Crow Wing River Watershed

Watershed Restoration and Protection Strategy Report

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Minnesota Pollution Control Agency

CLEAN WATER LAND & LEGACY AMENDMENT

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Contributors:

Meghan Jacobson and Pat Conrad (Emmons & Olivier Resources, Inc.)

Bonnie Finnerty (Minnesota Pollution Control Agency)

Darrin Hoverson (Minnesota Department of Natural Resources)

Nate Sitz, Julie Kingsley, and Melissa Koebernick (Hubbard SWCD)

Anne Oldakowski and Darren Newville (Wadena SWCD)

Melissa Barrick (Crow Wing SWCD)

Helen McLennan and Lance Chisholm (Morrison SWCD)

John Ringle and Kelly Condiff (Cass County)

Amy Warnberg and Tim Stieber (Todd County)

Dan Steward and Jeff Hrubes (Board of Water and Soil Resources)

Luke Stuewe (Minnesota Department of Agriculture)

Todd Holman and Kristen Blann (The Nature Conservancy)

Heather Baird (DNR Aquatic Habitat Specialist)

The science and analysis described in this report began before the passage of the 2013 Clean Water Accountability Act. Thus, this report may not address all elements of the Clean Water Accountability Act. When this watershed is revisited (according to the 10-year cycle), the information in this report will be updated according to the required elements of a Watershed Restoration and Protection Strategy (WRAPS) Report. This document is only the WRAPs report. It summarizes and references, but does not contain, the Total Maximum Daily Load documents.

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Key Terms

Assessment Unit Identifier (AUID): The unique water body identifier for each river reach comprised of the USGS eight-digit HUC plus a three-character code unique within each HUC.

Aquatic life impairment: The presence and vitality of aquatic life is indicative of the overall water quality of a stream. A stream is considered impaired for impacts to aquatic life if the fish Index of Biotic Integrity (IBI), macroinvertebrate IBI, dissolved oxygen, turbidity, or certain chemical standards are not met.

Aquatic recreation impairment: Streams are considered impaired for impacts to aquatic recreation if fecal bacteria standards are not met. Lakes are considered impaired for impacts to aquatic recreation if total phosphorus, chlorophyll-a, or Secchi disc depth standards are not met.

Hydrologic Unit Code (HUC): A Hydrologic Unit Code (HUC) is assigned by the USGS for each watershed. HUCs are organized in a nested hierarchy by size. For example, the Minnesota River Basin is assigned a HUC-4 of 0702 and the Pomme de Terre River Watershed is assigned a HUC-8 of 07020002.

Impairment: Water bodies are listed as impaired if water quality standards are not met for designated uses including: aquatic life, aquatic recreation, and aquatic consumption.

Index of Biotic integrity (IBI): A method for describing water quality using characteristics of aquatic communities, such as the types of fish and invertebrates found in the waterbody. It is expressed as a numerical value between 0 (lowest quality) to 100 (highest quality).

Protection: This term is used to characterize actions taken in watersheds of waters not known to be impaired to maintain conditions and beneficial uses of the waterbodies.

Restoration: This term is used to characterize actions taken in watersheds of impaired waters to improve conditions, eventually to meet water quality standards and achieve beneficial uses of the waterbodies.

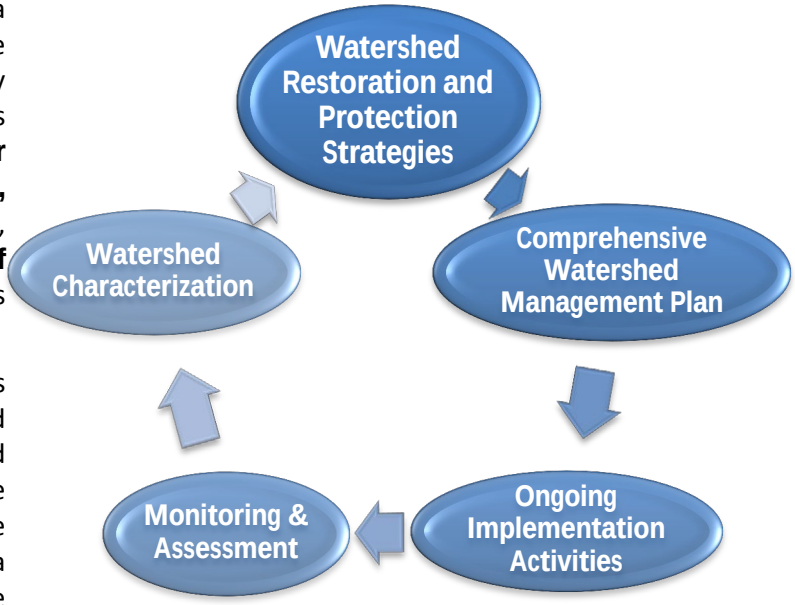
Source (or Pollutant Source): This term is distinguished from 'stressor' to mean only those actions, places or entities that deliver/discharge pollutants (e.g., sediment, phosphorus, nitrogen, pathogens).

Stressor (or Biological Stressor): This is a broad term that includes both pollutant sources and non-pollutant sources or factors (e.g., altered hydrology, dams preventing fish passage) that adversely impact aquatic life.

Total Maximum Daily Load (TMDL): A calculation of the maximum amount of a pollutant that may be introduced into a surface water and still ensure that applicable water quality standards for that water are met. A TMDL is the sum of the wasteload allocation for point sources, a load allocation for nonpoint sources and natural background, an allocation for future growth (i.e., reserve capacity), and a margin of safety as defined in the Code of Federal Regulations.

What is the WRAPS Report?

The State of Minnesota has adopted a "watershed approach" to address the state's 81 "major" watersheds (denoted by 8-digit hydrologic unit code or HUC). This watershed approach incorporates **water quality assessment, watershed analysis, civic engagement, planning, implementation**, and **measurement of results** into a 10-year cycle that addresses both restoration and protection.



As part of the watershed approach, waters not meeting state standards are still listed as impaired and Total Maximum Daily Load (TMDL) studies are performed, as they have been in the past, but in addition the watershed approach process facilitates a more cost-effective and comprehensive characterization of multiple water bodies and overall watershed health. A key aspect of this effort is to develop and utilize watershed-scale models and other tools to help state agencies, local governments and other watershed stakeholders determine how to best proceed with restoring and protecting lakes and streams. **This report summarizes past assessment and diagnostic work and outlines ways to prioritize actions and strategies for continued implementation.**

Purpose	•Support local working groups and jointly develop scientifically-supported restoration and protection strategies to be used for subsequent implementation planning •Summarize Watershed Approach work done to date including the following reports: •*Crow Wing River Watershed Monitoring and Assessment* •*Crow Wing River Watershed Biotic Stressor Identification* •*Crow Wing River Watershed Total Maximum Daily Load* •*Lake Margaret Nutrient Total Maximum Daily Load*
Scope	•Impacts to aquatic recreation and impacts to aquatic life in streams •Impacts to aquatic recreation in lakes
Audience	•Local working groups (local governments, SWCDs, watershed management groups, etc.) •State agencies (MPCA, DNR, BWSR, etc.)

Users' Guide

This WRAPS report summarizes past monitoring, water quality assessments, and other water quality studies that have been conducted in the Crow Wing River Watershed. In addition, it outlines ways for local groups to prioritize projects that can be implemented in the watershed to improve water quality. The WRAPS report contains a large amount of information. The purpose of the following table is to provide a Quick Reference guide for users to quickly identify what information can be found in each section of the report.

Table 1. WRAPS Report Quick Reference Guide

Section	Title	Description	Pages
Summaries of Past Monitoring and Water Quality Studies			
2.1	Water Quality Assessment	A summary of how fishable, swimmable and usable the lakes and streams are in the watershed.	6
2.2	Water Quality Trends	A summary of lakes and streams with improving or declining water quality based on at least 10 years of monitoring data.	8
2.3.1	Stressors of Biological Impairments	A summary of factors that cause fish and invertebrate communities in streams to become unhealthy (also known as stressors).	12
2.3.2	Pollutant sources	A summary of sources of pollutants (such as phosphorus, bacteria or sediment) to lakes and streams, including point sources (such as sewage treatment plants) or non-point sources (such as runoff from the land).	14
2.4	TMDL Summary	A summary of Total Maximum Daily Load (TMDL) studies in the watershed. A TMDL is a calculation of how much pollutant a lake or stream can receive before it becomes unfishable, unswimmable, or unusable.	17
Ways to Prioritize Projects to Protect or Restore Water Quality			
2.5	Protection Considerations	A summary of common water quality issues in the watershed.	18
3.1	Civic Engagement	A summary of input meetings with local partners in the watershed on the development of the WRAPS report.	24

Section	Title	Description	Pages
3.2	Targeting of Geographic Areas	A summary of the results from different tools that were used to identify, locate and prioritize restoration and protection projects in the watershed.	26
3.3	Restoration & Protection Strategies	Tables identifying projects in the watershed that restore or protect water quality. These projects are divided into individual tables for each 11 smaller watersheds.	31
4	Monitoring Plan	A plan for ongoing water quality monitoring to fill data gaps, determine changing conditions, and gauge implementation effectiveness	80
Supporting Information			
5	References	A bibliography of reports reference in the WRAPS document.	81
Appendix A	MPCA Water Quality Assessment Results	Detailed results from the 2012 MPCA monitoring and assessment indicating which streams and lakes are supporting or not supporting of water quality standards. This section includes a map of the HUC 11-scale watersheds that were used in the MPCA Monitoring and Assessment Report.	82
Appendix B	Stream and Lake TMDL Summaries	TMDL allocation tables for each impaired lake or stream with a completed TMDL study. These tables quantify the maximum amount of pollutant from point sources (wasteload allocation) and nonpoint sources (load allocation) that can be received by the lake or stream and still meet water quality standards.	91
Appendix C	Watershed Ranking Tool	A watershed ranking spreadsheet tool developed by DNR Fisheries that summarizes and ranks each HUC 12 watershed by the following characteristics: DNR Fisheries Area, DNR surveyed lakes, perennial streams and rivers, high value sensitive water resources, DNR land resources, areas of biodiversity and significance, and other changes, pressures, and risks to water quality.	104

Section	Title	Description	Pages
Appendix D	Lake Ranking & Management Tool	A lake management ranking spreadsheet tool developed by Emmons & Olivier Resources that prioritizes lakes by physical characteristics; water quality data and trends; watershed loading; ability to support cisco, trout or wild rice; and socio-economic factors. In addition, the tool defines a phosphorus load management focus based on a summary of the lake characteristics.	115
Appendix E	HSPF Watershed Pollutant Yields	Maps of the HSPF modeled annual average precipitation, runoff volume, and TSS, TP, and TN pollutant yields by HUC 12 watershed.	124
Appendix F	Index of Streams	A lookup table to identify which HUC 12 each stream is located in and therefore which table in Section 3.3, organized first by stream name, and again by stream ID.	129
Appendix G	Index of Lakes	A lookup table to identify which HUC 12 each lake is located in and therefore which table in Section 3.3, organized first by lake name, and again by lake ID.	144

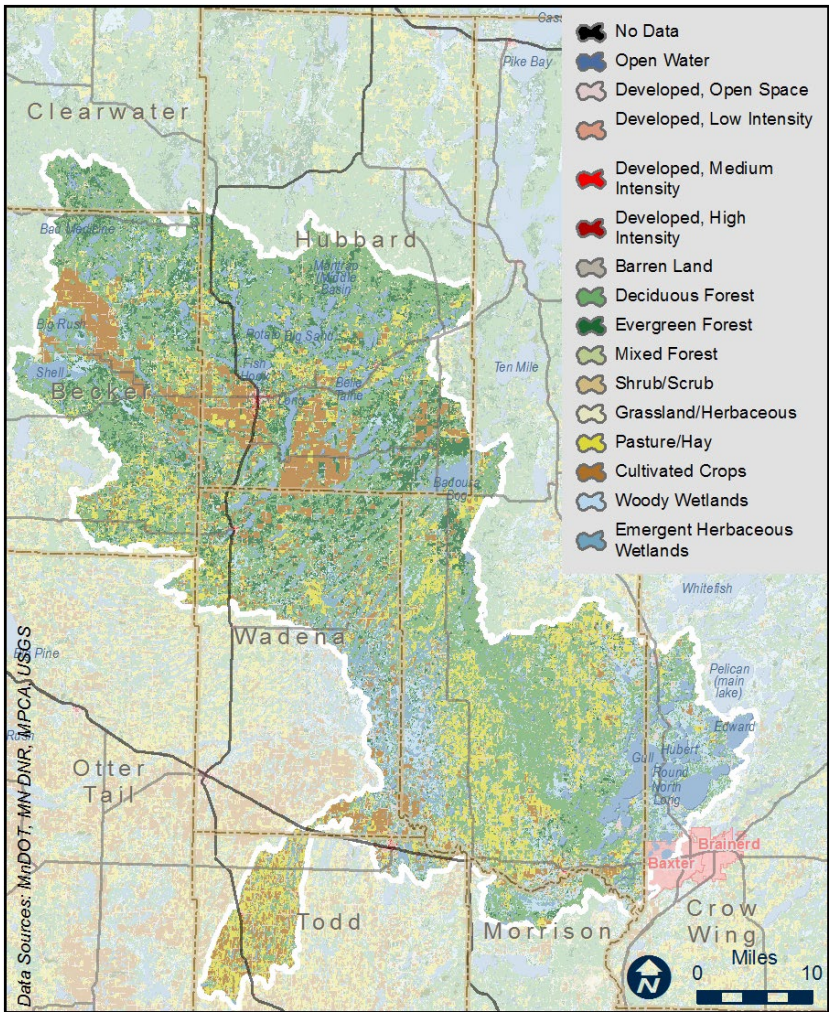
1. Introduction

The Crow Wing River Watershed (CWRW) is located in north-central Minnesota and covers approximately 1,946 square miles within Becker, Cass, Clearwater, Crow Wing, Hubbard, Morrison, Otter Tail, Todd, and Wadena Counties.

The watershed is located in the Upper Mississippi River Basin and is comprised of two ecoregions: the Northern Lakes and Forests, and North Central Hardwood Forests.

Land use within the watershed is primarily forested/shrub lands, followed by agricultural lands, wetlands, open water, and developed lands.

Municipalities located within the Crow Wing River Watershed include Akeley, Menahga, Nevis, Nisswa, Osage, Park Rapids, Pequot Lakes, Ponsford, and Staples.



There are a large number of pristine, high-value recreational lakes in the Crow Wing River Watershed and several cold water streams that support trout are located in the watershed.

Additional Crow Wing River Watershed Resources

USDA Natural Resources Conservation Service (NRCS) Rapid Watershed Assessment for the Crow Wing River Watershed: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_022928.pdf

Minnesota Department of Natural Resources (DNR) Watershed Assessment Mapbook for the Crow Wing River Watershed: http://files.dnr.state.mn.us/natural_resources/water/watersheds/tool/watersheds/wsmb12.pdf

2. Watershed Conditions

The Crow Wing River Watershed consists of a lake dominated headwaters region that is primarily forested with a band of intense agricultural use passing through a forested, rangeland and wetland dominated central region, and a lakes dominated forested region near the outlet of the watershed.

2.1. Water Quality Assessment

The MPCA assesses the water quality of lakes and streams based on how well they support aquatic recreation activities (such as fishing, swimming, and wading), or healthy fish and macroinvertebrate communities (i.e., aquatic life). Lakes are assessed as not supporting (i.e., impaired) of swimming and fishing when nutrients are too high, which cause nuisance algal blooms and low water clarity. Streams are assessed as not supporting of swimming and fishing when bacteria (or *E. coli*) levels are too high, which can make humans sick from direct contact. Streams are assessed as not supporting of healthy fish and macroinvertebrate communities when a fish or macroinvertebrate index of biological integrity (IBI) score is too low, a direct measure of the health of a community, or stream conditions are unfavorable for fish or macroinvertebrates, such as high turbidity and low dissolved oxygen levels. Sufficient data was available to assess 111 lakes and 47 stream segments for water quality impairments within the Crow Wing River Watershed.

Table 2 and Figure 1 summarizes the impairments in the Crow Wing River Watershed. Impaired waters will be targets for restoration efforts, while waters currently supporting aquatic life and recreation will be targets of protection efforts. Water quality conditions in the Crow Wing River Watershed are generally good. There are a relatively low number of impairments in the Crow Wing River Watershed. The impaired lakes are generally small to moderate sized lakes with large catchment areas. Some of the waterbodies in the Crow Wing River Watershed are impaired by mercury; however, this report does not cover toxic pollutants. For more information on mercury impairments see the statewide mercury TMDL at:

http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/tmdl-projects/special-projects/statewide-mercury-tmdl-pollutant-reduction-plan.html.

See **Appendix A** for detailed stream and lake assessment results from the Crow Wing River Watershed Monitoring and Assessment Report.

Table 2. Stream and Lake Water Quality Assessment Status by Impairment

	Aquatic Life				Aquatic Recreation	
	Fish IBI	Invert IBI	DO	Turbidity	*E. coli*	Nutrients
Assessment Status	Stream Reaches					Lakes
Fully supporting	39	36	4	26	12	103
Insufficient data	2	0	36	17	3	32
Not supporting	2	3	4	0	10	8
Not assessed	4	8	3	4	22	9

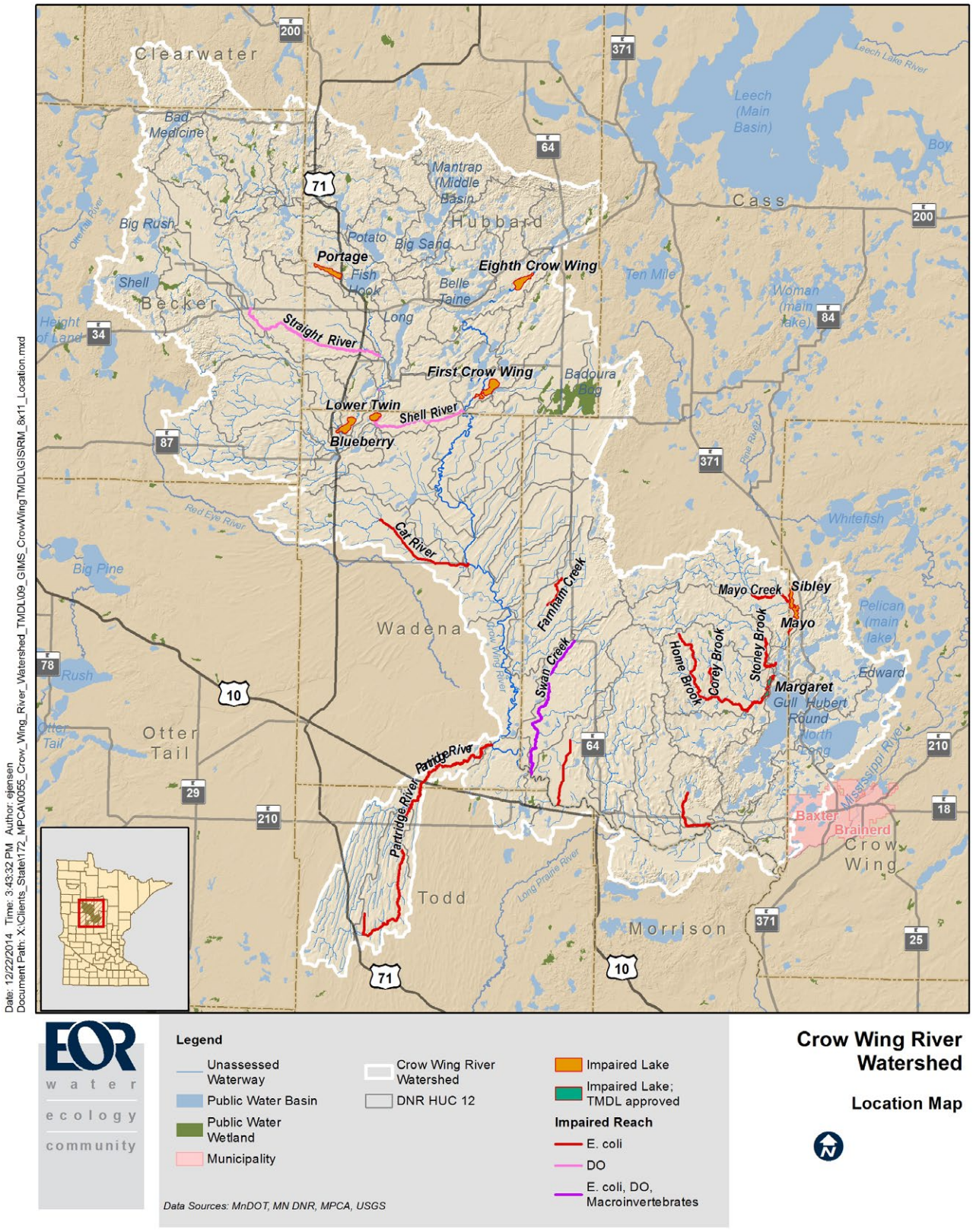


Figure 1. Water quality impairments in the Crow Wing River Watershed

2.2. Water Quality Trends

The following section summarizes whether lake and stream water quality is improving or declining over the last 10+ years. Changes in water quality can be the first indicator of pollutant problems in the watershed or problems with the lake or stream plants or fish. Of the lakes with sufficient data to detect a long-term water quality trend, 17 lakes have improving water quality and 14 lakes have declining water quality. The only stream with sufficient data to detect a long-term water quality trend was the Crow Wing River, which has increasing levels of nitrogen and phosphorus at Nimrod (i.e., declining water quality) but slightly decreasing levels of phosphorus at the Sylvan Dam (i.e. improving water quality).

2.2.1. Lake Trends

Cass County Environmental Services, Crow Wing County, Hubbard County Soil and Water Conservation District, and the Minnesota Board of Soil and Water Resources have collaborated with RMB Environmental Laboratories to complete Large Lake Assessments for Cass, Crow Wing, and Hubbard counties. As part of these assessments, long-term water quality trend analyses were performed for total phosphorus, chlorophyll-a and Secchi transparency depth data. The complete Large Lakes Assessment reports are available online from the following websites:

Cass: http://www.co.cass.mn.us/esd/pdfs/lakedata/2012_large_lake_reports/CassCounty-summary.pdf
Crow Wing: http://www.crowwing.us/DocumentCenter/View/4724
Hubbard: http://www.hubbardcolamn.org/uploads/3/2/6/5/3265696/hubbard_county_summary.pdf

Lake data were analyzed using the Mann Kendall Trend Analysis. For detecting trends, a **minimum of 8-10 years of data with 4 or more readings per season** are needed. Minimum confidence accepted by the MPCA is 90%, meaning that there is at least a 90% chance that the data are showing a true trend and at most a 10% chance that the trend is a random result of the data. For lakes not included in a Large Lakes Assessment but with sufficient water quality data, a seasonal Kendall test for trend using R Statistical Software was conducted by Emmons & Olivier Resources to identify statistically significant trends in lake water quality. The trend analysis results for these lakes are summarized in Table 3. **Lakes without 8-10 years of data were not included below**.

Table 3. Water quality trends of lakes in Hubbard County, green values indicate an improving trend in water quality for that parameter while red values indicate a degrading trend in water quality for that parameter.

Source	County	Lake	Parameter	Date Range	Trend	Confidence
RMB	Hubbard	Little Sand 29015000	Transparency	1987-2011	Improving	99.9%
			Total Phosphorus	1997-2011	Improving	99%
			Chlorophyll-a	1997-2011	No Trend	
RMB	Hubbard	Big Sand 29018500	Transparency	1994-2011	Improving	99%
			Total Phosphorus	1998-2011	Improving	95%
			Chlorophyll-a	1998-2011	No Trend	
RMB	Hubbard	Emma 29018600	Transparency	Insufficient Data		
			Total Phosphorus	1999-2011	Improving	90%
			Chlorophyll-a	1999-2011	No Trend	

Source	County	Lake	Parameter	Date Range	Trend	Confidence
RMB	Hubbard	Eagle 29025600	Transparency	1997-2011	Improving	95%
			Total Phosphorus	1997-2011	No Trend	
			Chlorophyll-a	1997-2011	No Trend	
RMB	Hubbard	Hinds 29024900	Transparency	1994-2003, 2006-2011	Improving	95%
			Total Phosphorus	1997-2000, 2002-'04,2006-'11	No Trend	
			Chlorophyll-a	1997-2000, 2002-'04,2006-'11	No Trend	
RMB	Hubbard	Potato 29024300	Transparency	1990-2011	Improving	95%
			Total Phosphorus	1997-2011	No Trend	
			Chlorophyll-a	1997-2011	No Trend	
RMB	Hubbard	Stocking 29017200	Transparency	1995-2011	Improving	99%
			Total Phosphorus	1997-2011	No Trend	
			Chlorophyll-a	1997-2011	No Trend	
RMB	Hubbard	1st Crow Wing 29008600	Transparency	1997-2011	Declining	90%
			Total Phosphorus	1997-1999, 2001-2011	No Trend	
			Chlorophyll-a	1997-1999, 2001-2011	No Trend	
RMB	Hubbard	9th Crow Wing 29002500	Transparency	1999-2001, 2004-2011	Declining	95%
			Total Phosphorus	Insufficient Data		
			Chlorophyll-a	Insufficient Data		
RMB	Hubbard	Gilmore 29018800	Transparency	1991-2011	Declining	90%
			Total Phosphorus	1997-2011	No Trend	
			Chlorophyll-a	1997-2011	No Trend	
RMB	Hubbard	Long 29016100	Transparency	1990-2011	Declining	95%
			Total Phosphorus	1997-2011	No Trend	
			Chlorophyll-a	1997-2011	No Trend	
RMB	Hubbard	Lower Bottle 29018000	Transparency	2000-2011	Declining	90%
			Total Phosphorus	2000-2011	No Trend	
			Chlorophyll-a	2000-2011	Declining	90%
RMB	Hubbard	Palmer 29008700	Transparency	1997-2011	Declining	95%
			Total Phosphorus	No Data		
			Chlorophyll-a	1997-2011	Declining	90%
RMB	Cass	Sylvan 11030400	Transparency	2000-2011	No Trend	
RMB	Crow Wing	Edward 18030500	Transparency	2000-2012	No Trend	
			Total Phosphorus	2000-2004, 2006, 2008-2012	No Trend	
			Chlorophyll-a	2000-2004, 2006, 2008-2012	No Trend	
RMB	Crow Wing	Gladstone 18033800	Transparency	1993-2004	No Trend	
RMB	Crow Wing	Gull Lake 11030500	Transparency	1986-2011	No Trend	

Source	County	Lake	Parameter	Date Range	Trend	Confidence
RMB	Crow Wing	Gull (Booming Out Bay) 11030500	Transparency	1987-2011	Declining	99%
RMB	Crow Wing	Hubert 18037500	Transparency	2003-2012	No Trend	
RMB	Crow Wi1ng	Lower Cullen 18040300	Transparency	1994-2011	No Trend	
			Total Phosphorus	1995-2008	Declining	95%
			Chlorophyll-a	1995, 1997-2008	Declining	90%
RMB	Crow Wing	Middle Cullen 18037700	Transparency	1998-2012	Declining	95%
			Total Phosphorus	2003-2005	No Trend	
			Chlorophyll-a	2003-2005	No Trend	
RMB	Crow Wing	North Long (East Bay) 18037200	Transparency	1998-2010	Improving	99.9%
RMB	Crow Wing	North Long (Main Bay) 18037200	Transparency	2000-2011	Declining	90%
RMB	Crow Wing	North Long (West Bay) 18037200	Transparency	2000-2011	Declining	90%
RMB	Crow Wing	Red Sand 18038600	Transparency	2001-2010	No Trend	
RMB	Crow Wing	Round 18037300	Transparency	1993-2012	No Trend	
RMB	Crow Wing	Sibley 18040400	Transparency	1989-2004	Declining	99%
RMB	Crow Wing	Upper Cullen 18037600	Transparency	1988-2012	No Trend	
			Total Phosphorus	1988-2012	No Trend	
			Chlorophyll-a	1988-2012	No Trend	
RMB	Crow Wing	White Sand 18037900	Transparency	1997-2011	Declining	95%
EOR	Becker	Boot 03003000	Transparency	1978-2011	Improving	>95%
EOR	Cass	Hardy 11020900	Transparency	2001-2011	No trend	
EOR	Cass	Margaret 11022200	Transparency	1973-2011	Improving	>95%
EOR	Clear-water	Long Lost 15006800	Transparency	1986-2011	Improving	>95%
EOR	Crow Wing	Little Hubert 18034000	Transparency	1973-2011	Improving	>95%
EOR	Crow Wing	Roy 18039800	Transparency	1975-2008	Improving	>95%
EOR	Crow Wing	Mayo 18040800	Transparency	1987-2009	Improving	>95%

Source	County	Lake	Parameter	Date Range	Trend	Confidence
EOR	Hubbard	7th Crow Wing 29009100	Transparency	1996-2011	Improving	>95%
EOR	Hubbard	6th Crow Wing 29009300	Total Phosphorus	1990-2011	No trend	
EOR	Hubbard	Spider East 29011702	Transparency	1977-2009	Improving	>95%
EOR	Hubbard	Upper Bottle 29014800	Total Phosphorus	1995-2011	No trend	
EOR	Wadena	Spirit 80003900	Transparency	1994-2011	Improving	>95%

2.2.2. Stream Trends

Long-term water quality records were available from two locations on the Crow Wing River: at the CR 12 bridge at Nimrod (S001-326), and at CSAH36 at the Sylvan Dam (S001-926). A seasonal Kendall test for trend using R Statistical Software was used to identify statistically significant trends in water quality. Trends were only reported that had statistical confidence of at least 90%, contained at least 10 years of data, and were missing no more than 75% of the samples from the entire period. No trends indicate parameters and/or seasons where there was sufficient data to analyze long-term trends, but the trends were not statistically significant. Increasing, decreasing, or stable trends shown in Table 4 below are statistically significant long-term trends in the Crow Wing River.

Table 4. Long-term water quality trends of the Crow Wing River

Station	Parameter	Data Range	Season	Trend
Crow Wing River at bridge on CR-12 at Nimrod (S001-326)	Kjeldahl Nitrogen	1999-2009	June – August	22% increase
			September - November	27% increase
	Total Phosphorus	1999-2009	June – August	No trend
			September – November	No trend
Crow Wing River at CSAH36 at Sylvan Dam, 9 miles SW of Brainerd (S001-926)	Kjeldahl Nitrogen	2002-2012	June – August	No trend
			September – November	No trend
	Total Phosphorus	2002-2011	March – May	Stable
			June – August	No trend
			September – November	No trend
	Total Suspended Solids	2002-2011	March – May	No trend
			June – August	No trend

2.3. Stressors and Sources

In order to develop appropriate strategies for restoring or protecting waterbodies, the stressors and/or pollutant sources impacting or threatening them must be identified and evaluated.

2.3.1. Stressors of Biologically-Impaired Stream Reaches

A stressor identification study was conducted to identify the factors (i.e., stressors) that are causing the fish and macroinvertebrate community impairments in the Crow Wing River Watershed, including pollutants and non-pollutant-related factors, such as altered hydrology, fish passage, or habitat. Table 5 summarizes the primary stressors identified in streams with aquatic life impairments in the Crow Wing River Watershed. Common stressors were animal grazing in the riparian corridor and stream channel (i.e., **channel damage**), and fish passage barriers due to incorrect culvert placement and/or sizing (i.e., **connectivity**). There are also some natural landscape features, namely extensive sedge peatlands, which are resulting in too low of **dissolved oxygen** levels and too high of **phosphorus** levels for a healthy fish and macroinvertebrate community in headwater streams. In addition, changes in the groundwater and surface water interactions in the streams, particularly near Park Rapids, are resulting in **altered stream hydrology** that is stressing fish communities.

Elevated stream water temperature was identified as the primary cause of low dissolved oxygen levels in the Straight and Shell Rivers through the TMDL process. Patterns of dissolved oxygen in the Straight and Shell Rivers coincided strongly with seasonal variations in water temperature, with the lowest dissolved oxygen levels occurring at the warmest water temperatures during the summer months. These summer increases in stream temperature have been linked to increased groundwater appropriations for surface crop irrigation since 1988 in the Straight River area according to a July 2002 report by the DNR titled: Surface Water and Ground Water Interaction and Thermal Changes in the Straight River in North Central Minnesota. These dissolved oxygen impairments are not caused by a traditional pollutant and will be addressed through the Straight River Groundwater Management Area efforts.

Between now and the next Crow Wing River Watershed Intensive Watershed Monitoring effort in 2020, additional emphasis and resources will be directed towards a better understanding of the groundwater dynamics in the Crow Wing River Watershed through local and state efforts, including:

- County Geologic Atlas completion in Todd, Morrison, and Crow Wing counties;
- County Geologic Atlas initiation in Becker, Hubbard, Wadena, and Cass counties;
- Additional groundwater and surface water monitoring by the DNR throughout the Crow Wing River watershed; and
- The Straight River Groundwater Management Area efforts.

Table 5. Summary of Primary Stressors to Biologically-Impaired Stream Reaches

Stream	AUID Last 3 digits	Reach Description	Biological Impairment	EPA Impairment Category*	Primary Stressors to Aquatic Life					
					Dissolved Oxygen	Phosphorus	Channel Damage	Connectivity	Altered Hydrology	Habitat
Bender Creek	691	Tripp Lk. to First Crow Wing Lk.	Fish and Macro-invertebrates	4D	●			●		●
Farnham Creek	522	Unnamed ditch to T136 R32W S21, west line	Fish and Macro-invertebrates	5	●	●	●	●		
Swan Creek	527	T135 R32W S2, north line to Crow Wing R	Macro-invertebrates	5	●		●			
Tower Creek	528	T135 R32W S4, north line to Farnham Cr	Macro-invertebrates	5	●	●				●
Unnamed Tributary to Crow Wing River	687	Unnamed ditch to Crow Wing R.	Fish	4E				●		●
Unnamed Trib. to Shell River	553	Headwaters to Shell R.	Macro-invertebrates	4D	●					
Upper Shell River	537	Shell Lk. to Blueberry Lk.	Fish	4C	●		●	●		●

*** EPA Impairment Categories:**

4C: Impaired, but a TMDL study is not required because the impairment is not caused by a pollutant

4D: Impaired or threatened but doesn't require a TMDL because the impairment is due to natural conditions with only insignificant anthropogenic influence.

4E: Impaired or threatened but existing data strongly suggests a TMDL is not required because impairment is solely a result of natural sources or non-pollutant conditions;

5: TMDL is required

2.3.2. Pollutant sources

This section summarizes the sources of pollutants (such as phosphorus, bacteria or sediment) to lakes and streams in the Crow Wing River Watershed, including point sources (such as sewage treatment plants) or non-point sources (such as runoff from the land).

Point Sources

Point sources are defined as facilities that discharge stormwater or wastewater to a lake or stream and have a NPDES/SDS permit. There are 8 municipal wastewater facilities, 14 industrial wastewater facilities, and 4 large animal feeding operations that require NPDES permitting located in the Crow Wing River Watershed (Table 6). None of the point sources require pollutant reductions beyond their current permit conditions or limits.

Table 6: Point Sources in the Crow Wing River Watershed. No pollutant reductions are needed beyond the current permit limits or conditions for any NPDES permitted facilities.

Point Source Name	Permit #	Type	Receiving (impaired) water body
Bertha WWTP	MN0022799	Municipal Waste Water	Bear Cr (Partridge R)
City of East Gull Lake	MNG870003	Municipal Waste Water	No surface discharge
East Gull Lake WWTP	MN0059871	Municipal Waste Water	Gull L
Menahga WWTP	MNG580032	Municipal Waste Water	Stocking Cr (historically Blueberry L)
Motley WWTP	MN0024244	Municipal Waste Water	Crow Wing R
Pillager WWTP	MNG580209	Municipal Waste Water	Crow Wing R
Staples WWTP	MN0024988	Municipal Waste Water	Hayden Cr
Wolf Lake WWTP	MN0069205	Municipal Waste Water	Mud L (Blueberry L)
Anderson Brothers Construction Co	MNG490001	Industrial Storm Water	No surface discharge
Anderson/Sebeka Sanitary Landfill - ISW	MNRNE366R	Industrial Storm Water	Kitten Cr
Central Specialties Inc	MNG490071	Industrial Storm Water	No surface discharge
David Barrett Construction	MNG490120	Industrial Storm Water	No surface discharge
Duininck Bros Inc - Aggregate	MNG490046	Industrial Storm Water	No surface discharge
Hengel Ready Mix & Construction Inc - SW	MNR05343L	Industrial Storm Water	Gull R
Knife River Central Minnesota	MNG490003	Industrial Storm Water	No surface discharge
Long Construction Inc	MNG490074	Industrial Storm Water	No surface discharge
Mark Sand & Gravel Acquisition Co	MNG490125	Industrial Storm Water	No surface discharge
MNDNR - Forestry	MNG490239	Industrial Storm Water	No surface discharge
Northstar Materials Inc dba Knife River Materials	MNG490038	Industrial Storm Water	No surface discharge
Rodney E Lof Co	MNG490180	Industrial Storm Water	No surface discharge
The Cemstone Companies	MNG490133	Industrial Storm Water	No surface discharge

Point Source Name	Permit #	Type	Receiving (impaired) water body
Tri-City Paving Inc	MNG490039	Industrial Storm Water	No surface discharge
CC Morgan LLC	153-81402	Feedlot	Co Ditch #15
FTM Inc	021-69078	Feedlot	Seven Mile Cr
Jennie-O Turkey Store - Menahga Farm	159-76300	Feedlot	Shell R (Lower Twin L)
Prairie Sky Farm	057-61974	Feedlot	Twin L
Sprau Cattle Co	021-114262	Feedlot	Cory Bk

Nonpoint Sources

Nonpoint source of pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. Nonpoint source pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes and streams. Common non-point and natural pollutant sources in the Crow Wing River watershed are:

- **Fertilizer and/or manure runoff**: Fertilizer and manure contains high concentrations of phosphorus, nitrogen, and bacteria that can runoff into lakes and streams when not properly managed.
- **Failing septic systems**: Septic systems that are not maintained or failing near a lake or stream can contribute excess phosphorus, nitrogen, and bacteria.
- **Peatlands/wetlands**: Peatlands and wetlands in the Crow Wing River Watershed have high levels of phosphorus and low levels of dissolved oxygen that can pollute downstream streams and lakes.
- **Internal loading**: Lake sediments contain large amounts of phosphorus that can be released into the lake water through physical mixing or under certain chemical conditions.
- **Upstream lake loading**: Some lakes receive most of their phosphorus from upstream lakes. For these lakes, restoration and protection efforts should focus on improving the water quality of the upstream lake.
- **Livestock overgrazing in stream**: Livestock overgrazing in the stream can cause localized damage and erosion of the stream bank, and is a source of phosphorus and bacteria pollutants.
- **Wildlife fecal runoff**: Dense or localized populations of wildlife, such as beavers or geese, can contribute phosphorus and bacteria pollutants to streams or ponds.

Livestock manure and wildlife fecal runoff were identified as common non-point pollutant sources to impaired streams. While fertilizer runoff, in-lake sediment phosphorus release (internal loading), and upstream lake loading were identified as common non-point pollutant sources to impaired lakes.

Table 7: Relative Magnitude of Contributing Nonpoint Pollutant Sources in the Crow Wing River Watershed.

HUC-10 Subwatershed	Pollutant	Watershed of Impaired Stream/Reach (AUID) and/or Lake (ID)	Fertilizer and/or manure run-off	Failing septic systems	Peatlands / wetlands	Internal loading	Upstream lake loading	Livestock overgrazing in stream	Wildlife fecal runoff
Fishhook River	TP	Portage Lake (29025000)		™	›	›			
Blueberry River	TP	Blueberry Lake (80003400)	›						
Shell River	TP	Blueberry Lake (80003400)	›	™		~			
		Lower Twin Lake (80003000)	™	™		™	~		
Headwaters Crow Wing River	TP	Eighth Crow Wing Lake (29007200)	›	™		~	›		
		First Crow Wing Lake (29008600)	›	™	›	~	›		
Cat River – Crow Wing River	Bacteria	Cat River (07010106-544)	~						
		Farnham Creek (07010106-702)	~						~
		Swan Creek (07010106-527)	›						~
	TP	Swan Creek (07010106-527)	™		~			™	
Partridge River	Bacteria	Partridge River (07010106-518)	~						
Gull River	Bacteria	Corey Brook (07010106-700)	›						~
		Home Brook (07010106-524)	›						~
		Stoney Brook (07010106-698)	~						~
		Mayo Creek (070101006-604)	~						~
	TP	Sibley Lake (18040400)	~	™		™	›		
		Mayo Lake (18040800)	™	™		›	~		
		Lake Margaret (11022200)	~	™		™			
Crow Wing River	Bacteria	Pillager Creek (07010106-577)	~						~
		Unnamed creek (07010106-684)	~						

Key: ~ = High › = Moderate ™ = Low. **Note:** All sources listed in the table were identified in completed TMDL studies in the Crow Wing River Watershed. The symbols in the table differentiate the relative ranking of implementation targeting for the more significant sources within each subwatershed. Refer to Table 8 for links to further information regarding specific sources.

2.4. TMDL Summary

A TMDL is a calculation of how much pollutant a lake or stream can receive before it becomes unfishable, unswimmable, or unusable. These studies are required by the Clean Water Act for all impaired lakes and streams. There are 8 impaired lakes and 12 impaired streams in the Crow Wing River Watershed with completed Total Maximum Daily Loads Studies (Table 3). See **Appendix B** for the existing pollutant loading, wasteload and load allocations, and load reductions by source category needed to meet water quality standards and goals for each impaired stream or lake.

Table 8. Completed Total Maximum Daily Load Studies in the Crow Wing River Watershed

Total Maximum Daily Load Study	Impaired Waters (Lake ID/AUID)	Online access to TMDL report
2010 Lake Margaret Nutrient TMDL	Lake Margaret (11022200)	http://www.pca.state.mn.us/index.php/view-document.html?gid=14955
2014 Crow Wing River Watershed TMDL Study	Blueberry Lake (80-0034-00) Eighth Crow Wing Lake (29-0072-00) First Crow Wing Lake (29-0086-00) Lower Twin Lake (80-0030-00) Mayo Lake (18-0408-00) Portage Lake (29-0250-00) Sibley Lake (18-0404-00) Partridge River (07010106-518) Home Brook (07010106-524) Swan Creek (07010106-527) Cat River (07010106-544) Pillager Creek (07010106-577) Mayo Creek (07010106-604) Unnamed creek (07010106-684) Stoney Brook (07010106-698) Corey Brook (07010106-700) Farnham Creek (07010106-702) Straight River (07010106-558) Shell River (07010106-681)	http://www.pca.state.mn.us/index.php/view-document.html?gid=21142

2.5. Protection Considerations

This section provides a short description of the major water quality concerns in the Crow Wing River Watershed that were developed based on input from local partners and the public. These water quality concerns were used to guide the identification and prioritization of restoration and protection strategies in Section 3.3.

2.5.1. Long-term Monitoring

A key aspect of protecting water quality is long-term monitoring of lake and stream water quality. While many lakes and streams are monitored and assessed for water quality, there still remain a significant number of lakes with insufficient monitoring data to identify changes in water quality over time.

2.5.2. Cold Water Fisheries

Cold water fishes such as brook, rainbow and brown trout, and tullibee, need clean, cold and well-oxygenated water to survive. Poor watershed land use practices and ineffective septic systems can add too many nutrients to cold water fisheries and upset the ecological balance that sustains these sensitive habitats. Urban development and agriculture around cold water streams and lakes can increase sedimentation which fills in clean gravel beds that trout use for spawning. Increased runoff also adds nutrients which can lead to excessive algae and plant growth. When the algae and plants die off, bacteria uses up the oxygen, reducing the amount available for coldwater fish species. Tullibee are exceptionally vulnerable to reduction in oxygen below the thermocline -the area in a thermally stratified lake that separates the warm surface waters from the cold deep water. In the summer these species live in the deep cold water of the lake and if oxygen levels are low there can be mass die offs of these species as they have to move up into warmer temperatures to find oxygen.

Climate change and over pumping of groundwater is also a significant threat to cold water habitat, with the potential to warm water temperatures and lower oxygen concentrations beyond tolerances. Climate change increases the temperature in lakes and reduces the volume of cold water habitat for trout and tullibee. Groundwater temperatures can also rise as annual air temperatures rise with climate change. Increases in groundwater pumping for agriculture reduces the groundwater available for trout in streams and may ultimately eliminate some marginal trout streams. Increase runoff from urban development and impervious surfaces also eliminates trout in streams.

2.5.3. High Value Sensitive Lakes

Many of the lakes in the Crow Wing River watershed are high value, sensitive lakes. Small changes in nutrient loading to these large, excellent water quality lakes is likely to result in large changes in water clarity, and/or these lakes contain sensitive plant and fish species. These include the following lakes: Big Sand, Little Sand, Belle Taine, Blue, Bad Medicine, Boot, and Long Lost.

2.5.4. High Value Lakes near Water Quality Thresholds

Some lakes in the Crow Wing River watershed with high recreational value have water quality near the eutrophication thresholds or declining water clarity. While not technically impaired, these lakes are at risk for degraded water quality.

Lakes with 2 or more parameters near water quality thresholds (TP, Chl-a, or Secchi), include: Crystal (18-0341-00), Upper Cullen (18-0376-00), Rice (27-0177-00), Upper Loon (11-0225-00), Shell (03-0102-00), Nisswa (18-0399-00), Third Crow Wing (29-0077-00), and Sixth Crow Wing (29-0093-00).

Lakes with declining water clarity include: First Crow Wing, Ninth Crow Wing, Gilmore, Long, Lower Bottle, Palmer, Gull (Blooming Out Bay), North Long, Sibley, White Sand, Big Stony, Lost, and Ray.

2.5.5. Shoreline Development

A healthy shoreline supports a diverse community of fish and wildlife by providing native vegetation that fulfills their habitat needs where land and water meet. Native vegetation provides important water quality functions by slowing and filtering water runoff as it moves to the lake or stream. Shorelines with a diverse mixture of native plants extending inland as well as offshore of the bank are more resilient to wave and ice erosion. Our lakes, streams, and wetlands need healthy shorelines to reduce runoff, filter pollutants, and provide important habitat functions that benefit fish and wildlife.

There are many shorelines where the banks were long ago stripped of the native plant community, including trees and shrubs, and converted to turf grass-type lawns. The loss of this vegetation encourages soil erosion and nutrients to flow directly to the lake. As these practices spread around a lake, there are fewer areas left to treat runoff water and provide habitat. Studies of Minnesota lakes have shown that the removal of natural vegetation near the shoreline reduces the amount of habitat available to songbirds and amphibians and reduces fish-nesting. Many of these problems could be prevented or minimized if an area of native plants is maintained or restored.

Local Government Shoreland ordinances have limited many impacts from shoreland development but as limited space around lakes continues to be divided and sold off, the pressures from each individual lot and residence can collectively have great impacts on a lake's or stream's habitat and water quality.

2.5.6. Wetland Protection

Wetlands are beneficial because they store water which is metered out slowly to either surfaces waters or groundwater. Many of the wetlands in the Crow Wing River Watershed are highly connected to streams, being immediately adjacent to stream edges. Modification of wetlands to drain faster has implications for other water resources. Stream flow becomes more variable, and thus habitat for aquatic biological life can be degraded. Increasing runoff can also mean less water infiltrates into groundwater aquifers, which also feed the area's lakes and streams. Many of the watersheds are peat meadows, which have centuries of stored, slowly-decaying vegetation. Ditching in wetlands may alter the dynamics of phosphorus cycling that occurs there and result in export of phosphorus to streams and lakes, which enhances algae growth and makes waters less suitable for recreation and for biological organisms.

Wetlands are a prominent feature in the Crow Wing River Watershed, covering approximately 302,288 acres (24% of the total area). Wetlands are at risk from impacts due to agriculture drainage, human development, and climate change.

2.5.7. Forest Conversion

Large tracts of forested land have recently been converted to row crop agriculture in the North Central portion of the watershed. Fisheries research has shown that healthy watersheds with intact forests are fundamental to good fish habitat. If land in the watershed is less than 25% disturbed and the remaining 75% is permanently protected forest, the lakes and streams in the watershed will have a high probability

of sustaining a healthy ecosystem. The undisturbed forest cover allows water to infiltrate into the ground rather than running off directly to lakes and streams. http://files.dnr.state.mn.us/fish_wildlife/fisheries/habitat/2013_fishhabitatplan.pdf References to the impacts of forest cutting are also identified under Scientific Literature Support on the following DNR website. http://www.dnr.state.mn.us/whaf/about/scores/hydrology/perennial.html

2.5.8. Agricultural Nutrient Management

Citizens have expressed concerns about nutrients and pesticides in the watershed. The Minnesota Department of Agriculture (MDA) monitors extensively for pesticides in Minnesota's water resources. They are the lead agency for all aspects of pesticide environmental and regulatory functions. The following is a link to the MDA's webpage describing the monitoring and assessment program: http://www.mda.state.mn.us/en/chemicals/pesticides/maace.aspx. A wealth of information can be found on this site, both about the monitoring that the MDA does and the results from that monitoring.

The Agricultural BMP Handbook for Minnesota contains an inventory of agricultural conservation practices that address water quality with a definition for each conservation practice, effectiveness estimates based on existing scientific literature, and costs and other economic considerations.

http://www.eorinc.com/documents/AG-BMPHandbookforMN_09_2012.pdf

2.5.9. Road Culvert Placement

Stream channel crossings have potential to become physical barriers to fish movement. Crossings can either be culverts (metal corrugated tubes or concrete boxes) or bridges. The crossings can become barriers when they are not installed properly, either due to incorrect sizing for the site or at the wrong elevation and/or slope. Culverts are the crossing type that more likely will become a migration barrier if not engineered properly. If culverts are too small, the passing water will increase in velocity. The velocity can become too fast for smaller fish species to move through. Improper slope of the culvert will also lead to high velocity. If culverts are installed at an incorrect elevation, they can be "perched" at the outlet end, meaning the base of the culvert is above the water level of the stream. Minnesota's native fish species are not capable of doing the leaping and surging required for migrating through these situations in the way that salmon for instance can navigate ledges in streams. The denser the road network, and the older the crossing constructions, the more opportunity there is for barriers to be found. Parts of the Crow Wing River Watershed do have a dense road network, typically in the areas with more agriculture.

2.5.10. Source-water Ground Water Protection

The north/central portion of this watershed is known to have high nitrates in the groundwater due to the combination of agricultural landuse and sandy soils.

The **Minnesota Department of Agriculture 2013 Nitrogen Fertilizer Management Plan** is the state's blueprint for prevention or minimization of the impacts of nitrogen fertilizer on groundwater. The strategies in the NFMP are based on voluntary BMPs, intended to engage local communities in protecting groundwater from nitrate contamination. The plan is available from the MDA webpage: http://www.mda.state.mn.us/chemicals/fertilizers/nutrient-mgmt/nitrogenplan/draftplan.aspx

2.5.11. Areas of Biodiversity

A site's biodiversity significance rank is based on the presence of rare species populations, the size and condition of native plant communities within the site, and the landscape context of the site (for example, whether the site is isolated in a landscape dominated by cropland or developed land, or whether it is connected or close to other areas with intact native plant communities).

