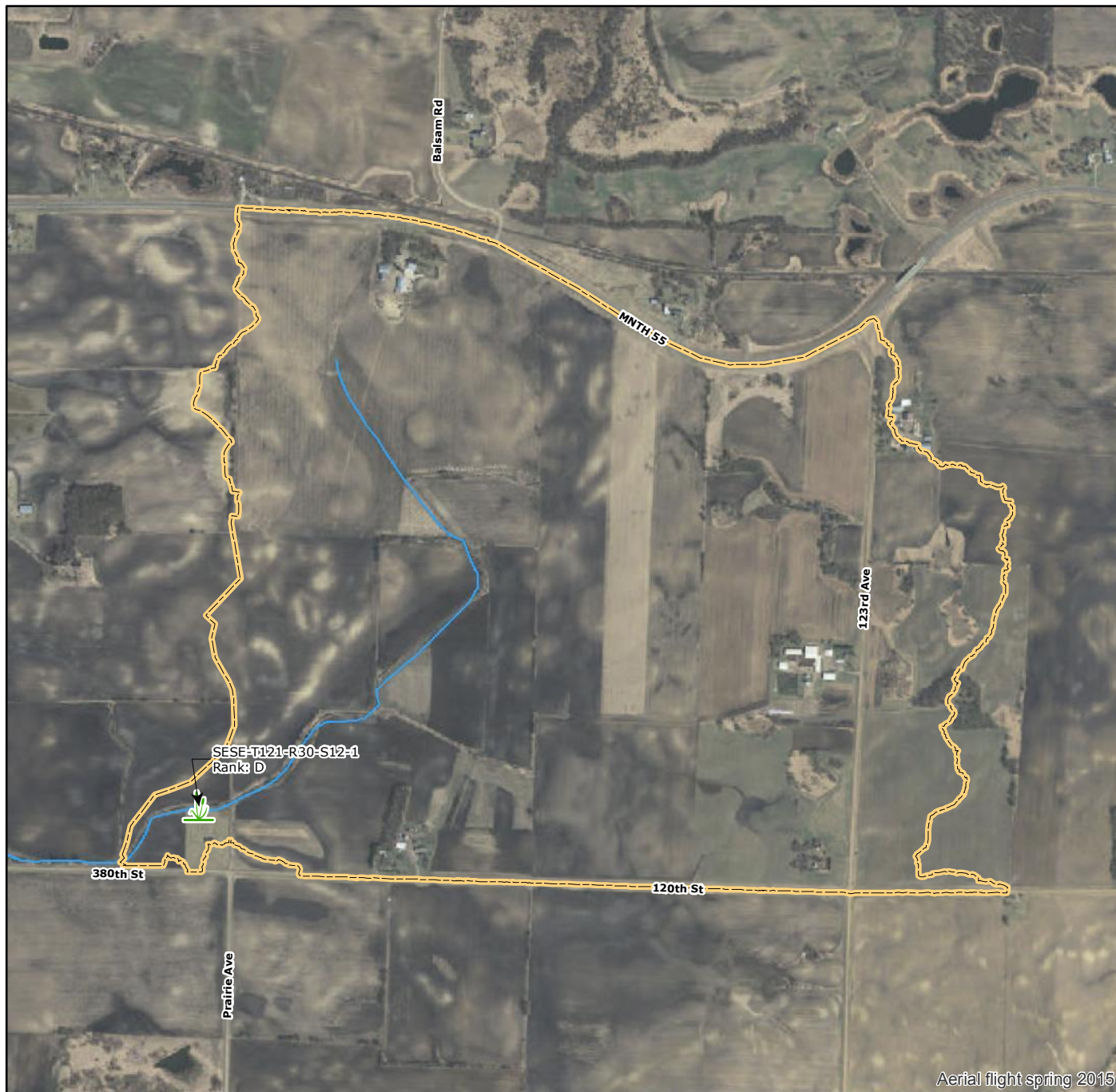


Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: Drainage Management Practice SWSW-T121-R30-S12-1

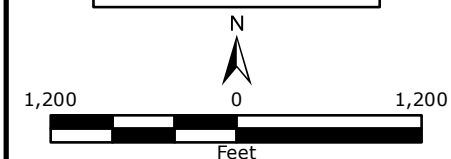
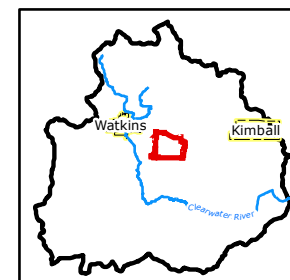




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

**Generalized BMP:
Drainage Management Practice
SESE-T121-R30-S12-1**

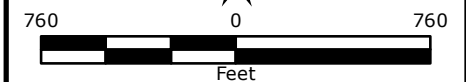
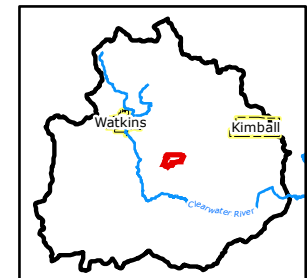




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: Drainage Management Practice NE-T121-R29-S18-1

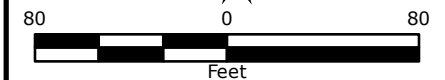
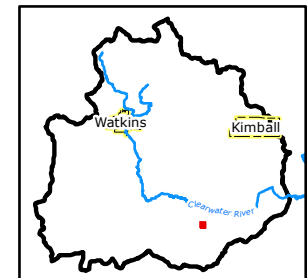




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP: Contour Practice SESE-T121-R29-S29-1

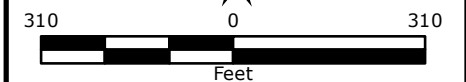
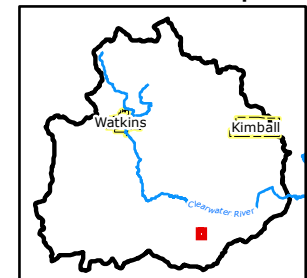




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP:
Stream Buffer
NENE-T121-R29-S32-1
Note: BMP not listed in report table.

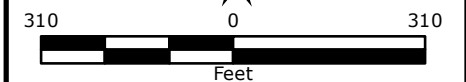
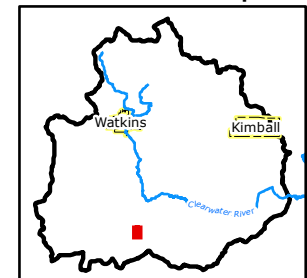




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP:
Stream Buffer
NW-T121-R30-S36-1
Note: BMP not listed in report table.

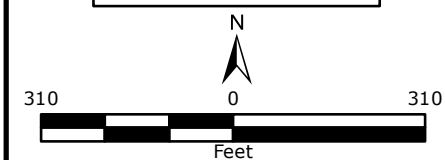
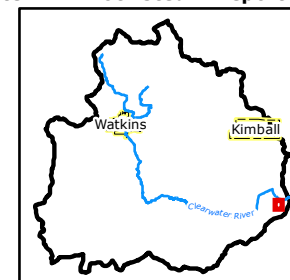




Legend

- ★ Alternative Tile Intake
- ▲ Ditch Maintenance
- M** Multiple
- Sedimentation Basin
- ◆ Side Inlet
- Wascob
- 🌱 Wetland Restoration
- In-Channel Practice
- Contour Buffer
- Grassed Waterway
- 🍷 Stream Buffer
- 🍷 Two Stage Ditch
- 🍷 Catchment Area

Generalized BMP:
Stream Buffer
SESE-T121-R29-S23-1
Note: BMP not listed in report table.





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