There are four biodiversity significance ranks, outstanding, high, moderate, and below:

- "**Outstanding**" sites contain the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most ecologically intact or functional landscapes.
- "**High**" sites contain very good quality occurrences of the rarest species, high-quality examples of rare native plant communities, and/or important functional landscapes.
- "**Moderate**" sites contain occurrences of rare species, moderately disturbed native plant communities, and/or landscapes that have strong potential for recovery of native plant communities and characteristic ecological processes.
- "**Below**" sites lack occurrences of rare species and natural features or do not meet MBS standards for outstanding, high, or moderate rank. These sites may include areas of conservation value at the local level, such as habitat for native plants and animals, corridors for animal movement, buffers surrounding higher-quality natural areas, areas with high potential for restoration of native habitat, or open space.

For more information visit http://www.dnr.state.mn.us/eco/mcbs/biodiversity_guidelines.html

2.5.12. Sensitive Shorelines

Sensitive areas are places that provide unique or critical ecological habitat. These areas along the shore or in near-shore areas of the lake are crucial to the health and well-being of fish, wildlife, and native plants. Many fish and wildlife species, including many species of greatest conservation need, are highly dependent on naturally vegetated shorelines as habitat for feeding, resting, and mating and juvenile life stages. Development and land alteration in the immediate shoreland and on the shoreline may have significant negative impacts on these species.

3. Prioritizing and Implementing Restoration and Protection

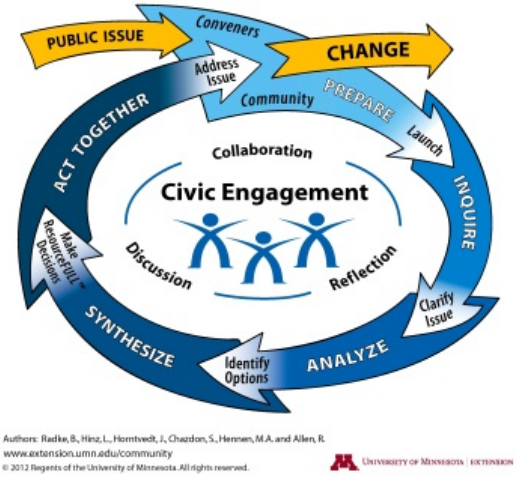
The Clean Water Legacy Act (CWLA) requires that WRAPS reports summarize priority areas for targeting actions to improve water quality, identify point sources and identify nonpoint sources of pollution with sufficient specificity to prioritize and geographically locate watershed restoration and protection actions. In addition, the CWLA requires including an implementation table of strategies and actions that are capable of cumulatively achieving needed pollution load reductions for point and nonpoint sources.

This section of the report provides the results of such prioritization and strategy development. Because much of the nonpoint source strategies outlined in this section rely on voluntary implementation by landowners, land users and residents of the watershed it is imperative to create social capital (trust, networks and positive relationships) with those who will be needed to voluntarily implement best management practices. Thus, effective ongoing civic engagement is fully a part of the overall plan for moving forward.

Specific strategies have been developed to restore the impaired waters within the watershed and for protecting the quality of the waters within the watershed that are not impaired. The subwatershed-based implementation strategy tables that follow outline the strategies and actions that are capable of cumulatively achieving the needed pollution load reductions for point and non-point sources. The tables were developed by thoroughly reviewing the specific conditions affecting each of the waters and collecting input from the watershed stakeholders listed at the beginning of the report, with the intent that these tables will be made part of locals plans or will otherwise inform local planning and budget/future grant development.

3.1. Civic Engagement

A key prerequisite for successful strategy development and on-the-ground implementation is meaningful civic engagement. This is distinguished from the broader term 'public participation' in that civic engagement encompasses a higher, more interactive level of involvement. Specifically, the University of Minnesota Extension's definition of civic engagement is "Making 'resourceFULL' decisions and taking collective action on public issues through processes that involve public discussion, reflection, and collaboration." A resourceFULL decision is one based on diverse sources of information and supported with buy-in, resources (including human), and competence. Further information on civic engagement is available at: http://www1.extension.umn.edu/community/civic-engagement/



3.1.1. Steering Committee Meetings

The Crow Wing Watershed is made up of numerous local partners who have been involved at various levels throughout the project. The following table outlines the meetings that occurred regarding the Crow Wing Watershed monitoring, TMDL development, and Watershed Restoration and Protection Strategy report planning.

Date	Location	Meeting Focus
5/27/10	MPCA office Brainerd, MN	Workplan Discussions
2/10/11	Tri-County Hospital in Wadena, MN	Quarterly Meeting
5/25/11	Northwoods Bank in Park Rapids, MN	Quarterly Meeting
9/27/11	Lakewood Health in Staples, MN	Quarterly Meeting
12/14/11	Lakewood Health in Staples, MN	Quarterly Meeting
4/4/12	MPCA in Brainerd, MN	Quarterly Meeting
1/23/13	The Shante in Pillager, MN	Quarterly Meeting
2/21/13	The Shante in Pillager, MN	Civic Engagement Planning Meeting
6/19/13	MPCA office Brainerd, MN	Quarterly Meeting – HSPF Focus
10/24/13	MPCA office Brainerd, MN	Quarterly Meeting – TMDL Focus
3/6/14	Lakewood Health in Staples, MN	Quarterly Meeting
5/12/14	Courthouse in Wadena, MN	Quarterly Meeting – TMDL Focus
6/30/14	MPCA office in Brainerd, MN	Quarterly Meeting – WRAPS Focus

3.1.2. Public Meetings

The MPCA along with the local partners and agencies in the Crow Wing Watershed recognize the importance of public involvement in the watershed process. A formal public notice period for this Crow Wing Watershed WRAPS report was held from November 10, 2014 through December 11, 2014. The following table outlines the opportunities used to engage the public and targeted stakeholders in the Crow Wing Watershed.

Date	Location	Meeting Focus
1/13/10	Lakewood Health in Staples, MN	Watershed Project Kick-Off
1/10/12	Staples, MN	Discussion with Crow Wing Forage Basin Council
6/13/12	Central Lakes College in Staples, MN	Watershed Gathering
7/21/12	Gull River near Baxter, MN	Gull River Association Meeting
9/12/12	City Hall Pequot Lakes, MN	Sibley & Mayo Lakes Public Meeting
9/13/12	St. Peter's Catholic Church Park Rapids, MN	Watershed Gathering and TMDL Open House
10/4/12	Menahga, Mn	Twin Lakes Association Meeting
5/10/13	Park Rapids, MN	Booth at Governor's Fishing Opener
5/18/13	Menahga, Mn	Twin Lake Association Meeting
7/25/13	Leader, MN	Leader Lions Farm Tour
8/31/13	Menahga, Mn	Stocking Lake Annual Meeting Presentation
9/16/13	Menahga, Mn	Twin Lakes Association Meeting
1/23/14	Parkers Prairie, MN	Booth at Central Minnesota Irrigators Annual Meeting
2/11/14	Staples, MN	Booth at Crow Wing Forage Basin Council Meeting
8/4/14	Pequot Lakes, MN	Sibley & Mayo Lakes Public Meeting
8/12/14	Park Rapids, MN	Watershed TMDL and WRAPs Public Meeting

3.1.3. Accomplishments and Future Plans

Stakeholders from the Crow Wing Watershed met to develop a civic engagement plan to increase citizen awareness and involvement in watershed work. The Civic Engagement Plan continues to be implemented in ways to increase watershed identity, provide training for emerging watershed leaders, develop a communication networks for watershed information as well as numerous activities and materials to inform and engage the general interest public.

Also through the Civic Engagement plan, partners collaborated with the University of Minnesota Extension to develop and host a citizens' leadership program for watershed leaders. The program was a huge success training over 40 leaders in building on strengths, motivating others, communication, facilitation, community capitals, followership and group dynamics. This series supported and strengthen emerging citizen leaders in their efforts to lead local efforts for the protection and restoration of our waters and lands.

3.2. Targeting of Geographic Areas

The following section describes the specific tools that were used by the Crow Wing River Watershed stakeholders to identify, locate and prioritize watershed restoration and protection actions. The three specific tools that were used were the Watershed Ranking Tool developed by DNR Fisheries, the Lake Ranking and Management Tool developed by EOR, and the HSPF Model. The figures that follow summarize the conclusions from each of the tools. Follow-up field reconnaissance will be the next part of the process to validate the identified areas potentially needing work.

3.2.1. Watershed Ranking Tool

A watershed ranking spreadsheet tool was developed by DNR Fisheries that summarizes and ranks each HUC 12 watershed. These rankings were revised based on local partner input and mapped by HUC 12 to guide the prioritization of restoration and protection projects throughout the watershed (**Figure 2**). A low priority rank indicates either a watershed where water quality is poor and improvement is not feasible, or water quality is exceptional and there are no major water quality concerns to address with protection projects. Conversely, a high priority rank indicates either a watershed where water quality is poor but improvement is feasible, or water quality is exceptional and there are water quality concerns to address with protection projects.

See **Appendix C** for the complete watershed ranking spreadsheet. Local and other partners can use the watershed characteristics summarized in this spreadsheet to help prioritize watershed and stream management efforts at the local level. These characteristics include: DNR Fisheries Area, DNR surveyed lakes, perennial streams and rivers, high value sensitive water resources, DNR land resources, areas of biodiversity and significance, and other changes, pressures, and risks to water quality.

3.2.2. Lake Ranking & Management Tool

A lake management ranking spreadsheet tool was developed by Emmons & Olivier Resources that prioritizes lakes by physical characteristics; water quality data and trends; watershed loading; ability to support cisco, trout or wild rice; and socio-economic factors. In addition, the tool defines a phosphorus load management focus based on a summary of the lake characteristics. The 86 lakes identified as priority lakes for restoration and protection efforts were mapped by management focus (upstream lake, watershed, or in-lake phosphorus load management) to guide the selection of restoration and protection strategies for the priority lakes (**Figure 3**).

See **Appendix D** for the complete lake ranking and management tool spreadsheet. Local and other partners can use the lake characteristics summarized in this spreadsheet to prioritize lake management efforts at the local level.

3.2.3. Hydrological Simulation Program – FORTRAN (HSPF) Model

An HSPF model was developed by AquaTerra to simulate hydrology and sources of sediment, nitrogen, and phosphorus in the Crow Wing River Watershed. Annual average pollutant yields (in pounds per acre per year) were mapped by HUC 12 watershed for TSS, TP, and TN to guide the prioritization of restoration and protection throughout the watershed (See figures in **Appendix E**). In addition, a combined ranking was assigned to each HUC 12 watershed based on the total TSS, TP, and TN pollutant yields (**Figure 4**).

3.2.4. Impaired Lake Phosphorus Load Reductions

Potential phosphorus load reductions (**Table 9**) were calculated from the management of cropland, developed land covers (urban), feedlots, and septic systems in the direct drainage area of each impaired lake (located downstream of an upstream lake) based on the assumptions listed in **Table 10**.

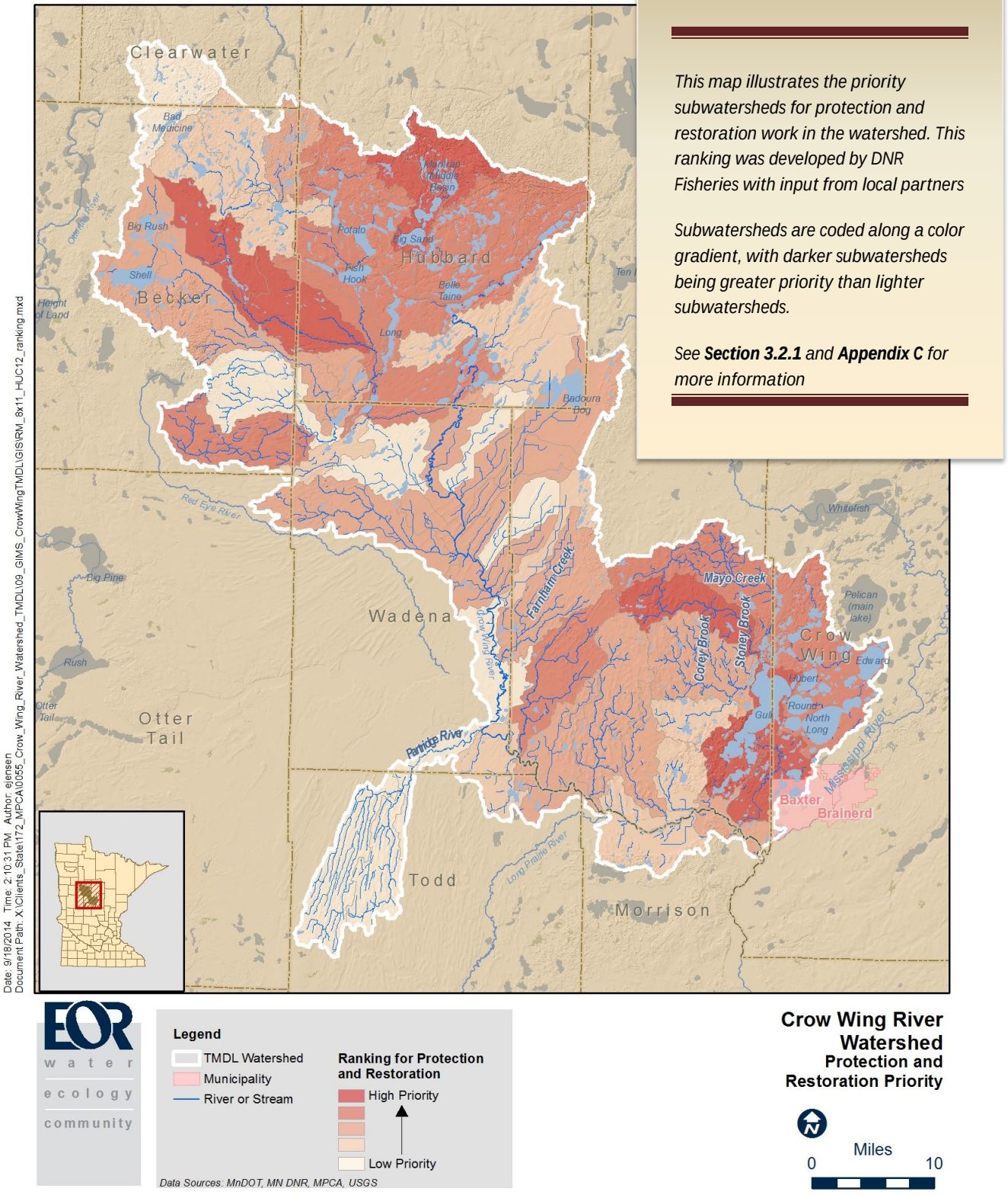
Table 9. Crow Wing River Watershed impaired lake phosphorus load reductions in the direct drainage area

	Blueberry	Eighth Crow Wing	First Crow Wing	Lower Twin	Mayo	Portage	Sibley
Direct Drainage Area [ac]	135,799	1,607	21,432	1,614	629	2,582	34,735
Direct Drainage Load [lb/yr]	13,211	274	2,280	260	85	404	4,452
Cropland reduction [lb/yr]	75.0	0.5	14.4	1.8	0.1	1.0	7.4
Turf Load Reduction [lb/yr]	57.7	1.9	7.7	1.9	0.3	2.2	19.4
Feedlot Reduction [lb/yr]	102.7	-	3.1	-	-	-	39.3
Septic Reduction [lb/yr]	9.6	26.2	9.7	17.3	3.1	24.9	9.0
Total Reduction [lb/yr]	**245.0**	**28.6**	**34.9**	**20.9**	**3.5**	**28.0**	**75.1**
Total Reduction [% Direct Drainage Load]	2%	10%	2%	8%	4%	7%	2%

Table 10. Impaired lake phosphorus load reduction data sources and assumptions

Implementation Category	Example Activities	Phosphorus Load	Removal Efficiency	Implementation Rate
Cropland Management	Conservation tillage, nutrient management planning, cover crops, and other agricultural BMPs	Area-weighted HSPF modeled load by the percent of cultivated crops land cover (NLCD 2006)	50%	10%
Urban Management	Biofilters (buffers and vegetated swales), rain gardens, and other infiltration BMPs	Area-weighted HSPF modeled load by the percent of developed, open space and developed, low intensity land covers (NLCD 2006)	50%	25%
Feedlot Management	Manure management and rotational grazing	Phosphorus load of total number of registered cattle and dairy cow animal units based on assumptions in MPCA 2004	75%	50%
Septic System Management	Upgrade failing shoreline septic systems	Phosphorus loads of shoreline septic systems based on assumptions in MPCA 2004, county average % failing rates from MPCA 2012 SSTS Annual Report, and county parcels	0.45 lb/capita-year	100%

Figure 2. Crow Wing River Watershed HUC 12 Ranking for Restoration & Protection



This map illustrates the priority subwatersheds for protection and restoration work in the watershed. This ranking was developed by DNR Fisheries with input from local partners

Subwatersheds are coded along a color gradient, with darker subwatersheds being greater priority than lighter subwatersheds.

*See **Section 3.2.1** and **Appendix C** for more information*

Figure 3. Crow Wing River Watershed Priority Lakes and Phosphorus Load Management Focus

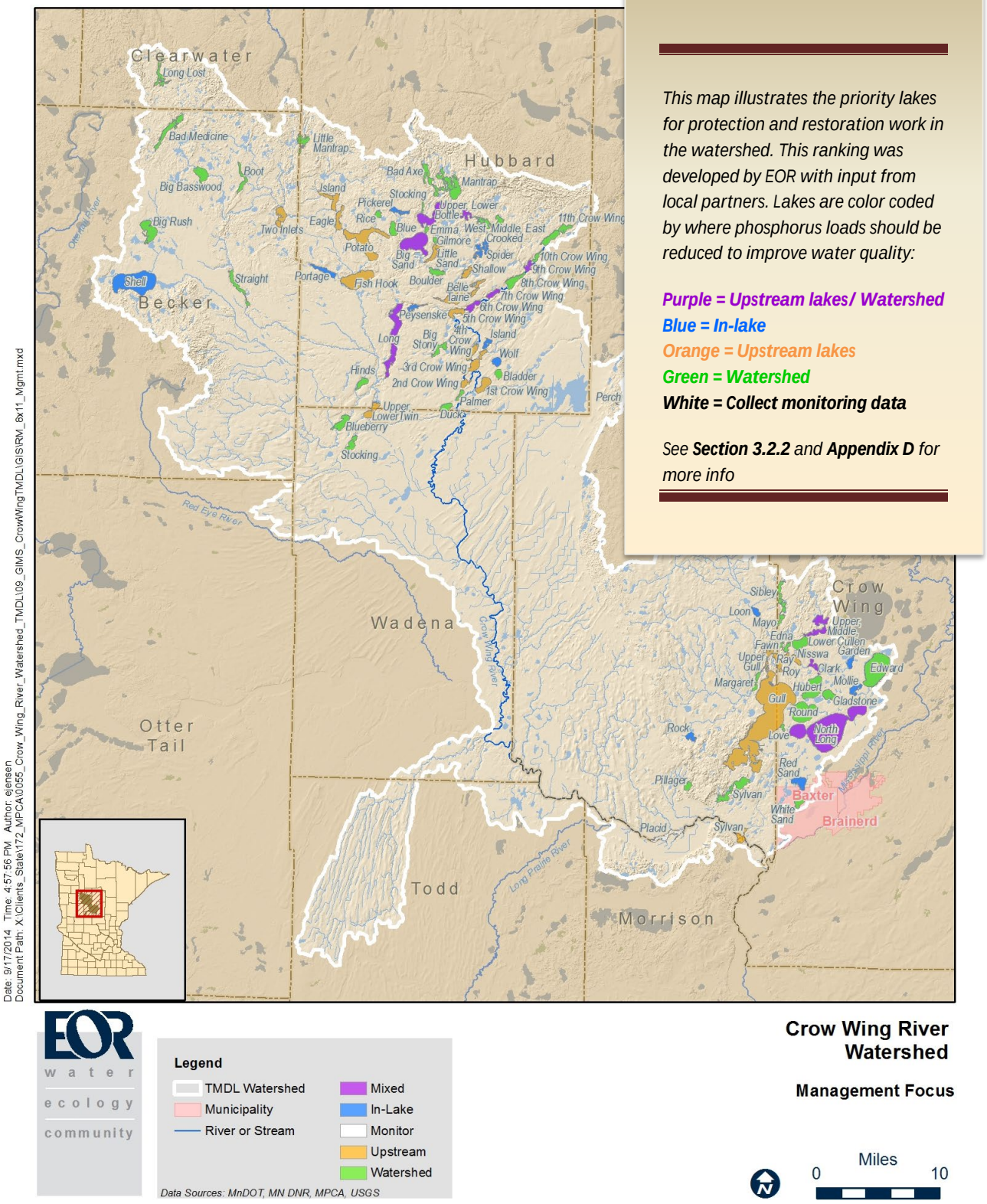
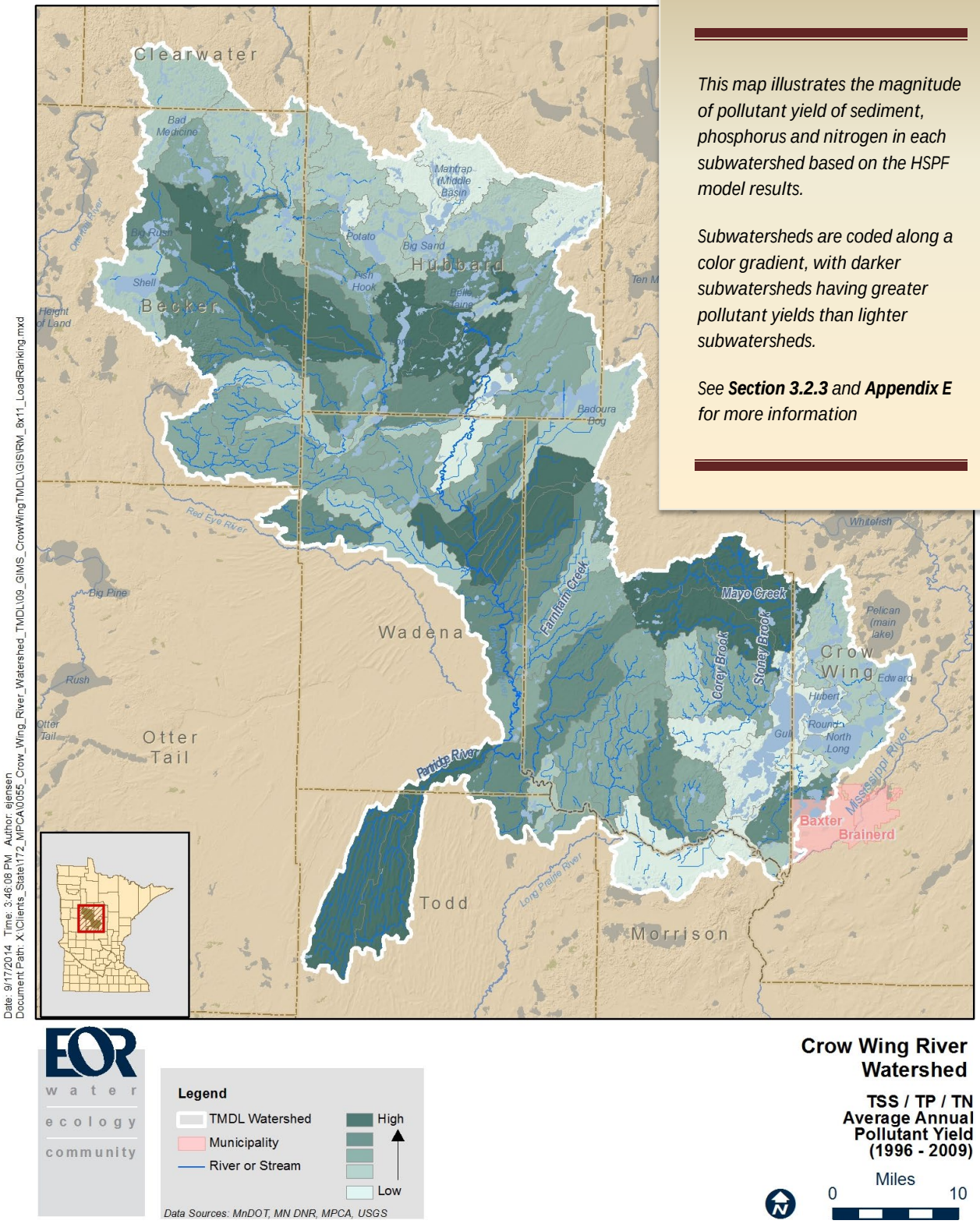


Figure 4. Crow Wing River Watershed HSPF Modeled Pollutant Yield Ranking



This map illustrates the magnitude of pollutant yield of sediment, phosphorus and nitrogen in each subwatershed based on the HSPF model results.

Subwatersheds are coded along a color gradient, with darker subwatersheds having greater pollutant yields than lighter subwatersheds.

*See **Section 3.2.3** and **Appendix E** for more information*

3.3. Restoration & Protection Strategies

This section provides detailed tables identifying restoration and protection strategies for individual lakes and streams in each HUC 12 watershed that restore or protect water quality. These projects are divided into sections by HUC 10 watershed, and include the following information:

- County location
- Water quality conditions and goals
- Strategies (see **Table 11** below for complete list of strategies and **implementation tools**)
- Estimate scale of adoption needed for each strategy to result in measurable improvements in water quality
- Governmental units with primary responsibility
- Estimated timeline for full implementation of strategy
- Interim 10-year milestones for implementation of strategy

A list and map of HUC 10 and HUC 12 subwatersheds within the Crow Wing River Watershed are included as an index to the strategy tables in **Table 13** and **Figure 5** below. Indices of the HUC 12 subwatershed for each stream and lake are available in **Appendix F** and **Appendix G**, respectively, to help locate a particular water body of interest.

Table 11. Restoration and protection strategies and implementation tools for the Crow Wing River Watershed

Strategy	Description (Applicable Implementation Tools)	NRCS Codes (see Table 12)
Conservation easements (including wild rice easements and Conservation Reserve Program)	A legal agreement between a landowner and a land trust or government agency that permanently limits uses of the land in order to protect its conservation values. It allows landowners to continue to own and use their land, and they can also sell it or pass it on to heirs. **Contact a Local Land Trust Agency:** The Nature Conservancy, Minnesota Land Trust, The Trust for Public Land, The Conservation Fund, etc.	N/A
Culvert management	Management of culvert (a closed conduit to convey water from one area to another, usually from one side of the road to the other side) size and position to maintain connectivity and natural water levels in lakes and streams. **Contact your DNR Area Hydrologist:** http://files.dnr.state.mn.us/waters/area_hydros.pdf	395
Dam management	Modification or removal of manmade dams, beaver dams, or improperly sized/perched culverts that are creating impoundments, to improve connectivity and natural water levels in lakes and streams. **Contact your DNR Area Hydrologist:** http://files.dnr.state.mn.us/waters/area_hydros.pdf	395

Strategy	Description (Applicable Implementation Tools)	NRCS Codes (see Table 12)
Diagnostic study	An in-depth study of water quality conditions, sources of pollutant loads, and water quality response modeling that identifies specific water quality goals and nutrient reduction strategies for individual or chains of connected lakes or streams. **Apply for a MPCA Clean Water Partnerships:** http://www.pca.state.mn.us/index.php/water/water-types-and-programs/water-nonpoint-source-issues/clean-water-partnership/financial-assistance-for-nonpoint-source-water-pollution-projects-clean-water-partnership-and-section-319-programs.html	N/A
Erosion control	Practices that prevent or control soil erosion in agricultural fields, gullies, shorelines, and streambanks to reduce nutrient and sediment erosion into lakes or streams. **BWSR tools for calculating erosion:** http://www.bwsr.state.mn.us/practices/pollution_reduction.html **MDA Agricultural BMP Handbook for Minnesota:** http://www.eorinc.com/documents/AG-BMPHandbookforMN_09_2012.pdf	580
Groundwater management	The protection of groundwater levels, quality, and contribution to surface water features through ordinances and monitoring. **Contact your DNR Area Hydrologist office:** http://files.dnr.state.mn.us/waters/area_hydros.pdf **Minnesota DNR Groundwater Management Program:** http://www.dnr.state.mn.us/gwmp/index.html **MDA Groundwater Monitoring Program:** http://www.mda.state.mn.us/chemicals/pesticides/maace.aspx	N/A
Increase forest acreage	The planting, restoration, or protection of forested stands which are associated with higher water quality than other land covers. **Contact your DNR Area Fisheries office:** http://www.dnr.state.mn.us/areas/fisheries/index.html	612

Strategy	Description (Applicable Implementation Tools)	NRCS Codes (see Table 12)
In-lake management	The management of fish and aquatic plant communities to maintain: low carp populations, balanced mix of predator and pan fish, sufficient native aquatic plant coverage in shallow lake sediments that are susceptible to physical disturbance, and low curlyleaf pondweed abundance. **Apply for a MPCA Clean Water Partnerships:** http://www.pca.state.mn.us/index.php/water/water-types-and-programs/water-nonpoint-source-issues/clean-water-partnership/financial-assistance-for-nonpoint-source-water-pollution-projects-clean-water-partnership-and-section-319-programs.html **Develop a lake management plan with a consulting firm** **Conduct an aquatic vegetation or fish survey**	643
Irrigation water management	The process of determining and controlling the volume, frequency, and application rate of irrigation water in a planned, efficient manner. http://www.mda.state.mn.us/protecting/conservation/practices/irrigation.aspx Minnesota DNR Water Quantity Planning and Information http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/wateruse.html University of Minnesota Irrigation Specialist http://www.extension.umn.edu/staffdirectory/StaffDetails.aspx?EmployeeIDint=5117023	449
Landowner education	Educating landowners about how their actions impact water quality and things they can do to protect or improve water quality, such as plant shoreline buffers, maintain their septic systems, or build a rain garden. **University of Minnesota Shoreland Education website:** http://www.extension.umn.edu/environment/shoreland/ **MPCA Lake Protection and Management Guide:** http://www.pca.state.mn.us/index.php/water/water-types-and-programs/surface-water/lakes/lake-protection-and-management.html	N/A

Strategy	Description (Applicable Implementation Tools)	NRCS Codes (see Table 12)
Manure management	Proper handling and storage of livestock manure to prevent or treat runoff of nutrient and bacteria laden manure to lakes and streams. MPCA information on Manure Management in feedlots: http://www.pca.state.mn.us/index.php/topics/feedlots/feedlot-nutrient-and-manure-management.html **BWSR tools for calculating pollution reduction estimates:** http://www.bwsr.state.mn.us/practices/pollution_reduction.html **MDA Agricultural BMP Handbook for Minnesota:** http://www.eorinc.com/documents/AG-BMPHandbookforMN_09_2012.pdf	472, 635
Monitoring	Frequent and/or regular sampling of lake or stream chemical and physical characteristics, including temperature, dissolved oxygen, phosphorus and clarity. **MPCA Citizen Water Monitoring Program:** http://www.pca.state.mn.us/index.php/water/water-monitoring-and-reporting/volunteer-water-monitoring/volunteer-surface-water-monitoring.html	N/A
Nutrient management	Any practice that removes nutrients from agricultural or developed runoff through infiltration, filtration, or sedimentation, including buffers, swales, rain gardens, or conservation crops. **BWSR tools for calculating pollution reduction estimates:** http://www.bwsr.state.mn.us/practices/pollution_reduction.html **MDA Agricultural BMP Handbook for Minnesota:** http://www.eorinc.com/documents/AG-BMPHandbookforMN_09_2012.pdf **Minnesota Stormwater Manual:** http://stormwater.pca.state.mn.us/index.php/Main_Page	327, 340, 345, 393, 590, 656
Ordinances	A law or regulation made by a city or town government to restrict land uses in water quality sensitive areas and time periods, such as riparian/shoreline setbacks or prohibiting septage/manure application in the winter. **Minimal Impact Design Standards (MIDS) Calculator:** http://stormwater.pca.state.mn.us/index.php/MIDS_calculator **MIDS in the Minnesota Stormwater Manual:** http://stormwater.pca.state.mn.us/index.php/Main_Page	N/A

Strategy	Description (Applicable Implementation Tools)	NRCS Codes (see Table 12)
Riparian buffers	Vegetated areas next to lakes or streams that protect lakes and streams from nonpoint source pollution and provide bank stabilization and aquatic and wildlife habitat. **BWSR tools for calculating pollution reduction estimates:** http://www.bwsr.state.mn.us/practices/pollution_reduction.html **MDA Agricultural BMP Handbook for Minnesota:** http://www.eorinc.com/documents/AG-BMPHandbookforMN_09_2012.pdf	393, 580
Rotational grazing	The strategic movement of livestock to fresh paddocks, or partitioned pasture areas, to allow vegetation in previously grazed pastures to regenerate or to protect sensitive riparian areas. **BWSR tools for calculating pollution reduction estimates:** http://www.bwsr.state.mn.us/practices/pollution_reduction.html **MDA Agricultural BMP Handbook for Minnesota:** http://www.eorinc.com/documents/AG-BMPHandbookforMN_09_2012.pdf	472
Septic system management	Monitoring, maintenance, and/or upgrading of individual septic treatment systems to maintain proper operation and treatment of septage by the system. **University of Minnesota Septic System Maintenance and Management:** http://www.septic.umn.edu/owners/maintenance/index.htm **MPCA SSTS LGU Program:** http://www.pca.state.mn.us/index.php/water/water-types-and-programs/subsurface-sewage-treatment-system-ssts/ssts-local-units-of-government.html	N/A
Shoreline protection	Protection of sensitive shoreline areas through conservation easements or establishment of buffers. **University of Minnesota Shoreland Education website:** http://www.extension.umn.edu/environment/shoreland/ **MPCA Lake Protection and Management Guide:** http://www.pca.state.mn.us/index.php/water/water-types-and-programs/surface-water/lakes/lake-protection-and-management.html	393, 580

Strategy	Description (Applicable Implementation Tools)	NRCS Codes (see Table 12)
Stormwater management	Any practice that removes nutrients from urban stormwater runoff through infiltration, filtration, or sedimentation, including buffers, swales, rain gardens, or infiltration trenches. **Minnesota Stormwater Manual:** http://stormwater.pca.state.mn.us/index.php/Main_Page **Minimal Impact Design Standards (MIDS) Calculator:** http://stormwater.pca.state.mn.us/index.php/MIDS_calculator **Conduct a Stormwater Retrofit Assessment, see the following example:** http://www.anokaswcd.org/index.php?option=com_content&view=article&id=92&Itemid=585	N/A
Stream restoration	Maintenance, improvement, and restoration of physical, chemical, and biological functions of a stream. **Trout Unlimited** **Contact your DNR Area Hydrologist office:** http://files.dnr.state.mn.us/waters/area_hydros.pdf	395, 580, 584
Water level management	Protecting natural water infiltration and water level fluctuations through outlet structures and conservation. **Contact your DNR Area Hydrologist office:** http://files.dnr.state.mn.us/waters/area_hydros.pdf	N/A
Wetland restoration	Projects that restore the hydrologic and nutrient removal function of a wetland. **U.S. Fish & Wildlife Service Restorable Wetland Inventory:** http://www.fws.gov/midwest/hapet/RWI.html **Division of Ecological and Water Resources' Wetlands Program:** www.dnr.state.mn.us/eco/wetlands/index.html	657, 659

Table 12. NRCS Conservation Practices

NRCS Conservation Practice (Code)	Description
327: Conservation Cover	Conservation cover is establishing and maintaining perennial vegetative cover to protect soil and water resources on lands needing permanent protective cover that will not be used for forage production.

NRCS Conservation Practice (Code)	Description
328: Conservation Crop Rotation	Conservation crop rotation is growing a planned sequence of various crops on the same piece of land for a variety of conservation purposes. Crops included in conservation crop rotation include high – residue producing crops such as corn or wheat in rotation with low – residue producing crops such as vegetables or soybeans. The rotation may also involve growing forage crops in rotation with other field crops
340: Cover Crop	Cover crop is growing a crop of grass, small grain, or legumes primarily for seasonal protection and soil improvement.
345: Residue Management, Mulch Till	Residue management, mulch till practice manages the amount, orientation, and distribution of crop and other plant residue on the soil surface year round while limiting the soil-disturbing activities used to grow and harvest crops in systems where the field surface is tilled prior to planting.
393: Filter Strip	A filter strip is an area of vegetation established for removing sediment, organic material, and other pollutants from runoff and wastewater.
395: Stream Habitat Improvement and Management	Stream habitat improvement and management is the maintenance, improvement, and restoration of physical, chemical, and biological functions of a stream.
449: Irrigation Water Management	Irrigation water management is the process of determining and controlling the volume, frequency, and application rate of irrigation water in a planned, efficient manner.
472: Access Control	Access control includes temporary or permanent exclusion of animals, people, vehicles, and/or equipment from an area. Barriers are usually fences, but may also be natural and artificial structures such as logs, boulders, earth fill, gates, signs, or similar structures.
580: Streambank and Shoreline Protection	Streambank and shoreline protection consists of applying vegetative or structural measures to stabilize and protect banks of streams, lakes, estuaries, or excavated channels from scour or erosion.
584: Channel Bed Stabilization	Channel bed stabilization is done by installing one or more structural measures to stabilize the bed or bottom of a channel.
590: Nutrient Management	Nutrient management involves managing the amount, placement, and timing of plant nutrients to obtain optimum yields and minimize the risk of surface and groundwater pollution.
612: Tree and Shrub Establishment	Establishing woody plants by planting or seeding.
635: Vegetated Treatment Area	A vegetated treatment area is a component of an agricultural waste management system consisting of a strip or area of herbaceous vegetation for the treatment of contaminated runoff.
643: Restoration and Management of Rare or Declining Habitats	Restoration and management of rare or declining habitats reestablishes and/or renovates unique or diminishing native terrestrial and aquatic ecosystems.
656: Constructed Wetland	A constructed wetland is an artificial ecosystem consisting of a shallow basin established with hydrophytic vegetation that is constructed to intersect and treat the flow of a waste stream or contaminated runoff.

NRCS Conservation Practice (Code)	Description
657: Wetland Restoration	Wetland restoration is a way to return a former or degraded wetland to a condition that is a close approximation of its original condition.
659: Wetland Enhancement	Wetland enhancement is the rehabilitation or reestablishment of a degraded wetland, and/or the modification of an existing wetland to favor specific wetland functions.

Table 13. HUC 10 and 12 subwatersheds within the Crow Wing River Watershed

HUC 10 Name	HUC 12	HUC 12 Name
Straight River	070101060101	Straight Lake
	070101060102	Straight River
Fishhook River	070101060201	Lake of the Valley
	070101060202	Basswood Creek
	070101060203	Indian Creek
	070101060204	Dinner Creek
	070101060205	Hay Creek
	070101060206	Eagle Lake
	070101060207	Potato Lake
	070101060208	Fishhook Lake
	070101060209	Long Lake
	070101060210	Fishhook River
Blueberry River	070101060301	Kettle River
	070101060302	Blueberry River
Shell River	070101060401	Shell Lake
	070101060402	Mission Creek-Shell River
	070101060403	Blueberry Lake-Shell River
	070101060404	Stocking Lake
	070101060405	Shell River
Belle Taine Lake	070101060501	Mantrap Lake
	070101060502	Big Sand Lake
	070101060503	Little Sand Lake
	070101060504	Belle Taine Lake
Headwaters Crow Wing River	070101060601	Eleventh Crow Wing Lake
	070101060602	Fifth Crow Wing Lake-Crow Wing River
	070101060603	Big Stony Lake-Crow Wing River
	070101060604	Wallingford Creek
	070101060605	Bender Creek
	070101060606	First Crow Wing Lake-Crow Wing River

HUC 10 Name	HUC 12	HUC 12 Name
Big Swamp Creek	070101060701	Goose Lake-Big Swamp Creek
	070101060702	Big Swamp Creek
Cat River – Crow Wing River	070101060801	Yaeger Lake
	070101060802	Burgen Lake
	070101060803	Town of Huntersville-Crow Wing River
	070101060804	Cat River
	070101060805	Beaver Creek
	070101060806	City of Nimrod-Crow Wing River
	070101060807	Goose Lake
	070101060808	Farnham Creek
	070101060809	Simon Lake-Crow Wing River
Partridge River	070101060901	Little Partridge Creek
	070101060902	Edgy Creek-Partridge River
	070101060903	Partridge River
Gull River	070101061001	Mayo Creek
	070101061002	Stony Brook
	070101061003	Rush Brook
	070101061004	Home Brook
	070101061005	Upper Gull Lake
	070101061006	Round Lake
	070101061007	Gull Lake
	070101061008	Gull River
Crow Wing River	070101061101	Hayden Creek-Crow Wing River
	070101061102	Swan Creek
	070101061103	Mosquito Creek
	070101061104	City of Motley-Crow Wing River
	070101061105	Sevenmile Creek
	070101061106	Lake Placid-Crow Wing River
	070101061107	Pillager Creek
	070101061108	Crow Wing River

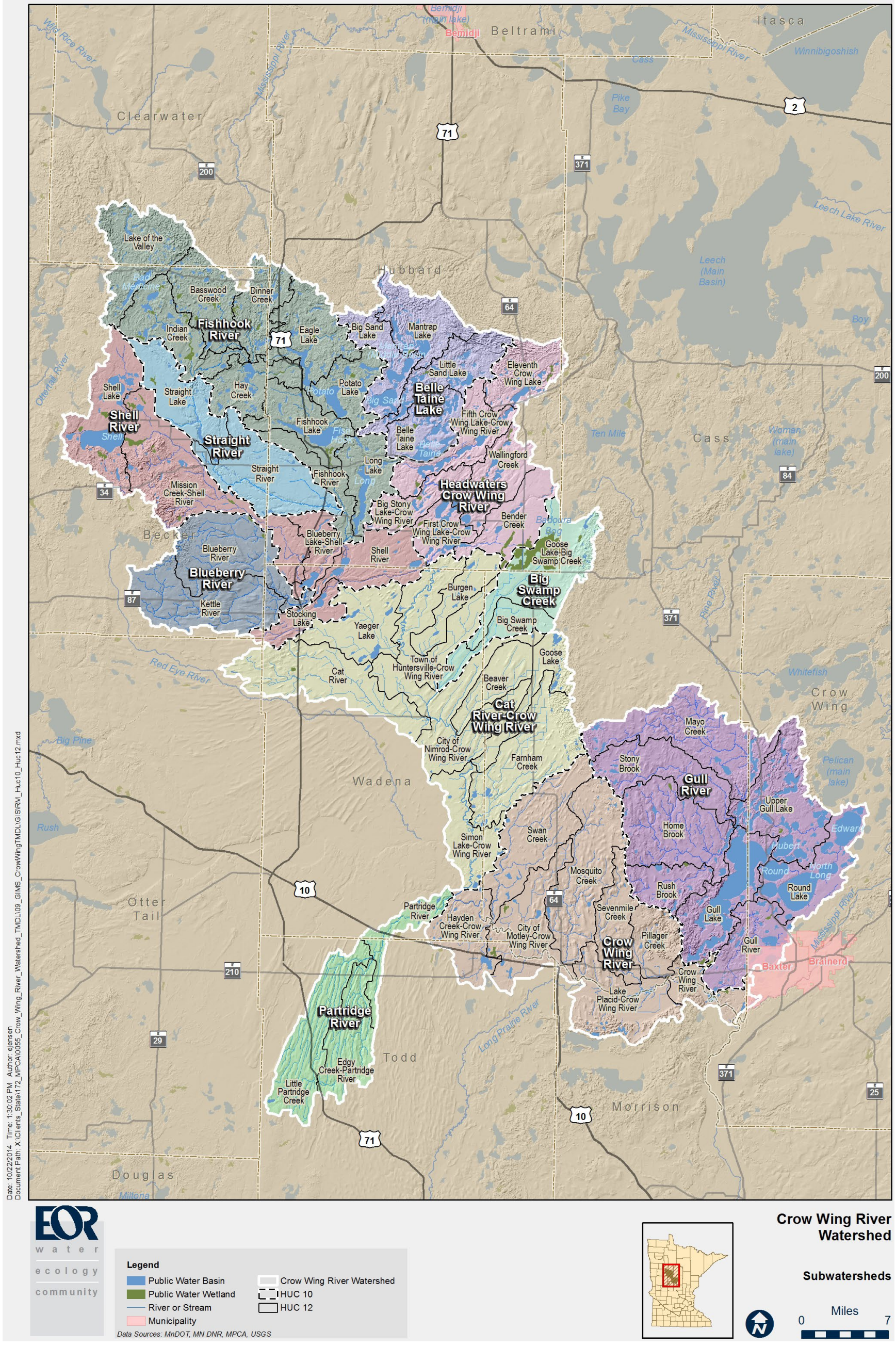


Figure 5. HUC 10 and 12 subwatersheds within the Crow Wing River Watershed

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3.3.1. (0701010601) STRAIGHT RIVER HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
1	**Straight Lake** (070101060101)	**Becker**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Fee title and easements on forested land	Add forest acreage (adding 9,673 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●		●		30 years	No net loss of forest
							Conservation easements and acquisition	Protect riparian habitat along the river; Protect sensitive lake shorelines		●					●	●	30 years	Identify sensitive riparian and shoreline habitats
							Conservation Reserve Program	Slow conversion to row crop agriculture		●					●	●	30 years	Contact large landowners
							Irrigation water management	Develop ordinances to protect groundwater from agricultural nitrate loads				●	●	●			20 years	Determine the effect that additional irrigated land will have on groundwater nitrate levels
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				●	●				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts
			Straight Lake (03001000)	Phosphorus	Growing Season Average TP = 23 ppb	Maintain or improve existing water quality	Shoreline protection	25% increase in amount of buffers		●					●		20 years	Develop shoreline buffer incentive program
										●					●		20 years	Complete boat landing improvement projects
							Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
			Straight Lake Creek (07010106-571)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Not assessed	Maintain or improve existing water quality												
			Straight River (07010106-517)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI; IF for DO/Turb; NA for *E. coli*	Maintain or improve existing water quality	Culvert management	Improve the poor road crossing on Upper Straight Creek at Twp 16 (285th St)					●	●			10 years	Contact local road authority regarding needed road crossing improvements
1	**Straight River** (070101060102)	**Hubbard Becker**	**Straight River** (07010106-558)	Dissolved Oxygen (DO) Fish IBI, invert IBI, turbidity, *E. coli*	DO < 5 mg/L; FS for fish/invert IBI, turbidity and *E. coli*	Daily minimum DO > 5 mg/L Reduce heating load	Conservation Reserve Program	Slow conversion to row crop agriculture		●					●	●	30 years	Contact large landowners
							Conservation easements	Protect riparian habitat along the river		●					●	●	30 years	Identify sensitive riparian and habitats
							Ordinances	Establish more restrictive zoning to increase river setbacks		●				●			5 years	Determine the width of an ideal river setback; Contact decision makers
							Landowner education	Contact 50% of landowners		●							5 years	Contact 10% of landowners
							Irrigation water management	Develop ordinances to protect groundwater from agricultural nitrate loads				●	●	●			20 years	Determine the effect that additional irrigated land will have on groundwater nitrate levels
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				●	●				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
							Increase forest acreage	Add forest acreage (adding 18,622 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					•		•		50+ years	No net loss of forest
							Diagnostic study	Implement load reduction activities identified in Diagnostic Study Implementation Plan	•	•							5 years	Complete diagnostic study and implementation plan to Investigate current state of riparian buffers, RDO process ponds, and Park Rapids WWTP ponds and spray irrigation fields. As part of study, complete longitudinal water quality survey along river to pinpoint problem nutrient loading areas.

3.3.2. (0701010602) FISHHOOK RIVER HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility							Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits	
5	**Lake of the Valley** (070101060201)	**Clearwater Becker**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality											
			Bad Medicine Lake (03008500)	Phosphorus	Growing Season Average TP = 8 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							Conservation easements or acquisition	Protect sensitive shorelines or other critical habitat		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
			Long Lost Lake (15006800)	Phosphorus	Growing Season Average TP = 11 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
4	**Basswood Creek** (070101060202)	**Becker** Clearwater	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 3,483 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
			Basswood Creek (07010106-568)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI; IF for DO/Turb; NA for *E. coli*	Maintain or improve existing water quality	Culvert management	Improve road crossings: Poor road crossing at CR 127. Fair crossing at CSAH 46 and Hughes Fire Trail					●	●			10 years	Contact local road authority regarding needed road crossing improvements
			Boot Lake (30030000)	Phosphorus	Growing Season Average TP = 9 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
4	**Indian Creek** (070101060203)	**Becker**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 4,614 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Wild rice easements	Establish at least one wild rice easement		●					●	●	30 years	Identify areas suitable for wild rice easement program
			Indian Creek (07010106-569)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for invert IBI; IF for Fish IBI, DO, and Turb; NA for *E. coli*	Maintain or improve existing water quality	Culvert management	Improve road crossing: Problem crossing at CR 127. Poor crossing at CSAH 44. Fair crossing at CSAH 44.					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
			Big Basswood Lake (3009600)	Phosphorus	Growing Season Average TP = 18 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
3	**Dinner Creek** (070101060204)	**Becker** Hubbard	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 5,137 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Wild rice easement program	Establish at least one wild rice easement		●					●	●	30 years	Identify areas suitable for wild rice easement program
			Dinner Creek (07010106-690)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish IBI; IF for DO/Turb; NA for Invert IBI/ *E. coli*	Maintain or improve existing water quality	Culvert management	Improve the problem crossing at CSAH 50, poor crossing at Dinner Lake Loop (Twp 9), and fair crossing at CSAH 46 and CHAS 44.					●	●			10 years	Contact local road authority regarding needed road crossing improvements
			Little Mantrap Lake (29031300)	Phosphorus	Growing Season Average TP = 11 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
4	**Hay Creek** (070101060205)	**Becker** Hubbard	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 2,198 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Culvert management	Improve the poor crossing on Trib to Two Inlets at Two Inlet Drive (Twp 22), and fair crossing on Mud Lake Outlet at Cone Cove Drive (Twp 722).					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features.				●	●				30 years	Assess the few center pivots on edge of watershed
							Wild rice easement program	Establish at least one wild rice easement		●					●	●	30 years	Identify areas suitable for wild rice easement program
			Hay Creek (07010106-617)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI, turbidity and *E. coli*; IF for DO	Maintain or improve existing water quality												
			Two Inlets Lake (3001700)	Phosphorus	Growing Season Average TP = 22	Maintain or improve existing	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Big Basswood (03009600)

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
					ppb	water quality	Shoreline protection	Implement or improve buffers along 50% of shoreline		●					●		20 years	Work with resort owners to install buffers along their shorelines
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							Dam management	Modify or replace dam to allow fish passage, natural flows, and water level fluctuations					●	●			20 years	Assess feasibility of modifying or replacing dam
2	**Eagle Lake** (070101060206)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 4,635 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Culvert management	Improve the poor road crossing on the Trib to Island Lake at Impression Road (Twp 540). Improve the fair road corssing at the Rose Lake Outlet and CR 89.					●	●			10 years	Contact local road authority regarding needed road crossing improvements
			Island lake (29025400)	Phosphorus	Growing Season Average TP = 24 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Two Inlets (03001700)
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Prioritize sensitive shoreline areas for protection from completed mapping
			Eagle Lake (29025600)	Phosphorus	Growing Season Average TP = 19 ppb	Maintain or improve existing water quality	Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Island (29025400)
2	**Potato Lake** (070101060207)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 8,608 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
			Pickerel Lake (29017800)	Phosphorus	Growing Season Average TP = 16 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
			Potato Lake (29024300)	Phosphorus	Growing Season Average TP = 14 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Eagle (29025600)
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
			Blue Lake (29018400)	Phosphorus	Growing Season Average TP = 10 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility							Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits	
			Rice Lake (29017700)	Phosphorus	Growing Season Average TP = 25 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		•							20 years	Develop plan to identify, target and implement nutrient BMPs
2	**Fishhook Lake** (070101060208)	**Hubbard** Becker	All lakes and streams	Nutrients, Temperature & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 13,597 acres incl. acres in Fishhook River HUC 12 would achieve 75% of watershed in forested landscape); Focus on high value uplands					•				50+ years	No net loss of forest
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				•	•				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts
			Portage Lake (29025000)	Phosphorus	Growing Season Average TP = 51 ppb	TP < 30 ppb	In-lake management	Reduce internal P loads by 76%		•					•		20 years	Curly-leaf management to assist in reducing high TP concentration and allow for native plants to rebound
									•	•							20 years	Investigate feasibility of lake draw down to reduce internal loading
							Nutrient management	Reduce watershed P loads by 67%		•							20 years	Implement or improve buffers along 50% of shoreline
							Dam management	If feasible, modify dam on Portage Lake for fish passage					•	•			20 years	Investigate the feasibility of modifying the dam on Portage Lake for fish passage
							Septic system management	Upgrade all failing SSTSs		•				•	•		10 years	Conduct septic inventory using CWFs
			Fish Hook Lake (29024200)	Phosphorus	Growing Season Average TP = 17 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		•							20 years	Support strategies for Potato (29024300) and Portage (29025000)
							Wetland restoration	Restore ditched wetland on south side of lake		•	•		•		•		20 years	Restore ditched wetland on south side of lake
							Culvert management	Improve road crossing on tributary from Portage Lake at CR 18					•	•			10 years	Contact local road authority regarding needed road crossing improvements
							Septic system management	Upgrade all failing SSTSs		•				•	•		10 years	Conduct septic inventory
2	**Long Lake** (070101060209)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 8,188 acres would achieve 75% of watershed in forested landscape)					•				50+ years	No net loss of forest

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				●	●				30 years	Support the Park Rapids / Straight River Groundwater Management Area Efforts
			Peysenske Lake – Main (29016901)	Phosphorus	Growing Season Average TP = 16 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
			Long Lake (29016100)	Phosphorus	Growing Season Average TP = 13 ppb	Maintain or improve existing water quality	Erosion control	Implement buffers or close undeveloped access points		●							5 years	Document areas of erosion at lake access points
							Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Peysenske (29016901)
2	**Fishhook River** (070101060210)	**Hubbard** Becker	All lakes and streams	Nutrients, Temperature & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 13,597 acres of forests (incl. acres in Fishhook Lake HUC 12) would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				●	●				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts
			Fishhook River (07010106-543) Fishhook River (07010106-542)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI and Turb; IF for DO and *E. coli*	Maintain or improve existing water quality	Stormwater management	Improve Park Rapids storm water system so less water is directly discharged into Fish Hook River.						●			20 years	Implement at least one stormwater BMP
							Dam management	Modify dam on Fishhook River for fish passage and to maintain minimum downstream flow requirements					●	●			20 years	Assess feasibility of modifying dam
							Culvert management	Improve road crossing at MN 87					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Stream restoration	Restore channelized section of Fish Hook River (from Hwy 87 to Twin Lake)					●				20 years	Develop restoration plan and obtain funding for stream restoration

3.3.3. (0701010603) BLUEBERRY RIVER HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
2	**Kettle River** (070101060301)	**Wadena Becker**	Kettle Creek (07010106-541)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI, Turb, and *E. coli*; NA for DO	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 17,901 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands		●			●				50+ years	No net loss of forest
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
							Monitoring	Collect DO data during critical conditions (late summer and low flow)		●							5 years	Collect continuous DO data for a 2 week period during critical conditions (late summer and low flow)
							Access Control	Control cattle access to stream by fencing and buffers on 50% of the stream		●	●						20 years	Implement at least one cattle exclusion project
5	**Blueberry River** (070101060302)	**Wadena Becker** Hubbard	Blueberry River (07010106-554)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI, turbidity, *E. coli*; IF for DO	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 17,940 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands		●			●				50+ years	No net loss of forest
							Groundwater management	Encourage efficient irrigation		●			●				30 years	Send out informational brochures to producers
								Regulation of groundwater withdrawals		●			●				30 years	Continue groundwater level monitoring and share data for decision making
							Culvert management	Improve poor and fair road crossings: Poor crossings on Blueberry River at Little Long Lk Rd (Twp 89) and CR 136. Poor crossings on Trib to Blueberry River at 560th Ave (Twp 192), CSAH 47, 550th Ave (Twp 93). Fair Crossings at Shipman Lk Outlet at 550th Ave (Twp 93), Blueberry River at 580th Ave (Twp 185) and Trib to Blueberry River at CR 125.					●	●			10 years	10-25% of culverts are replaced per year or within 10 years all problem culverts are replaced or planned to be replaced during next road improvement projects
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Monitoring	Stream is assessed for DO		●							5 years	Collect DO samples
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project

3.3.4. (0701010604) SHELL RIVER HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
3	**Shell Lake** (070101060401)	**Becker**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 9,799 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
			Fish Creek (07010106-597)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI; NA for DO, turb, and *E. coli*	Maintain or improve existing water quality												
			Shell Lake (3010200)	Phosphorus	Growing Season Average TP = 27 ppb	Maintain or improve existing water quality	Dam management	Modify outlet dam to provide fish passage and protect wild rice					●	●			20 years	Determine feasibility of modifying outlet dam to provide fish passage and protect wild rice
							In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
			Big Rush Lake (3010100)	Phosphorus	Growing Season Average TP = 15 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
3	**Mission Creek – Shell River** (070101060402)	**Wadena Hubbard Becker**	Shell River (07010106-537)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	NS for fish IBI; FS for invert IBI, DO, and turbidity; NA for *E. coli*	Reduce heating load	Increase forest acreage	Add forest acreage (adding 15,768 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands		●			●				50+ years	No net loss of forest
							Wild rice easements	Establish at least one wild rice easement		●					●	●	30 years	Identify areas suitable for wild rice easement program
							Dam management	Remove all stream barriers					●	●			20 years	Determine feasibility of removing dams

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
							Culvert management	Improve the problem, poor and fair road crossings: Problem crossings at Guyles Road (Twp 694), abandoned crossing at 210th st (Twp 84) and abandoned crossing at 580th St (Twp 780). Poor crossings at Smokey Hills Forest Road (Twp 174), 520th ave (Twp 769) and MN 34. Fair crossing at CSAH-47.					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Diagnostic study	Groundwater levels, withdrawals and contamination	●				●		●	●	5 years	Complete diagnostic study that investigate groundwater surface water interactions, specifically an evaluation of a surface water irrigation source from Shell River upstream of Upper Twin Lake
3	**Blueberry Lake – Shell River** (070101060403)	**Wadena Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 5,344 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Culvert management	Improve poor and fair road crossing: Poor road crossing on the Hinds Lake Outlet at Blue Spruce Road (NFR 530). Fair road crossing on Little Blueberry Lake Outlet at 550th Ave (Twp 93)					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				●	●				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts
			Blueberry Lake (80003400)	Phosphorus	Growing Season Average TP = 93 ppb	TP < 60 ppb	Livestock, pasture and feedlot management	Reduce direct drainage P loads by 10%	●	●								Conduct windshield survey of feedlots & all feedlots are inspected and compliant

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
							Diagnostic study	Implement BMPs identified in Implementation Plan	●	●							5 years	Conduct diagnostic study to identify legacy load hotspots in the watershed from the Menahga WWTP effluent
							Nutrient management	Reduce Blueberry River P loads by 30%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							Nutrient management	Reduce Shell River P loads by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							In-lake management	Reduce internal P load by 65%		●			●				20 years	Manage curly leaf pondweed and carp
			Hinds Lake (20924900)	Phosphorus	Growing Season Average TP = 14 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							In-lake management	Manage carp population		●			●				20 years	Conduct fish survey to confirm carp population
4	**Stocking Lake** (070101060404)	**Wadena** Becker	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 5,944 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Culvert management	Improved road crossing on unnamed stream at Menahga – 36 (Elm Ave, SE)					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				●	●				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts
			Stocking Lake (80003700)	Phosphorus	Growing Season Average TP = 45 ppb	Maintain or improve existing water quality	Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
							Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
			Spirit Lake (80003900)	Phosphorus	Growing Season Average TP = 20 ppb	Maintain or improve existing water quality	Stormwater management	Install Menahga SW BMPs		●				●	●		20 years	Conduct SW retrofit assessment
2	**Shell River** (070101060405)	**Wadena Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 5,089 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				●	●				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts
			Shell River (07010106-681)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	NS for DO; FS for fish/invert IBI, turbidity, and *E. coli*	Daily minimum DO > 7mg/L	Stream restoration	Restore channelized sections of river upstream of the Twin Lakes					●	●	●		20 years	Complete at least one stream restoration project
							Nutrient management	Lower Twin Lake meets water quality standards		●				●	●		20 years	Support strategies for Lower Twin (80003000)
			Lower Twin Lake (80003000)	Phosphorus	Growing Season Average TP = 40 ppb	TP < 40 ppb	In-lake management	Aquatic communities not dominated by curlyleaf pondweed or carp		●					●		20 years	Manage curlyleaf pondweed and carp
							Nutrient management	Protect upstream lake water quality of Upper Twin Lake to reduce export P loads by 10%		●			●	●			20 years	Support strategies for Blueberry (80003400) and Upper Twin (29015700)
							Livestock, pasture and feedlot management	Reduce direct drainage P loads by 28%		●							20 years	Conduct a windshield survey of feedlots
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septics
			Upper Twin Lake (29015700)	Phosphorus	Growing Season Average TP = 41 ppb	Maintain or improve existing water quality	Stream restoration	Restore stream channel in Hubbard County		●			●				20 years	Investigate the feasibility of restoring and stabilizing channelized portions of the Fish Hook and Shell Rivers, and restore 50% of the channel
							In-lake management	Reduce sediment accumulation in lake		●			●				20 years	Investigate the feasibility of dredging accumulated sediment
							Nutrient management	Maintain or improve upstream lake water quality		●					●		20 years	Support strategies for Blueberry (80003400)
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
			Duck Lake (29014200)	Phosphorus	Growing Season Average TP = 19	Maintain or improve existing	Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
					ppb	water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							Shoreline protection	50% of landowners implement shoreland BMPs		●					●		20 years	All shoreland residents receive shoreland BMP information
							Wetland restoration	Restore wetlands in the watershed		●	●		●		●		20 years	Assess condition of wetlands in the watershed

3.3.5. (0701010605) BELLE TAINE LAKE HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
1	**Mantrap Lake** (070101060501)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 5,414 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Water level management	Protect natural water infiltration and water level fluctuations					●				20 years	No new inlets, outlets or modifications to the existing conditions
							Shoreline protection	Shoreline buffers installed on all shoreline properties		●					●		20 years	Send out educational shoreline management materials to shoreline owners
			Bad Axe Lake (29020800)	Phosphorus	Growing Season Average TP = 14 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
			Mantrap Lake (29015100)	Phosphorus	Growing Season Average TP = 19 ppb	Maintain or improve existing water quality	Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Prioritize sensitive shoreline areas for protection from completed mapping
							Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
1	**Big Sand Lake** (070101060502)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Water level management	Protect natural water infiltration and water level fluctuations					●				20 years	No new inlets, outlets or modifications to the existing conditions
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							Increase forest acreage	Add forest acreage (adding 4,614 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
			Sand River	Hydrology	Not assessed	Maintain or improve existing water quality	Culvert management	Improve the poor road crossing on the Sand River below Mantrap Lake at Twp 405 (Lady Slipper Rd)					●	●			10 years	Contact local road authority regarding needed road crossing improvements
			Big Sand Lake (29018500)	Phosphorus	Growing Season Average TP = 9 ppb	Maintain or improve existing water quality	Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open	●	●							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
								water season										measurements at deepest point
							Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Emma (29018600)
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
			Lower Bottle (29018000)	Phosphorus	Growing Season Average TP = 12 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Stocking (29017200) and Upper Bottle (29014800)
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Develop a lake monitoring plan
							Conservation easements or acquisition	Limit second tiering of development through purchasing of parcels		●					●	●	30 years	Prioritize sensitive shoreline areas for protection from completed mapping
								Protect sensitive shoreline		●					●	●	30 years	
			Upper Bottle (29014800)	Phosphorus	Growing Season Average TP = 15 ppb	Maintain or improve existing water quality	Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Mantrap (29015101)
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Develop a lake monitoring plan and collect at least 2 years of TP, Chl-a and Secchi data
			Stocking (29017200)	Phosphorus	Growing Season Average TP = 25 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Develop a lake monitoring plan and collect at least 2 years of TP, Chl-a and Secchi data
			Emma (29018600)	Phosphorus	Growing Season Average TP = 16 ppb	Maintain or improve existing water quality	Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open	●	●							5 years	Develop a lake monitoring plan and collect at least 2 years of

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
								water season										TP, Chl-a and Secchi data
							Nutrient management	Reduce watershed loading by 10%		●					●		20 years	Work with shoreline landowners to install rain gardens
2	**Little Sand Lake** (070101060503)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Water level management	Protect natural water infiltration and water level fluctuations					●				20 years	No new inlets, outlets or modifications to the existing conditions
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							Increase forest acreage	Add forest acreage (adding 12,054 acres (total incl. acres in Belle Taine Lake subwatershed) would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
			Crooked West (29010103)	Phosphorus	Growing Season Average TP = 12 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Middle Crooked (29010102)
			Little Sand (29015000)	Phosphorus	Growing Season Average TP = 9 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Big Sand (29018500) and Gilmore (29008800)
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Develop a lake monitoring plan and collect at least 2 years of TP, Chl-a and Secchi data
			Gilmore (29018800)	Phosphorus	Growing Season Average TP = 10 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
			Crooked East (29010101) Crooked Middle (29010102)	Phosphorus	Growing Season Average TP = 8 ppb Growing Season Average TP = 15 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
2	**Belle Taine Lake** (070101060504)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 12,054 acres of forests (total incl. acres in Little Sand Lake subwatershed) would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
							Water level management	Protect natural water infiltration and water level fluctuations					●				20 years	No new inlets, outlets or modifications to the existing conditions
			Spider NE (29011701)	Phosphorus	Growing Season Average TP = 11 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Prioritize sensitive shoreline areas for protection from completed mapping
			Belle Taine (29014600)	Phosphorus	Growing Season Average TP = 11 ppb	Maintain or improve existing water quality	Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point and in bay by feedlot
							Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies Shallow (29008900)
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Prioritize sensitive shoreline areas for protection from completed mapping
			Shallow (29008900)	Phosphorus	Growing Season Average TP = 13 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies Spider (29011701)
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
			Boulder (29016200)	Phosphorus	Growing Season Average TP = 13 ppb	Maintain or improve existing water quality	Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs

3.3.6. (0701010606) HEADWATERS CROW WING RIVER HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
2	**Eleventh Crow Wing Lake** (070101060601)	**Hubbard** Cass	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 3,944 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
			Eleventh Crow Wing Lake (29003601)	Phosphorus	Growing Season Average TP = 12 ppb	Maintain or improve existing water quality	Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
							Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							In-lake management	Aquatic plant community dominated by diverse, native plants		●			●				20 years	Manage curlyleaf pondweed
							Dam management	Remove or modify Dam on outlet of 11th Crow Wing Lake					●	●			20 years	Assess conditions of dam on outlet of 11th Crow Wing Lake
2	**Fifth Crow Wing Lake – Crow Wing River** (070101060602)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 11,266 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
			Crow Wing River (07010106-523)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI, turbidity, and *E. coli*; IF for DO	Maintain or improve existing water quality												
			Fifth Crow Wing Lake (29009200)	Phosphorus	Growing Season Average TP = 23 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Sixth Crow Wing (29009300)
			Sixth Crow Wing Lake (29009300)	Phosphorus	Growing Season Average TP = 22 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Seventh Crow Wing (29009100)

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
			Seventh Crow Wing Lake (29009100)	Phosphorus	Growing Season Average TP = 26 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Eighth Crow Wing (29007200)
			Eighth Crow Wing Lake (29007200)	Phosphorus	Growing Season Average TP = 29 ppb	TP < 30 ppb	Dam management	Remove or Modify dam on 8th Crow Wing Lake to allow fish passage					●	●			20 years	Assess dam conditions
							Diagnostic study	Improve upstream lake water quality of Ninth and Tenth Crow Wing Lakes	●	●							5 years	Develop lake management plans for Ninth and Tenth Crow Wing Lakes with CWF Diagnostic Study and Implementation Plan
							Nutrient management	Reduce direct drainage P loads by 54%		●							20 years	Quantify phosphorus loads from City of Nevis WWTP spray irrigation fields
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
			Ninth Crow Wing Lake (29002500)	Phosphorus	Growing Season Average TP = 19 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Tenth Crow Wing (29004500)
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
			Tenth Crow Wing Lake (29004500)	Phosphorus	Growing Season Average TP = 20 ppb	Maintain or improve existing water quality	Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
							Nutrient management	Reduce watershed loading by 10%		●							20 years	Implement BMP to reduce nutrients exported from minnow rearing ponds connected to river upstream of lake

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
4	**Big Stony Lake – Crow Wing River** (070101060603)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 6,725 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				●	●				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts
			Island Lake (29008800)	Phosphorus	Growing Season Average TP = 14 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
			Big Stony Lake (29014300)	Phosphorus	Growing Season Average TP = 14 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
4	**Wallingford Creek** (070101060604)	**Hubbard**	All lakes and stream	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 8,316 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features (only one center pivot in watershed)				●	●				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts
			Wallingford Creek (07010106-573)	Hydrology	Not assessed	Maintain or improve existing water quality	Culvert management	Improve poor road crossings at the forest road (Twp 159)					●	●			10 years	Contact local road authority regarding needed road crossing improvements
			Wolf (29008100)	Phosphorus	Growing Season Average TP = 17 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
4	**Bender Creek** (070101060605)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 7,288 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features				●	●				30 years	Support the Park Rapids/Straight River Groundwater Management Area Efforts

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
			Bender Creek (07010106-691)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	NS for fish/invert IBI; IF for DO and turbidity; NA for *E. coli*	Maintain or improve existing water quality	Culvert management	Improve problem and poor road crossings: Problem crossing at Bender Creek Road (Twp 470) and Deer Trail Drive (Twp 350). Poor crossing at MN-87, CR 110 and Brayton Rd (Twp 179).					●	●			10 years	Contact local road authority regarding needed road crossing improvements
2	**First Crow Wing Lake – Crow Wing River** (070101060606)	**Hubbard**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 2,476 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Identify sensitive shorelines or other critical habitat
			Crow Wing River (07010106-523)	Hydrology	Not assessed	Maintain or improve existing water quality	Culvert management	Improve the fair road crossing on the Crow Wing River at CR 109.					●	●			10 years	Contact local road authority regarding needed road crossing improvements
			First Crow Wing Lake (29008600)	Phosphorus	Growing Season Average TP = 59.5	TP < 60 ppb	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Second Crow Wing (29008500)
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
							Conservation easements or acquisition	Protect sensitive shoreline		●					●	●	30 years	Prioritize sensitive shoreline areas for protection from completed mapping
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
							In-lake management	Reduce internal P loads by 5%		●			●				20 years	Develop carp and plant management plans
			Second Crow Wing Lake (29008500)	Phosphorus	Growing Season Average TP = 22 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Third Crow Wing (29007700)
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
			Third Crow Wing Lake (29007700)	Phosphorus	Growing Season Average TP = 27 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Fourth Crow Wing (29007800)

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	•	•							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
							Conservation easements or acquisition	Protect sensitive shoreline		•					•	•	30 years	Prioritize sensitive shoreline areas for protection from completed mapping
			Fourth Crow Wing Lake (29007800)	Phosphorus	Growing Season Average TP = 26 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		•							20 years	Support strategies for Fifth Crow Wing (29009200)
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	•	•							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
			Palmer Lake (29008700)	Phosphorus	Growing Season Average TP = 12 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		•							20 years	Develop plan to identify, target and implement nutrient BMPs
							Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	•	•							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
			Bladder Lake (29008300)	Phosphorus	Growing Season Average TP = 17 ppb	Maintain or improve existing water quality	Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	•	•							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
							Nutrient management	Reduce watershed phosphorus loading by 10%		•							20 years	Develop plan to identify, target and implement nutrient BMPs

3.3.7. (0701010607) BIG SWAMP CREEK HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
3	**Goose Lake – Big Swamp Creek** (070101060701)	**Cass Hubbard**	Big Swamp Creek/ JD2 (07010106-531)	Nutrients & Hydrology	Not assessed	Maintain or improve existing water quality	Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
							Culvert management	Improve road crossings					●	●			10 years	Assess road crossing conditions
							Dam management	Remove large beaver dams					●	●			20 years	Remove at least one dam
							Conservation easements	No net loss of forest		●			●		●	●	30 years	Identify remnant stands in watershed and other areas at high risk for agricultural conversion
			Perch Lake (11082600)	Phosphorus	Unknown	Maintain or improve existing water quality	Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
3	**Big Swamp Creek** (070101060702)	**Wadena Cass**	Big Swamp Creek/ JD2 (07010106-531)	Nutrients & Hydrology	Not assessed	Maintain or improve existing water quality	Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
							Culvert management	Improve road crossings					●	●			10 years	Assess road crossing conditions
							Dam management	Remove large beaver dams					●	●			20 years	Remove at least one dam
							Conservation easements	No net loss of forest		●			●		●	●	30 years	Identify remnant stands in watershed and other areas at high risk for agricultural conversion

3.3.8. (0701010608) CAT RIVER – CROW WING RIVER HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
5	**Yaeger Lake** (070101060801)	**Wadena**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Culvert management	Improve Problem, Poor and Fair road crossings in the watershed: Problem crossing at the Trib to Yeager Lake at CSAH 23. Poor Crossings on Trib to Yeager Lake at CR 13, Trib to Crow Wing River at CR 150. Fair crossings at Yeager Lake Outlet at CR 15, and Jim Cook Lake Outlet at CR 150.					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features		●			●				30 years	No net decline and no new contamination
5	**Burgen Lake** (070101060802)	**Wadena** Hubbard Cass	Crow Wing River	Nutrients & Hydrology	Not assessed	Maintain or improve existing water quality	Culvert management	Improve one poor road crossing over Trib to Crow Wing River at CR 110.					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Wetland restoration	Restore wetlands in the watershed		●	●		●		●		20 years	Assess condition of wetlands in the watershed
3	**Town of Huntersville – Crow Wing River** (070101060803)	**Wadena** Hubbard Cass	Crow Wing River (07010106-516)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish IBI and turbidity; IF for DO; NA for invert IBI and *E. coli*	Maintain or improve existing water quality	Groundwater management	Protect groundwater levels, quality, and contribution to surface water features		●			●				30 years	No net decline and no new contamination
							Culvert management	Improve one fair road crossing on Trib to Crow Wing River at 229th Ave (Twp 182)					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
3	**Cat River** (070101060804)	**Wadena** Otter Tail	Kitten Creek (07010106-546)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish IBI; IF for DO and turbidity; NA for invert IBI and *E. coli*	Maintain or improve existing water quality	Groundwater management	Protect groundwater levels, quality, and contribution to surface water features		●			●				30 years	No net decline and no new contamination
							Culvert management	Improve the problem, poor and fair road crossings: Problem crossing at 119th Ave (Twp 240). Poor crossings at 159th Ave (Twp 213). Fair crossings at 3 crossings on 310th St (Twp 87).					●	●			10 years	Contact local road authority regarding needed road crossing improvements

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
			Cat River (07010106-544)	Bacteria (*E. coli*) Fish IBI, invert IBI, DO, turbidity	Impaired for *E. coli*; FS for fish/invert IBI and turbidity; IF for DO	Monthly geometric average *E. coli* < 126 org/100mL	Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features		●			●				30 years	No net decline and no new contamination
							Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems
							Culvert management	Improve the problem and poor road crossings: Problem crossings at Snowmobile Trail and 318th St (Twp 89). Poor crossings at CR 146, CSAH 13, 159th Ave (Twp 213), 179th Ave (Twp 207), Trib to Cat River ar CSAH 13 and 159th Ave (Twp 213).					●	●			10 years	Contact local road authority regarding needed road crossing improvements
5	**Beaver Creek** (070101060805)	**Wadena Cass**	Beaver Creek (07010106-530)	Nutrients & Hydrology	Not assessed	Maintain or improve existing water quality	Culvert management	Improve fair road crossings of Beaver Creek at CR 139 and Trib to Beaver Creek at CSAH 12.					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
3	**City of Nimrod – Crow Wing River** (070101060806)	**Wadena** Cass	Crow Wing River (07010106-515) Crow Wing River (07010106-513) Little Swamp Creek (07010106-581)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI, DO and turbidity; IF for *E. coli* FS for fish/invert IBI, turbidity, and *E. coli*; IF for DO Not assessed	Maintain or improve existing water quality	Culvert management	Improve Problem, Poor and Fair road crossings: Problem crossing at the Trib to Crow Wing River at 294th st (Twp 73). Poor Crossings on Little Swamp Creek at 259th Ave (Twp 165), Two separate trib to Crow Wing River at CR 139 and CR 138. Fair crossings on multiple Trib to the Crow Wing River at CR 140 x 3, Cr 139), CR 138 x2 and CR 110.					●	●			10 years	Contact local road authority regarding needed road crossing improvements

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
4	**Goose Lake** (070101060807)	**Wadena Cass**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Culvert management	Improve the fair road crossings on Trib. To Big Swamp Creek on MN 64.					●	●			10 years	Contact local road authority regarding needed road crossing improvements
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
							Groundwater management	Protect groundwater levels, quality, and contribution to surface water features		●			●				30 years	No net decline and no new contamination
3	**Farnham Creek** (070101060808)	**Wadena Cass**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality												
			Martin Creek (07010106-588)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI, turbidity, and *E. coli*; IF for DO	Maintain or improve existing water quality												
			Tower Creek (07010106-528)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	NS for invert IBI; FS for fish IBI; IF for DO and turbidity; NA for *E. coli*	Maintain or improve existing water quality												
			Farnham Creek (07010106-522)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for *E. coli*; IF for DO; NA for fish/invert IBI and turbidity	Maintain or improve existing water quality												
			Farnham Creek (07010106-702)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for *E. coli* FS for turbidity; NA for fish/invert IBI; NS for DO	Monthly geometric average *E. coli* < 126 org/100mL	Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems
							Dam management	Remove beaver dams					●	●			20 years	Remove at least one dam

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
5	**Simon Lake – Crow Wing River** (070101060809)	**Wadena** Cass	Crow Wing River (07010106-512)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish IBI; IF for DO and turbidity; NA for invert IBI and *E. coli*	Maintain or improve existing water quality	Groundwater management	Protect groundwater levels, quality, and contribution to surface water features		•			•				30 years	No net decline and no new contamination

3.3.9. (0701010609) PARTRIDGE RIVER HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
5	**Little Partridge Creek** (070101060901)	**Todd**	Little Partridge Creek (07010106-551)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI; IF for DO and turbidity; NA for *E. coli*	Maintain or improve existing water quality	Access Control	Control cattle access to stream		●					●		20 years	Establish one controlled access project
							Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
							Nutrient and manure management	25% of landowners stop high risk manure applications		●		●			●		15 years	Decrease amount of high risk manure applications in winter
							Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
5	**Edgy Creek – Partridge River** (070101060902)	**Todd**	**Partridge River** (07010106-518)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for *E. coli* FS for fish/invert IBI, DO and turbidity	Monthly geometric average *E. coli* < 126 org/100mL	Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
							Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
							Nutrient and manure management	25% of landowners stop high risk manure applications		●		●			●		15 years	Decrease amount of high risk manure applications in winter
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Access Control	Control cattle access to stream		●					●		20 years	Establish on controlled access project
5	**Partridge River** (070101060903)	**Wadena Todd**	**Partridge River** (07010106-518)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for *E. coli* FS for fish/invert IBI, DO and turbidity	Monthly geometric average *E. coli* < 126 org/100mL	Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
							Access Control	Control cattle access to stream		●					●		20 years	Establish on controlled access project
							Nutrient and manure management	25% of landowners stop high risk manure applications		●		●			●		15 years	Decrease amount of high risk manure applications in winter
							Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Dam management	Remove dam on river near Verndale					●	●			20 years	Develop a plan for dam removal of unnecessary obstructions
							Groundwater management	Manage and monitor groundwater		●			●				30 years	No net decline and no new contamination

3.3.10. (0701010610) GULL RIVER – CROW WING RIVER HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility							Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits	
			All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 24,543 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
2	**Mayo Creek** (070101061001)	**Cass** Crow Wing	**Sibley Lake** (18040400)	Phosphorus	Growing Season Average TP = 33	TP < 30 ppb	Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems
							Diagnostic study	Implement BMPs in nutrient hotspots	●	●							5 years	Investigate historic WWTP effluent and current stormwater outfalls near lake
							Shoreline protection	50% of landowners implement shoreland BMPs		●					●		20 years	All shoreland residents receive shoreland BMP information
							Access Control	Reduce livestock P loads by 28%		●	●						20 years	Implement at least one cattle exclusion project
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
							In-lake management	Manage curlyleaf pondweed		●			●				20 years	Survey and conduct at least one curlyleaf pondweed treatment
			Mayo Lake (18040800)	Phosphorus	Growing Season Average TP = 36	TP < 30 ppb	Shoreline protection	50% of landowners implement shoreland BMPs		●					●		20 years	All shoreland residents receive shoreland BMP information
							In-lake management	Reduce internal P loads by 45%		●			●				20 years	Survey and conduct at least one curlyleaf pondweed treatment
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
							Nutrient management	Reduce upstream lake P loads by 20%		●					●		20 years	Promote phosphorus reductions in Sibley Lake watershed
			Mayo Creek (070101006-604)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for *E. coli* FS for fish/invert IBI, and turbidity; IF for DO	Monthly geometric average *E. coli* < 126 org/100mL	Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Culvert management	Restore stream connectivity					●	●			10 years	Prioritize culverts in need of improvement
							Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
							Riparian buffers	25% increase in amount of buffers		●			●		●	●	20 years	Increased size and amount of buffers
							Erosion Control	Restore Eroded Streams		●			●				10 Years	Conduct Stream Geomorphic Assessment
			Loon Lake (11022600)	Phosphorus	Growing Season Average TP = 18 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
							Shoreline protection	50% of landowners implement Shoreland BMPs		●					●		20 years	All shoreland residents receive shoreland BMP information
1	**Stony Brook** (070101061002)	**Cass**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 12,399 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
			Stoney Brook (07010106-698)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for *E. coli* FS for fish/invert IBI, and turbidity; IF for DO	Monthly geometric average *E. coli* < 126 org/100mL	Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Culvert and dam management	Restore stream connectivity					●	●			20 years	Assess stream crossings and connectivity
							Groundwater management	Limit groundwater appropriations		●			●				30 years	No net decline and no new contamination
							Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
4	**Rush Brook** (070101061003)	**Cass**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 1,585 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
			Rock Lake (11032400)	Phosphorus	Growing Season Average TP = 21 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
3	**Home Brook** (070101061004)	**Cass**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 14,979 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
			Lake Margaret (11022200)	Phosphorus	Growing Season Average TP = 94	TP < 60 ppb	Please refer to the TMDL implementation plan for this lake, available from the Lake Margaret – Excess Nutrients TMDL website: http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/tmdl-projects/upper-mississippi-river-basin-tmdl/project-lake-margaret-excess-nutrients.html											
			Corey Brook (07010106-700)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for *E. coli* FS for fish/invert IBI, and turbidity; IF for DO	Monthly geometric average *E. coli* < 126 org/100mL	Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Culvert and dam management	Restore stream connectivity					●	●			20 years	Assess stream crossings and connectivity
							Groundwater management	Limit groundwater appropriations		●			●				30 years	No net decline and no new contamination
							Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
			Home Brook (07010106-524)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for *E. coli* FS for fish/invert IBI, and turbidity; IF for DO	Monthly geometric average *E. coli* < 126 org/100mL	Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems
							Culvert and dam management	Restore stream connectivity					●	●			20 years	Assess stream crossings and connectivity
							Groundwater management	Limit groundwater appropriations		●			●				30 years	No net decline and no new contamination
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
2	**Upper Gull Lake** (070101061005)	**Crow Wing** Cass	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 14,370 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Shoreline protection	50% of landowners implement shoreland BMPs		●					●		20 years	All shoreland residents receive shoreland BMP information
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
							Conservation easements	Protect undeveloped land		●					●	●	30 years	Prioritize undeveloped tracts of land for conservation

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
							Ordinances	Limit emergent vegetation removal		●			●				5 years	Survey aquatic plant community and identify sensitive areas of emergent vegetation
							Stormwater management	Reduce stormwater discharge to lakes by 10%		●				●	●		20 years	Implement at least one stormwater BMP
			Garden Lake (18032900)	Phosphorus	Growing Season Average TP = 17 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
			Upper Cullen Lake (18037600)	Phosphorus	Growing Season Average TP = 27 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Rice (18040500)
			Middle Cullen Lake (18037700)	Phosphorus	Growing Season Average TP = 19 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Upper Cullen (18037600)
			Lower Cullen Lake (18040300)	Phosphorus	Growing Season Average TP = 23 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
			Upper Gull Lake (11021800)	Phosphorus	Growing Season Average TP = 23 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Mayo (18040800)
			Roy Lake (18039800)	Phosphorus	Growing Season Average TP = 20 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Nisswa (18039900)
			Clark Lake (18037400)	Phosphorus	Growing Season Average TP = 18 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Rice (18032700)
			Nisswa Lake (18039900)	Phosphorus	Growing Season Average TP = 20 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Lower Cullen (18040300)
			Ray Lake (11022000)	Phosphorus	Growing Season Average TP = 13 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Spider (11022100)
			Hubert Lake (18037500)	Phosphorus	Growing Season Average TP = 16 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
			Edna Lake (18039600)	Phosphorus	Growing Season Average TP = 11 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
			Fawn Lake (18039700)	Phosphorus	Growing Season Average TP = 11 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
			Gladstone Lake (18033800)	Phosphorus	Growing Season Average TP = 17 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
2	**Round Lake** (070101061006)	**Crow Wing**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 7,535 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Shoreline protection	50% of landowners implement shoreland BMPs		●					●		20 years	All shoreland residents receive shoreland BMP information
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
							Conservation easements	Protect undeveloped land		●					●	●	30 years	Prioritize undeveloped tracts of land for conservation
							Ordinances	Limit emergent vegetation removal		●			●				5 years	Survey aquatic plant community and identify sensitive areas of emergent vegetation
							Stormwater management	Reduce stormwater discharge to lakes by 10%		●				●	●		20 years	Implement at least one stormwater BMP
			Mollie Lake (18033500)	Phosphorus	Growing Season Average TP = 19 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
			North Long lake (18037200)	Phosphorus	Growing Season Average TP = 17 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loads by 10% and maintain or improve upstream lake water quality		●							20 years	Develop plan to identify, target and implement nutrient BMPs, and support strategies for Edward (18030500) and Mollie (18033500)
			Edward Lake (18030500)	Phosphorus	Growing Season Average TP = 18 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
			Round Lake (18037300)	Phosphorus	Growing Season Average TP = 24 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
1	**Gull Lake** (070101061007)	**Cass** Crow Wing	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 4,547 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Shoreline protection	50% of landowners implement shoreland BMPs		●					●		20 years	All shoreland residents receive shoreland BMP information
							Septic system management	Upgrade all failing septics		●				●	●		10 years	Inspect all shoreline septic systems
							Conservation easements	Protect undeveloped land		●					●	●	30 years	Prioritize undeveloped tracts of land for conservation
							Ordinances	Limit emergent vegetation removal		●			●				5 years	Survey aquatic plant community and identify sensitive areas of emergent vegetation
							Stormwater management	Reduce stormwater discharge to lakes by 10%		●				●	●		20 years	Implement at least one stormwater BMP
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
			Gull Lake (11030500)	Phosphorus	Growing Season Average TP = 21 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Margaret (11002200), Upper Gull (11021800), and Round (18037300)
			Love Lake (18038800)	Phosphorus	Growing Season Average TP = 20 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
			Sylvan Lake NE (11030402)	Phosphorus	Growing Season Average TP = 9 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
			Red Sand Lake (18038600)	Phosphorus	Growing Season Average TP = 23 ppb	Maintain or improve existing water quality	In-lake management	Improve in-lake biological community and/or reduce internal loading	●	●							20 years	Assess in-lake biological health and identify internal loading risks
			White Sand Lake (18037900)	Phosphorus	Growing Season Average TP = 20 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
1	**Gull River** (070101061008)	**Cass Crow Wing**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 2,620 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
			Gull River (07010106-502)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI, turbidity, and *E. coli*; IF for DO	Maintain or improve existing water quality												

3.3.11. (0701010611) CROW WING RIVER HUC 10 Watershed: Proposed strategies and actions

Red rows = impaired waters requiring restoration; Clear rows = unimpaired waters requiring protection

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility							Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits	
4	**Hayden Creek – Crow Wing River** (070101061101)	**Wadena** **Todd** Cass	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Stormwater management	Implement stormwater BMPs in the City of Staples		●				●	●		20 years	Develop stormwater management plan for City of Staples
			Crow Wing River (07010106-510)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI; IF for DO and turbidity; NA for *E. coli*		Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
							Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
2	**Swan Creek** (070101061102)	**Cass**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality												
			Swan Creek (07010106-527)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for DO, invert IBI, and *E. coli*; FS for fish IBI and turbidity	Daily minimum DO > 7 mg/L; Healthy macroinvertebrate community; Monthly geometric average *E. coli* < 126 org/100mL	Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
							Culvert and dam management	Restore stream connectivity					●	●			20 years	Assess stream crossings and connectivity
							Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
3	**Mosquito Creek** (070101061103)	**Cass**	Mosquito Creek (07010106-591)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI; IF for DO and turbidity; NA for *E. coli*	Maintain or improve existing water quality	Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project
3	**City of Motley – Crow Wing River** (070101061104)	**Todd** **Cass** Morrison	Crow Wing River (07010106-509)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI and turbidity; IF for DO; NA for *E. coli*	Maintain or improve existing water quality	Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
			Unnamed Creek (07010106-684)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for *E. coli*; IF for DO and turbidity; NA for fish/invert IBI	Monthly geometric average *E. coli* < 126 org/100mL	Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
3	**Sevenmile Creek** (070101061105)	**Cass**	Sevenmile Creek (07010106-525)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI; IF for DO and turbidity; NA for *E.*	Maintain or improve existing water quality	Stream restoration	Restore channelized sections of stream		●			●				20 years	Complete at least one stream restoration project

Rank	HUC-12 Subwatershed	County Location and Upstream Influence Counties	Waterbody (ID)	Water Quality Parameter (incl. non-pollutant stressors)	Water Quality Current Conditions (Based on data collected between 2002-2011 for the 2014 Monitoring and Assessment Report)	Water Quality Goals / Targets	Strategies (see Table 11 for descriptions and implementation tools; see Table 12 for applicable NRCS codes)	Estimated Scale of Adoption Needed	Governmental Units with Primary Responsibility								Timeline	Interim 10-yr Milestones
									MPCA	SWCD	NRCS	MDA	DNR	Cities/Townships	Landowners	Non-profits		
					coli		Culvert management	Improve road crossings					●	●			10 years	Assess road crossings
4	**Lake Placid – Crow Wing River** (070101061106)	**Morrison** Cass	Crow Wing River (07010106-506)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish IBI and turbidity; IF for DO and *E. coli*; NA for invert IBI	Maintain or improve existing water quality	Stormwater management	Reduce stormwater discharge by 10%		●				●	●		20 years	Install sedimentation basins in City of Pillager
			Crow Wing River (07010106-507)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI; IF for DO; NA for turbidity and *E. coli*		Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
			Lake Placid (49008000)	Phosphorus	Unknown	Maintain or improve existing water quality	Monitoring	Conduct bimonthly monitoring of TP, Chl-a and Secchi depth during the open water season	●	●							5 years	Collect 2 years of bi-monthly TP, Chl-a, and Secchi depth measurements at deepest point
4	**Pillager Creek** (070101061107)	**Cass**	All lakes and streams	Nutrients & Hydrology	Not applicable	Maintain or improve existing water quality	Increase forest acreage	Add forest acreage (adding 792 acres would achieve 75% of watershed in forested landscape); Focus on high value uplands					●				50+ years	No net loss of forest
			Pillager Creek (07010106-577)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	Impaired for *E. coli*; FS for fish/invert IBI and turbidity; IF for DO	Monthly geometric average *E. coli* < 126 org/100mL	Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
							Ordinances	Put ordinances in place to reduce poor applications of septage by 100% of pumpers						●			5 years	Review ordinances and current practices of septage land application
							Manure management	Address 50% of identified problems with manure management BMPs		●	●				●		15 years	Conduct windshield survey to identify manure problems
							Access Control	Control cattle access to stream		●	●						20 years	Implement at least one cattle exclusion project
			Pillager Lake (11032000)	Phosphorus	Growing Season Average TP = 11 ppb	Maintain or improve existing water quality	Nutrient management	Reduce watershed phosphorus loading by 10%		●							20 years	Develop plan to identify, target and implement nutrient BMPs
3	**Crow Wing River** (070101061108)	**Cass Morrison** Crow Wing	Crow Wing River (07010106-501)	Fish IBI, invert IBI, DO, turbidity, *E. coli*	FS for fish/invert IBI, DO, turbidity, and *E. coli*	Maintain or improve existing water quality	Riparian buffers	25% increase in amount of buffers		●					●	●	20 years	Increased size and amount of buffers
			Sylvan Lake Main (49003601)	Phosphorus	Growing Season Average TP = 60 ppb	Maintain or improve existing water quality	Nutrient management	Maintain or improve upstream lake water quality		●							20 years	Support strategies for Gull (11030500) and Red Sand (18038600)

4. Monitoring Plan

Data from three monitoring programs will continue to be collected and analyzed for the Crow Wing Watershed. These monitoring programs are summarized below:

1. ***Intensive Watershed Monitoring*** collects water quality and biological data throughout each major watershed once every ten years. This work is scheduled for its second iteration in the Crow Wing Watershed in 2020. This data provides a periodic but intensive "snapshot" of water quality throughout the watershed.
2. The ***Watershed Pollutant Load Monitoring Network*** intensively collects pollutant samples and flow data to calculate daily sediment and nutrient loads on either an annual or seasonal (no-ice) basis. In the Crow Wing watershed, there are three proposed seasonal subwatershed pollutant load monitoring sites.
3. The ***Citizen Surface Water Monitoring Program*** is a network of volunteers who make monthly lake and river transparency readings. Several dozen data collection locations exist in the Crow Wing watershed. This data provides a continuous record of one water quality parameter throughout much of the watershed.

In addition to the monitoring conducted in association with the WRAPS process, each local unit of government associated with water management may have their own monitoring plan. Furthermore, there are many citizen monitors throughout the watershed collecting both stream and lake data. All data collected locally should be submitted regularly to the MPCA for entry into the EQuIS database system.

5. References and Further Information

Emmons & Olivier Resources, Inc. Draft May 2014. Crow Wing River Watershed TMDL Study. Prepared for the Minnesota Pollution Control Agency.

Minnesota Pollution Control Agency (MPCA). January 2014. Crow Wing River Watershed Monitoring and Assessment Report.

Minnesota Pollution Control Agency (MPCA). January 2014. Crow Wing River Watershed Stressor Identification Report.

Wenck Engineering. September 2010. Lake Margaret Nutrient TMDL. Prepared for the City of Lake Shore and the Minnesota Pollution Control Agency.

Crow Wing River Watershed Reports

All Crow Wing River Watershed reports referenced in this watershed report are available at the Crow Wing River Watershed webpage: http://www.pca.state.mn.us/index.php/water/water-types-and-programs/watersheds/crow-wing-river.html

Appendix A: MPCA Water Quality Assessment Results

Figure 6. MPCA Water Quality Assessment HUC 11 Subwatersheds

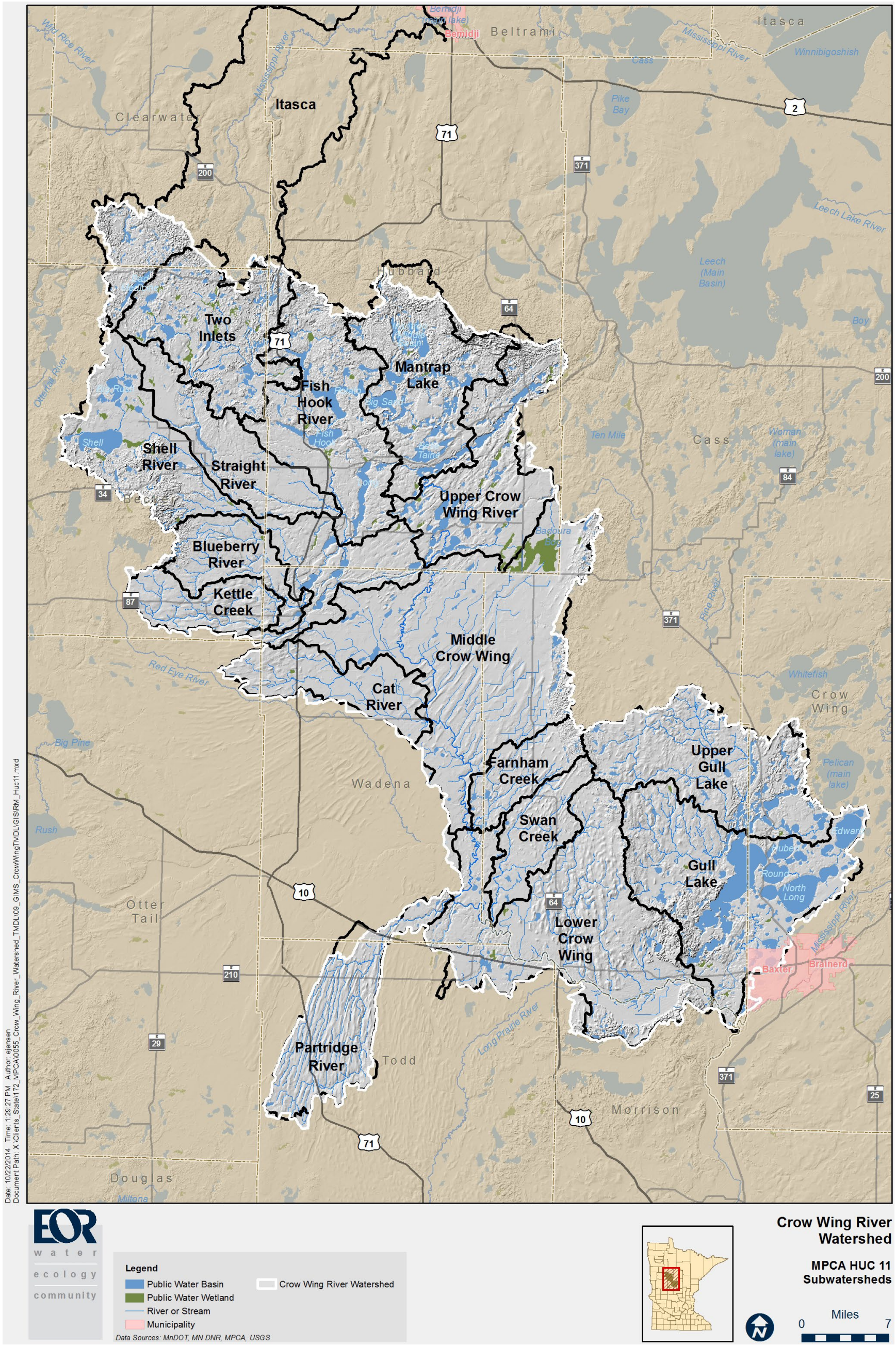

Table 14. Assessment status of stream reaches in the Crow Wing River Watershed, presented from northwest to southeast [MPCA January 2014 Crow Wing River Watershed Monitoring and Assessment Report]. Refer to Figure 6 for HUC11 boundaries.

HUC-11 Subwatershed	AUID (Last 3 digits)	Stream	Reach Description	Aquatic Life				Aq Rec
				Fish Index of Biotic Integrity	Macroinvertebrate Index of Biotic Integrity	Dissolved Oxygen	Turbidity/TSS	Bacteria
Upper Crow Wing River	523	Crow Wing River, Headwaters	Eleventh Crow Wing Lake to Shell River	Sup	Sup	IF	Sup	Sup
	691	Bender Creek	Unnamed Lk (29-0608-00) to First Crow Wing Lake	Imp	Imp	IF	IF	NA
Fish Hook River	543	Fishhook River	Park Rapids Dam to Straight R	Sup	Sup	IF	Sup	Sup
	542	Fishhook River	Straight R to Shell R	Sup	Sup	IF	Sup	IF
Two Inlets	568	Basswood Creek	Unnamed Lk (03-0665-00) to Indian Cr	Sup	Sup	IF	IF	NA
	569	Indian Creek	Big Basswood Lk to Basswood Cr	IF	Sup	IF	IF	NA
	690	Dinner Creek	Little Dinner Lk to Two Inlets Lk	Sup	NA	IF	IF	NA
	617	Hay Creek	Two Inlets Lk to Unnamed Lk (29-0554-00)	Sup	Sup	IF	Sup	Sup
Straight River	517	Straight River	Headwaters to Straight Lk	Sup	Sup	IF	IF	NA
	558	Straight River	Straight Lk to Fish Hook R	Sup	Sup	Imp	Sup	Sup
Shell River	597	Fish Creek	Aspinwall Lk to Shell Lk	Sup	Sup	NA	NA	NA
	553	Unnamed Creek	Headwaters to Shell R	NA	Sup	NA	NA	NA
	681	Shell River	Lower Twin Lk to Crow Wing R	Sup	Sup	Imp	Sup	Sup
	537	Shell River	Shell Lk to Blueberry Lk	Imp	Sup	Sup	Sup	NA
Kettle Creek	541	Kettle Creek	Unnamed Cr to Blueberry R	Sup	Sup	NA	Sup	Sup
Blueberry River	554	Blueberry River	Unnamed Cr to Kettle R	Sup	Sup	IF	Sup	Sup
Middle Crow Wing River	516	Crow Wing River	Shell R to Big Swamp Cr	Sup	NA	IF	Sup	NA
	515	Crow Wing River	Big Swamp Cr to Cat R	Sup	Sup	Sup	Sup	IF

HUC-11 Subwatershed	AUID (Last 3 digits)	Stream	Reach Description	Aquatic Life				Aq Rec
				Fish Index of Biotic Integrity	Macroinvertebrate Index of Biotic Integrity	Dissolved Oxygen	Turbidity/TSS	Bacteria
	513	Crow Wing River	Beaver Cr to Farnham Cr	Sup	Sup	IF	Sup	Sup
Cat River	546	Kitten Creek	Headwaters to Cat R	Sup	NA	IF	IF	NA
	687	Unnnamed Creek	Unnamed Ditch to Crow Wing R	IF	Sup	IF	IF	NA
	544	Cat River	Kitten Cr to Crow Wing R	Sup	Sup	IF	Sup	Imp
Farnham Creek	702	Farnham Creek	Unnamed Ditch to T136 R32W S21, west line	NA	NA	Imp	Sup	Imp
	588	Martin Creek	T136 R32W S22, East line to Farnham Cr	Sup	Sup	IF	Sup	Sup
	528	Tower Cr	T135 R32W S4 North line to	Sup	Imp	IF	IF	NA
	522	Farnham Creek	Unnamed Cr to Crow Wing R	NA	NA	IF	NA	Sup
Partridge River	551	Little Partridge Creek	Little Partridge R to Partridge R	Sup	Sup	IF	IF	NA
	518	Partridge River	Headwaters to Crow Wing R	Sup	Sup	Sup	Sup	Imp
Swan Creek	527	Swan Creek	T135 R32W S2, North line to Crow Wing R	Sup	Imp	Imp	Sup	Imp
Lower Crow Wing	506	Crow Wing River	Seven Mile Cr to Gull R	Sup	NA	IF	Sup	IF
	512	Crow Wing River	Farnham Cr to Leaf R	Sup	NA	IF	IF	NA
	510	Crow Wing River	Partridge R to Swan Cr	Sup	Sup	IF	IF	NA
	684	Unnamed Creek	Unnamed Cr to Crow Wing R	NA	NA	IF	IF	Imp
	509	Crow Wing River	Swan Cr to Mosquito Cr	Sup	Sup	IF	Sup	NA
	591	Mosquito Cr	T135 R31W S20, North line to Crow Wing R	Sup	Sup	IF	IF	NA
	693	East Branch Mosquito Creek	Unnamed Cr to Mosquito Cr	Sup	Sup	IF	IF	NA
	507	Crow Wing River	Long Prairie R to Seven Mile Cr	Sup	Sup	IF	NA	NA
	525	Sevenmile Creek	T134 R31W S2, North line to Crow Wing R	Sup	Sup	IF	IF	NA

HUC-11 Subwatershed	AUID (Last 3 digits)	Stream	Reach Description	Aquatic Life				Aq Rec
				Fish Index of Biotic Integrity	Macroinvertebrate Index of Biotic Integrity	Dissolved Oxygen	Turbidity/TSS	Bacteria
	577	Pillager Creek	T133 R30W S5, North line to Crow Wing R	Sup	Sup	IF	Sup	Imp
Lower Crow Wing	591	Mosquito Creek	T135 R31W S20, North line to Crow Wing R	Sup	Sup	IF	IF	NA
Upper Gull Lake	604	Mayo Creek	Unnamed Cr to Unnamed Cr	Sup	Sup	IF	Sup	Imp
	699	Stoney Brook	T136 R31W S26, South line to T136 R29W S31, East line	Sup	Sup	IF	IF	NA
	698	Stoney Brook	T136 R29W S32, West line to Upper Gull Lk	Sup	Sup	IF	Sup	Imp
Gull Lake	700	Corey Brook	T135 R30W S16, North Line to Home Bk	Sup	Sup	IF	Sup	Imp
	524	Home Brook	Headwaters to Lake Margaret	Sup	Sup	IF	Sup	Imp
	502	Gull River	Gull Lk to Crow Wing R	Sup	Sup	IF	Sup	Sup
	501	Crow Wing River	Gull R to Mississippi R	Sup	Sup	Sup	Sup	Sup

Sup = found to meet the water quality standard (FS, fully supporting)

Imp = does not meet the water quality standard and therefore, is impaired (NS, not supporting)

IF = the data collected was insufficient to make a finding

NA = not assessed

Table 15. Aquatic recreation assessment status of lakes in the Crow Wing River Watershed, presented from northwest to southeast.

[MPCA January 2014 Crow Wing River Watershed and Assessment Report]. Refer to Figure 6 for HUC 11 boundaries.

HUC-11 Subwatershed	Name	Lake ID	Support Status
Upper Crow Wing River	Mow	29-0002-00	FS
	Tripp	29-0005-00	FS
	Oelschlager Slough	29-0006-00	NA
	Ham	29-0017-00	FS
	Loon	29-0020-00	FS
	Ninth Crow Wing	29-0025-00	FS
	Big Bass	29-0032-00	FS
	Upper Bass	29-0034-00	IF
	Eleventh Crow Wing	29-0036-01	FS
	Eleventh Crow Wing (East)	29-0036-02	IF
	Tenth Crow Wing	29-0045-00	FS
	Eighth Crow Wing	29-0072-00	NS
	Indian	29-0074-00	FS
	Third Crow Wing	29-0077-00	IF
	Fourth Crow Wing	29-0078-00	FS
	Wolf	29-0081-00	FS
	Bladder	29-0083-00	FS
	Second Crow Wing	29-0085-00	FS
	First Crow Wing	29-0086-00	NS
	Palmer	29-0087-00	FS
	Island	29-0088-00	FS
	Big Stony	29-0143-00	FS
Mantrap Lake	Shallow	29-0089-00	FS
	Deer	29-0090-00	FS
	Seventh Crow Wing	29-0091-00	FS
	Fifth Crow Wing	29-0092-00	FS
	Sixth Crow Wing	29-0093-00	FS
	Waboose	29-0098-00	FS
	East Crooked	29-0101-01	IF
	Middle Crooked	29-0101-02	FS
Mantrap Lake	West Crooked	29-0101-03	FS

HUC-11 Subwatershed	Name	Lake ID	Support Status
(continued)	Dead	29-0110-00	IF
	Spider (NE/SW Bay)	29-0117-01	FS
	Spider (East Bay)	29-0117-02	IF
	Belle Taine	29-0146-00	FS
	Upper Bottle	29-0148-00	FS
	Ojibway	29-0149-00	FS
	Little Sand	29-0150-00	FS
	Mantrap (East Basin)	29-0151-01	FS
	Mantrap (Middle Basin)	29-0151-02	FS
	Mantrap (West Arm)	29-0151-04	IF
	Mantrap (Home Bay)	29-0151-05	IF
	Boulder	29-0162-00	FS
	Ida	29-0170-00	FS
	Stocking	29-0172-00	FS
	Lower Bottle	29-0180-00	FS
	Big Sand	29-0185-00	FS
	Emma	29-0186-00	FS
	Gilmore	29-0188-00	FS
	Bad Axe	29-0208-00	FS
	Skunk	29-0212-00	FS
Fish Hook River	Long	29-0161-00	FS
	Sweitzer	29-0164-00	FS
	Peysenske (Main Bay)	29-0169-01	FS
	Peysenske (E. Bay)	29-0169-02	IF
	Rice	29-0177-00	FS
	Pickerel	29-0178-00	FS
	Blue	29-0184-00	FS
	Fish Hook	29-0242-00	FS
	Potato	29-0243-00	FS
	Portage	29-0250-00	NS
	Island	29-0254-00	FS
	Eagle	29-0256-00	FS
	Fish Hook River Dam	29-0504-00	NA
Two Inlets	Two Inlets	03-0017-00	FS

HUC-11 Subwatershed	Name	Lake ID	Support Status
	Hungry Man	03-0029-00	FS
	Boot	03-0030-00	FS
	Abners	03-0039-00	IF
	Wahbegon	03-0082-00	FS
	Bad Medicine	03-0085-00	FS
	Bass	03-0088-00	FS
	Big Basswood	03-0096-00	FS
	Unnamed	03-0786-00	NA
	Little Mantrap	29-0313-00	FS
Straight River	Straight	03-0010-00	FS
Shell River	Gyles	03-0066-00	IF
	Shell	03-0102-00	IF
	Big Rush	03-0103-00	IF
	Aspinwall	03-0104-00	FS
	Mud	03-0120-00	FS
	Dumbbell	03-0124-00	IF
	Bass	03-0127-00	FS
	Duck	29-0142-00	FS
	Upper Twin	29-0157-00	FS
	Moran	29-0247-00	FS
	Lord	29-0248-00	FS
	Hinds	29-0249-00	FS
	Lower Twin	80-0030-00	NS
	Blueberry	80-0034-00	NS
	Stocking	80-0037-00	FS
	Morgan	80-0038-00	FS
Blueberry River	Shipman	03-0005-00	IF
	Blueberry	03-0007-00	IF
	Spirit	80-0039-00	FS
Middle Crow Wing River	Spider	11-0500-00	FS
	Yaeger	80-0022-00	IF
	Jim Cook (West)	80-0027-01	IF
Lower Crow Wing River	Pillager	11-0320-00	FS
Lower Crow Wing River	Sylvan (Main)	49-0036-01	NA

HUC-11 Subwatershed	Name	Lake ID	Support Status
(continued)	Simon	80-0003-00	IF
Upper Gull Lake	Upper Gull	11-0218-00	FS
	Lost	11-0219-00	IF
	Ray	11-0220-00	IF
	Spider	11-0221-00	FS
	Upper Loon	11-0225-00	IF
	Loon	11-0226-00	FS
	Mud	18-0326-00	NA
	Rice	18-0327-00	IF
	Garden	18-0329-00	FS
	Unnamed	18-0330-00	IF
	Upper Cullen	18-0376-00	FS
	Middle Cullen	18-0377-00	FS
	Edna	18-0396-00	FS
	Fawn	18-0397-00	FS
	Roy	18-0398-00	FS
	Nisswa	18-0399-00	FS
	Lower Cullen	18-0403-00	FS
	Sibley	18-0404-00	NS
	Rice	18-0405-00	NA
	East Twin	18-0407-00	FS
	Mayo	18-0408-00	NS
	West Twin	18-0409-00	IF
Gull Lake	Agate	11-0216-00	FS
	Margaret	11-0222-00	NS
	Sylvan (SW Bay)	11-0304-01	FS
	Sylvan (NE Bay)	11-0304-02	FS
	Gull	11-0305-00	FS
	Rock	11-0324-00	FS
	Unnamed	11-0777-00	IF
	Unnamed	11-0780-00	NA
	Perch	18-0304-00	FS
	Unnamed	18-0333-00	IF
Gull Lake	Mollie	18-0335-00	FS

HUC-11 Subwatershed	Name	Lake ID	Support Status
(continued)	Twin	18-0336-00	NA
	Unnamed	18-0337-00	IF
	Gladstone	18-0338-00	FS
	Moody	18-0339-00	IF
	Little Hubert	18-0340-00	FS
	Crystal	18-0341-00	IF
	North Long	18-0372-00	FS
	Round	18-0373-00	FS
	Clark	18-0374-00	FS
	Hubert	18-0375-00	FS
	White Sand	18-0379-00	FS
	Red Sand	18-0386-00	FS
	Middle Whipple	18-0387-02	FS
	Love	18-0388-00	FS
	Moburg	18-0389-00	IF
	Hartley	18-0392-00	FS
	Bass	18-0402-00	FS
	Unnamed	18-0544-00	IF
	Sylvan (N. Basin)	49-0036-02	NA

Abbreviations:

FS – Full Support

NS – Non-Support

IF – Insufficient Information

NA – Not Applicable

Appendix B: Stream and Lake TMDL Summaries

Table 16. Lake Margaret Phosphorus TMDL and allocations

Allocation	Source	Existing TP Load	Goal TP Load		Load Reduction	
		(lb/yr)	(lb/yr)	(lb/day)	(lb/yr)	(%)
Wasteload Allocation	Construction Stormwater	40	22	0.1	18	45%
Load Allocation	Stormwater Runoff	3,991	2,219	6.0	1,790	45%
	Registered Animal Units					
	Septic Systems		0	0		
	Atmospheric Load	20	20	0.1	0	0%
	Internal Load	508	50	0.1	458	90%
	TOTAL LOAD	4,559	2,311	6.3	2,249	49%

Table 17. Blueberry Lake TP TMDL and Allocations

Blueberry Lake Load Component		Existing	Goal		Reduction	
		(kg/yr)	(kg/yr)	(kg/day)	(kg/yr)	(%)
Wasteload Allocations	Wolf Lake WWTP (MN0069205)	23.0	23.0	0.86**	0.0	0%
	Construction stormwater (MNR100001)	0.45	0.45	0.001	0.0	0%
	Industrial stormwater (MNR50000)	0.45	0.45	0.001	0.0	0%
	Total WLA	**23.8**	**23.8**	**0.862**	**0.0**	
Load Allocations*	*Watershed runoff*	*89.6*	*78.8*	*0.216*	*10.8*	*12%*
	Failing septics	*3.5*	*0.0*	*0.000*	*3.5*	*100%*
	Shell River	*2,812.9*	*1,998.0*	*5.474*	*814.9*	*29%*
	Blueberry River	*3,075.8*	*2,309.8*	*6.328*	*766.0*	*25%*
	Internal load	*2,196.1*	*120.3*	*0.330*	*2,075.8*	*95%*
	Total Watershed/In-lake	8,177.9	4,506.9	12.348	3,671.0	45%
	Atmospheric	58.0	58.0	0.159	0.0	0%
	Total LA	**8,235.9**	**4,564.9**	**12.507**	**3,671.0**	
MOS			**510.0**	**1.397**		
TOTAL		**8,259.7**	**5,098.7**	**14.766**	**3,671.0**	**44%**

*LA components are broken down for guidance in implementation planning; loading goals for these components may change through the adaptive implementation process, but the total LA for each lake will not be modified from the total listed in the table above.

**Daily wasteload allocations for Minnesota facilities in the SM1 category are calculated from the 2 mg/L concentration assumption and the maximum permitted effluent flow rate of 6"/day over the area of the facility's discharging cell(s). These controlled discharge facilities are designed to store 180 days' worth of influent and to discharge during spring and fall periods of relatively high stream flow and/or low receiving water temperature. Since these facilities discharge intermittently, their daily wasteload allocations do not represent their annual wasteload allocations divided by the days in a year. Rather they reflect the permitted daily effluent loads as described above. Based on these daily allocations, the median number of days per year these facilities may discharge (annual WLA divided by daily WLA) is 27.

Table 18. Eighth Crow Wing Lake TP TMDL and Allocations

Eighth Crow Wing Lake Load Component		Existing	Goal		Reduction	
		(kg/yr)	(kg/yr)	(kg/day)	(kg/yr)	(%)
Wasteload Allocations	Construction stormwater (MNR100001)	0.05	0.05	0.00014	0.0	0%
	Industrial stormwater (MNR50000)	0.05	0.05	0.00014	0.0	0%
	Total WLA	**0.10**	**0.10**	**0.00027**	**0.0**	
Load Allocations*	*Watershed runoff*	*114.8*	*57.7*	*0.158*	*57.1*	*54%*
	Failing septics	*9.5*	*0.0*	*0.000*	*9.5*	*100%*
	Ninth Crow Wing Lake	*192.2*	*192.2*	*0.527*	*0.0*	*0%*
	Internal load	*295.2*	*295.2*	*0.809*	*0.0*	*0%*
	Total Watershed/In-lake	611.7	545.1	1.493	66.6	11%
	Atmospheric	53.7	53.7	0.147	0.0	0%
	Total LA	**665.4**	**598.8**	**1.640**	**66.6**	
MOS			**66.6**	**0.182**		
TOTAL		**665.5**	**665.5**	**1.822**	**66.6**	**10%**

*LA components are broken down for guidance in implementation planning; loading goals for these components may change through the adaptive implementation process, but the total LA for each lake will not be modified from the total listed in the table above.

Table 19. First Crow Wing Lake TP TMDL and Allocations

First Crow Wing Lake Load Component		Existing	Goal		Reduction	
		(kg/yr)	(kg/yr)	(kg/day)	(kg/yr)	(%)
Wasteload Allocations	Construction stormwater (MNR100001)	0.4	0.4	0.0011	0.0	0%
	Industrial stormwater (MNR50000)	0.4	0.4	0.0011	0.0	0%
	Total WLA	**0.8**	**0.8**	**0.0022**	**0.0**	
Load Allocations*	*Watershed runoff*	*1,028.4*	*629.0*	*1.723*	*399.4*	*39%*
	Livestock	*3.8*	*2.3*	*0.006*	*1.5*	*39%*
	Failing septics	*3.4*	*0.0*	*0.000*	*3.4*	*100%*
	Second Crow Wing Lake	*1,424.1*	*1,424.1*	*3.902*	*0.0*	*0%*
	Internal load	*3,094.1*	*2,937.4*	*8.048*	*156.7*	*5%*
	Total Watershed/In-lake	5,553.8	4,992.8	13.679	561.0	10%
	Atmospheric	55.4	55.4	0.152	0.0	0%
	Total LA	**5,609.2**	**5,048.2**	**13.831**	**561.0**	
MOS			**561.0**	**1.537**		
TOTAL		**5,610.0**	**5,610.0**	**15.370**	**561.0**	**10%**

*LA components are broken down for guidance in implementation planning; loading goals for these components may change through the adaptive implementation process, but the total LA for each lake will not be modified from the total listed in the table above.

Table 20. Lower Twin Lake TP TMDL and Allocations

Lower Twin Lake Load Component		Existing	Goal		Reduction	
		(kg/yr)	(kg/yr)	(kg/day)	(kg/yr)	(%)
Wasteload Allocations	Construction stormwater (MNR100001)	0.97	0.97	0.0027	0.0	0%
	Industrial stormwater (MNR50000)	0.97	0.97	0.0027	0.0	0%
	Total WLA	**1.9**	**1.9**	**0.0054**	**0.0**	
Load Allocations*	*Watershed runoff*	*110.3*	*82.8*	*0.227*	*27.5*	*28%*
	Failing septics	*6.1*	*0.0*	*0.000*	*6.1*	*100%*
	Upper Twin Lake	*8,720.1*	*7,819.4*	*21.423*	*900.7*	*10%*
	Internal load	*476.6*	*476.6*	*1.306*	*0.0*	*0%*
	Total Watershed/In-lake	9,313.1	8,378.9	22.956	934.2	10%
	Atmospheric	27.4	27.4	0.075	0.0	0%
	Total LA	**9,340.5**	**8,406.3**	**23.031**	**934.2**	
MOS			**934.2**	**2.559**		
TOTAL		**9,342.4**	**9,342.4**	**25.595**	**934.2**	**10%**

*LA components are broken down for guidance in implementation planning; loading goals for these components may change through the adaptive implementation process, but the total LA for each lake will not be modified from the total listed in the table above.

Table 21. Mayo Lake TP TMDL and Allocations

Mayo Lake Load Component		Existing	Goal		Reduction	
		(kg/yr)	(kg/yr)	(kg/day)	(kg/yr)	(%)
Wasteload Allocations	Construction stormwater (MNR100001)	5.2	5.2	0.014	0.0	0%
	Industrial stormwater (MNR50000)	5.2	5.2	0.014	0.0	0%
	Total WLA	**10.4**	**10.4**	**0.028**	**0.0**	
Load Allocations*	*Watershed runoff*	*27.2*	*23.0*	*0.063*	*4.1*	*13%*
	Failing septics	*1.1*	*0.0*	*0.000*	*1.1*	*100%*
	Sibley Lake	*880.2*	*708.4*	*1.941*	*171.8*	*20%*
	Internal load	*198.3*	*88.0*	*0.241*	*110.3*	*56%*
	Total Watershed/In-lake	1,106.7	819.5	2.245	287.2	26%
	Atmospheric	16.4	16.4	0.045	0.0	0%
	Total LA	**1,123.1**	**835.9**	**2.290**	**287.2**	
MOS			**94.0**	**0.258**		
TOTAL		**1,133.5**	**940.3**	**2.576**	**287.2**	**25%**

*LA components are broken down for guidance in implementation planning; loading goals for these components may change through the adaptive implementation process, but the total LA for each lake will not be modified from the total listed in the table above.

Table 22. Portage Lake TP TMDL and Allocations

Portage Lake Load Component		Existing	Goal		Reduction	
		(kg/yr)	(kg/yr)	(kg/day)	(kg/yr)	(%)
Wasteload Allocations	Construction stormwater (MNR100001)	0.004	0.004	0.000011	0.0	0%
	Industrial stormwater (MNR50000)	0.004	0.004	0.000011	0.0	0%
	Total WLA	**0.008**	**0.008**	**0.000022**	**0.0**	
Load Allocations*	*Watershed runoff*	*175.1*	*61.0*	*0.167*	*114.1*	*67%*
	Failing septics	*8.8*	*0.0*	*0.000*	*8.8*	*100%*
	Internal load	*73.3*	*17.3*	*0.047*	*56.0*	*76%*
	Total Watershed/In-lake	257.2	78.3	0.214	178.9	70%
	Atmospheric	45.4	45.4	0.124	0.0	0%
	Total LA	**302.6**	**123.7**	**0.338**	**178.9**	
MOS			**13.7**	**0.038**		
TOTAL		**302.6**	**137.4**	**0.376**	**178.9**	**59%**

*LA components are broken down for guidance in implementation planning; loading goals for these components may change through the adaptive implementation process, but the total LA for each lake will not be modified from the total listed in the table above.

Table 23. Sibley Lake TP TMDL and Allocations

Sibley Lake Load Component		Existing	Goal		Reduction	
		(kg/yr)	(kg/yr)	(kg/day)	(kg/yr)	(%)
Wasteload Allocations	Construction stormwater (MNR100001)	11.1	11.1	0.030	0.0	0%
	Industrial stormwater (MNR50000)	11.1	11.1	0.030	0.0	0%
	Total WLA	**22.2**	**22.2**	**0.060**	**0.0**	
Load Allocations*	*Watershed runoff*	*1,951.1*	*1,498.3*	*4.105*	*452.8*	*23%*
	Livestock	*47.5*	*36.5*	*0.100*	*11.0*	*23%*
	Failing septics	*3.2*	*0.0*	*0.000*	*3.2*	*100%*
	Internal load	*0.0*	*0.0*	*0.000*	*0.0*	*0%*
	Total Watershed/In-lake	2,001.8	1,534.9	4.205	466.9	23%
	Atmospheric	46.3	46.3	0.127	0.0	0%
	Total LA	**2,048.1**	**1,581.2**	**4.332**	**466.9**	
MOS			**178.0**	**0.488**		
TOTAL		**2,070.3**	**1,781.4**	**4.880**	**466.9**	**23%**

*LA components are broken down for guidance in implementation planning; loading goals for these components may change through the adaptive implementation process, but the total LA for each lake will not be modified from the total listed in the table above.

Table 24. Swan Creek TP TMDL and Allocations

Swan Creek (07010106-527) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		TP (kg/day)				
Existing Load		No Data	1.2	0.6	No Data	No Data
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocation	*Watershed runoff*	*1.08*	*0.61*	*0.40*	*0.26*	*0.15*
	Tributary: Iron Creek	*1.13*	*0.63*	*0.41*	*0.28*	*0.17*
	Total LA	**2.21**	**1.24**	**0.81**	**0.54**	**0.32**
MOS		**0.25**	**0.14**	**0.09**	**0.06**	**0.04**
Total Loading Capacity		**2.45**	**1.37**	**0.90**	**0.60**	**0.36**
Estimated Load Reduction		No Data	0%	0%	No Data	No Data

Table 25. Straight River Heating Capacity TMDL and Allocations

Straight River (07010106-558) Load Component	Flow Regime				
	High	Moist	Mid	Dry	Low
	Heat Input (Million kJ/day)				
Existing Load	10,877	11,708	5,098	5,772	6,821
Wasteload Allocation	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocation	**15,048**	**11,237**	**9,705**	**8,343**	**6,640**
MOS	**1,672**	**1,249**	**1,078**	**927**	**738**
Total Loading Capacity	**16,720**	**12,486**	**10,783**	**9,270**	**7,378**

Table 26. Shell River Heating Capacity TMDL and Allocations

Shell River (07010106-681) Load Component	Flow Regime				
	High	Moist	Mid	Dry	Low
	Heat Input (Million kJ/day)				
Existing Load	88,944	65,919	56,382	36,081	No Data
Wasteload Allocation	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocation	**115,123**	**75,103**	**56,945**	**44,018**	**22,854**
MOS	**12,791**	**8,345**	**6,327**	**4,891**	**2,539**
Total Loading Capacity	**127,915**	**83,448**	**63,272**	**48,909**	**25,393**

Table 35. Cat River *E. coli* TMDL and Allocations

Cat River (07010106-544) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		**No Data**	**99.5**	**162.4**	**34.9**	**13.6**
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocations	*Watershed runoff*	*155.7*	*80.9*	*47.7*	*30.1*	*16.0*
	Total LA	**155.7**	**80.9**	**47.7**	**30.1**	**16.0**
MOS		**17.3**	**9.0**	**5.3**	**3.3**	**1.8**
Total Loading Capacity		**173.0**	**89.9**	**53.0**	**33.4**	**17.8**
Estimated Load Reduction		**N/A**	**10%**	**67%**	**4%**	**0%**

Table 27. Corey Brook *E. coli* TMDL and Allocations

Corey Brook (07010106-700) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		**110.9**	**251.2**	**50.5**	**20.3**	**No Data**
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocations	*Watershed runoff*	*211.9*	*62.2*	*26.7*	*12.3*	*2.2*
	Total LA	**211.9**	**62.2**	**26.7**	**12.3**	**2.2**
MOS		**23.5**	**6.9**	**3.0**	**1.4**	**0.2**
Total Loading Capacity		**235.4**	**69.1**	**29.7**	**13.7**	**2.4**
Estimated Load Reduction		**N/A**	**73%**	**41%**	**33%**	**N/A**

Table 28. Farnham Creek *E. coli* TMDL and Allocations

Farnham Creek (07010106-702) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		**82.6**	**209.2**	**47.3**	**21.9**	**No Data**
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocations	*Watershed runoff*	*49.8*	*29.9*	*20.2*	*13.9*	*9.1*
	Total LA	**49.8**	**29.9**	**20.2**	**13.9**	**9.1**
MOS		**5.5**	**3.3**	**2.2**	**1.6**	**1.0**
Total Loading Capacity		**55.3**	**33.2**	**22.4**	**15.5**	**10.1**
Estimated Load Reduction		**33%**	**84%**	**53%**	**29%**	**N/A**

Table 29. Home Brook *E. coli* TMDL and Allocations

Home Brook (07010106-524) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		**94.2**	**76.4**	**69.2**	**19.4**	**No Data**
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocations	*Watershed Runoff*	*126.9*	*38.4*	*16.2*	*7.6*	*1.3*
	Upstream Impaired Tributary: Corey Brook	*235.4*	*69.1*	*29.7*	*13.7*	*2.4*
	Total LA	**362.3**	**107.5**	**45.9**	**21.3**	**3.7**
MOS		**40.3**	**11.9**	**5.1**	**2.4**	**0.4**
Total Loading Capacity		**402.6**	**119.4**	**51.0**	**23.7**	**4.1**
Estimated Load Reduction		**0%**	**0%**	**26%**	**0%**	**N/A**

Table 37. Mayo Creek *E. coli* TMDL and Allocations

Mayo Creek (07010106-604) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		**99.4**	**30.4**	**25.4**	**No Data**	**No Data**
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocations	*Watershed runoff*	*66.5*	*30.2*	*21.6*	*15.5*	*8.3*
	Total LA	**66.5**	**30.2**	**21.6**	**15.5**	**8.3**
MOS		**7.4**	**3.4**	**2.4**	**1.6**	**0.9**
Total Loading Capacity		**73.9**	**33.6**	**24.0**	**16.1**	**9.2**
Estimated Load Reduction		**26%**	**0%**	**6%**	**N/A**	**N/A**

Table 30. Partridge River *E. coli* TMDL and Allocations

Partridge River (07010106-518) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		**No data**	**322.5**	**133.9**	**39.9**	**No Data**
Wasteload Allocations	Bertha WWTP (MN 0022799)	4.82*	4.82*	4.82*	4.82*	4.82*
	Total WLA	**4.82**	**4.82**	**4.82**	**4.82**	**4.82**
Load Allocations	*Watershed Runoff*	*324.13*	*143.59*	*76.9*	*27.58*	*21.01*
	Total LA	**324.13**	**143.59**	**76.9**	**27.58**	**21.01**
MOS		**36.55**	**16.49**	**9.08**	**3.6**	**2.87**
Total Loading Capacity		**365.5**	**164.9**	**90.8**	**36**	**28.7**
Estimated Load Reduction		**N/A**	**48%**	**31%**	**2%**	**N/A**

*The daily wasteload allocation for the Bertha WWTP is calculated from the facility's Fecal Coliform bacteria effluent limit of 200 organisms/100 mL (equivalent to the 126 organism 100/mL E. coli water quality standard) and the maximum permitted effluent flow rate of 6"/day from the facility's 6.2 acre discharging cell.

Table 36. Pillager Creek *E. coli* TMDL and Allocations

Pillager Creek (07010106-577) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		**12.5**	**37.5**	**16.7**	**No Data**	**No Data**
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocations	*Watershed runoff*	*43.6*	*24.7*	*16.7*	*11.2*	*6.7*
	Total LA	**43.6**	**24.7**	**16.7**	**11.2**	**6.7**
MOS		**4.8**	**2.8**	**1.9**	**1.2**	**0.8**
Total Loading Capacity		**48.4**	**27.5**	**18.6**	**12.4**	**7.5**
Estimated Load Reduction		**0%**	**27%**	**0%**	**N/A**	**N/A**

Table 31. Stoney Brook *E. coli* TMDL and Allocations

Stoney Brook (07010106-698) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		237.3	120.2	115.4	No data	No Data
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocations	*Watershed runoff*	*127.3*	*61.4*	*45.8*	*32.1*	*17.5*
	Total LA	127.3	61.4	45.8	32.1	17.5
MOS		14.1	6.8	5.1	3.6	2.0
Total Loading Capacity		141.4	68.2	50.9	35.7	19.5
Estimated Load Reduction		40%	43%	56%	N/A	N/A

Table 34. Swan Creek *E. coli* TMDL and Allocations

Swan Creek (070106-527) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		188.9	302.9	304.4	No Data	No Data
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocations	*Watershed runoff*	*135.3*	*75.7*	*49.5*	*33.4*	*19.8*
	Total LA	135.3	75.7	49.5	33.4	19.8
MOS		15.0	8.4	5.5	3.7	2.2
Total Loading Capacity		150.3	84.1	55.0	37.1	22.0
Estimated Load Reduction		20%	72%	82%	N/A	N/A

Table 38. Unnamed Creek *E. coli* TMDL and Allocations

Unnamed Creek (07010106-684) Load Component		Flow Regime				
		High	Moist	Mid	Dry	Low
		Billion organisms per day				
Existing Load		20.6	41.6	48.7	No data	No Data
Wasteload Allocation		*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
Load Allocations	*Watershed runoff*	*52.5*	*24.2*	*9.0*	*10.4*	*5.8*
	Total LA	52.5	24.2	9.0	10.4	5.8
MOS		5.8	2.7	1.7	1.2	0.7
Total Loading Capacity		58.3	26.9	10.7	11.6	6.5
Estimated Load Reduction		0%	35%	78%	N/A	N/A

Appendix C: Watershed Ranking Tool

Table 32. Watershed Ranking Tool Summary Spreadsheet [DNR Fisheries 2014] [This table needs to be updated by DNR Fisheries]

Priority Ranking	HUC 12	Fisheries Area	Lakes Surveyed by DNR Fisheries: Lake Name (Identification Number)	Perennial Streams and Rivers: Stream name (Kittle Number)	Water Quality Condition (current & trends)	Water Quality Impairments (Not including Mercury in Fish)	High Value & Sensitive Water Resources	DNR Land Resources	Areas of Biodiversity & Significance	Current or Future Changes, Pressures & Risks to Condition & Quality
1	Mantrap Lake	Park Rapids	Bad Axe (29020800), Buck (29020600), Giles (29012100), Mantrap (29015100), Petit (29014700)	Sand River	All lakes in excellent to good WQ condition and fall within expected ecoregion ranges for Total P, Chl *a* & transparency and fully support aquatic recreation.		Mantrap Lake	Paul Bunyan State Forest	* Tullibee in Buck, Bad Axe, Mantrap * Musky in Mantrap, Bad Axe *Wild Rice in Mantrap & Sand Creek	*Shoreline Development - __% Change *Currently under 75% Upland Protected from land use conversion – 47% protected including all upstream catchments
1	Big Sand Lake	Park Rapids	Big Sand (29018500), Emma (29018600), Loon (29019000), Lower Bottle (29018000), Stocking (29017200), Upper Bottle (29014800)	Sand River	Most lakes in excellent to good WQ condition with Stocking being outside the expected range for TP, Chl a & transparency, not considered impairment. Upper & Lower Bottle showing an increasing trend in TP but no change in Chl a or Transparency. All lakes fully support aquatic recreation.		Big Sand Lake	Bottle Lake AMA	* Tullibee in Big Sand, Emma, Upper and Lower Bottle *Wild Rice in Upper & Lower Bottle	*Shoreline Development - __% Change *Currently under 75% Upland Protected from land use conversion – 48% protected including all upstream catchments
1	Lake of the Valley	**Bemidji Detroit Lakes**	Bad Medicine (3008500), Cox (15006900), Glanders (15007000), Long Lost (15006800)	None	High water levels in recent decades have caused concern with water quality but overall lakes are excellent to good WQ and fully support aquatic recreation		Bad Medicine Lake	Bad Medicine Lake AMA, Gardner Lake WMA, White Earth State Forest	* Tullibee and Rainbow Trout in Bad Medicine Lake * Wild rice	*Shoreline Development - __% Change *Currently Over 75% Upland Protected from land use conversion
1	Straight Lake	Park Rapids	Straight (03001000)	Straight Lake Creek, Upper Straight Creek	Both Straight Lake Creek & Upper Straight Creek are Cold Water / Ground Water Dependent Systems. Dissolved Oxygen, flow, and water temperatures may being impacted by adjacent Groundwater withdrawal for irrigated agriculture		Upper Straight Creek	Bog Lake AMA, Two Inlets State Forest	* Brown trout in Straight Lake Creek * Brook trout in Straight Lake Creek, Upper Straight Creek * Tullibee in Straight Lake * Wild rice	*Historic and current Irrigated Agriculture Expansion in the watershed can effect GW Levels and GW dependent resources such as wetlands and both Straight Lake Creek and Upper Straight Creek
1	Straight River	Park Rapids		Straight River	Straight River is a Cold Water / Ground Water Dependent System. Dissolved Oxygen, flow, and water temperatures may being impacted by adjacent Groundwater withdrawal for irrigated agriculture	Dissolved Oxygen in Straight River	Straight River	Straight River AMAs	* Brown trout in Straight River	*Historic and current Irrigated Agriculture Expansion in the watershed can effect GW Levels and GW dependent resources such as wetlands and both Straight Lake Creek and Upper Straight Creek
2	Eagle Lake	Park Rapids	Island (29025400), Eagle (29025600), Coon (29027700)	Hay Creek, Rose Creek, Trib to Upper Mud Lake	All lakes in excellent to good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation.		Upper & Lower Mud Wild Rice Lakes Area of High Biodiversity Significance		* Tullibee in Island, Eagle Lakes * Sensitive shoreline on Island Lake *Wild Rice in Island, Eagle & Upper and Lower Mud Lakes *Large portion of Mud Lakes catchment is rated high area of biodiversity significance which currently is greater than 75% in Protection	*Shoreline Development - __% Change *Currently under 75% Upland Protected from land use conversion – 58% protected including all upstream catchments

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2	Eleventh Crow Wing Lake	Park Rapids	Upper Bass (29003400), Schroeder (29002900), Indian (29007400), 11th Crow Wing (29003600), Big Bass (29003200)	Crow Wing River	All lakes in excellent to good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation.			Paul Bunyan State Forest	* Tullibee in 11th Crow Wing Lake	*Shoreline Development - __% Change *Currently under 75% Upland Protected from land use conversion – 50% protected
2	Fifth Crow Wing Lake – CWR	Park Rapids	8th Crow Wing (29007200), 7th Crow Wing (29009100), 9th Crow Wing (29002500), Shinker (29009600), 6th Crow Wing (29009300), 5th Crow Wing(29009200), Tenth Crow Wing (29004500), Owl (29007300)	Crow Wing River, Hellcamp Creek	All lakes in excellent to good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation with the exception of 8th Crow Wing Lake which is impaired for nutrients (TP)	Nutrient Impairment in 8th Crow Wing Lake	Hellcamp Creek		* Tullibee in 5th – 10th Crow Wing Lakes * Brook trout in Hellcamp Creek. *Wild Rice in 5th – 10th Crow Wing Lakes and River	* Groundwater levels, withdrawals and contamination
2	First Crow Wing Lake – CWR	Park Rapids	Third Crow Wing (29007700), Fourth Crow Wing (29007800), First Crow Wing (29008600), Second Crow Wing (29008500), Palmer (29008700)	Crow Wing River	All lakes in excellent to good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency with the exception of First Crow Wing Lake which is impaired for nutrients (TP) which may be due to natural causes and internal loading. All lakes fully support aquatic recreation & life.	Nutrient Impairment in First Crow Wing		Crow Wing Chain WMA	* Tullibee in 1st – 3rd Crow Wing Lakes *Wild Rive in 1st – 3rd Crow Wing Lakes and River	* Sensitive shoreline on 1st, 3rd Crow Wing Lakes * Groundwater levels, withdrawals and contamination
2	Fishhook Lake & Fishhook River	Park Rapids	Portage (29025000), Fish Hook (29024200)	Fish Hook River Potato River, Portage Lake Outlet	Fish Hook Lake has good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully supports aquatic recreation. Portage Lake is impaired for nutrients (TP) which may be due to internal loading and dam. Sections of the Fish Hook River are channelized while still fully supporting aquatic life throughout.	Nutrient Impairment in Portage			* Tullibee in Fish Hook Lake	*Historic and current Irrigated Agriculture Expansion in the watershed can affect GW levels, quality and GW dependent resources such as wetlands and river from GW withdrawal and nutrient and chemical applications. *City of Park Rapids resides in these subwatersheds and concerns regarding stormwater, shoreline development on Portage, Fish Hook Lake, and Fish Hook River exist.
2	Kettle River	Park Rapids	None	Kettle River, Kettle River Tributary	The Kettle River Subwatershed fully support aquatic recreation and life however TP results were among highest in CWR watershed which may be contributing to downstream impairments on Blueberry and Twin Lakes.		Trout tributary to Kettle River		* Brook Trout in small tributary to Kettle River	Primarily Forested (50%) intermixed with agriculture (30%) mixed row crop, hay, pasture, and livestock.

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2	Little Sand Lake & Belle Taine	Park Rapids	Belle Taine (29014600), Deer (29009000), Clausens (29009700), Spider (29011700), Round (29014500), Little Sand (29015000), Dead (29011000), Shallow (29008900), Gilmore (29018800), Boulder (29016200), Spring (29010600), East Crooked (29010101), Crow Wing (29011600), Coon (29010800), Dead Horse (29018700), Middle Crooked (29010102), West Crooked (29010103), Waboose (29009800)	Sand River	All lakes in excellent to good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation.			Paul Bunyan State Forest	* Tullibee in Spider, Little Sand, East Crooked Lakes	Primarily forested & shoreline development *Shoreline Development - __% Change *Currently under 75% Upland Protected from land use conversion – 49% protected including all upstream catchments (Big Sand & Mantrap)
2	Long Lake	Park Rapids	Ivan (29016600), Long (29016100), Sweitzer (29016400), Peysenske (29016900)	None	Sweitzer, Peysenske & Long Lakes all have excellent to good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency but Long Lake has seen an decline in transparency from 1984-2006 but more recently has that trend in improving from 2000-2011. The lakes fully support aquatic recreation.				* Tullibee in Long Lake	*Historic and current Irrigated Agriculture Expansion in the watershed can effect GW Levels and GW dependent resources such as wetlands and rive. City of Park Rapids resides in these subwatersheds and concerns regarding stormwater, shoreline development on Portage, Fish Hook Lake, and Fish Hook River exist.
2	Potato Lake	Park Rapids	Potato (29024300), Pickerel (29017800), Blue (29018400), Rice (29017700), Ingram (29017100)	Potato River Hay Creek, Rice Lake Outlet	All lakes in excellent to good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation.		Rice Lake		* Tullibee in Potato, Blue Lakes * Put & take rainbow trout and trophy walleye in Blue Lake * Big Rice Lake as Wild Rice Lake	Primarily forested & shoreline development *Shoreline Development - __% Change *Currently under 75% Upland Protected from land use conversion – 49% protected including all upstream catchments (Big Sand & Mantrap)
3	Blueberry Lake – Shell River	Park Rapids	Bass (29059000), Lord (29024800), Blueberry (80003400), Hinds (29024900), Moran (29024700)	Shell River, Hinds Lake Outlet	Bass, Lord, Moran & Hinds Lakes in good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation and show increasing trends in WA in Lords and Moran. Blueberry Lake is impaired for nutrients (TP) and does not fully support aquatic recreation. Blueberry is a shallow lake and receives water and nutrients from two of the subwatersheds with the highest TP concentrations in the CWR watershed.	Nutrients in Blueberry			* Tullibee in Blueberry, Hinds Lakes	*Historic and current Irrigated Agriculture Expansion in the watershed can affect GW Levels and GW dependent resources such as wetlands and lakes such as Moran and Lords Lakes. Shoreline * Development is mixed with stretches of shoreline with limited development and others with small lots. *Common Carp and Curly Leaf Pondweed, both aquatic invasive species also contribute to the

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										poor water quality of Blueberry Lake
3	Cat River	Park Rapids		Cat River, Kitten Creek	Kitten Creek, Cat River Headwaters & Cat River all had good WQ, fully supported life, and met WQ criteria with the exception of bacterial exceedance in the Cat River which was determined to not fully support aquatic recreation due to bacterial exceedance.	Bacterial Exceedance (E. coli) in Cat river from confluence with Kitten Creek to CWR		Wood Eye WMA. Kitten Creek WMA. Red Eye WMA.	* Brook trout in the headwaters of Cat River. Supported by stocking with limited reproduction.	Primarily Forested (40%) intermixed with wetland & agriculture of mixed row crop, hay, pasture, and livestock.
3	Dinner Creek	Park Rapids	Little Mantrap (29031300), Cedar (29031200), Kane (3004200), Little Dinner (3004500), Dinner (3004400), Hungry Man (3002900)	Dinner Creek	All assessed lakes in excellent to good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation. Dinner Creek showed high taxa richness and sensitive species and fully supports aquatic life.		Areas of Outstanding biodiversity Significance	Two Inlets State Forest Hungry Man Campground Itasca State Park bisects northern portion of subwatershed	Large tracts of Outstanding rating for Area of Biodiversity Significance in subwatershed	Primarily forested & currently under 75% Upland Protected from land use conversion – 49% protected including all upstream catchments
3	Mission Creek – Shell River	Park Rapids **Detroit Lakes**	Harvelas (03005700), Section 10 (03005900)	Shell River	Shell River has biological impairments for fish.	Biological Impairment in the Shell River		Smokey Hill State Forest is Western portion of watershed		Conversion of river riparian to Center Pivot irrigation
3	Shell Lake	**Detroit Lakes**	Shell (93010200), Pihlaja's (3012600), Aspinwall (3010400), Dumbbell (3012400), Big Rush (3010300), Bass (3012700)	Fish Creek	All lakes in good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation.		Shell Lake and Big Rush Lake.	Portions of both the Smokey Hills and White Earth State Forests & Shell Lake WMA	*Large area of High rating for Area of Biodiversity Significance around Rush Lake *Wild Rice on nearly all lakes in subwatershed including Shell and Big Rush Lakes	Primarily forested & wetland historic agriculture in Northern Portion of subwatershed, much of which if irrigated row crop.

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3	Shell River	Park Rapids	Lower Twin (80003000), Duck (29014200), Upper Twin (29015700), Morgan (80003800)	Shell River	Duck is in good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation. High nutrient levels were observed in Upper Twin but they still fell within expected range for ecoregion and lake type. Lower Twin Lake is impaired for nutrients (TP) and does not fully support aquatic recreation. Lower Twin similar to Blueberry upstream is a shallow lake and receives water and nutrients from two of the subwatersheds with the highest TP concentrations in the CWR watershed.	Nutrients (TP) in Lower Twin Shell River Between Lower Twin and CWR displayed biological impairments and such does not fully support aquatic life. Causes may include poor stream habitat and large wetland fringes of river system.			* Tullibee in Lower Twin Lake	Composed of forest, wetland and agriculture in portions of subwatershed, much of which if irrigated row crop and intermixed hay/pasture. A large portion of north 1/2 of watershed and other southern portions are heavily irrigated ag and forest to ag conversion is transforming areas of historic forest to irrigated ag. Concerns with GW levels, quality and GW dependent resources such as wetland and lakes, Duck in particular exist.
4	Basswood Creek	Park Rapids **Bemidji Detroit lakes**	Boot (03003000)	Basswood Creek	Boot Lake is considered excellent WQ condition and falls within or better than expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation. Basswood Creek showed high taxa richness and sensitive species and fully supports aquatic life.		Boot Lake.	Portion of both Two Inlets & White Earth State Forest as well as portion of Itasca State Park in up reaches of subwatershed	* Tullibee in Boot Lake	*Shoreline Development - __% Change *Currently under 75% Upland Protected from land use conversion – 25% protected including all upstream catchments

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4	Bender Creek	Park Rapids	Nagel (29000300), Mud (29000400), Tripp (29000500), Mow (29000200)	Bender Creek	All lakes assessed in good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation. Bender Creek monitoring score was very poor and considered not fully supporting aquatic life.	Bender Creek monitoring score was very poor and considered not fully supporting aquatic life. More monitoring will be performed in 2014 to determine if natural background conditions are causing low numbers as there is limited anthropogenic disturbance in subwatershed	Groundwater levels and quality	Badora State Forest	* Tullibee in Tripp Lake	Primarily forested & wetland with agriculture in NE 1/2 of subwatershed, much of which is irrigated row crop. This subwatershed has also seen the recent sale of large areas of commercial forest for conversion to irrigated row crop than may have large impacts on the small watershed size and its groundwater dependent lakes, wetlands, and creek.
4	Big Stony Lake – CWR	Park Rapids	Island (29008800), Big Stony (29014300)	Crow Wing River	Both Island and Big Stony fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation but Big Stony does appear to be showing a downward trend in WQ according to Citizen Lake Monitoring Data.		Groundwater levels and quality			This subwatershed consists of both forested and irrigated agriculture, primarily on western edge of subwatershed. Numerous wetlands and small basin are GW dependent and could be affected by GW withdrawal and application of nutrients and chemicals for farm production.
4	Indian Creek	Park Rapids **Detroit Lakes**	Bass (03008800)	Indian Creek	Bass Lake fell within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation. Other larger shallow Lakes including Big Basswood (03008800) & Indian Creek Reservoir (03078600) are large shallow rice lakes and WQ typical of observed conditions. Big Basswood fully supports aquatic recreation.		Big Basswood Lake and Indian Creek Reservoir.	Both Two Inlets and White Earth State Forests	*Wild Rice in both Big Basswood Lake, Indian Creek Reservoir & downstream of both Big Basswood lake and Reservoir in Indian Creek	Primarily forested & currently under 75% Upland Protected from land use conversion – 49% protected including all upstream catchments

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4	Hay Creek	Park Rapids	Two Inlets (03001700)	Hay Creek, Mud Lake Outlet	Two Inlets is in good WQ condition and falls within expected ecoregion ranges for Total P, Chl a & transparency and fully supports aquatic recreation. Hay Creek downstream of Two Inlets Lakes fully supports aquatic life and recreation.		Two Inlets Lake and Hay Creek	Two Inlets State Forest	*Tullibee in Two Inlets Lake * Wild Rice in Hay Creek at widening of river between Two Inlets & Island Lakes	Primarily forested & wetland with hay and pasture agriculture in Central portion of subwatershed, some of which could be converted to irrigated row crop. *Currently under 75% Upland Protected from land use conversion – 59% protected including all upstream catchments (Dinner, Basswood, * Indian Creeks)
4	Stocking Lake	Park Rapids	Stocking (80003700), Spirit (80003900)	Stocking Creek	Stocking Lake is a eutrophic lake and is impaired for nutrients (TP) and does not fully support aquatic recreation. Stocking Lake is a shallow lake and is near built out in relations to the shoreland. Spirit, which was determined to be fully supporting aquatic recreation.	Nutrient Impairment in Stocking Lake				This subwatershed consists of both forested and irrigated and dry land agriculture and includes the majority of the city of Menahga. Both Stocking and Spirit Lakes are built up along shoreland including much of the landscape.
4	Wallingford Creek	Park Rapids	Hay (29001600), Wolf (29008100), Loon (29002000), Ham (29001700)	Wallingford Creek Muckey Brook	All lakes assessed in good WQ condition and fall within expected ecoregion ranges for Total P, Chl a & transparency and fully support aquatic recreation. Wallingford Creek was not monitored.		Wallingford Creek and Muckey Brook	Badoura State Forest	Wallingford Creek and Muckey Brook are cold water streams that support trout and other cold water stream species	Primarily forested & wetland with agriculture in NE 1/2 of subwatershed, much of which is irrigated row crop. This subwatershed has also seen the recent sale of large areas of commercial forest for conversion to irrigated row crop than may have large impacts on the small watershed size and its groundwater dependent lakes, wetlands, and creek
4	Hayden Creek – CWR	Park Rapids	None	Crow Wing River, Hayden Creek, Fawn Creek	Water Quality was not assessed in this watershed		Fawn Creek		Fawn Creek is a designated trout stream	This subwatershed consists of both forested and irrigated and dry land agriculture and includes the majority of the city of Staples. Very built out subwatershed with city and agriculture.
4	Goose Lake	Park Rapids **Brainerd**	Spider (11050000)	Goose Creek	Spider Lake falls within expected ecoregion ranges for Total P, Chl a & transparency and fully supports aquatic recreation			Foot Hills State Forest	Bergkeller is a wild rice lake	The foothill lakes and wetlands are surrounded by state or county owned forest and are fully protected. Middle and lower sections of the watershed a mixed forest, wetland and farm land, primarily private ownership.

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5	Beaver Creek	Park Rapids	None	Beaver Creek	Beaver Creek has good WQ but likely do to channelization of stream the stream had Poor MN Stream Health Assessment Score. Was not assessed for aquatic life or recreation.			Foot Hills State Forest		Much of Beaver Creek has been channelized to drain water out of wetland and off landscape. The subwatershed is primarily forest with mix dry land ag and wetlands.
5	Big Swamp Creek	Park Rapids **Brainerd**	None	Big Swamp Creek	Big Swamp Creek and trib to Big Swamp Creek had good fish and invertebrate IBI scores but poor Stream Health Assessment Score. Was not assessed for aquatic life or recreation but the stream is almost entirely channelized.					Much of Big Swamp Creek and its tributaries have been channelized to drain water out of wetland and off landscape. The subwatershed is primarily forest with mix of dry land and irrigated ag and wetlands. The subwatershed does contain some large commercial forest tracts that could be converted to irrigated row crop, a recent trend, one of these have already been sold to do so.
5	Blueberry River	Park Rapids	None Other Lakes – Shipman (03000500) Blueberry (03000700)	Blueberry River, Trib to Blueberry River, Shipman lake Outlet	Blueberry Creek had good WQ and fully supports aquatic life and recreation. It also showed high invertebrate taxa richness and was dominated by sensitive species including some cold water species.		Blueberry Creek	Lowell WMA		
5	Burgen Lake	Park Rapids	None	None				Burgen Lake WMA. Huntersville WMA.		
5	City of Nimrod – CWR	Park Rapids	None	Crow Wing River, Trib to CWR, Little Swamp Creek, Trib to CWR, Trib to CWR, Strike Lake Outlet, Trib to CWR				Strike Lake WMA		
5	Egly Creek – Partridge River	**Little Falls**	None	Partridge River, Egly Creek						
5	Goose Lake – Big Swamp Creek	Park Rapids **Walker Brainerd**	None	Big Swamp Creek						
5	Little Partridge Creek	**Little Falls**	None	Little Partridge River, Bear Creek						
5	Partridge River	Park Rapids **Little Falls**	None	Partridge River						
5	Simon Lake – CWR	Park Rapids	None	Crow Wing River						

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5	Town of Huntersville – CWR	Park Rapids	None	Crow Wing River, Trib to CWR						
5	Yaeger Lake	Park Rapids	None	None				Yeager Lake WMA. Menagha WMA.		
Not Rated	Crow Wing River	Brainerd	Hardy (11020900), Sylvan Reservoir (49003600)	Crow Wing River						
Not Rated	City of Motley – CWR	Brainerd Little Falls	None	Crow Wing River, Trib to CWR, Trib to CWR				Villard WMA		
Not Rated	Farnham Creek	Brainerd	Farnham (11051300)	Farnham Creek, Tower Creek, Martin Creek				Farnham Lake WMA. Dry Sand WMA		
Not Rated	Gull Lake	Brainerd	Ruth (11021100), Sylvan (11030400), Gull (11030500), Green Bass (11033000)	None				Pillsbury State Forest in South West end of Watershed	Tullibee in Gull Lake.	
Not Rated	Gull River	Brainerd	White Sand (18037900), Red Sand (18038600), Whipple (18038700), Hartley (18039200), Sylvan Reservoir (49003600)	Gull River						
Not Rated	Home Brook	Brainerd	Agate (11021600), Margaret (11022200), Meadow (11041900)	Home Brook, Cory Brook		Nutrient Impairment in Margaret		Vast amount of County Land in Western end of Watershed	Tullibee in Margaret Lake. Brook Trout in Home Brook and Corey Brook (wild and naturally reproducing in Corey Brook)	
Not Rated	Lake Placid – CWR	Brainerd	Placid Reservoir (49008000), Stanchfield (49011800)	Crow Wing River						
Not Rated	Mayo Creek	Brainerd	Loon (110226000), Sibley (18040400), Mayo (18040800)	Mayo Brook, Trib to Mayo Brook						
Not Rated	Mosquito Creek	Brainerd	None	Mosquito Creek, Cat Creek, East Mosquito Creek				Headwaters in County and Meadowbrook WMA		
Not Rated	Pillager Creek	Brainerd	Pillager (11032000)	Pillager Creek, Rogers Brook, Peterson Creek				Pillsbury State Forest in Northeast end of Watershed	Tullibee in Pillager Lake.	

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Not Rated	Round Lake	Brainerd	Edward (18030500), Wise (18031900), Mollie (18033500), North Long (18037200), Round (18037300)	Bishop Creek, County Ditch 13					Tullibee in North Long and Round Lake.	
Not Rated	Rush Brook	Brainerd	Little Long (11032300), Rock (11032400), Long (11032800)	Rush Brook				Pillsbury State Forest		
Not Rated	Sevenmile Creek	Brainerd	None	Sevenmile Creek						
Not Rated	Stony Brook	Brainerd	None	Stony Brook, North Branch Stony Brook					Brook and Brown Trout in Stoney Brook (wild and naturally reproducing)	
Not Rated	Swan Creek	Brainerd	None	Swan Creek, Iron Creek, Little Swan Creek				Vast amounts of County Land in central part of watershed		
Not Rated	Upper Gull Lake	Brainerd	Upper Gull (11021800), Ray (11022000), Gladstone (18033800), Little Hubert (18034000), Clark (18037400), Hubert (18037500), Upper Cullen (18037600), Middle Cullen (18037700), Edna (18039600), Fawn (18039700), Roy (18039800), Nisswa (18039900), Lower Cullen (18040300), East Twin (18040700), West Twin (18040900)	Unnamed Creek					Tullibee in Upper Gull, Ray, Hubert, Lower Cullen, Middle Cullen, Edna, Roy and Nisswa Lakes	

Appendix D: Lake Ranking & Management Tool

There are 200 lakes or bays larger than 10 acres in the Crow Wing River Watershed. The objective of this tool is to prioritize those 200 lakes into a smaller subset of lakes that will be the focus of restoration and protection efforts in the watershed. In addition, phosphorus management strategies were identified for each priority lake to guide the selection of restoration and protection strategies in Section 3.3 of this report.

86 priority lakes for protection (Figure 7) were chosen based on the criteria of having one or more of the following attributes:

- Surface area greater than 200 acres, and/or
- DNR designated cisco or trout lake, and/or
- Lakes included in a RMB Large Lakes Assessment report, and/or
- Lakes with an active lake association

Descriptions, data sources, and categories of lake characteristics used to prioritize the lakes in the Leech Lake River Watershed are summarized in Table 33.

Table 35 and 5 accompanying maps summarize the lake physical characteristics, biological attributes (Figure 8), trophic state (Figure 9), long-term water quality trends (**Error! Reference source not found.**), and number of upstream lakes (Figure 10) of the 52 priority lakes.

Based on certain lake characteristics, the 86 priority lakes were further categorized by one of the following phosphorus management strategies (Table 34) to guide later selection of restoration and protection strategies (see Section 3.3):

- **Monitor**: Existing in-lake water quality is unknown and a monitoring plan should be developed.
- **In-Lake Load Management**: In-lake water quality is expected to be most strongly influenced by in-lake aquatic plant and fish population dynamics and in-lake sediment phosphorus release (internal loading)
- **Upstream Load Management**: In-lake water quality is expected to be most strongly influenced by upstream lake phosphorus loads
- **Mixed Load Management**: In-lake water quality is expected to be equally influenced by watershed phosphorus loads and upstream lake phosphorus loads
- **Watershed Load Management**: In-lake water quality is expected to be most strongly influenced by watershed phosphorus loads

Table 33. Lake prioritization table parameter description, data sources, and categories

Parameter	Description	Data Source	Categories
Surface Area (ac)	The surface area of each individual lake in acres	DNR Data Deli	None
Max Depth (feet)	The maximum depth of each individual lake in feet	DNR Data Deli MPCA Assessment Data	Horizontal bars scaled between the smallest and largest maximum depth of all lakes listed in the table
Cisco	Lakes that support populations of tullibee (cisco or lake herring). These coldwater fish provide excellent forage for trophy walleye, northern pike, muskellunge, and lake trout. They require cold, well-oxygenated water of deep, high water quality lakes.	The Minnesota DNR Fisheries Research Unit, in conjunction with the University of Minnesota, has identified tullibee refuge lakes in Minnesota that are deep and clear enough to sustain tullibees even after climate warming occurs.	Yes or no
Trout	DNR designated trout lake	Minn. R. 6264.0050	Yes or no
Wild Rice	DNR designated wild rice lake	DNR statewide inventory of wild rice waters (2008-02-15)	Yes or no
HSPF	Lakes that were explicitly modeled in the Leech Lake River Watershed HSPF model	HSPF model supporting documentation (RESPEC)	Yes or no
Lake Assoc.	Lakes with known lake associations	RMB Lake Summary Reports, Cass County website, Crow Wing County website, and individual lake association websites.	Yes or no
Trophic Index	The average of the total phosphorus, chlorophyll-a, and Secchi depth Carlson Trophic State Indices.	Calculated	**Oligotrophic (light blue)**: TSI < 40 **Mesotrophic (light green)**: TSI 40-50 **Eutrophic (dark green)**: TSI 50-70
Nutrients (TP) (ppb), Algae (Chl-a) (ppb), and Clarity (ft)	The 10-year (2004-2013) growing season (June-September) mean total phosphorus (TP) concentration in parts per billion (ppb), chlorophyll-a (Chl-a) concentration in parts per billion (ppb), and Secchi transparency depth (a measure of water clarity) in feet (ft)	MPCA EQuIS database	None
Clarity RMB	Long-term trend of lake water transparency	Mann Kendall Trend Analysis of >8 years of MPCA Secchi transparency depth data with 4 or more readings per season reported by RMB Environmental Laboratories in the Cass County, Hubbard County, and Crow Wing County Large Lake Assessment reports.	**Up Arrow**: improving trend **Right Arrow**: no evidence of trend **Down Arrow**: declining trend **No Arrow**: insufficient data for trend analysis
Lakeshed Assess.	Lake Report that summarizes lake water quality and lakeshed data	RMB Environmental Laboratories Cass County Lake Water Quality (www.co.cass.mn.us/esd/water_quality.html) Crow Wing County Large Lake Assessments (crowing.us/index.aspx?NID=705) Hubbard County Large Lake Assessment http://www.hubbardcolamn.org/uploads/3/2/6/5/3265696/hubbard_county_summary.pdf	Yes or no

Parameter	Description	Data Source	Categories
Poor U/S Lake WQ	Lakes that have a smaller 10-year growing season mean TP concentration than the next most upstream lake(s)	Calculated	**Red symbol**: next most upstream lake TP is at least 4 ppb greater than the lake TP **Yellow symbol**: next most upstream lake TP > lake TP **Green symbol**: next most upstream lake TP <= lake TP **No symbol**: no TP data for either the next most upstream lake or the lake
Upstream Load	An estimate of the relative fraction of phosphorus load originating from upstream lakes compared to the direct drainage area based on the approximate number of lakes located upstream that are connected in part by surface water to the lake	HSPF model subbasin and reach shapefiles	**Red symbol**: > 20 lakes are located upstream **Yellow symbol**: 10-19 lakes are located upstream **Green symbol**: < 10 lakes are located upstream
Directly U/S Lakes	The number of lakes that are located directly upstream of the lake and connected in part by surface water	HSPF model subbasin and reach shapefiles	**Red symbol**: 3 or more lakes located directly upstream **Yellow symbol**: 2 lakes located directly upstream **Green symbol**: 0-1 lakes located directly upstream
Wshed: Surface	The ratio of the estimated total watershed area to lake surface area	DNR lake catchment shapefiles (It was assumed that all of the catchment area contributes drainage to each located in the catchment, even if more than one lake was located in the catchment)	**Red symbol**: > 20 watershed to surface area ratio **Yellow symbol**: 10-19 watershed to surface area ratio **Green symbol**: < 10 watershed to surface area ratio
% Littoral	The percent of the littoral (water depths < 15 feet) zone area compared to the total lake surface area	DNR Data Deli	Horizontal bar scaled between 0% and 100% of littoral zone

Table 34. Recommended Type of Lake Management for Priority Lakes

Lake Management Focus	Rationale	Lake Characteristics	Protection Strategies
Monitor	Existing in-lake water quality is unknown and a monitoring plan should be developed	No TP data	Water quality monitoring
In-Lake	In-lake water quality is expected to be most strongly influenced by in-lake aquatic plant and fish population dynamics, and/or sediment phosphorus release (internal loading)	watershed to surface area ratio < 10 AND > 80% littoral area OR maximum depth < 20 feet	In-lake aquatic plant and fish management
Upstream	In-lake water quality is expected to be most strongly influenced by upstream lake phosphorus loads	> 10 upstream lakes AND/OR > 1 directly upstream lake Greater upstream lake TP concentration	Protecting upstream lake water quality
Mixed	In-lake water quality is expected to be equally influenced by watershed phosphorus loads and upstream lake phosphorus loads	< 10 total upstream lakes AND/OR Greater upstream lake TP concentration	Watershed best management practices Protecting upstream lake water quality
Watershed	In-lake water quality is expected to be most strongly influenced by watershed phosphorus loads	All remaining lakes	Watershed best management practices

Table 35. Priority Lakes with Management Focus [Emmons & Olivier Resources, 2014]

HUC 12	HUC 12 NAME	LAKE	BAY	ID	MGMT FOCUS	COUNTY	SURFACE AREA (acres)	MAX DEPTH (feet)	CISCO	TROUT	WILD RICE	HSPF	LAKE ASSOC.	TROPHIC INDEX	NUTRIENTS (TP) (ppb)	ALGAE (CHL-A) (ppb)	CLARITY (ft)	CLARITY RMB	Lakeshed Assess.	UPSTREAM LOAD	POOR U/S LAKE WQ	DIRECTLY U/S LAKES	WSHED: SURFACE	% LITTORAL	DNR FISHERIES MGMT FOCUS
070101060101	Straight Lake	**Straight**		03001000	**Watershed**	Becker	**471**	**63**						44	23	11.0	10	3		1	0	0	36	45	**FULL RESTORATION**
070101060201	Lake of the Valley	**Bad Medicine**		03008500	**Watershed**	Becker	**746**	**80**						29	8	2.1	23	2		0	0	0	15	16	**VIGILANCE**
070101060201	Lake of the Valley	**Long Lost**		15006800	**Watershed**	Clearwater	**501**	**53**						32	11	2.8	21			0	0	0	32	76	**VIGILANCE**
070101060202	Basswood Creek	**Boot**		03003000	**Watershed**	Becker	**385**	**109**						28	9	1.2	23			1	0	0	4	26	**NEEDS PROTECTION**
070101060203	Indian Creek	**Big Basswood**		03009600	**Watershed**	Becker	**592**	**6**						41	18	3.6	6			6	0	2	42	100	
070101060204	Dinner Creek	**Little Mantrap**		29031300	**Watershed**	Hubbard	**381**	**54**						33	11	3.4	18			2	0	1	10	57	**NEEDS PROTECTION**
070101060205	Hay Creek	**Two Inlets**		03001700	**Upstream**	Becker	**579**	**60**						44	22	8.5	8	2		15	0	4	139	34	**NEEDS PROTECTION**
070101060206	Eagle Lake	**Island**		29025400	**Upstream**	Hubbard	**533**	**61**						44	24	8.6	8			16	0	2	194	43	**NEEDS PROTECTION**
070101060206	Eagle Lake	**Eagle**		29025600	**Upstream**	Hubbard	**424**	**77**						41	19	7.3	10	3		17	2	1	255	47	**NEEDS PROTECTION**
070101060207	Potato Lake	**Potato**		29024300	**Upstream**	Hubbard	**2,096**	**87**						38	14	5.3	11	3		21	2	1	59	52	**NEEDS PROTECTION**
070101060207	Potato Lake	**Blue**		29018400	**Watershed**	Hubbard	**336**	**84**						32	10	2.1	17	2		1	0	0	3	34	**FULL RESTORATION**
070101060207	Potato Lake	**Pickerel**		29017800	**In-Lake**	Hubbard	**310**	**26**						38	16	4.8	13			1	0	0	9	87	**NEEDS PROTECTION**
070101060207	Potato Lake	**Rice**		29017700	**Watershed**	Hubbard	**230**	**18**						45	25	8.5	6			2	0	1	30	94	**NEEDS PROTECTION**
070101060208	Fishhook Lake	**Fish Hook**		29024200	**Upstream**	Hubbard	**1,643**	**76**						38	17	4.8	12			22	2	2	86	48	**NEEDS PROTECTION**
070101060208	Fishhook Lake	**Portage**		29025000	**In-Lake**	Hubbard	**428**	**15**						54	51	22.2	4	2		1	0	0	7	56	**NEEDS PROTECTION**
070101060209	Long Lake	**Long**		29016100	**Mixed**	Hubbard	**1,926**	**129**						38	13	5.3	10	1		4	2	2	8	36	**FULL RESTORATION**
070101060209	Long Lake	**Peysenske**	Main	29016901	**In-Lake**	Hubbard	**201**	**13**						39	16	3.6	9	2		1	0	0	7	-	**FULL RESTORATION**
070101060401	Shell Lake	**Shell**		03010200	**In-Lake**	Becker	**3,147**	**16**						47	27	9.2	6			3	0	1	9	97	**NEEDS PROTECTION**
070101060401	Shell Lake	**Big Rush**		03010300	**Watershed**	Becker	**1,128**	**9**						40	15		5			1	0	0	12	100	**FULL RESTORATION**
070101060403	Blueberry Lake-Shell River	**Blueberry**		80003400	**Watershed**	Wadena	**533**	**15**						61	93	52.3	3			4	0	1	256	100	**FULL RESTORATION**
070101060403	Blueberry Lake-Shell River	**Hinds**		29024900	**Watershed**	Hubbard	**310**	**16**						36	14	4.0	14	3		1	0	0	21	75	**FULL RESTORATION**
070101060404	Stocking Lake	**Stocking**		80003700	**Watershed**	Wadena	**356**	**24**						51	45	21.4	6			1	0	0	27	82	**FULL RESTORATION**
070101060405	Shell River	**Duck**		29014200	**Watershed**	Hubbard	**322**	**23**						43	19	7.7	8	2		1	0	0	17	42	**PARTIAL RESTORATION**
070101060405	Shell River	**Lower Twin**		80003000	**Upstream**	Wadena	**252**	**24**						49	40	14.8	6			34	1	1	1,460	43	**FULL RESTORATION**
070101060405	Shell River	**Upper Twin**		29015700	**Upstream**	Hubbard	**213**	**10**						45	41	4.3	7			33	2	5	1,722	100	**FULL RESTORATION**
070101060501	Mantrap Lake	**Mantrap**	East	29015101	**Watershed**	Hubbard	**669**	**68**						39	19	5.9	13	2		2	0	1	12	37	**NEEDS PROTECTION**
070101060501	Mantrap Lake	**Bad Axe**		29020800	**Watershed**	Hubbard	**322**	**39**						36	14	4.4	16	2		1	0	0	8	46	**NEEDS PROTECTION**
070101060502	Big Sand Lake	**Big Sand**		29018500	**Mixed**	Hubbard	**1,635**	**135**						29	9	2.0	23	3		8	2	1	22	36	**NEEDS PROTECTION**
070101060502	Big Sand Lake	**Lower Bottle**		29018000	**Mixed**	Hubbard	**641**	**115**						34	12	3.1	15	1		6	2	2	48	48	**NEEDS PROTECTION**
070101060502	Big Sand Lake	**Upper Bottle**		29014800	**Mixed**	Hubbard	**459**	**55**						36	15	4.0	15	2		4	0	2	46	38	**NEEDS PROTECTION**
070101060502	Big Sand Lake	**Stocking**		29017200	**Watershed**	Hubbard	**100**	**25**						43	25	8.9	10	3		1	0	0	305	56	**NEEDS PROTECTION**
070101060502	Big Sand Lake	**Emma**		29018600	**Watershed**	Hubbard	**77**	**50**						36	16	3.6	14	3		7	0	1	398	42	
070101060503	Little Sand Lake	**Little Sand**		29015000	**Upstream**	Hubbard	**410**	**80**						30	9	2.3	21	3		14	2	2	138	48	**NEEDS PROTECTION**
070101060503	Little Sand Lake	**Crooked**	East	29010101	**Watershed**	Hubbard	**379**	**96**						28	8	1.3	21			1	0	0	49	34	**NEEDS PROTECTION**
070101060503	Little Sand Lake	**Crooked**	Middle	29010102	**Watershed**	Hubbard	**289**	**33**						37	15	3.8	12			2	0	1	49	82	**NEEDS PROTECTION**
070101060503	Little Sand Lake	**Crooked**	West	29010103	**Mixed**	Hubbard	**270**	**50**						33	12	2.5	16			3	1	1	49	49	**NEEDS PROTECTION**
070101060503	Little Sand Lake	**Gilmore**		29018800	**Watershed**	Hubbard	**93**	**54**						33	10	3.1	15	1		8	0	1	191	41	
070101060504	Belle Taine Lake	**Belle Taine**		29014600	**Upstream**	Hubbard	**1,442**	**50**						32	11	2.8	19	2		22	1	1	50	80	**NEEDS PROTECTION**
070101060504	Belle Taine Lake	**Spider**	Northeast	29011701	**In-Lake**	Hubbard	**467**	**96**						34	11	3.8	18	2		1	0	0	5	80	**NEEDS PROTECTION**
070101060504	Belle Taine Lake	**Boulder**		29016200	**Watershed**	Hubbard	**341**	**28**						37	13	5.0	13	2		1	0	0	7	48	**FULL RESTORATION**
070101060504	Belle Taine Lake	**Shallow**		29008900	**Upstream**	Hubbard	**284**	**10**						37	13	2.9	8			21	0	2	217	100	**NEEDS PROTECTION**

Table Key (see Table 33 for complete key):

TROPHIC INDEX: Oligotrophic (light blue): TSI < 40, **Mesotrophic (light green)**: TSI 40-50, **Eutrophic (dark green)**: TSI 50-70

CLARITY RMB: Long-term trends in lake water transparency**. Up Arrow**: improving trend, **Right Arrow**: no evidence of trend, **Down Arrow**: declining trend, **No Arrow**: insufficient data for trend analysis

UPSTREAM LOAD: An estimate of the relative fraction of phosphorus load originating from upstream lakes compared to the direct drainage area based on the approximate number of lakes located upstream that are connected in part by surface water to the lake. **Red**: > 20 lakes are located upstream, **Yellow**: 10-19 lakes are located upstream, **Green**: < 10 lakes are located upstream

POOR U/S LAKE WQ: Lakes that have a smaller 10-year growing season mean TP concentration than the next most upstream lake(s). **Red**: next most upstream lake TP is at least 4 ppb greater than the lake TP, **Yellow**: next most upstream lake TP > lake TP, **Green**: next most upstream lake TP <= lake TP, **No symbol**: no TP data for either the next most upstream lake or the lake

DIRECTLY U/S LAKES: The number of lakes that are located directly upstream of the lake and connected in part by surface water. **Red**: 3 or more lakes located directly upstream, **Yellow**: 2 lakes located directly upstream, **Green**: 0-1 lakes located directly upstream

WSHED: SURFACE: The ratio of the estimated total watershed area to lake surface area. **Red**: > 20 watershed to surface area ratio, **Yellow**: 10-19 watershed to surface area ratio, **Green**: < 10 watershed to surface area ratio

HUC 12	HUC 12 NAME	LAKE	BAY	ID	MGMT FOCUS	COUNTY	SURFACE AREA (acres)	MAX DEPTH (feet)	CISCO	TROUT	WILD RICE	HSPF	LAKE ASSOC.	TROPHIC INDEX	NUTRIENTS (TP) (ppb)	ALGAE (CHL-A) (ppb)	CLARITY (ft)	CLARITY RMB	Lakeshed Assess.	UPSTREAM LOAD	POOR U/S LAKE WQ	DIRECTLY U/S LAKES	WSHED: SURFACE	% LITTORAL	DNR FISHERIES MGMT FOCUS
070101060601	Eleventh Crow Wing Lake	**11 Crow Wing**	Main	29003601	**Watershed**	Hubbard	**479**	**80**						35	12	4.3	14			1	0	0	22	19	NEEDS PROTECTION
070101060602	Fifth Crow Wing Lake-Crow Wing River	**Eighth Crow Wing**		29007200	**Watershed**	Hubbard	**493**	**30**						46	29	13.9	9 ⇨	2		4	0	1	50	43	NEEDS PROTECTION
070101060602	Fifth Crow Wing Lake-Crow Wing River	**Fifth Crow Wing**		29009200	**Upstream**	Hubbard	**400**	**35**						44	23	10.4	9 ⇨	2		30	0	3	269	50	NEEDS PROTECTION
070101060602	Fifth Crow Wing Lake-Crow Wing River	**Sixth Crow Wing**		29009300	**Mixed**	Hubbard	**340**	**35**						44	22	9.7	8 ⇨	2		6	2	1	91	50	NEEDS PROTECTION
070101060602	Fifth Crow Wing Lake-Crow Wing River	**Seventh Crow Wing**		29009100	**Mixed**	Hubbard	**258**	**40**						46	26	12.8	8 ⇨	2		5	1	1	107	47	NEEDS PROTECTION
070101060602	Fifth Crow Wing Lake-Crow Wing River	**Ninth Crow Wing**		29002500	**Mixed**	Hubbard	**224**	**65**						41	19	6.6	10 ⇩	1		3	1	1	99	41	NEEDS PROTECTION
070101060602	Fifth Crow Wing Lake-Crow Wing River	**Tenth Crow Wing**		29004500	**Watershed**	Hubbard	**175**	**40**						40	20	5.0	10			2	0	1	100	70	NEEDS PROTECTION
070101060603	Big Stony Lake-Crow Wing River	**Big Stony**		29014300	**Watershed**	Hubbard	**343**	**24**						39	14	4.6	10			1	0	0	19	71	PARTIAL RESTORATION
070101060603	Big Stony Lake-Crow Wing River	**Island**		29008800	**In-Lake**	Hubbard	**227**	**32**						38	14	5.2	12			1	0	0	6	84	VIGILANCE
070101060604	Wallingford Creek	**Wolf**		29008100	**In-Lake**	Hubbard	**274**	**12**						38	17	3.1	10			1	0	0	3	100	NEEDS PROTECTION
070101060606	First Crow Wing Lake-Crow Wing River	**Third Crow Wing**		29007700	**Upstream**	Hubbard	**635**	**30**						48	27	11.9	5			40	0	3	221	63	NEEDS PROTECTION
070101060606	First Crow Wing Lake-Crow Wing River	**First Crow Wing**		29008600	**Upstream**	Hubbard	**520**	**15**						56	59	32.4	4 ⇩	1		49	0	4	319	100	NEEDS PROTECTION
070101060606	First Crow Wing Lake-Crow Wing River	**Fourth Crow Wing**		29007800	**Upstream**	Hubbard	**440**	**10**						45	26	8.3	7 ⇨	2		33	0	3	281	100	NEEDS PROTECTION
070101060606	First Crow Wing Lake-Crow Wing River	**Bladder**		29008300	**Watershed**	Hubbard	**217**	**4**						39	17	2.1	6			1	0	0	734	-	
070101060606	First Crow Wing Lake-Crow Wing River	**Second Crow Wing**		29008500	**Upstream**	Hubbard	**217**	**35**						45	22	11.2	7 ⇨	2		41	2	1	653	59	NEEDS PROTECTION
070101060606	First Crow Wing Lake-Crow Wing River	**Palmer**		29008700	**Watershed**	Hubbard	**146**	**21**						36	12	4.5	13 ⇩	1		0	0	0	9	67	FULL RESTORATION
070101060701	Goose Lake-Big Swamp Creek	**Perch**		11082600	**Monitor**	Cass	**0**	**-**												0	0	0	2,458	-	
070101061001	Mayo Creek	**Sibley**		18040400	**Watershed**	Crow Wing	**444**	**40**						51	32	20.8	5 ⇩	1		3	0	2	81	57	FULL RESTORATION
070101061001	Mayo Creek	**Loon**		11022600	**In-Lake**	Cass	**232**	**25**						38	18	4.3	12			1	0	0	3	97	NEEDS PROTECTION
070101061001	Mayo Creek	**Mayo**		18040800	**Watershed**	Crow Wing	**165**	**22**						49	36	18.2	7			4	0	1	222	89	FULL RESTORATION
070101061003	Rush Brook	**Rock**		11032400	**In-Lake**	Cass	**261**	**17**						43	21	6.7	7			1	0	0	8	99	VIGILANCE
070101061004	Home Brook	**Margaret**		11022200	**Watershed**	Cass	**243**	**26**						57	94	26.0	5			2	0	1	182	58	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Hubert**		18037500	**Watershed**	Crow Wing	**1,288**	**81**						36	16	3.5	15 ⇨	2		3	0	1	3	35	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Lower Cullen**		18040300	**Watershed**	Crow Wing	**560**	**39**						41	23	6.4	12 ⇩	1		4	0	1	22	42	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Gladstone**		18033800	**Watershed**	Crow Wing	**437**	**36**						38	17	4.8	11 ⇨	2		1	0	0	4	66	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Upper Cullen**		18037600	**Mixed**	Crow Wing	**435**	**40**						44	27	8.7	10 ⇨	2		2	2	1	20	49	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Upper Gull**		11021800	**Upstream**	Cass	**422**	**54**						44	23	10.4	9			23	2	4	327	49	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Middle Cullen**		18037700	**Mixed**	Crow Wing	**397**	**46**						39	19	4.9	13			3	2	1	26	35	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Roy**		18039800	**Upstream**	Crow Wing	**319**	**26**						42	20	6.7	9			13	1	1	93	79	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Clark**		18037400	**Mixed**	Crow Wing	**305**	**31**						40	18	4.7	10			7	2	2	42	83	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Garden**		18032900	**In-Lake**	Crow Wing	**262**	**8**						42	17	4.3	5			2	0	1	10	-	
070101061005	Upper Gull Lake	**Nisswa**		18039900	**Upstream**	Crow Wing	**219**	**23**						43	20	8.6	8			12	1	2	124	79	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Ray**		11022000	**Upstream**	Cass	**138**	**27**						39	13	6.9	10			15	1	1	206	87	NEEDS PROTECTION
070101061005	Upper Gull Lake	**Edna**		18039600	**Watershed**	Crow Wing	**156**	**63**						34	11	3.2	15			1	0	0	10	60	
070101061005	Upper Gull Lake	**Fawn**		18039700	**Watershed**	Crow Wing	**64**	**40**						36	11	4.3	12			2	0	1	25	68	
070101061006	Round Lake	**North Long**		18037200	**Mixed**	Crow Wing	**6,144**	**90**						38	17	5.0	15 ⇧	3		3	1	2	3	70	NEEDS PROTECTION
070101061006	Round Lake	**Edward**		18030500	**Watershed**	Crow Wing	**2,576**	**75**						38	18	5.3	13 ⇨	2		1	0	0	2	54	NEEDS PROTECTION
070101061006	Round Lake	**Round**		18037300	**Watershed**	Crow Wing	**1,650**	**51**						44	24	10.7	10 ⇨	2		4	0	1	15	37	NEEDS PROTECTION
070101061006	Round Lake	**Mollie**		18033500	**In-Lake**	Crow Wing	**421**	**7**						45	19	8.8	6			1	0	0	3	-	NEEDS PROTECTION
070101061007	Gull Lake	**Gull**		11030500	**Upstream**	Cass	**9,968**	**80**						42	21	8.2	11			33	2	6	14	34	NEEDS PROTECTION
070101061007	Gull Lake	**Sylvan**	Northeast	11030402	**Watershed**	Cass	**894**	**57**						29	9	1.4	20 ⇧	2		1	0	0	4	51	NEEDS PROTECTION
070101061007	Gull Lake	**Red Sand**		18038600	**In-Lake**	Crow Wing	**523**	**15**						40	23	4.4	11 ⇨	2		2	0	1	9	100	NEEDS PROTECTION
070101061007	Gull Lake	**White Sand**		18037900	**Watershed**	Crow Wing	**410**	**26**						41	20	6.3	11 ⇩	1		1	0	0	3	69	NEEDS PROTECTION
070101061007	Gull Lake	**Love**		18038800	**Watershed**	Crow Wing	**79**	**27**						41	20	6.4	9			1	0	0	2,454	73	
070101061106	Lake Placid-Crow Wing River	**Placid**		49008000	**Monitor**	Morrison	**519**	**25**												85	2	5	1,884	32	NEEDS PROTECTION
070101061107	Pillager Creek	**Pillager**		11032000	**Watershed**	Cass	**205**	**39**						32	11	2.2	18			1	0	0	12	37	NEEDS PROTECTION
070101061108	Crow Wing River	**Sylvan**	Main	49003601	**Upstream**	Morrison	**322**	**31**						50	60	12.1	7			129	0	6	646	57	NEEDS PROTECTION

Figure 7. Priority Lakes in the Crow Wing River Watershed

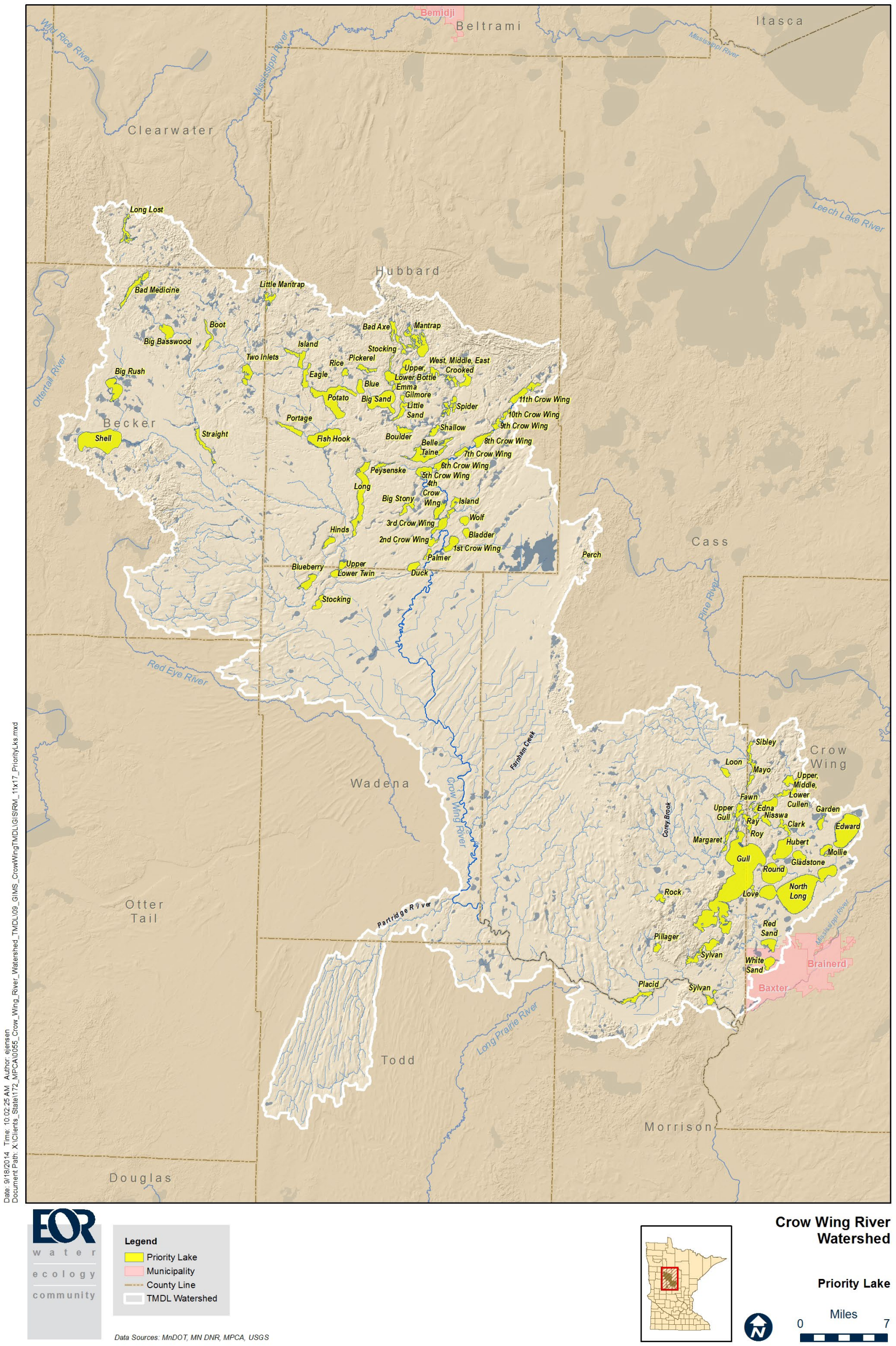
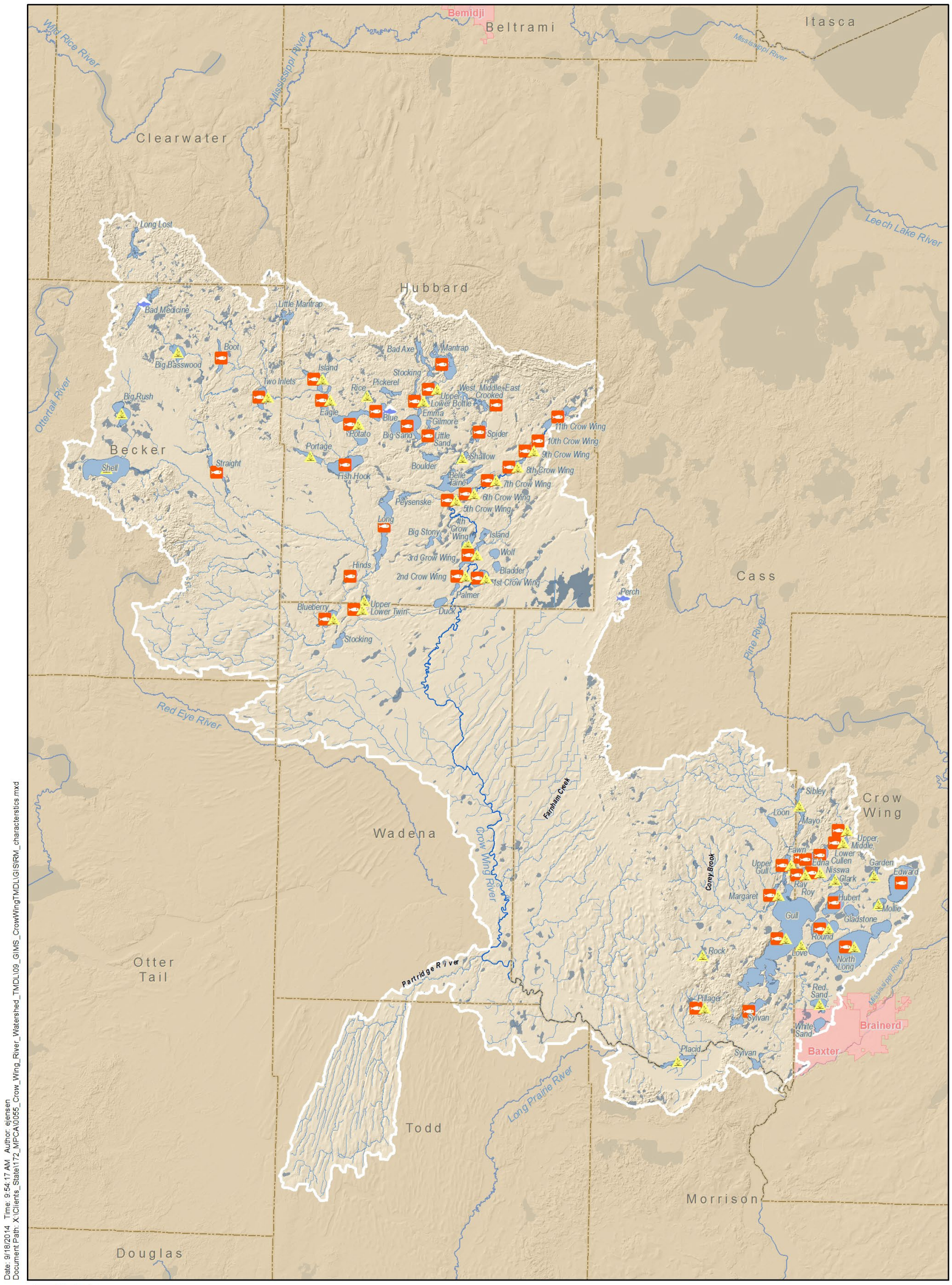


Figure 8. Crow Wing River Watershed DNR designated cisco, trout, and/or wild rice priority lakes



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EOR water ecology community

Legend

- Municipality
- County Line
- TMDL Watershed
- Wild Rice
- Trout
- Cisco

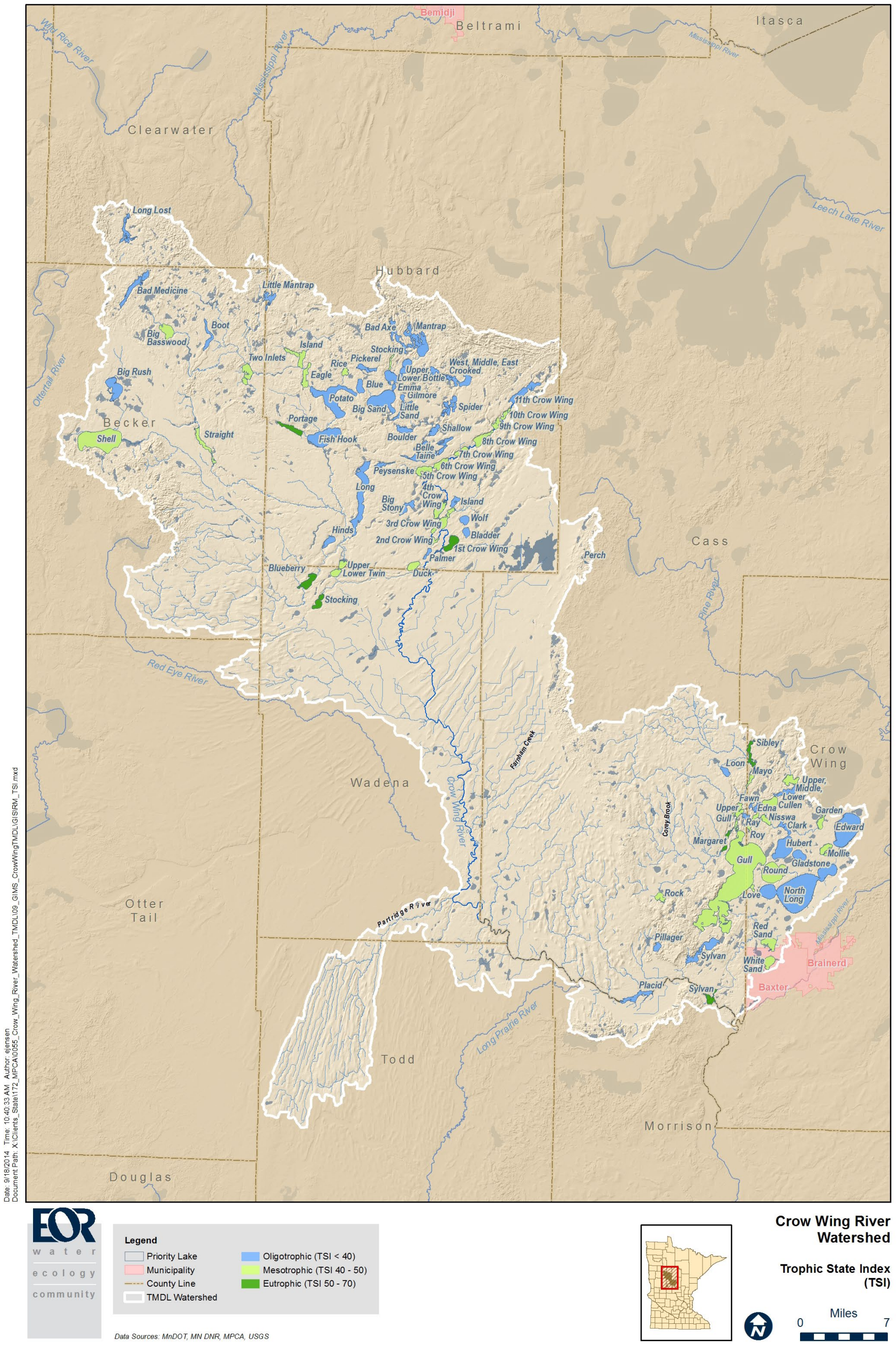
Data Sources: MnDOT, MN DNR, MPCA, USGS

Crow Wing River Watershed

Cisco, Trout or Wild Rice Lake

Miles 0 7

Figure 9. Crow Wing River Watershed priority lake average trophic status



Date: 9/18/2014 Time: 10:40:33 AM Author: ejensen
Document Path: X:\Clients_State\172_MPCA\0055_Crow_Wing_River_Watershed_TMDL\09_GIMS_CrowWingTMDL\GIS\RM_TSI.mxd

EOR water ecology community

Legend

- Priority Lake
- Municipality
- County Line
- TMDL Watershed
- Oligotrophic (TSI < 40)
- Mesotrophic (TSI 40 - 50)
- Eutrophic (TSI 50 - 70)

Data Sources: MnDOT, MN DNR, MPCA, USGS

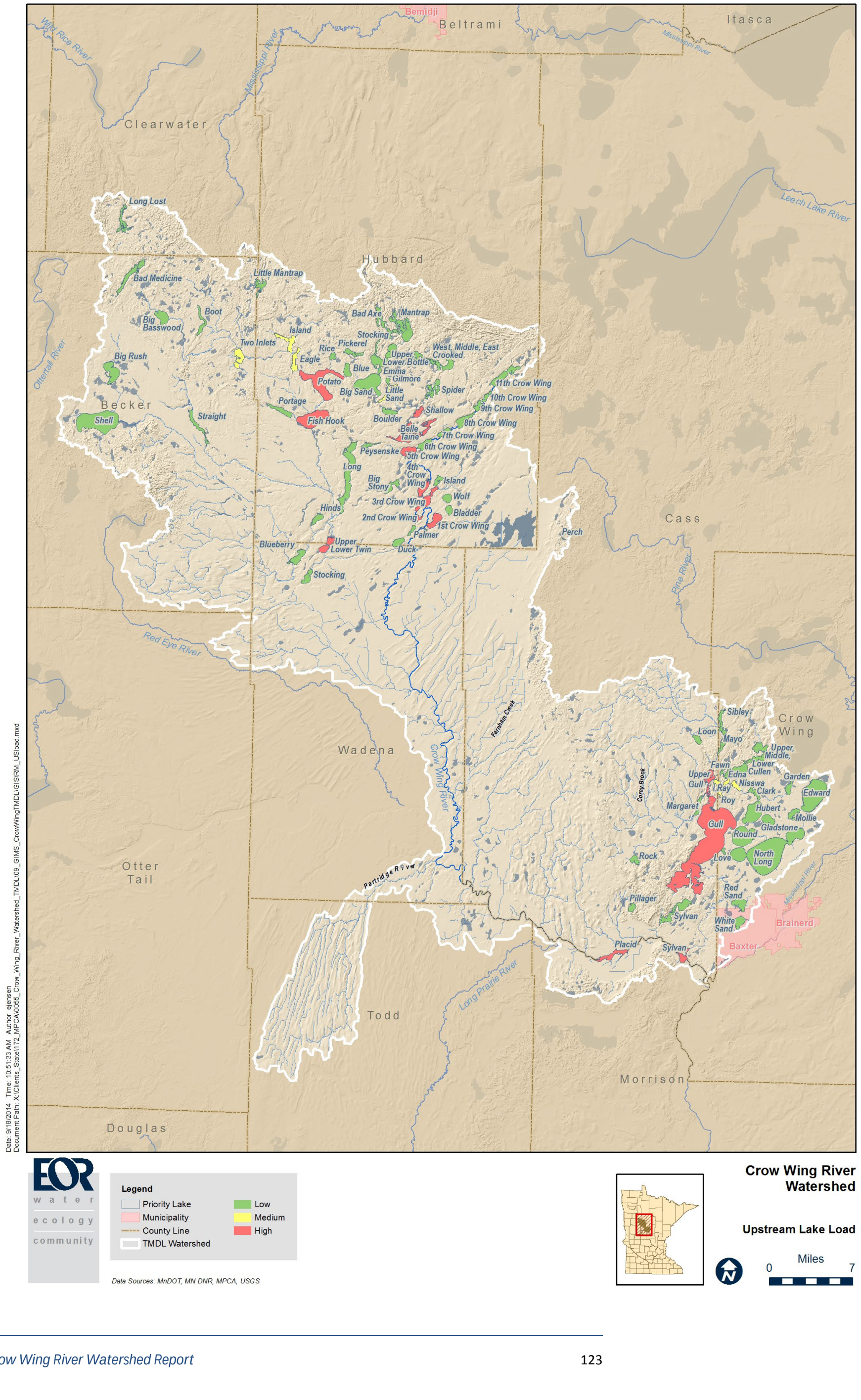
Crow Wing River Watershed

Trophic State Index (TSI)

Miles 0 7

Figure 10. Crow Wing River Watershed priority lakes approximated upstream lake phosphorus load relative to the total phosphorus load.

UPSTREAM LOAD: An estimate of the relative fraction of phosphorus load originating from upstream lakes compared to the direct drainage area based on the approximate number of lakes located upstream that are connected in part by surface water to the lake. **Red**: > 20 lakes are located upstream, **Yellow**: 10-19 lakes are located upstream, **Green**: < 10 lakes are located upstream



Appendix E: HSPF Watershed Pollutant Yields

Figure 11. Crow Wing River Watershed HSPF Modeled Average Annual Precipitation (1996-2009)

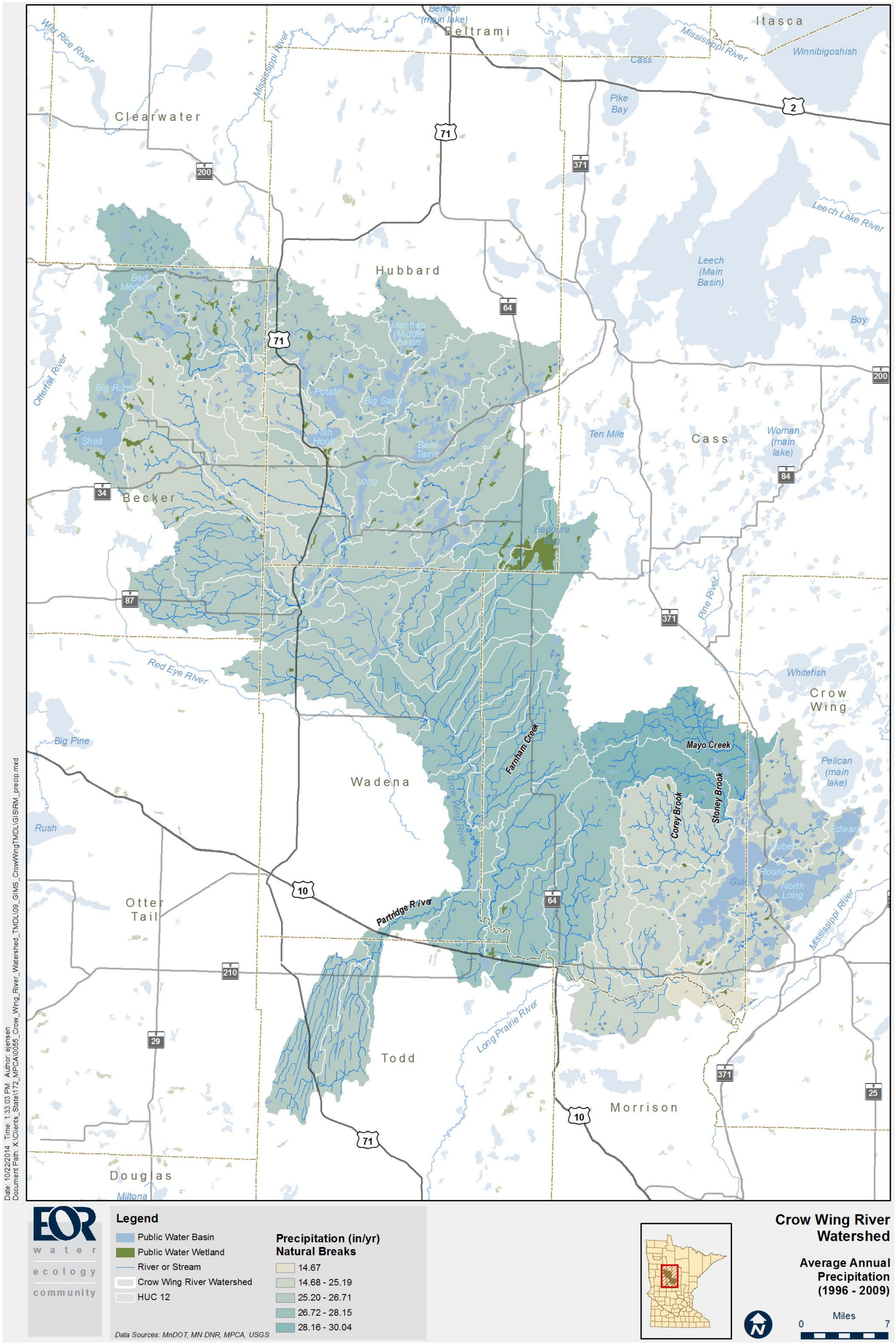


Figure 12. Crow Wing River Watershed HSPF Modeled Average Annual Runoff Volume (1996-2009)

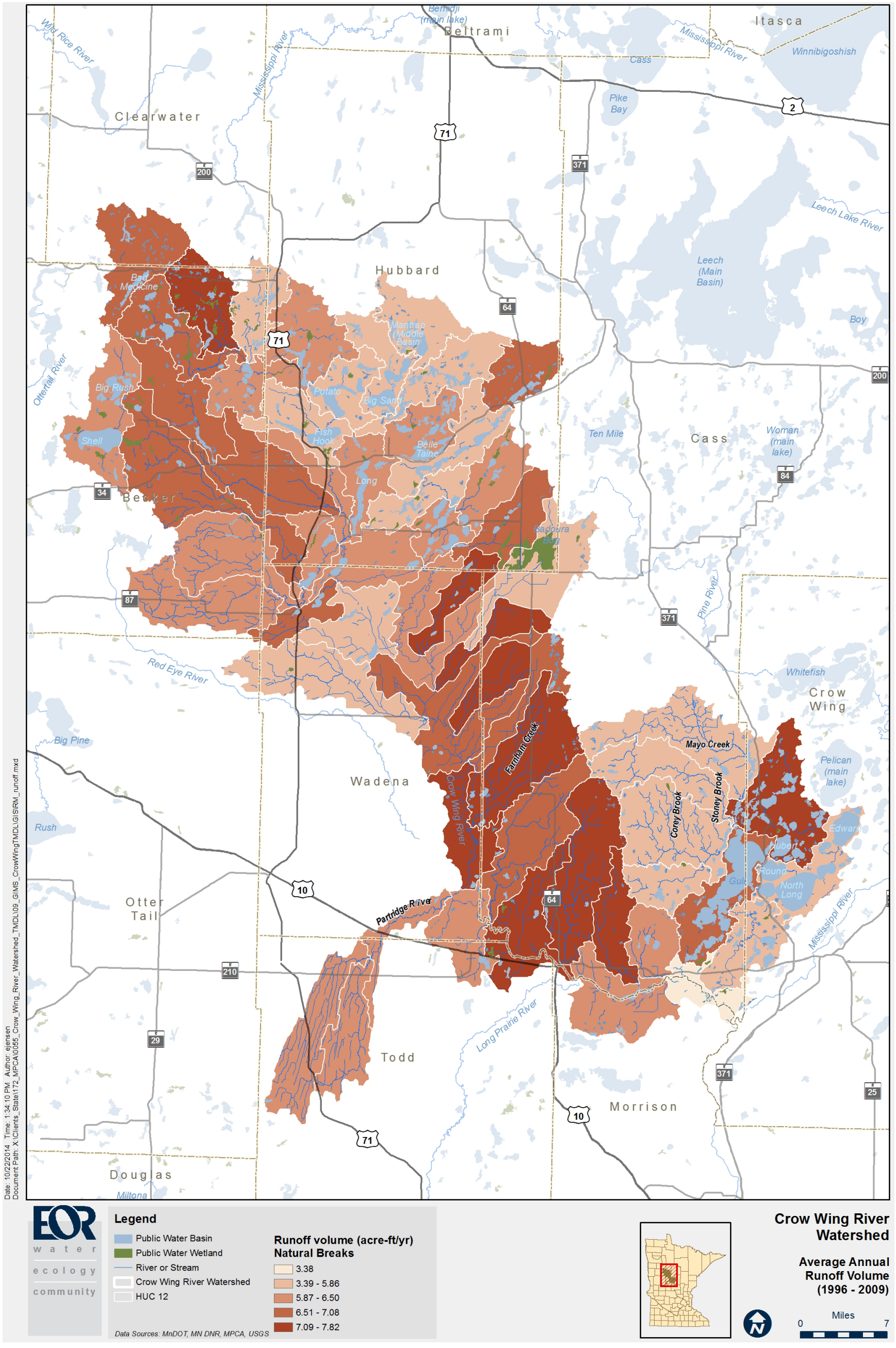


Figure 13. Crow Wing River Watershed HSPF Modeled Average Annual Total Suspended Sediment Yield (1996-2009)

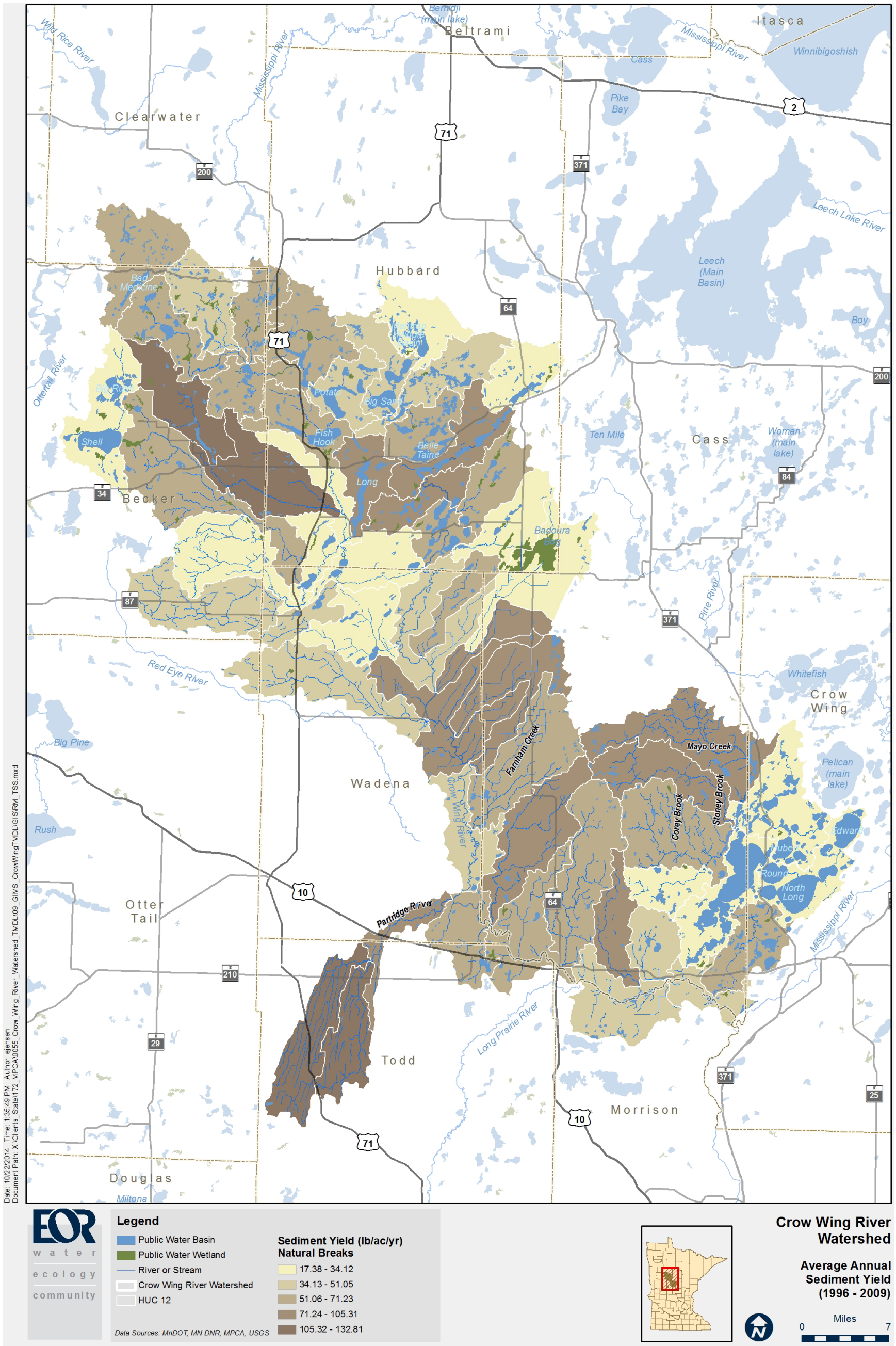


Figure 14. Crow Wing River Watershed HSPF Modeled Average Annual Total Phosphorus Yield (1996-2009)

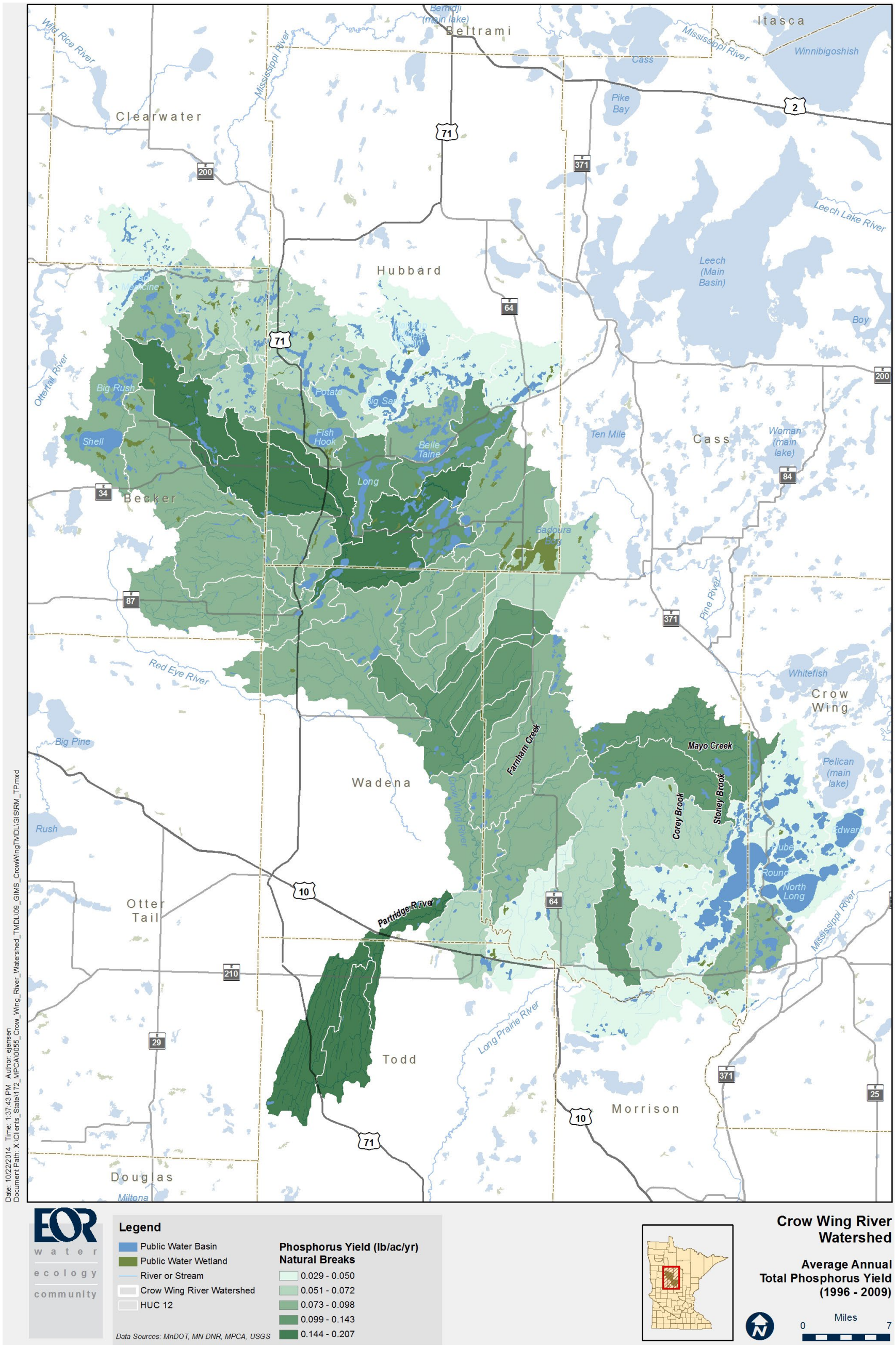
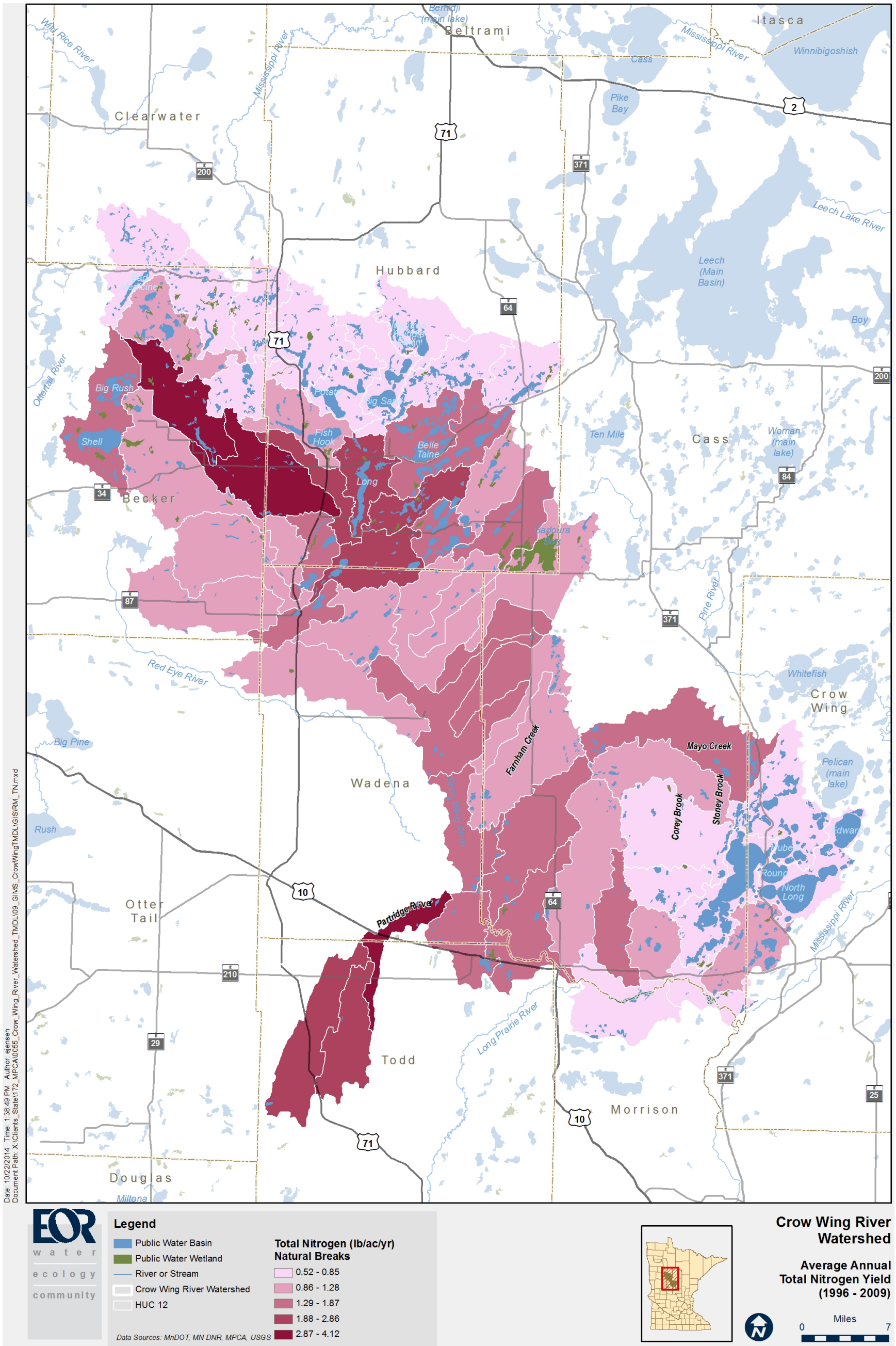


Figure 15. Crow Wing River Watershed HSPF Modeled Average Annual Total Nitrogen Yield (1996-2009)



Appendix F: Index of Stream Name, AUID & HUC 12

Table 36. Crow Wing River Watershed Index of Stream Name, ID & HUC 12, listed in alphabetical order by stream name. Refer to Minn. R. 7050.0140 for Use Class definitions (https://www.revisor.mn.gov/rules/?id=7050.0140).

Reach Name	AUID	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
Basswood Creek	-567	Headwaters to Unnamed lk (03-0665-00)	2C	5.88	070101060202	Basswood Creek
Basswood Creek	-568	Unnamed lk (03-0665-00) to Indian Cr	2C	7.66	070101060202	Basswood Creek
Bear Creek	-550	CD 15 to Little Partridge R	7	4.81	070101060901	Little Partridge Creek
Beaver Creek	-530	Unnamed ditch to Crow Wing R	2C	6.82	070101060805	Beaver Creek
Bender Creek	-691	Unnamed lk (29-0608-00) to First Crow Wing Lk	2B, 3C	4.73	070101060605	Bender Creek
Bender Creek	-704	Tripp Lk to Unnamed Lk (29-0608-00)	2B, 3C	0.04	070101060605	Bender Creek
Big Swamp Creek	-531	Headwaters to Crow Wing R	2C	11.01	070101060701	Goose Lake-Big Swamp Creek
Big Swamp Creek	-531	Headwaters to Crow Wing R	2C	4.43	070101060702	Big Swamp Creek
Blueberry River	-540	Kettle R to Blueberry Lk	2C	5.99	070101060302	Blueberry River
Blueberry River	-554	Unnamed cr to Kettle R	2C	7.43	070101060302	Blueberry River
Blueberry River	-585	Blueberry Lk (03-0007-00) to Unnamed cr	2C	2.53	070101060302	Blueberry River
Blueberry River	-586	Unnamed cr to Unnamed cr	2C	4.43	070101060302	Blueberry River
Cat River	-544	Kitten Cr to Crow Wing R	2C	9.25	070101060804	Cat River
Cat River	-545	Headwaters to T137 R35W S13, east line	1B, 2A, 3B	6.21	070101060804	Cat River
Cat River	-564	T137 R34W 18, west line to Kitten Cr	2C	0.73	070101060804	Cat River
Cat River Tributary	-634	T137 R35W S10, north line to Cat R	1B, 2A, 3B	0.22	070101060804	Cat River
Cat River Tributary	-635	T137 R35W S11, north line to Cat R	1B, 2A, 3B	0.48	070101060804	Cat River
Cat River Tributary	-636	T137 R35W S13, west line to Cat R	1B, 2A, 3B	0.66	070101060804	Cat River
Corey Brook	-700	T135 T30W S16, north line to Home Bk	1B, 2A, 3B	2.89	070101061004	Home Brook
Corey Brook	-701	T135 R30W S9 north line to south line	1B, 2A, 3B	1.19	070101061004	Home Brook
Cory Brook	-697	Headwaters to T135 R30W S4, south line	2B, 3C	1.89	070101061004	Home Brook
Cory Brook Tributary	-599	T135 R30W S15, north line to Cory Bk	1B, 2A, 3B	1.45	070101061004	Home Brook
Cory Brook Tributary	-637	T135 R30W S15, north line to Unnamed cr	1B, 2A, 3B	0.50	070101061004	Home Brook
Cory Brook Tributary	-638	Headwaters to Unnamed cr	1B, 2A, 3B	0.62	070101061004	Home Brook

Reach Name	AUID	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
Cory Brook Tributary	-639	T135 R30W S9, north line to Cory Bk	1B, 2A, 3B	0.93	070101061004	Home Brook
Cory Brook Tributary	-640	T135 R30W S9, north line to Cory Bk	1B, 2A, 3B	0.24	070101061004	Home Brook
Cory Brook Tributary	-641	Headwaters to Cory Bk	1B, 2A, 3B	0.48	070101061004	Home Brook
Cory Brook Tributary	-642	Headwaters to Cory Bk	1B, 2A, 3B	0.36	070101061004	Home Brook
County Ditch 15	-548	Unnamed ditch to T132 R35W S3, east line	2B, 3C	1.52	070101060901	Little Partridge Creek
County Ditch 15	-552	T132 R35W S2, west line to Bear Cr	7	3.33	070101060901	Little Partridge Creek
County Ditch 27	-598	Headwaters to Little Partridge R	2B, 3C	3.19	070101060901	Little Partridge Creek
Crow Wing River	-501	Gull R to Mississippi R	2B, 3C	4.02	070101061108	Crow Wing River
Crow Wing River	-506	Seven Mile Cr to Gull R	2B, 3C	2.35	070101061106	Lake Placid-Crow Wing River
Crow Wing River	-506	Seven Mile Cr to Gull R	2B, 3C	4.64	070101061108	Crow Wing River
Crow Wing River	-507	Long Prairie R to Seven Mile Cr	2B, 3C	6.93	070101061106	Lake Placid-Crow Wing River
Crow Wing River	-508	Mosquito Cr to Long Prairie R	2B, 3C	1.95	070101061104	City of Motley-Crow Wing River
Crow Wing River	-509	Swan Cr to Mosquito Cr	2B, 3C	10.53	070101061104	City of Motley-Crow Wing River
Crow Wing River	-510	Partridge R to Swan Cr	2B, 3C	6.73	070101061101	Hayden Creek-Crow Wing River
Crow Wing River	-511	Leaf R to Partridge R	2B, 3C	1.00	070101061101	Hayden Creek-Crow Wing River
Crow Wing River	-512	Farnham Cr to Leaf R	2B, 3C	11.11	070101060809	Simon Lake-Crow Wing River
Crow Wing River	-513	Beaver Cr to Farnham Cr	2B, 3C	3.80	070101060806	City of Nimrod-Crow Wing River
Crow Wing River	-513	Beaver Cr to Farnham Cr	2B, 3C	8.55	070101060809	Simon Lake-Crow Wing River
Crow Wing River	-514	Cat R to Beaver Cr	2B, 3C	3.20	070101060806	City of Nimrod-Crow Wing River
Crow Wing River	-515	Big Swamp Cr to Cat R	2B, 3C	2.64	070101060806	City of Nimrod-Crow Wing River
Crow Wing River	-516	Shell R to Big Swamp Cr	2B, 3C	20.47	070101060803	Town of Huntersville-Crow Wing River
Crow Wing River	-523	Headwaters (Eleventh Crow Wing Lk 29-0036-00) to Shell R	2B, 3C	11.31	070101060602	Fifth Crow Wing Lake-Crow Wing River
Crow Wing River	-523	Headwaters (Eleventh Crow Wing Lk 29-0036-00) to Shell R	2B, 3C	5.46	070101060603	Big Stony Lake-Crow Wing River
Crow Wing River	-523	Headwaters (Eleventh Crow Wing Lk 29-0036-00) to Shell R	2B, 3C	10.53	070101060606	First Crow Wing Lake-Crow Wing River
Cullen Brook	-582	Rice Lk to Upper Cullen Lk	1B, 2A, 3B	2.74	070101061005	Upper Gull Lake
Dinner Creek	-690	Little Dinner Lk to Two Inlets Lk	2B, 3C	3.74	070101060204	Dinner Creek

Reach Name	AUID	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
East Branch Mosquito Creek	-693	Unnamed cr to Mosquito Cr	2B, 3C	1.44	070101061103	Mosquito Creek
Egly Creek	-694	Unnamed cr to Partridge R	2B, 3C	6.86	070101060902	Edgy Creek-Partridge River
Farnham Creek	-522	Unnamed cr to Crow Wing R	2B, 3C	0.53	070101060808	Farnham Creek
Farnham Creek	-549	Tower Cr to T135 R32W S7, west line	1B, 2A, 3B	0.57	070101060808	Farnham Creek
Farnham Creek	-565	T135 R33W S12, east line to Unnamed cr	2B, 3C	2.25	070101060808	Farnham Creek
Farnham Creek	-580	Martin Cr to Tower Cr	1B, 2A, 3B	1.15	070101060808	Farnham Creek
Farnham Creek	-702	Unnamed ditch to T136 R32W S21, west line	1B, 2A, 3B	2.96	070101060808	Farnham Creek
Farnham Creek	-703	T136 R32W S20, east line to Martin Cr	1B, 2A, 3B	4.78	070101060808	Farnham Creek
Farnham Creek Tributary	-587	T136 R32W S20, north line to Farnham Cr	1B, 2A, 3B	3.09	070101060808	Farnham Creek
Farnham Creek Tributary	-643	T135 R33W S12, east line to Farnham Cr	2B, 3C	1.08	070101060808	Farnham Creek
Farnham Creek Tributary	-644	Farnham Cr to T135 R32W S7, west line	1B, 2A, 3B	0.74	070101060808	Farnham Creek
Farnham Creek Tributary	-645	Unnamed lk to Farnham Cr	1B, 2A, 3B	0.55	070101060808	Farnham Creek
Farnham Creek Tributary	-646	T136 R32W S21, east line to Unnamed cr	1B, 2A, 3B	0.51	070101060808	Farnham Creek
Farnham Creek Tributary	-647	Headwaters to Unnamed cr	1B, 2A, 3B	0.72	070101060808	Farnham Creek
Farnham Creek Tributary	-648	Unnamed cr to Farnham Cr	1B, 2A, 3B	1.16	070101060808	Farnham Creek
Farnham Creek Tributary	-649	T136 R32W S10, east line to Unnamed cr	1B, 2A, 3B	0.69	070101060808	Farnham Creek
Farnham Creek Tributary	-650	T136 R32W S10, east line to Unnamed cr	1B, 2A, 3B	0.57	070101060808	Farnham Creek
Farnham Creek Tributary	-651	Unnamed cr to Farnham Cr	1B, 2A, 3B	0.81	070101060808	Farnham Creek
Farnham Creek Tributary	-652	T136 R32W S3, north line to Farnham Cr	1B, 2A, 3B	1.13	070101060808	Farnham Creek
Farnham Creek Tributary	-653	T136 R32W S2, north line to Unnamed cr	1B, 2A, 3B	0.37	070101060808	Farnham Creek
Farnham Creek Tributary	-654	T136 R32W S2, north line to Unnamed cr	1B, 2A, 3B	1.31	070101060808	Farnham Creek
Farnham Creek Tributary	-655	Unnamed cr to Farnham Cr	1B, 2A, 3B	1.78	070101060808	Farnham Creek
Fawn Creek	-592	T134 R33W S33, south line to T134 R33W S22, north line	1B, 2A, 3B	4.14	070101061101	Hayden Creek-Crow Wing River
Fawn Creek	-601	T134 R33W S15, south line to Crow Wing R	2B, 3C	0.38	070101061101	Hayden Creek-Crow Wing River
Fish Creek	-597	Aspinwall Lk to Shell Lk	2B, 3C	2.89	070101060401	Shell Lake
Fishhook River	-542	Straight R to Shell R	2B, 3C	3.47	070101060210	Fishhook River
Fishhook River	-543	Park Rapids Dam to Straight R	2B, 3C	6.07	070101060210	Fishhook River

Reach Name	AUID	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
Fishhook River	-596	Pedestrian bridge above Heartland Trail to Fishhook Dam	2B, 3C	0.37	070101060208	Fishhook Lake
Fishhook River	-627	Fishhook Lk to Pedestrian bridge	2B, 3C	1.67	070101060208	Fishhook Lake
Gull River	-502	Gull Lk to Crow Wing R	2B, 3C	14.39	070101061008	Gull River
Hay Creek	-617	Two Inlets Lk to Unnamed lk (29-0554-00)	2B, 3C	2.50	070101060205	Hay Creek
Hay Creek	-619	Unnamed lk (29-0554-00) to Island Lk	2B, 3C	1.62	070101060205	Hay Creek
Hayden Creek	-529	Headwaters to Crow Wing R	2B, 3C	7.59	070101061101	Hayden Creek-Crow Wing River
Hellkamp Creek	-594	T140 R34W S24, west line to Fifth Crow Wing Lk	1B, 2A, 3B	1.72	070101060602	Fifth Crow Wing Lake-Crow Wing River
Hellkamp Creek	-630	Artificial path within Fifth Crow Wing Lk	2B, 3C	0.27	070101060602	Fifth Crow Wing Lake-Crow Wing River
Home Brook	-524	Headwaters (Omen Lk 11-0336-00) to Lk Margaret	2B, 3C	16.13	070101061004	Home Brook
Indian Creek	-569	Big Basswood Lk to Basswood Cr	2C	13.88	070101060203	Indian Creek
Indian Creek (Basswood Creek)	-570	Basswood Cr to Two Inlets Lk	2C	1.49	070101060203	Indian Creek
Iron Creek	-593	Headwaters to Swan Cr	2C	7.88	070101061102	Swan Creek
Kettle River	-541	Unnamed cr to Blueberry R	2C	20.39	070101060301	Kettle River
Kettle River	-559	Unnamed cr to Unnamed cr	2C	2.29	070101060301	Kettle River
Kettle River	-660	Headwaters to Unnamed cr	2C	3.30	070101060301	Kettle River
Kitten Creek	-546	Headwaters to Cat R	2C	10.11	070101060804	Cat River
Little Partridge Creek	-551	Little Partridge R to Partridge R	2B, 3C	3.73	070101060901	Little Partridge Creek
Little Partridge River	-547	Headwaters (Pendergast Lk 77-0207-00) to Partridge R	2B, 3C	17.51	070101060901	Little Partridge Creek
Little Swamp Creek	-581	Headwaters to Crow Wing R	2C	7.84	070101060806	City of Nimrod-Crow Wing River
Little Swan Creek	-578	T135 R32W S12, east line to Swan Cr	2C	6.01	070101061102	Swan Creek
Martin Creek (Poplar Brook)	-588	T136 R32W S22, east line to Farnham Cr	1B, 2A, 3B	5.44	070101060808	Farnham Creek
Martin Creek Tributary	-663	Headwaters to Martin Cr	1B, 2A, 3B	0.13	070101060808	Farnham Creek
Martin Creek Tributary	-664	T136 R32W S27, east line to Martin Cr	1B, 2A, 3B	0.41	070101060808	Farnham Creek
Mayo Creek	-604	Unnamed cr to Unnamed cr	2B, 3C	6.08	070101061001	Mayo Creek

Reach Name	AUID	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
Mayo Creek	-605	Unnamed cr to Sibley Lk	2B, 3C	0.38	070101061001	Mayo Creek
Mayo Creek	-695	Unnamed cr to Unnamed cr	2B, 3C	7.30	070101061001	Mayo Creek
Mayo Creek	-696	Moose Lk to Unnamed cr	2B, 3C	4.59	070101061001	Mayo Creek
Mosquito Creek (Hay Creek)	-589	Headwaters to T135 R31W S4, south line	2B, 3C	0.25	070101061103	Mosquito Creek
Mosquito Creek (Hay Creek)	-590	T135 R31W S9, north line to T135 R31W S17, south line	1B, 2A, 3B	2.82	070101061103	Mosquito Creek
Mosquito Creek (Hay Creek)	-591	T135 R31W S20, north line to Crow Wing R	2B, 3C	17.72	070101061103	Mosquito Creek
Mosquito Creek Tributary	-656	Headwaters to Mosquito Cr	1B, 2A, 3B	1.00	070101061103	Mosquito Creek
Mosquito Creek Tributary	-657	T135 R31W S8, west line to Mosquito Cr	1B, 2A, 3B	1.40	070101061103	Mosquito Creek
Mosquito Creek Tributary	-658	T135 R31W S16, east line to Mosquito Cr	1B, 2A, 3B	1.65	070101061103	Mosquito Creek
Mosquito Creek Tributary	-659	T135 R31W S16, south line to Mosquito Cr	1B, 2A, 3B	0.52	070101061103	Mosquito Creek
Mucky Creek	-574	Unnamed lk (29-0397-00) to Wallingford Cr	1B, 2A, 3B	1.68	070101060604	Wallingford Creek
Olson Brook	-583	Headwaters to Mayo Cr	1B, 2A, 3B	1.07	070101061001	Mayo Creek
Partridge River	-518	Headwaters to Crow Wing R	2B, 3C	18.19	070101060902	Edgy Creek-Partridge River
Partridge River	-518	Headwaters to Crow Wing R	2B, 3C	14.96	070101060903	Partridge River
Peterson Creek	-661	Headwaters to Pillager Cr	1B, 2A, 3B	0.97	070101061107	Pillager Creek
Pillager Creek	-577	T133 R30W S5, north line to Crow Wing R	2C	5.99	070101061107	Pillager Creek
Pillager Creek	-612	Rice Lk to T134 R30W S32, south line	2C	0.10	070101061107	Pillager Creek
Pillager Creek	-662	Pillager Lk to Rice Lk	2C	0.64	070101061107	Pillager Creek
Portage River	-678	Portage Lk to Fishhook Lk	2B, 3C	0.75	070101060208	Fishhook Lake
Potato River	-625	Potato Lk to Fishhook Lk	2B, 3C	1.79	070101060208	Fishhook Lake
Rogers Brook	-576	Headwaters to Rice Lk	1B, 2A, 3B	1.13	070101061107	Pillager Creek
Sevenmile Creek	-525	T134 R31W S2, north line to Crow Wing R	2C	15.10	070101061105	Sevenmile Creek
Sevenmile Creek	-560	Headwaters to T135 R31W S35, south line	2B, 3C	1.66	070101061105	Sevenmile Creek
Shell River	-536	Blueberry Lk (80-0034-00) to Fishhook R	2B, 3C	4.33	070101060403	Blueberry Lake-Shell River
Shell River	-537	Shell Lk to Blueberry Lk	2B, 3C	30.41	070101060402	Mission Creek-Shell River
Shell River	-679	Fishhook R to Upper Twin Lk	2B, 3C	1.44	070101060405	Shell River

Reach Name	AUID	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
Shell River	-681	Lower Twin Lk to Crow Wing R	2B, 3C	9.13	070101060405	Shell River
Stocking Creek	-595	Stocking Lk to T138 R35W S12, east line	2C	1.92	070101060404	Stocking Lake
Stocking Creek	-614	T138 R34W S7, west line to Shell R	2C	0.18	070101060404	Stocking Lake
Stocking Lake	-682	Stocking Lk (80-0037-00)	2B, 3C	1.82	070101060404	Stocking Lake
Stoney Brook	-561	Headwaters to T136 R31W S35, north line	2B, 3C	0.64	070101061002	Stony Brook
Stoney Brook	-698	T136 R29W S32, west line to Upper Gull Lk	1B, 2A, 3B	4.46	070101061002	Stony Brook
Stoney Brook	-699	T136 R31W S26, south line to T136 R29W S31, east line	1B, 2A, 3B	12.85	070101061002	Stony Brook
Stony Brook Tributary	-600	T136 R31W S24, north line to Stony Bk	1B, 2A, 3B	2.03	070101061002	Stony Brook
Stony Brook Tributary	-665	Headwaters to Stony Bk	1B, 2A, 3B	0.52	070101061002	Stony Brook
Stony Brook Tributary	-666	T136 R31W S25, east line to Unnamed cr	1B, 2A, 3B	0.15	070101061002	Stony Brook
Stony Brook Tributary	-667	Headwaters to Stony Bk	1B, 2A, 3B	0.81	070101061002	Stony Brook
Stony Brook Tributary	-668	Headwaters to Stony Bk	1B, 2A, 3B	0.71	070101061002	Stony Brook
Stony Brook Tributary	-669	T136 R30W S26, west line to Stony Bk	1B, 2A, 3B	0.87	070101061002	Stony Brook
Stony Brook Tributary	-670	Headwaters to Stony Bk	1B, 2A, 3B	1.10	070101061002	Stony Brook
Stony Brook Tributary	-671	T136 R31W S26, west line to Stony Bk	1B, 2A, 3B	0.83	070101061002	Stony Brook
Stony Brook Tributary	-672	T136 R30W S22, east line to Stony Bk	1B, 2A, 3B	0.52	070101061002	Stony Brook
Stony Brook Tributary	-708	T136 R30W S30, north line to west line	1B, 2A, 3B	0.34	070101061002	Stony Brook
Straight Lake Creek	-571	Headwaters to Unnamed lk (03-0051-00)	1B, 2A, 3B	0.95	070101060101	Straight Lake
Straight Lake Creek	-572	Unnamed lk (03-0051-00) to Straight R	1B, 2A, 3B	0.44	070101060101	Straight Lake
Straight River	-517	Headwaters to Straight Lk	1B, 2A, 3B	4.61	070101060101	Straight Lake
Straight River	-558	Straight Lk to Fishhook R	1B, 2A, 3B	16.92	070101060102	Straight River
Straight River Tributary	-673	T141 R37W S25, south line to Straight R	1B, 2A, 3B	0.71	070101060101	Straight Lake
Straight River Tributary	-674	T141 R36W S31, south line to Straight R	1B, 2A, 3B	0.34	070101060101	Straight Lake
Straight River Tributary	-675	T139 R36W S1, west line to Straight R	1B, 2A, 3B	2.04	070101060102	Straight River
Straight River Tributary	-676	T139 R35W S11, north line to Straight R	1B, 2A, 3B	0.53	070101060102	Straight River
Swan Creek	-527	T135 R32W S2, north line to Crow Wing R	2C	19.33	070101061102	Swan Creek
Swan Creek	-562	Headwaters to T136 R32W S35, south line	2B, 3C	3.12	070101061102	Swan Creek

Reach Name	AUID	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
Tower Creek	-528	T135 R32W S4, north line to Farnham Cr	2C	3.57	070101060808	Farnham Creek
Tower Creek	-563	Headwaters to T136 R32W S33, south line	2B, 3C	3.70	070101060808	Farnham Creek
Unnamed creek	-519	Headwaters to Cat R	2B, 3C	3.07	070101060804	Cat River
Unnamed creek	-521	Headwaters to Bear Cr	2B, 3C	9.84	070101060901	Little Partridge Creek
Unnamed creek	-532	Headwaters (Unnamed lk 80-0056-00) to Yaeger Lk	2B, 3C	1.68	070101060801	Yaeger Lake
Unnamed creek	-534	Yaeger Lk to Crow Wing R	2B, 3C	1.62	070101060801	Yaeger Lake
Unnamed creek	-553	Headwaters to Shell R	2B, 3C	4.37	070101060402	Mission Creek-Shell River
Unnamed creek	-607	Mayo Lk to Upper Gull Lk	2B, 3C	1.88	070101061001	Mayo Creek
Unnamed creek	-609	Lower Cullen Lk to Nisswa Lk	2B, 3C	0.64	070101061005	Upper Gull Lake
Unnamed creek	-621	Island Lk to Eagle Lk	2B, 3C	0.44	070101060206	Eagle Lake
Unnamed creek	-623	Eagle Lk to Potato Lk	2B, 3C	0.29	070101060207	Potato Lake
Unnamed creek	-628	Unnamed lk (03-0008-00) to Blueberry R	2B, 3C	0.03	070101060302	Blueberry River
Unnamed creek	-632	Headwaters to Stocking Lk	2B, 3C	0.25	070101060404	Stocking Lake
Unnamed creek	-633	Headwaters to Stocking Lk	2B, 3C	0.23	070101060404	Stocking Lake
Unnamed creek	-677	Long Lk to Fishhook R	2B, 3C	0.92	070101060210	Fishhook River
Unnamed creek	-684	Unnamed cr to Crow Wing R	2B, 3C	5.51	070101061104	City of Motley- Crow Wing River
Unnamed creek	-685	Unnamed cr to Unnamed cr	2B, 3C	2.38	070101060301	Kettle River
Unnamed creek	-686	Unnamed cr to Kettle R	2B, 3C	0.97	070101060301	Kettle River
Unnamed creek	-687	Unnamed ditch to Crow Wing R	2B, 3C	3.12	070101060806	City of Nimrod- Crow Wing River
Unnamed creek	-688	Headwaters to Beaver Cr	2B, 3C	8.05	070101060805	Beaver Creek
Unnamed creek	-689	Unnamed ditch to Crow Wing R	2B, 3C	4.95	070101060807	Goose Lake
Unnamed creek	-706	Headwaters to Tower Cr	2B, 3C	1.53	070101060808	Farnham Creek
Unnamed creek	-707	Unnamed cr to Swan Cr	2B, 3C	1.08	070101061102	Swan Creek
Unnamed ditch	-555	Unnamed cr to Unnamed cr	2B, 3C	2.31	070101060803	Town of Huntersville- Crow Wing River
Unnamed ditch	-556	Unnamed cr to Crow Wing R	2B, 3C	0.35	070101060803	Town of Huntersville- Crow Wing River
Unnamed ditch	-683	Unnamed ditch to Big Swamp Cr	2B, 3C	1.87	070101060702	Big Swamp Creek

Reach Name	AUID	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
Wallingford Creek	-573	Tamarack Lk to Mucky Cr	1B, 2A, 3B	3.56	070101060604	Wallingford Creek
Wallingford Creek (Mucky Creek)	-575	Mucky Cr to Third Crow Wing Lk	1B, 2A, 3B	0.64	070101060604	Wallingford Creek

Table 37. Crow Wing River Watershed Index of Stream Name, ID & HUC 12, listed in numerical order by stream AUID. Refer to Minn. R. 7050.0140 for Use Class definitions https://www.revisor.mn.gov/rules/?id=7050.0140).

AUID	Reach Name	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
-501	Crow Wing River	Gull R to Mississippi R	2B, 3C	4.02	070101061108	Crow Wing River
-502	Gull River	Gull Lk to Crow Wing R	2B, 3C	14.39	070101061008	Gull River
-506	Crow Wing River	Seven Mile Cr to Gull R	2B, 3C	2.35	070101061106	Lake Placid-Crow Wing River
-506	Crow Wing River	Seven Mile Cr to Gull R	2B, 3C	4.64	070101061108	Crow Wing River
-507	Crow Wing River	Long Prairie R to Seven Mile Cr	2B, 3C	6.93	070101061106	Lake Placid-Crow Wing River
-508	Crow Wing River	Mosquito Cr to Long Prairie R	2B, 3C	1.95	070101061104	City of Motley-Crow Wing River
-509	Crow Wing River	Swan Cr to Mosquito Cr	2B, 3C	10.53	070101061104	City of Motley-Crow Wing River
-510	Crow Wing River	Partridge R to Swan Cr	2B, 3C	6.73	070101061101	Hayden Creek-Crow Wing River
-511	Crow Wing River	Leaf R to Partridge R	2B, 3C	1.00	070101061101	Hayden Creek-Crow Wing River
-512	Crow Wing River	Farnham Cr to Leaf R	2B, 3C	11.11	070101060809	Simon Lake-Crow Wing River
-513	Crow Wing River	Beaver Cr to Farnham Cr	2B, 3C	3.80	070101060806	City of Nimrod-Crow Wing River
-513	Crow Wing River	Beaver Cr to Farnham Cr	2B, 3C	8.55	070101060809	Simon Lake-Crow Wing River
-514	Crow Wing River	Cat R to Beaver Cr	2B, 3C	3.20	070101060806	City of Nimrod-Crow Wing River
-515	Crow Wing River	Big Swamp Cr to Cat R	2B, 3C	2.64	070101060806	City of Nimrod-Crow Wing River
-516	Crow Wing River	Shell R to Big Swamp Cr	2B, 3C	20.47	070101060803	Town of Huntersville-Crow Wing River
-517	Straight River	Headwaters to Straight Lk	1B, 2A, 3B	4.61	070101060101	Straight Lake
-518	Partridge River	Headwaters to Crow Wing R	2B, 3C	18.19	070101060902	Edgy Creek-Partridge River
-518	Partridge River	Headwaters to Crow Wing R	2B, 3C	14.96	070101060903	Partridge River
-519	Unnamed creek	Headwaters to Cat R	2B, 3C	3.07	070101060804	Cat River
-521	Unnamed creek	Headwaters to Bear Cr	2B, 3C	9.84	070101060901	Little Partridge Creek
-522	Farnham Creek	Unnamed cr to Crow Wing R	2B, 3C	0.53	070101060808	Farnham Creek
-523	Crow Wing River	Headwaters (Eleventh Crow Wing Lk 29-0036-00) to Shell R	2B, 3C	11.31	070101060602	Fifth Crow Wing Lake-Crow Wing River
-523	Crow Wing River	Headwaters (Eleventh Crow Wing Lk 29-0036-00) to Shell R	2B, 3C	5.46	070101060603	Big Stony Lake-Crow Wing River
-523	Crow Wing River	Headwaters (Eleventh Crow Wing Lk 29-0036-00) to Shell R	2B, 3C	10.53	070101060606	First Crow Wing Lake-Crow Wing River

AUID	Reach Name	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
-524	Home Brook	Headwaters (Omen Lk 11-0336-00) to Lk Margaret	2B, 3C	16.13	070101061004	Home Brook
-525	Sevenmile Creek	T134 R31W S2, north line to Crow Wing R	2C	15.10	070101061105	Sevenmile Creek
-527	Swan Creek	T135 R32W S2, north line to Crow Wing R	2C	19.33	070101061102	Swan Creek
-528	Tower Creek	T135 R32W S4, north line to Farnham Cr	2C	3.57	070101060808	Farnham Creek
-529	Hayden Creek	Headwaters to Crow Wing R	2B, 3C	7.59	070101061101	Hayden Creek-Crow Wing River
-530	Beaver Creek	Unnamed ditch to Crow Wing R	2C	6.82	070101060805	Beaver Creek
-531	Big Swamp Creek	Headwaters to Crow Wing R	2C	11.01	070101060701	Goose Lake-Big Swamp Creek
-531	Big Swamp Creek	Headwaters to Crow Wing R	2C	4.43	070101060702	Big Swamp Creek
-532	Unnamed creek	Headwaters (Unnamed lk 80-0056-00) to Yaeger Lk	2B, 3C	1.68	070101060801	Yaeger Lake
-534	Unnamed creek	Yaeger Lk to Crow Wing R	2B, 3C	1.62	070101060801	Yaeger Lake
-536	Shell River	Blueberry Lk (80-0034-00) to Fishhook R	2B, 3C	4.33	070101060403	Blueberry Lake-Shell River
-537	Shell River	Shell Lk to Blueberry Lk	2B, 3C	30.41	070101060402	Mission Creek-Shell River
-540	Blueberry River	Kettle R to Blueberry Lk	2C	5.99	070101060302	Blueberry River
-541	Kettle River	Unnamed cr to Blueberry R	2C	20.39	070101060301	Kettle River
-542	Fishhook River	Straight R to Shell R	2B, 3C	3.47	070101060210	Fishhook River
-543	Fishhook River	Park Rapids Dam to Straight R	2B, 3C	6.07	070101060210	Fishhook River
-544	Cat River	Kitten Cr to Crow Wing R	2C	9.25	070101060804	Cat River
-545	Cat River	Headwaters to T137 R35W S13, east line	1B, 2A, 3B	6.21	070101060804	Cat River
-546	Kitten Creek	Headwaters to Cat R	2C	10.11	070101060804	Cat River
-547	Little Partridge River	Headwaters (Pendergast Lk 77-0207-00) to Partridge R	2B, 3C	17.51	070101060901	Little Partridge Creek
-548	County Ditch 15	Unnamed ditch to T132 R35W S3, east line	2B, 3C	1.52	070101060901	Little Partridge Creek
-549	Farnham Creek	Tower Cr to T135 R32W S7, west line	1B, 2A, 3B	0.57	070101060808	Farnham Creek
-550	Bear Creek	CD 15 to Little Partridge R	7	4.81	070101060901	Little Partridge Creek
-551	Little Partridge Creek	Little Partridge R to Partridge R	2B, 3C	3.73	070101060901	Little Partridge Creek
-552	County Ditch 15	T132 R35W S2, west line to Bear Cr	7	3.33	070101060901	Little Partridge Creek
-553	Unnamed creek	Headwaters to Shell R	2B, 3C	4.37	070101060402	Mission Creek-Shell River
-554	Blueberry River	Unnamed cr to Kettle R	2C	7.43	070101060302	Blueberry River
-555	Unnamed ditch	Unnamed cr to Unnamed cr	2B, 3C	2.31	070101060803	Town of Huntersville-

AUID	Reach Name	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
						Crow Wing River
-556	Unnamed ditch	Unnamed cr to Crow Wing R	2B, 3C	0.35	070101060803	Town of Huntersville-Crow Wing River
-558	Straight River	Straight Lk to Fishhook R	1B, 2A, 3B	16.92	070101060102	Straight River
-559	Kettle River	Unnamed cr to Unnamed cr	2C	2.29	070101060301	Kettle River
-560	Sevenmile Creek	Headwaters to T135 R31W S35, south line	2B, 3C	1.66	070101061105	Sevenmile Creek
-561	Stoney Brook	Headwaters to T136 R31W S35, north line	2B, 3C	0.64	070101061002	Stony Brook
-562	Swan Creek	Headwaters to T136 R32W S35, south line	2B, 3C	3.12	070101061102	Swan Creek
-563	Tower Creek	Headwaters to T136 R32W S33, south line	2B, 3C	3.70	070101060808	Farnham Creek
-564	Cat River	T137 R34W 18, west line to Kitten Cr	2C	0.73	070101060804	Cat River
-565	Farnham Creek	T135 R33W S12, east line to Unnamed cr	2B, 3C	2.25	070101060808	Farnham Creek
-567	Basswood Creek	Headwaters to Unnamed lk (03-0665-00)	2C	5.88	070101060202	Basswood Creek
-568	Basswood Creek	Unnamed lk (03-0665-00) to Indian Cr	2C	7.66	070101060202	Basswood Creek
-569	Indian Creek	Big Basswood Lk to Basswood Cr	2C	13.88	070101060203	Indian Creek
-570	Indian Creek (Basswood Creek)	Basswood Cr to Two Inlets Lk	2C	1.49	070101060203	Indian Creek
-571	Straight Lake Creek	Headwaters to Unnamed lk (03-0051-00)	1B, 2A, 3B	0.95	070101060101	Straight Lake
-572	Straight Lake Creek	Unnamed lk (03-0051-00) to Straight R	1B, 2A, 3B	0.44	070101060101	Straight Lake
-573	Wallingford Creek	Tamarack Lk to Mucky Cr	1B, 2A, 3B	3.56	070101060604	Wallingford Creek
-574	Mucky Creek	Unnamed lk (29-0397-00) to Wallingford Cr	1B, 2A, 3B	1.68	070101060604	Wallingford Creek
-575	Wallingford Creek (Mucky Creek)	Mucky Cr to Third Crow Wing Lk	1B, 2A, 3B	0.64	070101060604	Wallingford Creek
-576	Rogers Brook	Headwaters to Rice Lk	1B, 2A, 3B	1.13	070101061107	Pillager Creek
-577	Pillager Creek	T133 R30W S5, north line to Crow Wing R	2C	5.99	070101061107	Pillager Creek
-578	Little Swan Creek	T135 R32W S12, east line to Swan Cr	2C	6.01	070101061102	Swan Creek
-580	Farnham Creek	Martin Cr to Tower Cr	1B, 2A, 3B	1.15	070101060808	Farnham Creek
-581	Little Swamp Creek	Headwaters to Crow Wing R	2C	7.84	070101060806	City of Nimrod-Crow Wing River
-582	Cullen Brook	Rice Lk to Upper Cullen Lk	1B, 2A, 3B	2.74	070101061005	Upper Gull Lake
-583	Olson Brook	Headwaters to Mayo Cr	1B, 2A, 3B	1.07	070101061001	Mayo Creek

AUID	Reach Name	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
-585	Blueberry River	Blueberry Lk (03-0007-00) to Unnamed cr	2C	2.53	070101060302	Blueberry River
-586	Blueberry River	Unnamed cr to Unnamed cr	2C	4.43	070101060302	Blueberry River
-587	Farnham Creek Tributary	T136 R32W S20, north line to Farnham Cr	1B, 2A, 3B	3.09	070101060808	Farnham Creek
-588	Martin Creek (Poplar Brook)	T136 R32W S22, east line to Farnham Cr	1B, 2A, 3B	5.44	070101060808	Farnham Creek
-589	Mosquito Creek (Hay Creek)	Headwaters to T135 R31W S4, south line	2B, 3C	0.25	070101061103	Mosquito Creek
-590	Mosquito Creek (Hay Creek)	T135 R31W S9, north line to T135 R31W S17, south line	1B, 2A, 3B	2.82	070101061103	Mosquito Creek
-591	Mosquito Creek (Hay Creek)	T135 R31W S20, north line to Crow Wing R	2B, 3C	17.72	070101061103	Mosquito Creek
-592	Fawn Creek	T134 R33W S33, south line to T134 R33W S22, north line	1B, 2A, 3B	4.14	070101061101	Hayden Creek-Crow Wing River
-593	Iron Creek	Headwaters to Swan Cr	2C	7.88	070101061102	Swan Creek
-594	Hellkamp Creek	T140 R34W S24, west line to Fifth Crow Wing Lk	1B, 2A, 3B	1.72	070101060602	Fifth Crow Wing Lake-Crow Wing River
-595	Stocking Creek	Stocking Lk to T138 R35W S12, east line	2C	1.92	070101060404	Stocking Lake
-596	Fishhook River	Pedestrian bridge above Heartland Trail to Fishhook Dam	2B, 3C	0.37	070101060208	Fishhook Lake
-597	Fish Creek	Aspinwall Lk to Shell Lk	2B, 3C	2.89	070101060401	Shell Lake
-598	County Ditch 27	Headwaters to Little Partridge R	2B, 3C	3.19	070101060901	Little Partridge Creek
-599	Cory Brook Tributary	T135 R30W S15, north line to Cory Bk	1B, 2A, 3B	1.45	070101061004	Home Brook
-600	Stony Brook Tributary	T136 R31W S24, north line to Stony Bk	1B, 2A, 3B	2.03	070101061002	Stony Brook
-601	Fawn Creek	T134 R33W S15, south line to Crow Wing R	2B, 3C	0.38	070101061101	Hayden Creek-Crow Wing River
-604	Mayo Creek	Unnamed cr to Unnamed cr	2B, 3C	6.08	070101061001	Mayo Creek
-605	Mayo Creek	Unnamed cr to Sibley Lk	2B, 3C	0.38	070101061001	Mayo Creek
-607	Unnamed creek	Mayo Lk to Upper Gull Lk	2B, 3C	1.88	070101061001	Mayo Creek
-609	Unnamed creek	Lower Cullen Lk to Nisswa Lk	2B, 3C	0.64	070101061005	Upper Gull Lake
-612	Pillager Creek	Rice Lk to T134 R30W S32, south line	2C	0.10	070101061107	Pillager Creek
-614	Stocking Creek	T138 R34W S7, west line to Shell R	2C	0.18	070101060404	Stocking Lake
-617	Hay Creek	Two Inlets Lk to Unnamed lk (29-0554-00)	2B, 3C	2.50	070101060205	Hay Creek

AUID	Reach Name	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
-619	Hay Creek	Unnamed lk (29-0554-00) to Island Lk	2B, 3C	1.62	070101060205	Hay Creek
-621	Unnamed creek	Island Lk to Eagle Lk	2B, 3C	0.44	070101060206	Eagle Lake
-623	Unnamed creek	Eagle Lk to Potato Lk	2B, 3C	0.29	070101060207	Potato Lake
-625	Potato River	Potato Lk to Fishhook Lk	2B, 3C	1.79	070101060208	Fishhook Lake
-627	Fishhook River	Fishhook Lk to Pedestrian bridge	2B, 3C	1.67	070101060208	Fishhook Lake
-628	Unnamed creek	Unnamed lk (03-0008-00) to Blueberry R	2B, 3C	0.03	070101060302	Blueberry River
-630	Hellkamp Creek	Artificial path within Fifth Crow Wing Lk	2B, 3C	0.27	070101060602	Fifth Crow Wing Lake-Crow Wing River
-632	Unnamed creek	Headwaters to Stocking Lk	2B, 3C	0.25	070101060404	Stocking Lake
-633	Unnamed creek	Headwaters to Stocking Lk	2B, 3C	0.23	070101060404	Stocking Lake
-634	Cat River Tributary	T137 R35W S10, north line to Cat R	1B, 2A, 3B	0.22	070101060804	Cat River
-635	Cat River Tributary	T137 R35W S11, north line to Cat R	1B, 2A, 3B	0.48	070101060804	Cat River
-636	Cat River Tributary	T137 R35W S13, west line to Cat R	1B, 2A, 3B	0.66	070101060804	Cat River
-637	Cory Brook Tributary	T135 R30W S15, north line to Unnamed cr	1B, 2A, 3B	0.50	070101061004	Home Brook
-638	Cory Brook Tributary	Headwaters to Unnamed cr	1B, 2A, 3B	0.62	070101061004	Home Brook
-639	Cory Brook Tributary	T135 R30W S9, north line to Cory Bk	1B, 2A, 3B	0.93	070101061004	Home Brook
-640	Cory Brook Tributary	T135 R30W S9, north line to Cory Bk	1B, 2A, 3B	0.24	070101061004	Home Brook
-641	Cory Brook Tributary	Headwaters to Cory Bk	1B, 2A, 3B	0.48	070101061004	Home Brook
-642	Cory Brook Tributary	Headwaters to Cory Bk	1B, 2A, 3B	0.36	070101061004	Home Brook
-643	Farnham Creek Tributary	T135 R33W S12, east line to Farnham Cr	2B, 3C	1.08	070101060808	Farnham Creek
-644	Farnham Creek Tributary	Farnham Cr to T135 R32W S7, west line	1B, 2A, 3B	0.74	070101060808	Farnham Creek
-645	Farnham Creek Tributary	Unnamed lk to Farnham Cr	1B, 2A, 3B	0.55	070101060808	Farnham Creek
-646	Farnham Creek Tributary	T136 R32W S21, east line to Unnamed cr	1B, 2A, 3B	0.51	070101060808	Farnham Creek
-647	Farnham Creek Tributary	Headwaters to Unnamed cr	1B, 2A, 3B	0.72	070101060808	Farnham Creek
-648	Farnham Creek Tributary	Unnamed cr to Farnham Cr	1B, 2A, 3B	1.16	070101060808	Farnham Creek
-649	Farnham Creek Tributary	T136 R32W S10, east line to Unnamed cr	1B, 2A, 3B	0.69	070101060808	Farnham Creek
-650	Farnham Creek Tributary	T136 R32W S10, east line to Unnamed cr	1B, 2A, 3B	0.57	070101060808	Farnham Creek
-651	Farnham Creek Tributary	Unnamed cr to Farnham Cr	1B, 2A, 3B	0.81	070101060808	Farnham Creek

AUID	Reach Name	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
-652	Farnham Creek Tributary	T136 R32W S3, north line to Farnham Cr	1B, 2A, 3B	1.13	070101060808	Farnham Creek
-653	Farnham Creek Tributary	T136 R32W S2, north line to Unnamed cr	1B, 2A, 3B	0.37	070101060808	Farnham Creek
-654	Farnham Creek Tributary	T136 R32W S2, north line to Unnamed cr	1B, 2A, 3B	1.31	070101060808	Farnham Creek
-655	Farnham Creek Tributary	Unnamed cr to Farnham Cr	1B, 2A, 3B	1.78	070101060808	Farnham Creek
-656	Mosquito Creek Tributary	Headwaters to Mosquito Cr	1B, 2A, 3B	1.00	070101061103	Mosquito Creek
-657	Mosquito Creek Tributary	T135 R31W S8, west line to Mosquito Cr	1B, 2A, 3B	1.40	070101061103	Mosquito Creek
-658	Mosquito Creek Tributary	T135 R31W S16, east line to Mosquito Cr	1B, 2A, 3B	1.65	070101061103	Mosquito Creek
-659	Mosquito Creek Tributary	T135 R31W S16, south line to Mosquito Cr	1B, 2A, 3B	0.52	070101061103	Mosquito Creek
-660	Kettle River	Headwaters to Unnamed cr	2C	3.30	070101060301	Kettle River
-661	Peterson Creek	Headwaters to Pillager Cr	1B, 2A, 3B	0.97	070101061107	Pillager Creek
-662	Pillager Creek	Pillager Lk to Rice Lk	2C	0.64	070101061107	Pillager Creek
-663	Martin Creek Tributary	Headwaters to Martin Cr	1B, 2A, 3B	0.13	070101060808	Farnham Creek
-664	Martin Creek Tributary	T136 R32W S27, east line to Martin Cr	1B, 2A, 3B	0.41	070101060808	Farnham Creek
-665	Stony Brook Tributary	Headwaters to Stony Bk	1B, 2A, 3B	0.52	070101061002	Stony Brook
-666	Stony Brook Tributary	T136 R31W S25, east line to Unnamed cr	1B, 2A, 3B	0.15	070101061002	Stony Brook
-667	Stony Brook Tributary	Headwaters to Stony Bk	1B, 2A, 3B	0.81	070101061002	Stony Brook
-668	Stony Brook Tributary	Headwaters to Stony Bk	1B, 2A, 3B	0.71	070101061002	Stony Brook
-669	Stony Brook Tributary	T136 R30W S26, west line to Stony Bk	1B, 2A, 3B	0.87	070101061002	Stony Brook
-670	Stony Brook Tributary	Headwaters to Stony Bk	1B, 2A, 3B	1.10	070101061002	Stony Brook
-671	Stony Brook Tributary	T136 R31W S26, west line to Stony Bk	1B, 2A, 3B	0.83	070101061002	Stony Brook
-672	Stony Brook Tributary	T136 R30W S22, east line to Stony Bk	1B, 2A, 3B	0.52	070101061002	Stony Brook
-673	Straight River Tributary	T141 R37W S25, south line to Straight R	1B, 2A, 3B	0.71	070101060101	Straight Lake
-674	Straight River Tributary	T141 R36W S31, south line to Straight R	1B, 2A, 3B	0.34	070101060101	Straight Lake
-675	Straight River Tributary	T139 R36W S1, west line to Straight R	1B, 2A, 3B	2.04	070101060102	Straight River
-676	Straight River Tributary	T139 R35W S11, north line to Straight R	1B, 2A, 3B	0.53	070101060102	Straight River
-677	Unnamed creek	Long Lk to Fishhook R	2B, 3C	0.92	070101060210	Fishhook River
-678	Portage River	Portage Lk to Fishhook Lk	2B, 3C	0.75	070101060208	Fishhook Lake
-679	Shell River	Fishhook R to Upper Twin Lk	2B, 3C	1.44	070101060405	Shell River

AUID	Reach Name	Reach Description	Use Class	Length (miles)	HUC 12	HUC 12 Name
-681	Shell River	Lower Twin Lk to Crow Wing R	2B, 3C	9.13	070101060405	Shell River
-682	Stocking Lake	Stocking Lk (80-0037-00)	2B, 3C	1.82	070101060404	Stocking Lake
-683	Unnamed ditch	Unnamed ditch to Big Swamp Cr	2B, 3C	1.87	070101060702	Big Swamp Creek
-684	Unnamed creek	Unnamed cr to Crow Wing R	2B, 3C	5.51	070101061104	City of Motley-Crow Wing River
-685	Unnamed creek	Unnamed cr to Unnamed cr	2B, 3C	2.38	070101060301	Kettle River
-686	Unnamed creek	Unnamed cr to Kettle R	2B, 3C	0.97	070101060301	Kettle River
-687	Unnamed creek	Unnamed ditch to Crow Wing R	2B, 3C	3.12	070101060806	City of Nimrod-Crow Wing River
-688	Unnamed creek	Headwaters to Beaver Cr	2B, 3C	8.05	070101060805	Beaver Creek
-689	Unnamed creek	Unnamed ditch to Crow Wing R	2B, 3C	4.95	070101060807	Goose Lake
-690	Dinner Creek	Little Dinner Lk to Two Inlets Lk	2B, 3C	3.74	070101060204	Dinner Creek
-691	Bender Creek	Unnamed lk (29-0608-00) to First Crow Wing Lk	2B, 3C	4.73	070101060605	Bender Creek
-693	East Branch Mosquito Creek	Unnamed cr to Mosquito Cr	2B, 3C	1.44	070101061103	Mosquito Creek
-694	Egly Creek	Unnamed cr to Partridge R	2B, 3C	6.86	070101060902	Edgy Creek-Partridge River
-695	Mayo Creek	Unnamed cr to Unnamed cr	2B, 3C	7.30	070101061001	Mayo Creek
-696	Mayo Creek	Moose Lk to Unnamed cr	2B, 3C	4.59	070101061001	Mayo Creek
-697	Cory Brook	Headwaters to T135 R30W S4, south line	2B, 3C	1.89	070101061004	Home Brook
-698	Stoney Brook	T136 R29W S32, west line to Upper Gull Lk	1B, 2A, 3B	4.46	070101061002	Stony Brook
-699	Stoney Brook	T136 R31W S26, south line to T136 R29W S31, east line	1B, 2A, 3B	12.85	070101061002	Stony Brook
-700	Corey Brook	T135 T30W S16, north line to Home Bk	1B, 2A, 3B	2.89	070101061004	Home Brook
-701	Corey Brook	T135 R30W S9 north line to south line	1B, 2A, 3B	1.19	070101061004	Home Brook
-702	Farnham Creek	Unnamed ditch to T136 R32W S21, west line	1B, 2A, 3B	2.96	070101060808	Farnham Creek
-703	Farnham Creek	T136 R32W S20, east line to Martin Cr	1B, 2A, 3B	4.78	070101060808	Farnham Creek
-704	Bender Creek	Tripp Lk to Unnamed Lk (29-0608-00)	2B, 3C	0.04	070101060605	Bender Creek
-706	Unnamed creek	Headwaters to Tower Cr	2B, 3C	1.53	070101060808	Farnham Creek
-707	Unnamed creek	Unnamed cr to Swan Cr	2B, 3C	1.08	070101061102	Swan Creek
-708	Stony Brook Tributary	T136 R30W S30, north line to west line	1B, 2A, 3B	0.34	070101061002	Stony Brook

Appendix G: Index of Lake Name, ID & HUC 12

Table 38. Crow Wing River Watershed Index of Lake Name, ID & HUC 12, listed in alphabetical order by lake name. Refer to Minn. R. 7050.0140 for Use Class definitions (https://www.revisor.mn.gov/rules/?id=7050.0140).

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Abners	03003900	81.0	Becker	070101060202	Basswood Creek
Agate	11021600	157.4	Cass	070101061004	Home Brook
Anchor Hill 4	15021300	31.8	Clearwater	070101060201	Lake of the Valley
Aspinwall	03010400	145.0	Becker	070101060401	Shell Lake
Bad Axe	29020800	303.3	Hubbard	070101060501	Mantrap Lake
Bad Medicine	03008500	745.7	Becker	070101060201	Lake of the Valley
Bad Medicine 3	15021800	29.1	Clearwater	070101060201	Lake of the Valley
Bass	03008800	204.2	Becker	070101060203	Indian Creek
Bass	03012700	128.1	Becker	070101060401	Shell Lake
Bass	11021500	31.0	Cass	070101061008	Gull River
Bass	11032500	37.2	Cass	070101061003	Rush Brook
Bass	18038400	34.0	Crow Wing	070101061108	Crow Wing River
Bass	18040200	38.0	Crow Wing	070101061005	Upper Gull Lake
Basswood	03009200	112.0	Becker	070101060203	Indian Creek
Beauty	11062400	17.9	Cass	070101061107	Pillager Creek
Beaver	29018900	37.8	Hubbard	070101060502	Big Sand Lake
Becker	29004700	20.4	Hubbard	070101060601	Eleventh Crow Wing Lake
Beden	29026500	33.6	Hubbard	070101060208	Fishhook Lake
Belle Taine	29014600	1,442.0	Hubbard	070101060504	Belle Taine Lake
Benz	77007900	13.9	Todd	070101061104	City of Motley-Crow Wing River
Bergkeller	11044700	193.7	Cass	070101060807	Goose Lake
Bess	11050300	28.9	Cass	070101060601	Eleventh Crow Wing Lake
Big Bass	29003200	131.1	Hubbard	070101060601	Eleventh Crow Wing Lake
Big Basswood	03009600	581.1	Becker	070101060203	Indian Creek
Big Olson	29010000	24.3	Hubbard	070101060501	Mantrap Lake
Big Rush	03010300	931.7	Becker	070101060401	Shell Lake
Big Sand	29018500	1,635.1	Hubbard	070101060502	Big Sand Lake
Big Stony	29014300	343.4	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Bill	80003300	22.8	Wadena	070101060405	Shell River
Bladder	29008300	226.8	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
Bliss	29015900	39.9	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Blue	29018400	336.4	Hubbard	070101060207	Potato Lake
Blueberry	03000700	82.9	Becker	070101060302	Blueberry River
Blueberry	80003400	532.5	Wadena	070101060403	Blueberry Lake-Shell River
Bog	03001200	46.1	Becker	070101060101	Straight Lake

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Boogun	03003500	44.0	Becker	070101060204	Dinner Creek
Boot	03003000	377.6	Becker	070101060202	Basswood Creek
Boubora	29008200	50.8	Hubbard	070101060604	Wallingford Creek
Boulder	29016200	340.5	Hubbard	070101060504	Belle Taine Lake
Branham	29034100	28.2	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Brenum	03012100	69.4	Becker	070101060401	Shell Lake
Browns	03001300	11.0	Becker	070101060102	Straight River
Brush	29031000	79.6	Hubbard	070101060102	Straight River
Buck	29020600	26.0	Hubbard	070101060501	Mantrap Lake
Bunness	29025500	16.6	Hubbard	070101060206	Eagle Lake
Burgen	80001800	31.0	Wadena	070101060802	Burgen Lake
Camp 1	29003000	15.3	Hubbard	070101060601	Eleventh Crow Wing Lake
Camp Two	11058700	23.5	Cass	070101061002	Stony Brook
Carlson	18039500	39.8	Crow Wing	070101061008	Gull River
Cat	11050900	103.6	Cass	070101061103	Mosquito Creek
Cedar	29031200	102.0	Hubbard	070101060204	Dinner Creek
Clark	18037400	305.4	Crow Wing	070101061005	Upper Gull Lake
Clausens	29009700	81.8	Hubbard	070101060504	Belle Taine Lake
Clear	11041800	37.1	Cass	070101061103	Mosquito Creek
Clear	11067800	14.1	Cass	070101060808	Farnham Creek
Cloverleaf	18040600	32.3	Crow Wing	070101061005	Upper Gull Lake
Coleman	03001900	19.7	Becker	070101060101	Straight Lake
Cook	29004000	14.0	Hubbard	070101060601	Eleventh Crow Wing Lake
Coon	03004800	60.7	Becker	070101060202	Basswood Creek
Coon	29010800	78.9	Hubbard	070101060503	Little Sand Lake
Coon	29027700	94.8	Hubbard	070101060206	Eagle Lake
Cox	15006900	61.0	Clearwater	070101060201	Lake of the Valley
Cox 2	15046800	17.7	Clearwater	070101060201	Lake of the Valley
Cox 3	15046900	14.9	Clearwater	070101060201	Lake of the Valley
Cranberry	11082500	37.7	Cass	070101060701	Goose Lake-Big Swamp Creek
Crooked	11058800	19.4	Cass	070101061002	Stony Brook
Crow Wing	29011600	46.7	Hubbard	070101060504	Belle Taine Lake
Crystal	18034100	86.8	Crow Wing	070101061006	Round Lake
Dade	11021400	97.7	Cass	070101061007	Gull Lake
Daisy	29032800	42.7	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Dead	29011000	130.6	Hubbard	070101060503	Little Sand Lake
Dead Horse	11032900	15.1	Cass	070101061007	Gull Lake
Dead Horse	29018700	44.1	Hubbard	070101060503	Little Sand Lake
Deadhead	29020900	13.2	Hubbard	070101060501	Mantrap Lake
Deer	29009000	180.8	Hubbard	070101060504	Belle Taine Lake

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Deer	29016300	45.0	Hubbard	070101060503	Little Sand Lake
Deer	29019500	42.0	Hubbard	070101060501	Mantrap Lake
Dinner	03004400	56.8	Becker	070101060204	Dinner Creek
Doe	11061700	15.3	Cass	070101061106	Lake Placid-Crow Wing River
Dog	11050800	117.6	Cass	070101061104	City of Motley-Crow Wing River
Dry Sand	11051400	21.5	Cass	070101060808	Farnham Creek
Duck	29014200	326.4	Hubbard	070101060405	Shell River
Duffney	11032700	48.2	Cass	070101061007	Gull Lake
Duffy	11063400	28.4	Cass	070101060701	Goose Lake-Big Swamp Creek
Dumbbell	03012400	109.1	Becker	070101060401	Shell Lake
Eagle	29025600	423.5	Hubbard	070101060206	Eagle Lake
East Crooked	29010101	379.1	Hubbard	070101060503	Little Sand Lake
East Twin	18040700	161.8	Crow Wing	070101061005	Upper Gull Lake
Echo	11021200	19.0	Cass	070101061008	Gull River
Edna	18039600	156.5	Crow Wing	070101061005	Upper Gull Lake
Ed's	15038500	36.0	Clearwater	070101060201	Lake of the Valley
Edward	18030500	2,576.3	Crow Wing	070101061006	Round Lake
Eighth Crow Wing	29007200	503.0	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Elbow	03006500	61.0	Becker	070101060402	Mission Creek-Shell River
Eleventh Crow Wing	29003600	752.5	Hubbard	070101060601	Eleventh Crow Wing Lake
Emma	29018600	78.4	Hubbard	070101060502	Big Sand Lake
Esterday	11051100	21.7	Cass	070101060809	Simon Lake-Crow Wing River
Farber	11061400	13.9	Cass	070101061104	City of Motley-Crow Wing River
Farnham	11051300	43.4	Cass	070101060808	Farnham Creek
Fawn	18039700	63.9	Crow Wing	070101061005	Upper Gull Lake
Fifth Crow Wing	29009200	400.1	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Finn	80002800	140.4	Wadena	070101060801	Yaeger Lake
First Crow Wing	29008600	522.0	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
Fish Hook	29024200	1,642.6	Hubbard	070101060208	Fishhook Lake
Fish Hook River Dam	29050400	128.1	Hubbard	070101060208	Fishhook Lake
Fish Trap	18040000	35.8	Crow Wing	070101061005	Upper Gull Lake
Fools	03002800	52.0	Becker	070101060205	Hay Creek
Foss	29034300	14.5	Hubbard	070101060208	Fishhook Lake
Fourth Crow Wing	29007800	440.6	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
Fox Meadow	11059000	21.4	Cass	070101061001	Mayo Creek
Frandsen Slough	29032300	37.3	Hubbard	070101060405	Shell River
Frellsen	15007100	22.6	Clearwater	070101060201	Lake of the Valley
Fucat	11042000	13.8	Cass	070101061103	Mosquito Creek
Fucat	11064100	12.7	Cass	070101061105	Sevenmile Creek
Gakin	11078100	13.3	Cass	070101061108	Crow Wing River

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Garden	18032900	249.7	Crow Wing	070101061005	Upper Gull Lake
Gardner	03010000	70.0	Becker	070101060201	Lake of the Valley
Giles	29012100	17.1	Hubbard	070101060501	Mantrap Lake
Gilfillan	03003100	49.5	Becker	070101060204	Dinner Creek
Gilmore	29018800	93.2	Hubbard	070101060503	Little Sand Lake
Gladstone	18033800	437.1	Crow Wing	070101061005	Upper Gull Lake
Glanders	15007000	56.8	Clearwater	070101060201	Lake of the Valley
Goose	11033400	68.9	Cass	070101061002	Stony Brook
Goose	11045100	122.0	Cass	070101060701	Goose Lake-Big Swamp Creek
Goose	29010500	39.0	Hubbard	070101060503	Little Sand Lake
Granning	80001200	14.2	Wadena	070101060806	City of Nimrod-Crow Wing River
Green Bass	11033000	44.0	Cass	070101061007	Gull Lake
Guida	18033200	36.7	Crow Wing	070101061005	Upper Gull Lake
Gull	11030500	9,947.2	Cass	070101061007	Gull Lake
Gyles	03006600	15.9	Becker	070101060402	Mission Creek-Shell River
Hagen	11033500	50.6	Cass	070101061004	Home Brook
Ham	29001700	194.2	Hubbard	070101060604	Wallingford Creek
Hardware	11059400	22.1	Cass	070101060808	Farnham Creek
Hardy	11020900	105.0	Cass	070101061108	Crow Wing River
Hardy	11033200	83.9	Cass	070101061003	Rush Brook
Harlan	11032200	50.0	Cass	070101061107	Pillager Creek
Hartley	18039200	135.5	Crow Wing	070101061008	Gull River
Harvela's	03005700	14.4	Becker	070101060402	Mission Creek-Shell River
Hay	29001600	67.5	Hubbard	070101060604	Wallingford Creek
Hayden	77008000	187.2	Todd	070101061101	Hayden Creek-Crow Wing River
Hazel	80000500	28.7	Wadena	070101061101	Hayden Creek-Crow Wing River
Hemenway Pond	29016002	50.5	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Hinds	29024900	305.4	Hubbard	070101060403	Blueberry Lake-Shell River
Hole-in-the-Day	18040100	94.1	Crow Wing	070101061007	Gull Lake
Holland-Lucy	29009500	43.2	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Horseshoe	03002700	12.7	Becker	070101060205	Hay Creek
Horseshoe	03014200	19.2	Becker	070101060201	Lake of the Valley
Hubert	18037500	1,287.7	Crow Wing	070101061005	Upper Gull Lake
Hungry Man	03002900	139.7	Becker	070101060204	Dinner Creek
Huntersville	80005000	42.7	Wadena	070101060802	Burgen Lake
Ida	29017000	74.5	Hubbard	070101060503	Little Sand Lake
Idaho	29036400	12.9	Hubbard	070101060601	Eleventh Crow Wing Lake
Indian	29007400	51.7	Hubbard	070101060601	Eleventh Crow Wing Lake
Ingram	29017100	45.4	Hubbard	070101060207	Potato Lake
Iron Corner	03111300	14.4	Becker	070101060204	Dinner Creek

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Iron Corner 2	03125000	10.8	Becker	070101060204	Dinner Creek
Island	29008800	225.2	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Island	29025400	541.3	Hubbard	070101060206	Eagle Lake
Island Pond	15021500	11.7	Clearwater	070101060201	Lake of the Valley
Itasca	29027100	14.3	Hubbard	070101060204	Dinner Creek
Ivan	29016600	22.3	Hubbard	070101060209	Long Lake
Jacks	18039400	28.6	Crow Wing	070101061008	Gull River
Jim Cook (east)	80002702	71.7	Wadena	070101060801	Yaeger Lake
Jim Cook (west)	80002701	60.9	Wadena	070101060801	Yaeger Lake
Johnson	11061600	11.1	Cass	070101061104	City of Motley-Crow Wing River
Johnson	18032800	124.9	Crow Wing	070101061005	Upper Gull Lake
Jones	03012300	34.8	Becker	070101060401	Shell Lake
Jon's	15041800	11.2	Clearwater	070101060201	Lake of the Valley
Kane	03004200	32.0	Becker	070101060204	Dinner Creek
Kansas	03009500	21.2	Becker	070101060203	Indian Creek
Katie	03005000	10.5	Becker	070101060301	Kettle River
Kelly	11042800	27.6	Cass	070101061002	Stony Brook
Keske	29033500	22.5	Hubbard	070101060405	Shell River
Kettle	29000100	39.5	Hubbard	070101060605	Bender Creek
Kneebone	03009000	68.1	Becker	070101060203	Indian Creek
Knutson	03000400	44.7	Becker	070101060302	Blueberry River
Kramer	29004100	48.8	Hubbard	070101060601	Eleventh Crow Wing Lake
Kramer	11020800	77.9	Cass	070101061108	Crow Wing River
Layden	29020000	18.5	Hubbard	070101060501	Mantrap Lake
Linbom	03007000	99.4	Becker	070101060402	Mission Creek-Shell River
Little	03000600	16.0	Becker	070101060302	Blueberry River
Little Bass	29003300	61.1	Hubbard	070101060601	Eleventh Crow Wing Lake
Little Dinner	03004500	12.7	Becker	070101060204	Dinner Creek
Little Ham	29001800	38.5	Hubbard	070101060604	Wallingford Creek
Little Hubert	18034000	193.9	Crow Wing	070101061005	Upper Gull Lake
Little Long	03000900	12.5	Becker	070101060302	Blueberry River
Little Long	11032300	32.4	Cass	070101061003	Rush Brook
Little Mantrap	29027300	31.5	Hubbard	070101060204	Dinner Creek
Little Mantrap	29031300	381.0	Hubbard	070101060204	Dinner Creek
Little Mud	03002200	15.6	Becker	070101060205	Hay Creek
Little Red Sand	11031800	76.8	Cass	070101061007	Gull Lake
Little Rice	29018300	26.8	Hubbard	070101060207	Potato Lake
Little Round	03000800	17.0	Becker	070101060302	Blueberry River
Little Sand	29015000	409.5	Hubbard	070101060503	Little Sand Lake
Little Shell	03012500	22.6	Becker	070101060401	Shell Lake

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Little Stony	29008000	67.8	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Long	11032800	112.9	Cass	070101061003	Rush Brook
Long	11042200	119.2	Cass	070101061001	Mayo Creek
Long	29016100	1,926.1	Hubbard	070101060209	Long Lake
Long Lost	15006800	501.2	Clearwater	070101060201	Lake of the Valley
Loon	11022600	231.0	Cass	070101061001	Mayo Creek
Loon	29002000	125.5	Hubbard	070101060604	Wallingford Creek
Loon	29019000	82.3	Hubbard	070101060502	Big Sand Lake
Lord	29024800	61.4	Hubbard	070101060403	Blueberry Lake-Shell River
Lova	11042600	40.5	Cass	070101061002	Stony Brook
Love	18038800	76.6	Crow Wing	070101061007	Gull Lake
Lovejoy	80000400	40.1	Wadena	070101060903	Partridge River
Lovelace	15022000	32.2	Clearwater	070101060202	Basswood Creek
Lower Bottle	29018000	641.2	Hubbard	070101060502	Big Sand Lake
Lower Camel	29027900	20.1	Hubbard	070101060206	Eagle Lake
Lower Cullen	18040300	560.0	Crow Wing	070101061005	Upper Gull Lake
Lower Mud	29026700	27.3	Hubbard	070101060206	Eagle Lake
Lower Twin	80003000	251.9	Wadena	070101060405	Shell River
Lyden	29020500	13.7	Hubbard	070101060501	Mantrap Lake
Lynch	11021000	23.6	Cass	070101061008	Gull River
Macs	03007200	40.4	Becker	070101060101	Straight Lake
Mallard	03009400	21.9	Becker	070101060203	Indian Creek
Mallard	18033400	57.1	Crow Wing	070101061005	Upper Gull Lake
Mantrap	29015100	1,617.7	Hubbard	070101060501	Mantrap Lake
Many Arm	29025700	63.6	Hubbard	070101060206	Eagle Lake
Margaret	11022200	247.8	Cass	070101061004	Home Brook
Mayo	18040800	162.2	Crow Wing	070101061001	Mayo Creek
McKay	15001300	34.0	Clearwater	070101060204	Dinner Creek
Meadow	11041900	53.6	Cass	070101061004	Home Brook
Middle Crooked	29010102	288.6	Hubbard	070101060503	Little Sand Lake
Middle Cullen	18037700	396.7	Crow Wing	070101061005	Upper Gull Lake
Mile	11020700	81.1	Cass	070101061008	Gull River
Missouri	03008400	27.7	Becker	070101060202	Basswood Creek
Moburg	18038900	36.7	Crow Wing	070101061006	Round Lake
Mollie	18033500	334.2	Crow Wing	070101061006	Round Lake
Moody	18033900	35.8	Crow Wing	070101061005	Upper Gull Lake
Moose	11042400	92.1	Cass	070101061001	Mayo Creek
Moran	29024700	105.5	Hubbard	070101060403	Blueberry Lake-Shell River
Morgan	80003800	21.8	Wadena	070101060405	Shell River
Moulton	03008600	27.4	Becker	070101060203	Indian Creek

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Mow	29000200	105.7	Hubbard	070101060605	Bender Creek
MPL	11077700	41.0	Cass	070101061008	Gull River
Mud	03001600	86.0	Becker	070101060203	Indian Creek
Mud	03002300	66.5	Becker	070101060205	Hay Creek
Mud	03004700	63.4	Becker	070101060202	Basswood Creek
Mud	03006700	152.1	Becker	070101060402	Mission Creek-Shell River
Mud	03012000	170.0	Becker	070101060401	Shell Lake
Mud	03013100	82.4	Becker	070101060401	Shell Lake
Mud	11051000	31.8	Cass	070101061102	Swan Creek
Mud	18032600	23.8	Crow Wing	070101061005	Upper Gull Lake
Mud	29000400	48.7	Hubbard	070101060605	Bender Creek
Mud	29011900	53.7	Hubbard	070101060501	Mantrap Lake
Mud	29016800	45.7	Hubbard	070101060209	Long Lake
Mud	29025100	68.5	Hubbard	070101060208	Fishhook Lake
Mud	56001400	36.1	Otter Tail	070101060804	Cat River
Mud	18032200	61.1	Crow Wing	070101061008	Gull River
Nagel	29000300	69.3	Hubbard	070101060605	Bender Creek
Nancy	03000200	27.7	Becker	070101060402	Mission Creek-Shell River
Neal	29045700	33.6	Hubbard	070101060504	Belle Taine Lake
Nelson	11020600	18.4	Cass	070101061008	Gull River
Ninth Crow Wing	29002500	232.4	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Nisswa	18039900	219.3	Crow Wing	070101061005	Upper Gull Lake
North Long	18037200	6,144.1	Crow Wing	070101061006	Round Lake
North Mantrap	29055900	25.9	Hubbard	070101060204	Dinner Creek
North Twin	49012100	23.0	Morrison	070101061106	Lake Placid-Crow Wing River
Oelschlager Slough	29000600	182.3	Hubbard	070101060605	Bender Creek
Ojibway	29014900	179.9	Hubbard	070101060503	Little Sand Lake
Old Grade	15031800	18.3	Clearwater	070101060201	Lake of the Valley
Omen	11033600	33.1	Cass	070101061004	Home Brook
Owl	29007300	90.4	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Palmer	29008700	144.5	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
Pendergast	77020700	85.6	Todd	070101060901	Little Partridge Creek
Perch	11082600	12.5	Cass	070101060701	Goose Lake-Big Swamp Creek
Perch	18030400	166.5	Crow Wing	070101061006	Round Lake
Perch	49012900	87.6	Morrison	070101061106	Lake Placid-Crow Wing River
Petit	29014700	51.4	Hubbard	070101060501	Mantrap Lake
Peysenske	29016900	220.1	Hubbard	070101060209	Long Lake
Pickerel	29017800	310.3	Hubbard	070101060207	Potato Lake
Pihlaja's	03012600	13.4	Becker	070101060401	Shell Lake
Pillager	11032000	205.0	Cass	070101061107	Pillager Creek

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Pine	03004100	31.3	Becker	070101060202	Basswood Creek
Placid	49008000	537.5	Morrison	070101061106	Lake Placid-Crow Wing River
Pork Chop	29031700	13.2	Hubbard	070101060605	Bender Creek
Portage	29025000	429.3	Hubbard	070101060208	Fishhook Lake
Potato	29024300	2,096.1	Hubbard	070101060207	Potato Lake
Radabaugh	80000200	35.9	Wadena	070101060809	Simon Lake-Crow Wing River
Rat	11043000	22.4	Cass	070101061103	Mosquito Creek
Rat	11065900	12.3	Cass	070101061001	Mayo Creek
Ray	11022000	138.7	Cass	070101061005	Upper Gull Lake
Red Sand	18038600	515.0	Crow Wing	070101061008	Gull River
Rehm Pond	29016001	15.3	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Rice	11032100	82.9	Cass	070101061107	Pillager Creek
Rice	18032700	127.8	Crow Wing	070101061005	Upper Gull Lake
Rice	18040500	54.6	Crow Wing	070101061005	Upper Gull Lake
Rice	29017700	160.4	Hubbard	070101060207	Potato Lake
Rinker	03014900	18.6	Becker	070101060201	Lake of the Valley
Rock	11032400	261.0	Cass	070101061003	Rush Brook
Rock and Moore	11058900	23.4	Cass	070101061001	Mayo Creek
Rockwell	29016500	50.7	Hubbard	070101060209	Long Lake
Rocky Trail	15021400	23.6	Clearwater	070101060201	Lake of the Valley
Ron's	15021900	14.5	Clearwater	070101060201	Lake of the Valley
Rose	29028000	60.5	Hubbard	070101060206	Eagle Lake
Round	11042900	16.4	Cass	070101061002	Stony Brook
Round	18037300	1,650.1	Crow Wing	070101061006	Round Lake
Round	29014500	44.7	Hubbard	070101060504	Belle Taine Lake
Round	80001900	44.5	Wadena	070101060803	Town of Huntersville-Crow Wing River
Roy	18039800	301.7	Crow Wing	070101061005	Upper Gull Lake
Ruby Pond	11077800	12.9	Cass	070101061008	Gull River
Rudbeck	11020500	23.5	Cass	070101061008	Gull River
Ruth	11021100	93.9	Cass	070101061007	Gull Lake
Sand	80001100	49.3	Wadena	070101060808	Farnham Creek
Schroeder	29002900	44.0	Hubbard	070101060601	Eleventh Crow Wing Lake
Scott's Pond	29033900	16.9	Hubbard	070101060405	Shell River
Second Crow Wing	29008500	221.4	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
Section 3	03005600	20.7	Becker	070101060402	Mission Creek-Shell River
Section Ten	03005900	12.8	Becker	070101060402	Mission Creek-Shell River
Section Thirty-Six	11042100	13.1	Cass	070101061004	Home Brook
Seventh Crow Wing	29009100	260.6	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Severtson	29010900	18.4	Hubbard	070101060503	Little Sand Lake
Shafer	11032600	47.2	Cass	070101061003	Rush Brook

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Shallow	29008900	284.3	Hubbard	070101060504	Belle Taine Lake
Shell	03010200	3,147.3	Becker	070101060401	Shell Lake
Shinker	29009600	63.9	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Shipman	03000500	58.7	Becker	070101060302	Blueberry River
Sibilant	29027200	23.1	Hubbard	070101060204	Dinner Creek
Sibley	18040400	436.8	Crow Wing	070101061001	Mayo Creek
Sill	29016700	37.0	Hubbard	070101060209	Long Lake
Simon	80000300	102.8	Wadena	070101060809	Simon Lake-Crow Wing River
Sixteen	29018200	45.0	Hubbard	070101060207	Potato Lake
Sixth Crow Wing	29009300	339.6	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Skunk	29021200	218.4	Hubbard	070101060502	Big Sand Lake
Sloan	29026600	83.0	Hubbard	070101060208	Fishhook Lake
Small	03002100	33.9	Becker	070101060205	Hay Creek
Sockeye	03009700	67.3	Becker	070101060203	Indian Creek
Solarz	11064000	16.5	Cass	070101061105	Sevenmile Creek
South Twin	49012200	29.2	Morrison	070101061106	Lake Placid-Crow Wing River
Sperling	29021000	15.7	Hubbard	070101060501	Mantrap Lake
Spider	11022100	55.8	Cass	070101061005	Upper Gull Lake
Spider	11050000	154.5	Cass	070101060807	Goose Lake
Spider	29011700	569.5	Hubbard	070101060504	Belle Taine Lake
Spirit	80003900	113.9	Wadena	070101060404	Stocking Lake
Spot	11051200	29.1	Cass	070101060806	City of Nimrod-Crow Wing River
Spring	11066400	11.7	Cass	070101061001	Mayo Creek
Spring	29010600	45.4	Hubbard	070101060503	Little Sand Lake
St. Mary's	11062100	22.9	Cass	070101061007	Gull Lake
Stanchfield	49011800	116.0	Morrison	070101061106	Lake Placid-Crow Wing River
Star	80003500	12.9	Wadena	070101060302	Blueberry River
Stassen	15007200	32.1	Clearwater	070101060201	Lake of the Valley
Stephens	11021300	87.2	Cass	070101061008	Gull River
Stocking	29017200	101.8	Hubbard	070101060502	Big Sand Lake
Stocking	80003700	356.9	Wadena	070101060404	Stocking Lake
Stones	77008100	45.6	Todd	070101061104	City of Motley-Crow Wing River
Stony	29017500	56.0	Hubbard	070101060206	Eagle Lake
Straight	03001000	471.4	Becker	070101060101	Straight Lake
Strike	80001300	51.1	Wadena	070101060806	City of Nimrod-Crow Wing River
Stump	03002000	10.8	Becker	070101060205	Hay Creek
Stump	11062900	13.8	Cass	070101061007	Gull Lake
Sunday	29014400	61.2	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Sweitzer	29016400	113.5	Hubbard	070101060209	Long Lake
Sylvan	11030400	894.0	Cass	070101061007	Gull Lake

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Sylvan	49003600	321.5	Morrison	070101061108	Crow Wing River
Tamarack	29009400	23.8	Hubbard	070101060604	Wallingford Creek
Ten Acre	03002400	11.6	Becker	070101060205	Hay Creek
Tenth Crow Wing	29004500	175.2	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Third Crow Wing	29007700	643.4	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
Thirteen	29007900	40.0	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Three Finger	15031900	11.3	Clearwater	070101060201	Lake of the Valley
Three String	03125100	11.1	Becker	070101060203	Indian Creek
Tin Roof	15032000	12.1	Clearwater	070101060201	Lake of the Valley
Tripp	29000500	155.5	Hubbard	070101060605	Bender Creek
Twin	03001800	24.9	Becker	070101060205	Hay Creek
Twin	18033600	62.1	Crow Wing	070101061006	Round Lake
Twin 1	15021700	21.3	Clearwater	070101060201	Lake of the Valley
Twin 2	15021600	21.5	Clearwater	070101060201	Lake of the Valley
Twin Island	03003300	64.5	Becker	070101060202	Basswood Creek
Two Inlets	03001700	578.0	Becker	070101060205	Hay Creek
Unnamed	03000300	12.5	Becker	070101060402	Mission Creek-Shell River
Unnamed	03003600	15.3	Becker	070101060204	Dinner Creek
Unnamed	03003700	14.7	Becker	070101060204	Dinner Creek
Unnamed	03003800	14.5	Becker	070101060202	Basswood Creek
Unnamed	03004600	12.4	Becker	070101060202	Basswood Creek
Unnamed	03005100	16.0	Becker	070101060101	Straight Lake
Unnamed	03006900	22.5	Becker	070101060402	Mission Creek-Shell River
Unnamed	03007100	18.5	Becker	070101060401	Shell Lake
Unnamed	03007300	29.2	Becker	070101060203	Indian Creek
Unnamed	03007400	24.4	Becker	070101060203	Indian Creek
Unnamed	03007600	28.4	Becker	070101060401	Shell Lake
Unnamed	03007700	56.3	Becker	070101060401	Shell Lake
Unnamed	03007900	19.7	Becker	070101060101	Straight Lake
Unnamed	03008300	31.8	Becker	070101060203	Indian Creek
Unnamed	03008700	23.3	Becker	070101060203	Indian Creek
Unnamed	03008900	10.6	Becker	070101060201	Lake of the Valley
Unnamed	03009100	22.0	Becker	070101060203	Indian Creek
Unnamed	03009300	13.2	Becker	070101060202	Basswood Creek
Unnamed	03014100	15.2	Becker	070101060201	Lake of the Valley
Unnamed	03070000	12.3	Becker	070101060302	Blueberry River
Unnamed	03070700	90.8	Becker	070101060101	Straight Lake
Unnamed	03070900	27.0	Becker	070101060203	Indian Creek
Unnamed	03071100	11.5	Becker	070101060202	Basswood Creek
Unnamed	03071500	15.4	Becker	070101060203	Indian Creek

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Unnamed	03071700	13.8	Becker	070101060401	Shell Lake
Unnamed	03071800	16.0	Becker	070101060401	Shell Lake
Unnamed	03077300	12.8	Becker	070101060202	Basswood Creek
Unnamed	03077400	14.1	Becker	070101060202	Basswood Creek
Unnamed	03077500	10.8	Becker	070101060202	Basswood Creek
Unnamed	03078400	14.2	Becker	070101060202	Basswood Creek
Unnamed	03078600	12.6	Becker	070101060203	Indian Creek
Unnamed	03100200	12.4	Becker	070101060202	Basswood Creek
Unnamed	03100400	17.6	Becker	070101060202	Basswood Creek
Unnamed	03100700	13.4	Becker	070101060202	Basswood Creek
Unnamed	03102700	10.1	Becker	070101060201	Lake of the Valley
Unnamed	03110400	10.4	Becker	070101060102	Straight River
Unnamed	03110600	12.4	Becker	070101060205	Hay Creek
Unnamed	03118200	135.6	Becker	070101060401	Shell Lake
Unnamed	03119700	32.9	Becker	070101060101	Straight Lake
Unnamed	03120300	22.1	Becker	070101060202	Basswood Creek
Unnamed	03120700	13.3	Becker	070101060204	Dinner Creek
Unnamed	03120800	10.4	Becker	070101060202	Basswood Creek
Unnamed	11022300	28.4	Cass	070101061004	Home Brook
Unnamed	11022400	19.4	Cass	070101061004	Home Brook
Unnamed	11022800	18.1	Cass	070101061001	Mayo Creek
Unnamed	11030300	51.1	Cass	070101061108	Crow Wing River
Unnamed	11030600	19.7	Cass	070101061003	Rush Brook
Unnamed	11033100	21.4	Cass	070101061003	Rush Brook
Unnamed	11042300	17.9	Cass	070101060808	Farnham Creek
Unnamed	11042500	14.6	Cass	070101060808	Farnham Creek
Unnamed	11043500	46.2	Cass	070101060807	Goose Lake
Unnamed	11044000	20.6	Cass	070101060808	Farnham Creek
Unnamed	11049700	30.2	Cass	070101061103	Mosquito Creek
Unnamed	11049800	21.8	Cass	070101061103	Mosquito Creek
Unnamed	11049900	31.8	Cass	070101060807	Goose Lake
Unnamed	11050700	25.3	Cass	070101061103	Mosquito Creek
Unnamed	11058600	10.6	Cass	070101061001	Mayo Creek
Unnamed	11059100	11.6	Cass	070101061103	Mosquito Creek
Unnamed	11059200	14.5	Cass	070101060808	Farnham Creek
Unnamed	11060200	32.0	Cass	070101060807	Goose Lake
Unnamed	11060300	25.9	Cass	070101060807	Goose Lake
Unnamed	11060400	22.4	Cass	070101060807	Goose Lake
Unnamed	11060500	11.0	Cass	070101060807	Goose Lake
Unnamed	11060600	11.5	Cass	070101060807	Goose Lake

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Unnamed	11060700	18.2	Cass	070101060807	Goose Lake
Unnamed	11060800	22.4	Cass	070101060807	Goose Lake
Unnamed	11061000	18.9	Cass	070101061004	Home Brook
Unnamed	11061500	11.0	Cass	070101061102	Swan Creek
Unnamed	11062300	13.9	Cass	070101061107	Pillager Creek
Unnamed	11062500	15.7	Cass	070101061107	Pillager Creek
Unnamed	11062600	16.1	Cass	070101061003	Rush Brook
Unnamed	11062700	13.2	Cass	070101061003	Rush Brook
Unnamed	11063900	15.0	Cass	070101061102	Swan Creek
Unnamed	11064400	14.3	Cass	070101061003	Rush Brook
Unnamed	11064600	14.0	Cass	070101061004	Home Brook
Unnamed	11065000	11.7	Cass	070101061103	Mosquito Creek
Unnamed	11065200	11.4	Cass	070101061103	Mosquito Creek
Unnamed	11065300	27.0	Cass	070101060808	Farnham Creek
Unnamed	11065700	13.3	Cass	070101060808	Farnham Creek
Unnamed	11066000	10.5	Cass	070101061001	Mayo Creek
Unnamed	11066300	17.8	Cass	070101061002	Stony Brook
Unnamed	11067100	25.2	Cass	070101060807	Goose Lake
Unnamed	11067200	14.7	Cass	070101060808	Farnham Creek
Unnamed	11067300	12.8	Cass	070101060808	Farnham Creek
Unnamed	11068700	18.9	Cass	070101060702	Big Swamp Creek
Unnamed	11077500	11.9	Cass	070101061007	Gull Lake
Unnamed	11077600	16.9	Cass	070101061108	Crow Wing River
Unnamed	11078000	12.7	Cass	070101061008	Gull River
Unnamed	11078200	15.2	Cass	070101061007	Gull Lake
Unnamed	11078600	21.1	Cass	070101061007	Gull Lake
Unnamed	11082200	11.1	Cass	070101060701	Goose Lake-Big Swamp Creek
Unnamed	11082700	11.3	Cass	070101060701	Goose Lake-Big Swamp Creek
Unnamed	11083000	10.9	Cass	070101060701	Goose Lake-Big Swamp Creek
Unnamed	11083100	10.8	Cass	070101060701	Goose Lake-Big Swamp Creek
Unnamed	15007300	12.5	Clearwater	070101060201	Lake of the Valley
Unnamed	15020700	12.4	Clearwater	070101060201	Lake of the Valley
Unnamed	15025200	28.5	Clearwater	070101060201	Lake of the Valley
Unnamed	15031200	16.6	Clearwater	070101060201	Lake of the Valley
Unnamed	15031400	16.7	Clearwater	070101060202	Basswood Creek
Unnamed	15032100	16.4	Clearwater	070101060201	Lake of the Valley
Unnamed	15032200	14.3	Clearwater	070101060201	Lake of the Valley
Unnamed	15038900	12.2	Clearwater	070101060201	Lake of the Valley
Unnamed	15042900	23.1	Clearwater	070101060201	Lake of the Valley
Unnamed	18033000	22.6	Crow Wing	070101061005	Upper Gull Lake

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Unnamed	18033100	27.5	Crow Wing	070101061005	Upper Gull Lake
Unnamed	18033300	22.5	Crow Wing	070101061005	Upper Gull Lake
Unnamed	18033700	27.2	Crow Wing	070101061006	Round Lake
Unnamed	18038500	31.7	Crow Wing	070101061108	Crow Wing River
Unnamed	18039000	36.4	Crow Wing	070101061006	Round Lake
Unnamed	18039300	48.4	Crow Wing	070101061008	Gull River
Unnamed	18044900	22.6	Crow Wing	070101061005	Upper Gull Lake
Unnamed	18053000	22.4	Crow Wing	070101061008	Gull River
Unnamed	18054300	12.6	Crow Wing	070101061008	Gull River
Unnamed	18054400	18.4	Crow Wing	070101061008	Gull River
Unnamed	18054700	10.2	Crow Wing	070101061006	Round Lake
Unnamed	18055500	18.2	Crow Wing	070101061006	Round Lake
Unnamed	18055600	17.5	Crow Wing	070101061006	Round Lake
Unnamed	18055900	14.5	Crow Wing	070101061006	Round Lake
Unnamed	29001100	64.7	Hubbard	070101060604	Wallingford Creek
Unnamed	29001900	17.7	Hubbard	070101060604	Wallingford Creek
Unnamed	29002100	16.6	Hubbard	070101060604	Wallingford Creek
Unnamed	29002600	22.0	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29002700	10.8	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29002800	22.5	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29003100	14.7	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29003500	28.3	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29003700	13.9	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29003800	12.3	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29004600	11.7	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29005300	12.4	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29008400	24.8	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
Unnamed	29010200	34.1	Hubbard	070101060503	Little Sand Lake
Unnamed	29010300	16.0	Hubbard	070101060503	Little Sand Lake
Unnamed	29010400	38.7	Hubbard	070101060503	Little Sand Lake
Unnamed	29010700	19.7	Hubbard	070101060503	Little Sand Lake
Unnamed	29011100	11.7	Hubbard	070101060503	Little Sand Lake
Unnamed	29011200	24.7	Hubbard	070101060503	Little Sand Lake
Unnamed	29011300	15.5	Hubbard	070101060503	Little Sand Lake
Unnamed	29011500	15.5	Hubbard	070101060503	Little Sand Lake
Unnamed	29011800	27.3	Hubbard	070101060503	Little Sand Lake
Unnamed	29012000	10.8	Hubbard	070101060501	Mantrap Lake
Unnamed	29015800	73.4	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Unnamed	29017400	14.2	Hubbard	070101060206	Eagle Lake
Unnamed	29017600	18.2	Hubbard	070101060206	Eagle Lake

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Unnamed	29017900	14.1	Hubbard	070101060502	Big Sand Lake
Unnamed	29018100	18.1	Hubbard	070101060207	Potato Lake
Unnamed	29019400	13.4	Hubbard	070101060501	Mantrap Lake
Unnamed	29020400	15.4	Hubbard	070101060501	Mantrap Lake
Unnamed	29020700	22.4	Hubbard	070101060501	Mantrap Lake
Unnamed	29021100	17.3	Hubbard	070101060502	Big Sand Lake
Unnamed	29021300	55.2	Hubbard	070101060502	Big Sand Lake
Unnamed	29021400	11.2	Hubbard	070101060501	Mantrap Lake
Unnamed	29025200	10.9	Hubbard	070101060206	Eagle Lake
Unnamed	29025300	22.4	Hubbard	070101060206	Eagle Lake
Unnamed	29025800	52.3	Hubbard	070101060207	Potato Lake
Unnamed	29025900	13.5	Hubbard	070101060207	Potato Lake
Unnamed	29026100	21.2	Hubbard	070101060206	Eagle Lake
Unnamed	29026300	17.7	Hubbard	070101060205	Hay Creek
Unnamed	29026400	10.5	Hubbard	070101060206	Eagle Lake
Unnamed	29028200	13.2	Hubbard	070101060206	Eagle Lake
Unnamed	29028300	12.3	Hubbard	070101060206	Eagle Lake
Unnamed	29031100	46.2	Hubbard	070101060302	Blueberry River
Unnamed	29031800	11.7	Hubbard	070101060605	Bender Creek
Unnamed	29032500	17.1	Hubbard	070101060504	Belle Taine Lake
Unnamed	29032600	15.9	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Unnamed	29032700	54.8	Hubbard	070101060504	Belle Taine Lake
Unnamed	29032900	75.9	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Unnamed	29033000	13.1	Hubbard	070101060802	Burgen Lake
Unnamed	29033100	65.4	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
Unnamed	29033200	18.4	Hubbard	070101060405	Shell River
Unnamed	29034200	16.7	Hubbard	070101060208	Fishhook Lake
Unnamed	29034500	18.0	Hubbard	070101060102	Straight River
Unnamed	29035100	22.6	Hubbard	070101060605	Bender Creek
Unnamed	29039300	15.5	Hubbard	070101060605	Bender Creek
Unnamed	29040500	14.2	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
Unnamed	29040700	14.6	Hubbard	070101060504	Belle Taine Lake
Unnamed	29041200	18.0	Hubbard	070101060504	Belle Taine Lake
Unnamed	29041300	13.8	Hubbard	070101060503	Little Sand Lake
Unnamed	29041800	11.8	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29042100	11.7	Hubbard	070101060503	Little Sand Lake
Unnamed	29044300	25.2	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Unnamed	29045400	17.4	Hubbard	070101060504	Belle Taine Lake
Unnamed	29045600	18.2	Hubbard	070101060504	Belle Taine Lake
Unnamed	29045900	15.6	Hubbard	070101060504	Belle Taine Lake

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Unnamed	29050500	27.6	Hubbard	070101060209	Long Lake
Unnamed	29051600	16.3	Hubbard	070101060207	Potato Lake
Unnamed	29051700	11.3	Hubbard	070101060208	Fishhook Lake
Unnamed	29052400	11.1	Hubbard	070101060206	Eagle Lake
Unnamed	29052600	14.8	Hubbard	070101060206	Eagle Lake
Unnamed	29055000	17.8	Hubbard	070101060102	Straight River
Unnamed	29055200	11.2	Hubbard	070101060208	Fishhook Lake
Unnamed	29055300	11.0	Hubbard	070101060208	Fishhook Lake
Unnamed	29055400	38.3	Hubbard	070101060205	Hay Creek
Unnamed	29055800	19.8	Hubbard	070101060204	Dinner Creek
Unnamed	29056500	19.0	Hubbard	070101060207	Potato Lake
Unnamed	29057500	13.7	Hubbard	070101060601	Eleventh Crow Wing Lake
Unnamed	29057700	41.1	Hubbard	070101060603	Big Stony Lake-Crow Wing River
Unnamed	49007600	13.3	Morrison	070101061108	Crow Wing River
Unnamed	49012000	24.4	Morrison	070101061106	Lake Placid-Crow Wing River
Unnamed	49012300	20.4	Morrison	070101061106	Lake Placid-Crow Wing River
Unnamed	49012500	13.8	Morrison	070101061106	Lake Placid-Crow Wing River
Unnamed	80000600	11.8	Wadena	070101061101	Hayden Creek-Crow Wing River
Unnamed	80001000	35.5	Wadena	070101060809	Simon Lake-Crow Wing River
Unnamed	80001500	43.3	Wadena	070101060802	Burgen Lake
Unnamed	80001600	51.7	Wadena	070101060802	Burgen Lake
Unnamed	80001700	38.7	Wadena	070101060803	Town of Huntersville-Crow Wing River
Unnamed	80002500	18.2	Wadena	070101060405	Shell River
Unnamed	80002600	19.0	Wadena	070101060801	Yaeger Lake
Unnamed	80002900	39.8	Wadena	070101060803	Town of Huntersville-Crow Wing River
Unnamed	80003200	40.6	Wadena	070101060804	Cat River
Unnamed	80003600	31.7	Wadena	070101060405	Shell River
Unnamed	80004800	10.5	Wadena	070101060806	City of Nimrod-Crow Wing River
Unnamed	80005200	22.6	Wadena	070101060803	Town of Huntersville-Crow Wing River
Unnamed	80006200	16.0	Wadena	070101060801	Yaeger Lake
Unnamed	80007700	13.3	Wadena	070101060402	Mission Creek-Shell River
Unnamed	80007900	11.3	Wadena	070101061101	Hayden Creek-Crow Wing River
Upper Bass	29003400	29.5	Hubbard	070101060601	Eleventh Crow Wing Lake
Upper Bottle	29014800	459.1	Hubbard	070101060502	Big Sand Lake
Upper Camel	29027600	28.6	Hubbard	070101060206	Eagle Lake
Upper Cullen	18037600	434.6	Crow Wing	070101061005	Upper Gull Lake
Upper Gull	11021800	422.0	Cass	070101061005	Upper Gull Lake
Upper Loon	11022500	115.6	Cass	070101061001	Mayo Creek
Upper Mud	29028400	43.7	Hubbard	070101060206	Eagle Lake
Upper Twin	29015700	212.5	Hubbard	070101060405	Shell River

Lake Name	Lake ID	Area (acres)	County	HUC 12	HUC 12 Name
Valmes	03119000	11.5	Becker	070101060102	Straight River
Wabisish	29027400	23.6	Hubbard	070101060206	Eagle Lake
Waboose	29009800	171.8	Hubbard	070101060503	Little Sand Lake
Waboose #1	29009900	28.2	Hubbard	070101060503	Little Sand Lake
Wahbegon	03008200	110.6	Becker	070101060203	Indian Creek
Wapsi	03002600	20.6	Becker	070101060205	Hay Creek
West Crooked	29010103	269.6	Hubbard	070101060503	Little Sand Lake
West Twin	18040900	124.5	Crow Wing	070101061005	Upper Gull Lake
Whipple	18038700	294.9	Crow Wing	070101061008	Gull River
White Sand	18037900	413.2	Crow Wing	070101061008	Gull River
Wise	18031900	135.4	Crow Wing	070101061006	Round Lake
Wolf	29008100	278.1	Hubbard	070101060604	Wallingford Creek
Yaeger	80002200	79.4	Wadena	070101060801	Yaeger Lake
Yliniemi Pond	03007500	14.6	Becker	070101060101	Straight Lake

Table 39. Crow Wing River Watershed Index of Lake Name, ID & HUC 12, listed in numerical order by lake ID. Refer to Minn. R. 7050.0140 for Use Class definitions (https://www.revisor.mn.gov/rules/?id=7050.0140).

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
03000200	Nancy	27.7	Becker	070101060402	Mission Creek-Shell River
03000300	Unnamed	12.5	Becker	070101060402	Mission Creek-Shell River
03000400	Knutson	44.7	Becker	070101060302	Blueberry River
03000500	Shipman	58.7	Becker	070101060302	Blueberry River
03000600	Little	16.0	Becker	070101060302	Blueberry River
03000700	Blueberry	82.9	Becker	070101060302	Blueberry River
03000800	Little Round	17.0	Becker	070101060302	Blueberry River
03000900	Little Long	12.5	Becker	070101060302	Blueberry River
03001000	Straight	471.4	Becker	070101060101	Straight Lake
03001200	Bog	46.1	Becker	070101060101	Straight Lake
03001300	Browns	11.0	Becker	070101060102	Straight River
03001600	Mud	86.0	Becker	070101060203	Indian Creek
03001700	Two Inlets	578.0	Becker	070101060205	Hay Creek
03001800	Twin	24.9	Becker	070101060205	Hay Creek
03001900	Coleman	19.7	Becker	070101060101	Straight Lake
03002000	Stump	10.8	Becker	070101060205	Hay Creek
03002100	Small	33.9	Becker	070101060205	Hay Creek
03002200	Little Mud	15.6	Becker	070101060205	Hay Creek
03002300	Mud	66.5	Becker	070101060205	Hay Creek
03002400	Ten Acre	11.6	Becker	070101060205	Hay Creek
03002600	Wapsi	20.6	Becker	070101060205	Hay Creek
03002700	Horseshoe	12.7	Becker	070101060205	Hay Creek
03002800	Fools	52.0	Becker	070101060205	Hay Creek
03002900	Hungry Man	139.7	Becker	070101060204	Dinner Creek
03003000	Boot	377.6	Becker	070101060202	Basswood Creek
03003100	Gilfillan	49.5	Becker	070101060204	Dinner Creek
03003300	Twin Island	64.5	Becker	070101060202	Basswood Creek
03003500	Boogun	44.0	Becker	070101060204	Dinner Creek
03003600	Unnamed	15.3	Becker	070101060204	Dinner Creek
03003700	Unnamed	14.7	Becker	070101060204	Dinner Creek
03003800	Unnamed	14.5	Becker	070101060202	Basswood Creek
03003900	Abners	81.0	Becker	070101060202	Basswood Creek
03004100	Pine	31.3	Becker	070101060202	Basswood Creek
03004200	Kane	32.0	Becker	070101060204	Dinner Creek
03004400	Dinner	56.8	Becker	070101060204	Dinner Creek
03004500	Little Dinner	12.7	Becker	070101060204	Dinner Creek
03004600	Unnamed	12.4	Becker	070101060202	Basswood Creek
03004700	Mud	63.4	Becker	070101060202	Basswood Creek

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
03004800	Coon	60.7	Becker	070101060202	Basswood Creek
03005000	Katie	10.5	Becker	070101060301	Kettle River
03005100	Unnamed	16.0	Becker	070101060101	Straight Lake
03005600	Section 3	20.7	Becker	070101060402	Mission Creek-Shell River
03005700	Harvela's	14.4	Becker	070101060402	Mission Creek-Shell River
03005900	Section Ten	12.8	Becker	070101060402	Mission Creek-Shell River
03006500	Elbow	61.0	Becker	070101060402	Mission Creek-Shell River
03006600	Gyles	15.9	Becker	070101060402	Mission Creek-Shell River
03006700	Mud	152.1	Becker	070101060402	Mission Creek-Shell River
03006900	Unnamed	22.5	Becker	070101060402	Mission Creek-Shell River
03007000	Linbom	99.4	Becker	070101060402	Mission Creek-Shell River
03007100	Unnamed	18.5	Becker	070101060401	Shell Lake
03007200	Macs	40.4	Becker	070101060101	Straight Lake
03007300	Unnamed	29.2	Becker	070101060203	Indian Creek
03007400	Unnamed	24.4	Becker	070101060203	Indian Creek
03007500	Yliniemi Pond	14.6	Becker	070101060101	Straight Lake
03007600	Unnamed	28.4	Becker	070101060401	Shell Lake
03007700	Unnamed	56.3	Becker	070101060401	Shell Lake
03007900	Unnamed	19.7	Becker	070101060101	Straight Lake
03008200	Wahbegon	110.6	Becker	070101060203	Indian Creek
03008300	Unnamed	31.8	Becker	070101060203	Indian Creek
03008400	Missouri	27.7	Becker	070101060202	Basswood Creek
03008500	Bad Medicine	745.7	Becker	070101060201	Lake of the Valley
03008600	Moulton	27.4	Becker	070101060203	Indian Creek
03008700	Unnamed	23.3	Becker	070101060203	Indian Creek
03008800	Bass	204.2	Becker	070101060203	Indian Creek
03008900	Unnamed	10.6	Becker	070101060201	Lake of the Valley
03009000	Kneebone	68.1	Becker	070101060203	Indian Creek
03009100	Unnamed	22.0	Becker	070101060203	Indian Creek
03009200	Basswood	112.0	Becker	070101060203	Indian Creek
03009300	Unnamed	13.2	Becker	070101060202	Basswood Creek
03009400	Mallard	21.9	Becker	070101060203	Indian Creek
03009500	Kansas	21.2	Becker	070101060203	Indian Creek
03009600	Big Basswood	581.1	Becker	070101060203	Indian Creek
03009700	Sockeye	67.3	Becker	070101060203	Indian Creek
03010000	Gardner	70.0	Becker	070101060201	Lake of the Valley
03010200	Shell	3,147.3	Becker	070101060401	Shell Lake
03010300	Big Rush	931.7	Becker	070101060401	Shell Lake
03010400	Aspinwall	145.0	Becker	070101060401	Shell Lake
03012000	Mud	170.0	Becker	070101060401	Shell Lake

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
03012100	Brenum	69.4	Becker	070101060401	Shell Lake
03012300	Jones	34.8	Becker	070101060401	Shell Lake
03012400	Dumbbell	109.1	Becker	070101060401	Shell Lake
03012500	Little Shell	22.6	Becker	070101060401	Shell Lake
03012600	Pihlaja's	13.4	Becker	070101060401	Shell Lake
03012700	Bass	128.1	Becker	070101060401	Shell Lake
03013100	Mud	82.4	Becker	070101060401	Shell Lake
03014100	Unnamed	15.2	Becker	070101060201	Lake of the Valley
03014200	Horseshoe	19.2	Becker	070101060201	Lake of the Valley
03014900	Rinker	18.6	Becker	070101060201	Lake of the Valley
03070000	Unnamed	12.3	Becker	070101060302	Blueberry River
03070700	Unnamed	90.8	Becker	070101060101	Straight Lake
03070900	Unnamed	27.0	Becker	070101060203	Indian Creek
03071100	Unnamed	11.5	Becker	070101060202	Basswood Creek
03071500	Unnamed	15.4	Becker	070101060203	Indian Creek
03071700	Unnamed	13.8	Becker	070101060401	Shell Lake
03071800	Unnamed	16.0	Becker	070101060401	Shell Lake
03077300	Unnamed	12.8	Becker	070101060202	Basswood Creek
03077400	Unnamed	14.1	Becker	070101060202	Basswood Creek
03077500	Unnamed	10.8	Becker	070101060202	Basswood Creek
03078400	Unnamed	14.2	Becker	070101060202	Basswood Creek
03078600	Unnamed	12.6	Becker	070101060203	Indian Creek
03100200	Unnamed	12.4	Becker	070101060202	Basswood Creek
03100400	Unnamed	17.6	Becker	070101060202	Basswood Creek
03100700	Unnamed	13.4	Becker	070101060202	Basswood Creek
03102700	Unnamed	10.1	Becker	070101060201	Lake of the Valley
03110400	Unnamed	10.4	Becker	070101060102	Straight River
03110600	Unnamed	12.4	Becker	070101060205	Hay Creek
03111300	Iron Corner	14.4	Becker	070101060204	Dinner Creek
03118200	Unnamed	135.6	Becker	070101060401	Shell Lake
03119000	Valmes	11.5	Becker	070101060102	Straight River
03119700	Unnamed	32.9	Becker	070101060101	Straight Lake
03120300	Unnamed	22.1	Becker	070101060202	Basswood Creek
03120700	Unnamed	13.3	Becker	070101060204	Dinner Creek
03120800	Unnamed	10.4	Becker	070101060202	Basswood Creek
03125000	Iron Corner 2	10.8	Becker	070101060204	Dinner Creek
03125100	Three String	11.1	Becker	070101060203	Indian Creek
11020500	Rudbeck	23.5	Cass	070101061008	Gull River
11020600	Nelson	18.4	Cass	070101061008	Gull River
11020700	Mile	81.1	Cass	070101061008	Gull River

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
11020800	Kramer	77.9	Cass	070101061108	Crow Wing River
11020900	Hardy	105.0	Cass	070101061108	Crow Wing River
11021000	Lynch	23.6	Cass	070101061008	Gull River
11021100	Ruth	93.9	Cass	070101061007	Gull Lake
11021200	Echo	19.0	Cass	070101061008	Gull River
11021300	Stephens	87.2	Cass	070101061008	Gull River
11021400	Dade	97.7	Cass	070101061007	Gull Lake
11021500	Bass	31.0	Cass	070101061008	Gull River
11021600	Agate	157.4	Cass	070101061004	Home Brook
11021800	Upper Gull	422.0	Cass	070101061005	Upper Gull Lake
11022000	Ray	138.7	Cass	070101061005	Upper Gull Lake
11022100	Spider	55.8	Cass	070101061005	Upper Gull Lake
11022200	Margaret	247.8	Cass	070101061004	Home Brook
11022300	Unnamed	28.4	Cass	070101061004	Home Brook
11022400	Unnamed	19.4	Cass	070101061004	Home Brook
11022500	Upper Loon	115.6	Cass	070101061001	Mayo Creek
11022600	Loon	231.0	Cass	070101061001	Mayo Creek
11022800	Unnamed	18.1	Cass	070101061001	Mayo Creek
11030300	Unnamed	51.1	Cass	070101061108	Crow Wing River
11030400	Sylvan	894.0	Cass	070101061007	Gull Lake
11030500	Gull	9,947.2	Cass	070101061007	Gull Lake
11030600	Unnamed	19.7	Cass	070101061003	Rush Brook
11031800	Little Red Sand	76.8	Cass	070101061007	Gull Lake
11032000	Pillager	205.0	Cass	070101061107	Pillager Creek
11032100	Rice	82.9	Cass	070101061107	Pillager Creek
11032200	Harlan	50.0	Cass	070101061107	Pillager Creek
11032300	Little Long	32.4	Cass	070101061003	Rush Brook
11032400	Rock	261.0	Cass	070101061003	Rush Brook
11032500	Bass	37.2	Cass	070101061003	Rush Brook
11032600	Shafer	47.2	Cass	070101061003	Rush Brook
11032700	Duffney	48.2	Cass	070101061007	Gull Lake
11032800	Long	112.9	Cass	070101061003	Rush Brook
11032900	Dead Horse	15.1	Cass	070101061007	Gull Lake
11033000	Green Bass	44.0	Cass	070101061007	Gull Lake
11033100	Unnamed	21.4	Cass	070101061003	Rush Brook
11033200	Hardy	83.9	Cass	070101061003	Rush Brook
11033400	Goose	68.9	Cass	070101061002	Stony Brook
11033500	Hagen	50.6	Cass	070101061004	Home Brook
11033600	Omen	33.1	Cass	070101061004	Home Brook
11041800	Clear	37.1	Cass	070101061103	Mosquito Creek

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
11041900	Meadow	53.6	Cass	070101061004	Home Brook
11042000	Fucat	13.8	Cass	070101061103	Mosquito Creek
11042100	Section Thirty-Six	13.1	Cass	070101061004	Home Brook
11042200	Long	119.2	Cass	070101061001	Mayo Creek
11042300	Unnamed	17.9	Cass	070101060808	Farnham Creek
11042400	Moose	92.1	Cass	070101061001	Mayo Creek
11042500	Unnamed	14.6	Cass	070101060808	Farnham Creek
11042600	Lova	40.5	Cass	070101061002	Stony Brook
11042800	Kelly	27.6	Cass	070101061002	Stony Brook
11042900	Round	16.4	Cass	070101061002	Stony Brook
11043000	Rat	22.4	Cass	070101061103	Mosquito Creek
11043500	Unnamed	46.2	Cass	070101060807	Goose Lake
11044000	Unnamed	20.6	Cass	070101060808	Farnham Creek
11044700	Bergkeller	193.7	Cass	070101060807	Goose Lake
11045100	Goose	122.0	Cass	070101060701	Goose Lake-Big Swamp Creek
11049700	Unnamed	30.2	Cass	070101061103	Mosquito Creek
11049800	Unnamed	21.8	Cass	070101061103	Mosquito Creek
11049900	Unnamed	31.8	Cass	070101060807	Goose Lake
11050000	Spider	154.5	Cass	070101060807	Goose Lake
11050300	Bess	28.9	Cass	070101060601	Eleventh Crow Wing Lake
11050700	Unnamed	25.3	Cass	070101061103	Mosquito Creek
11050800	Dog	117.6	Cass	070101061104	City of Motley-Crow Wing River
11050900	Cat	103.6	Cass	070101061103	Mosquito Creek
11051000	Mud	31.8	Cass	070101061102	Swan Creek
11051100	Esterday	21.7	Cass	070101060809	Simon Lake-Crow Wing River
11051200	Spot	29.1	Cass	070101060806	City of Nimrod-Crow Wing River
11051300	Farnham	43.4	Cass	070101060808	Farnham Creek
11051400	Dry Sand	21.5	Cass	070101060808	Farnham Creek
11058600	Unnamed	10.6	Cass	070101061001	Mayo Creek
11058700	Camp Two	23.5	Cass	070101061002	Stony Brook
11058800	Crooked	19.4	Cass	070101061002	Stony Brook
11058900	Rock and Moore	23.4	Cass	070101061001	Mayo Creek
11059000	Fox Meadow	21.4	Cass	070101061001	Mayo Creek
11059100	Unnamed	11.6	Cass	070101061103	Mosquito Creek
11059200	Unnamed	14.5	Cass	070101060808	Farnham Creek
11059400	Hardware	22.1	Cass	070101060808	Farnham Creek
11060200	Unnamed	32.0	Cass	070101060807	Goose Lake
11060300	Unnamed	25.9	Cass	070101060807	Goose Lake
11060400	Unnamed	22.4	Cass	070101060807	Goose Lake
11060500	Unnamed	11.0	Cass	070101060807	Goose Lake

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
11060600	Unnamed	11.5	Cass	070101060807	Goose Lake
11060700	Unnamed	18.2	Cass	070101060807	Goose Lake
11060800	Unnamed	22.4	Cass	070101060807	Goose Lake
11061000	Unnamed	18.9	Cass	070101061004	Home Brook
11061400	Farber	13.9	Cass	070101061104	City of Motley-Crow Wing River
11061500	Unnamed	11.0	Cass	070101061102	Swan Creek
11061600	Johnson	11.1	Cass	070101061104	City of Motley-Crow Wing River
11061700	Doe	15.3	Cass	070101061106	Lake Placid-Crow Wing River
11062100	St. Mary's	22.9	Cass	070101061007	Gull Lake
11062300	Unnamed	13.9	Cass	070101061107	Pillager Creek
11062400	Beauty	17.9	Cass	070101061107	Pillager Creek
11062500	Unnamed	15.7	Cass	070101061107	Pillager Creek
11062600	Unnamed	16.1	Cass	070101061003	Rush Brook
11062700	Unnamed	13.2	Cass	070101061003	Rush Brook
11062900	Stump	13.8	Cass	070101061007	Gull Lake
11063400	Duffy	28.4	Cass	070101060701	Goose Lake-Big Swamp Creek
11063900	Unnamed	15.0	Cass	070101061102	Swan Creek
11064000	Solarz	16.5	Cass	070101061105	Sevenmile Creek
11064100	Fucat	12.7	Cass	070101061105	Sevenmile Creek
11064400	Unnamed	14.3	Cass	070101061003	Rush Brook
11064600	Unnamed	14.0	Cass	070101061004	Home Brook
11065000	Unnamed	11.7	Cass	070101061103	Mosquito Creek
11065200	Unnamed	11.4	Cass	070101061103	Mosquito Creek
11065300	Unnamed	27.0	Cass	070101060808	Farnham Creek
11065700	Unnamed	13.3	Cass	070101060808	Farnham Creek
11065900	Rat	12.3	Cass	070101061001	Mayo Creek
11066000	Unnamed	10.5	Cass	070101061001	Mayo Creek
11066300	Unnamed	17.8	Cass	070101061002	Stony Brook
11066400	Spring	11.7	Cass	070101061001	Mayo Creek
11067100	Unnamed	25.2	Cass	070101060807	Goose Lake
11067200	Unnamed	14.7	Cass	070101060808	Farnham Creek
11067300	Unnamed	12.8	Cass	070101060808	Farnham Creek
11067800	Clear	14.1	Cass	070101060808	Farnham Creek
11068700	Unnamed	18.9	Cass	070101060702	Big Swamp Creek
11077500	Unnamed	11.9	Cass	070101061007	Gull Lake
11077600	Unnamed	16.9	Cass	070101061108	Crow Wing River
11077700	MPL	41.0	Cass	070101061008	Gull River
11077800	Ruby Pond	12.9	Cass	070101061008	Gull River
11078000	Unnamed	12.7	Cass	070101061008	Gull River
11078100	Gakin	13.3	Cass	070101061108	Crow Wing River

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
11078200	Unnamed	15.2	Cass	070101061007	Gull Lake
11078600	Unnamed	21.1	Cass	070101061007	Gull Lake
11082200	Unnamed	11.1	Cass	070101060701	Goose Lake-Big Swamp Creek
11082500	Cranberry	37.7	Cass	070101060701	Goose Lake-Big Swamp Creek
11082600	Perch	12.5	Cass	070101060701	Goose Lake-Big Swamp Creek
11082700	Unnamed	11.3	Cass	070101060701	Goose Lake-Big Swamp Creek
11083000	Unnamed	10.9	Cass	070101060701	Goose Lake-Big Swamp Creek
11083100	Unnamed	10.8	Cass	070101060701	Goose Lake-Big Swamp Creek
15001300	McKay	34.0	Clearwater	070101060204	Dinner Creek
15006800	Long Lost	501.2	Clearwater	070101060201	Lake of the Valley
15006900	Cox	61.0	Clearwater	070101060201	Lake of the Valley
15007000	Glanders	56.8	Clearwater	070101060201	Lake of the Valley
15007100	Frellsen	22.6	Clearwater	070101060201	Lake of the Valley
15007200	Stassen	32.1	Clearwater	070101060201	Lake of the Valley
15007300	Unnamed	12.5	Clearwater	070101060201	Lake of the Valley
15020700	Unnamed	12.4	Clearwater	070101060201	Lake of the Valley
15021300	Anchor Hill 4	31.8	Clearwater	070101060201	Lake of the Valley
15021400	Rocky Trail	23.6	Clearwater	070101060201	Lake of the Valley
15021500	Island Pond	11.7	Clearwater	070101060201	Lake of the Valley
15021600	Twin 2	21.5	Clearwater	070101060201	Lake of the Valley
15021700	Twin 1	21.3	Clearwater	070101060201	Lake of the Valley
15021800	Bad Medicine 3	29.1	Clearwater	070101060201	Lake of the Valley
15021900	Ron's	14.5	Clearwater	070101060201	Lake of the Valley
15022000	Lovelace	32.2	Clearwater	070101060202	Basswood Creek
15025200	Unnamed	28.5	Clearwater	070101060201	Lake of the Valley
15031200	Unnamed	16.6	Clearwater	070101060201	Lake of the Valley
15031400	Unnamed	16.7	Clearwater	070101060202	Basswood Creek
15031800	Old Grade	18.3	Clearwater	070101060201	Lake of the Valley
15031900	Three Finger	11.3	Clearwater	070101060201	Lake of the Valley
15032000	Tin Roof	12.1	Clearwater	070101060201	Lake of the Valley
15032100	Unnamed	16.4	Clearwater	070101060201	Lake of the Valley
15032200	Unnamed	14.3	Clearwater	070101060201	Lake of the Valley
15038500	Ed's	36.0	Clearwater	070101060201	Lake of the Valley
15038900	Unnamed	12.2	Clearwater	070101060201	Lake of the Valley
15041800	Jon's	11.2	Clearwater	070101060201	Lake of the Valley
15042900	Unnamed	23.1	Clearwater	070101060201	Lake of the Valley
15046800	Cox 2	17.7	Clearwater	070101060201	Lake of the Valley
15046900	Cox 3	14.9	Clearwater	070101060201	Lake of the Valley
18030400	Perch	166.5	Crow Wing	070101061006	Round Lake
18030500	Edward	2,576.3	Crow Wing	070101061006	Round Lake

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
18031900	Wise	135.4	Crow Wing	070101061006	Round Lake
18032200	Mud	61.1	Crow Wing	070101061008	Gull River
18032600	Mud	23.8	Crow Wing	070101061005	Upper Gull Lake
18032700	Rice	127.8	Crow Wing	070101061005	Upper Gull Lake
18032800	Johnson	124.9	Crow Wing	070101061005	Upper Gull Lake
18032900	Garden	249.7	Crow Wing	070101061005	Upper Gull Lake
18033000	Unnamed	22.6	Crow Wing	070101061005	Upper Gull Lake
18033100	Unnamed	27.5	Crow Wing	070101061005	Upper Gull Lake
18033200	Guida	36.7	Crow Wing	070101061005	Upper Gull Lake
18033300	Unnamed	22.5	Crow Wing	070101061005	Upper Gull Lake
18033400	Mallard	57.1	Crow Wing	070101061005	Upper Gull Lake
18033500	Mollie	334.2	Crow Wing	070101061006	Round Lake
18033600	Twin	62.1	Crow Wing	070101061006	Round Lake
18033700	Unnamed	27.2	Crow Wing	070101061006	Round Lake
18033800	Gladstone	437.1	Crow Wing	070101061005	Upper Gull Lake
18033900	Moody	35.8	Crow Wing	070101061005	Upper Gull Lake
18034000	Little Hubert	193.9	Crow Wing	070101061005	Upper Gull Lake
18034100	Crystal	86.8	Crow Wing	070101061006	Round Lake
18037200	North Long	6,144.1	Crow Wing	070101061006	Round Lake
18037300	Round	1,650.1	Crow Wing	070101061006	Round Lake
18037400	Clark	305.4	Crow Wing	070101061005	Upper Gull Lake
18037500	Hubert	1,287.7	Crow Wing	070101061005	Upper Gull Lake
18037600	Upper Cullen	434.6	Crow Wing	070101061005	Upper Gull Lake
18037700	Middle Cullen	396.7	Crow Wing	070101061005	Upper Gull Lake
18037900	White Sand	413.2	Crow Wing	070101061008	Gull River
18038400	Bass	34.0	Crow Wing	070101061108	Crow Wing River
18038500	Unnamed	31.7	Crow Wing	070101061108	Crow Wing River
18038600	Red Sand	515.0	Crow Wing	070101061008	Gull River
18038700	Whipple	294.9	Crow Wing	070101061008	Gull River
18038800	Love	76.6	Crow Wing	070101061007	Gull Lake
18038900	Moburg	36.7	Crow Wing	070101061006	Round Lake
18039000	Unnamed	36.4	Crow Wing	070101061006	Round Lake
18039200	Hartley	135.5	Crow Wing	070101061008	Gull River
18039300	Unnamed	48.4	Crow Wing	070101061008	Gull River
18039400	Jacks	28.6	Crow Wing	070101061008	Gull River
18039500	Carlson	39.8	Crow Wing	070101061008	Gull River
18039600	Edna	156.5	Crow Wing	070101061005	Upper Gull Lake
18039700	Fawn	63.9	Crow Wing	070101061005	Upper Gull Lake
18039800	Roy	301.7	Crow Wing	070101061005	Upper Gull Lake
18039900	Nisswa	219.3	Crow Wing	070101061005	Upper Gull Lake

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
18040000	Fish Trap	35.8	Crow Wing	070101061005	Upper Gull Lake
18040100	Hole-in-the-Day	94.1	Crow Wing	070101061007	Gull Lake
18040200	Bass	38.0	Crow Wing	070101061005	Upper Gull Lake
18040300	Lower Cullen	560.0	Crow Wing	070101061005	Upper Gull Lake
18040400	Sibley	436.8	Crow Wing	070101061001	Mayo Creek
18040500	Rice	54.6	Crow Wing	070101061005	Upper Gull Lake
18040600	Cloverleaf	32.3	Crow Wing	070101061005	Upper Gull Lake
18040700	East Twin	161.8	Crow Wing	070101061005	Upper Gull Lake
18040800	Mayo	162.2	Crow Wing	070101061001	Mayo Creek
18040900	West Twin	124.5	Crow Wing	070101061005	Upper Gull Lake
18044900	Unnamed	22.6	Crow Wing	070101061005	Upper Gull Lake
18053000	Unnamed	22.4	Crow Wing	070101061008	Gull River
18054300	Unnamed	12.6	Crow Wing	070101061008	Gull River
18054400	Unnamed	18.4	Crow Wing	070101061008	Gull River
18054700	Unnamed	10.2	Crow Wing	070101061006	Round Lake
18055500	Unnamed	18.2	Crow Wing	070101061006	Round Lake
18055600	Unnamed	17.5	Crow Wing	070101061006	Round Lake
18055900	Unnamed	14.5	Crow Wing	070101061006	Round Lake
29000100	Kettle	39.5	Hubbard	070101060605	Bender Creek
29000200	Mow	105.7	Hubbard	070101060605	Bender Creek
29000300	Nagel	69.3	Hubbard	070101060605	Bender Creek
29000400	Mud	48.7	Hubbard	070101060605	Bender Creek
29000500	Tripp	155.5	Hubbard	070101060605	Bender Creek
29000600	Oelschlager Slough	182.3	Hubbard	070101060605	Bender Creek
29001100	Unnamed	64.7	Hubbard	070101060604	Wallingford Creek
29001600	Hay	67.5	Hubbard	070101060604	Wallingford Creek
29001700	Ham	194.2	Hubbard	070101060604	Wallingford Creek
29001800	Little Ham	38.5	Hubbard	070101060604	Wallingford Creek
29001900	Unnamed	17.7	Hubbard	070101060604	Wallingford Creek
29002000	Loon	125.5	Hubbard	070101060604	Wallingford Creek
29002100	Unnamed	16.6	Hubbard	070101060604	Wallingford Creek
29002500	Ninth Crow Wing	232.4	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29002600	Unnamed	22.0	Hubbard	070101060601	Eleventh Crow Wing Lake
29002700	Unnamed	10.8	Hubbard	070101060601	Eleventh Crow Wing Lake
29002800	Unnamed	22.5	Hubbard	070101060601	Eleventh Crow Wing Lake
29002900	Schroeder	44.0	Hubbard	070101060601	Eleventh Crow Wing Lake
29003000	Camp 1	15.3	Hubbard	070101060601	Eleventh Crow Wing Lake
29003100	Unnamed	14.7	Hubbard	070101060601	Eleventh Crow Wing Lake
29003200	Big Bass	131.1	Hubbard	070101060601	Eleventh Crow Wing Lake
29003300	Little Bass	61.1	Hubbard	070101060601	Eleventh Crow Wing Lake

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
29003400	Upper Bass	29.5	Hubbard	070101060601	Eleventh Crow Wing Lake
29003500	Unnamed	28.3	Hubbard	070101060601	Eleventh Crow Wing Lake
29003600	Eleventh Crow Wing	752.5	Hubbard	070101060601	Eleventh Crow Wing Lake
29003700	Unnamed	13.9	Hubbard	070101060601	Eleventh Crow Wing Lake
29003800	Unnamed	12.3	Hubbard	070101060601	Eleventh Crow Wing Lake
29004000	Cook	14.0	Hubbard	070101060601	Eleventh Crow Wing Lake
29004100	Kramer	48.8	Hubbard	070101060601	Eleventh Crow Wing Lake
29004500	Tenth Crow Wing	175.2	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29004600	Unnamed	11.7	Hubbard	070101060601	Eleventh Crow Wing Lake
29004700	Becker	20.4	Hubbard	070101060601	Eleventh Crow Wing Lake
29005300	Unnamed	12.4	Hubbard	070101060601	Eleventh Crow Wing Lake
29007200	Eighth Crow Wing	503.0	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29007300	Owl	90.4	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29007400	Indian	51.7	Hubbard	070101060601	Eleventh Crow Wing Lake
29007700	Third Crow Wing	643.4	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
29007800	Fourth Crow Wing	440.6	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
29007900	Thirteen	40.0	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29008000	Little Stony	67.8	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29008100	Wolf	278.1	Hubbard	070101060604	Wallingford Creek
29008200	Boubora	50.8	Hubbard	070101060604	Wallingford Creek
29008300	Bladder	226.8	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
29008400	Unnamed	24.8	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
29008500	Second Crow Wing	221.4	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
29008600	First Crow Wing	522.0	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
29008700	Palmer	144.5	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
29008800	Island	225.2	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29008900	Shallow	284.3	Hubbard	070101060504	Belle Taine Lake
29009000	Deer	180.8	Hubbard	070101060504	Belle Taine Lake
29009100	Seventh Crow Wing	260.6	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29009200	Fifth Crow Wing	400.1	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29009300	Sixth Crow Wing	339.6	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29009400	Tamarack	23.8	Hubbard	070101060604	Wallingford Creek
29009500	Holland-Lucy	43.2	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29009600	Shinker	63.9	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29009700	Clausens	81.8	Hubbard	070101060504	Belle Taine Lake
29009800	Waboose	171.8	Hubbard	070101060503	Little Sand Lake
29009900	Waboose #1	28.2	Hubbard	070101060503	Little Sand Lake
29010000	Big Olson	24.3	Hubbard	070101060501	Mantrap Lake
29010101	East Crooked	379.1	Hubbard	070101060503	Little Sand Lake
29010102	Middle Crooked	288.6	Hubbard	070101060503	Little Sand Lake

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
29010103	West Crooked	269.6	Hubbard	070101060503	Little Sand Lake
29010200	Unnamed	34.1	Hubbard	070101060503	Little Sand Lake
29010300	Unnamed	16.0	Hubbard	070101060503	Little Sand Lake
29010400	Unnamed	38.7	Hubbard	070101060503	Little Sand Lake
29010500	Goose	39.0	Hubbard	070101060503	Little Sand Lake
29010600	Spring	45.4	Hubbard	070101060503	Little Sand Lake
29010700	Unnamed	19.7	Hubbard	070101060503	Little Sand Lake
29010800	Coon	78.9	Hubbard	070101060503	Little Sand Lake
29010900	Severtson	18.4	Hubbard	070101060503	Little Sand Lake
29011000	Dead	130.6	Hubbard	070101060503	Little Sand Lake
29011100	Unnamed	11.7	Hubbard	070101060503	Little Sand Lake
29011200	Unnamed	24.7	Hubbard	070101060503	Little Sand Lake
29011300	Unnamed	15.5	Hubbard	070101060503	Little Sand Lake
29011500	Unnamed	15.5	Hubbard	070101060503	Little Sand Lake
29011600	Crow Wing	46.7	Hubbard	070101060504	Belle Taine Lake
29011700	Spider	569.5	Hubbard	070101060504	Belle Taine Lake
29011800	Unnamed	27.3	Hubbard	070101060503	Little Sand Lake
29011900	Mud	53.7	Hubbard	070101060501	Mantrap Lake
29012000	Unnamed	10.8	Hubbard	070101060501	Mantrap Lake
29012100	Giles	17.1	Hubbard	070101060501	Mantrap Lake
29014200	Duck	326.4	Hubbard	070101060405	Shell River
29014300	Big Stony	343.4	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29014400	Sunday	61.2	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29014500	Round	44.7	Hubbard	070101060504	Belle Taine Lake
29014600	Belle Taine	1,442.0	Hubbard	070101060504	Belle Taine Lake
29014700	Petit	51.4	Hubbard	070101060501	Mantrap Lake
29014800	Upper Bottle	459.1	Hubbard	070101060502	Big Sand Lake
29014900	Ojibway	179.9	Hubbard	070101060503	Little Sand Lake
29015000	Little Sand	409.5	Hubbard	070101060503	Little Sand Lake
29015100	Mantrap	1,617.7	Hubbard	070101060501	Mantrap Lake
29015700	Upper Twin	212.5	Hubbard	070101060405	Shell River
29015800	Unnamed	73.4	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29015900	Bliss	39.9	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29016001	Rehm Pond	15.3	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29016002	Hemenway Pond	50.5	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29016100	Long	1,926.1	Hubbard	070101060209	Long Lake
29016200	Boulder	340.5	Hubbard	070101060504	Belle Taine Lake
29016300	Deer	45.0	Hubbard	070101060503	Little Sand Lake
29016400	Sweitzer	113.5	Hubbard	070101060209	Long Lake
29016500	Rockwell	50.7	Hubbard	070101060209	Long Lake

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29016600	Ivan	22.3	Hubbard	070101060209	Long Lake
29016700	Sill	37.0	Hubbard	070101060209	Long Lake
29016800	Mud	45.7	Hubbard	070101060209	Long Lake
29016900	Peysenske	220.1	Hubbard	070101060209	Long Lake
29017000	Ida	74.5	Hubbard	070101060503	Little Sand Lake
29017100	Ingram	45.4	Hubbard	070101060207	Potato Lake
29017200	Stocking	101.8	Hubbard	070101060502	Big Sand Lake
29017400	Unnamed	14.2	Hubbard	070101060206	Eagle Lake
29017500	Stony	56.0	Hubbard	070101060206	Eagle Lake
29017600	Unnamed	18.2	Hubbard	070101060206	Eagle Lake
29017700	Rice	160.4	Hubbard	070101060207	Potato Lake
29017800	Pickerel	310.3	Hubbard	070101060207	Potato Lake
29017900	Unnamed	14.1	Hubbard	070101060502	Big Sand Lake
29018000	Lower Bottle	641.2	Hubbard	070101060502	Big Sand Lake
29018100	Unnamed	18.1	Hubbard	070101060207	Potato Lake
29018200	Sixteen	45.0	Hubbard	070101060207	Potato Lake
29018300	Little Rice	26.8	Hubbard	070101060207	Potato Lake
29018400	Blue	336.4	Hubbard	070101060207	Potato Lake
29018500	Big Sand	1,635.1	Hubbard	070101060502	Big Sand Lake
29018600	Emma	78.4	Hubbard	070101060502	Big Sand Lake
29018700	Dead Horse	44.1	Hubbard	070101060503	Little Sand Lake
29018800	Gilmore	93.2	Hubbard	070101060503	Little Sand Lake
29018900	Beaver	37.8	Hubbard	070101060502	Big Sand Lake
29019000	Loon	82.3	Hubbard	070101060502	Big Sand Lake
29019400	Unnamed	13.4	Hubbard	070101060501	Mantrap Lake
29019500	Deer	42.0	Hubbard	070101060501	Mantrap Lake
29020000	Layden	18.5	Hubbard	070101060501	Mantrap Lake
29020400	Unnamed	15.4	Hubbard	070101060501	Mantrap Lake
29020500	Lyden	13.7	Hubbard	070101060501	Mantrap Lake
29020600	Buck	26.0	Hubbard	070101060501	Mantrap Lake
29020700	Unnamed	22.4	Hubbard	070101060501	Mantrap Lake
29020800	Bad Axe	303.3	Hubbard	070101060501	Mantrap Lake
29020900	Deadhead	13.2	Hubbard	070101060501	Mantrap Lake
29021000	Sperling	15.7	Hubbard	070101060501	Mantrap Lake
29021100	Unnamed	17.3	Hubbard	070101060502	Big Sand Lake
29021200	Skunk	218.4	Hubbard	070101060502	Big Sand Lake
29021300	Unnamed	55.2	Hubbard	070101060502	Big Sand Lake
29021400	Unnamed	11.2	Hubbard	070101060501	Mantrap Lake
29024200	Fish Hook	1,642.6	Hubbard	070101060208	Fishhook Lake
29024300	Potato	2,096.1	Hubbard	070101060207	Potato Lake

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29024700	Moran	105.5	Hubbard	070101060403	Blueberry Lake-Shell River
29024800	Lord	61.4	Hubbard	070101060403	Blueberry Lake-Shell River
29024900	Hinds	305.4	Hubbard	070101060403	Blueberry Lake-Shell River
29025000	Portage	429.3	Hubbard	070101060208	Fishhook Lake
29025100	Mud	68.5	Hubbard	070101060208	Fishhook Lake
29025200	Unnamed	10.9	Hubbard	070101060206	Eagle Lake
29025300	Unnamed	22.4	Hubbard	070101060206	Eagle Lake
29025400	Island	541.3	Hubbard	070101060206	Eagle Lake
29025500	Bunness	16.6	Hubbard	070101060206	Eagle Lake
29025600	Eagle	423.5	Hubbard	070101060206	Eagle Lake
29025700	Many Arm	63.6	Hubbard	070101060206	Eagle Lake
29025800	Unnamed	52.3	Hubbard	070101060207	Potato Lake
29025900	Unnamed	13.5	Hubbard	070101060207	Potato Lake
29026100	Unnamed	21.2	Hubbard	070101060206	Eagle Lake
29026300	Unnamed	17.7	Hubbard	070101060205	Hay Creek
29026400	Unnamed	10.5	Hubbard	070101060206	Eagle Lake
29026500	Beden	33.6	Hubbard	070101060208	Fishhook Lake
29026600	Sloan	83.0	Hubbard	070101060208	Fishhook Lake
29026700	Lower Mud	27.3	Hubbard	070101060206	Eagle Lake
29027100	Itasca	14.3	Hubbard	070101060204	Dinner Creek
29027200	Sibilant	23.1	Hubbard	070101060204	Dinner Creek
29027300	Little Mantrap	31.5	Hubbard	070101060204	Dinner Creek
29027400	Wabisish	23.6	Hubbard	070101060206	Eagle Lake
29027600	Upper Camel	28.6	Hubbard	070101060206	Eagle Lake
29027700	Coon	94.8	Hubbard	070101060206	Eagle Lake
29027900	Lower Camel	20.1	Hubbard	070101060206	Eagle Lake
29028000	Rose	60.5	Hubbard	070101060206	Eagle Lake
29028200	Unnamed	13.2	Hubbard	070101060206	Eagle Lake
29028300	Unnamed	12.3	Hubbard	070101060206	Eagle Lake
29028400	Upper Mud	43.7	Hubbard	070101060206	Eagle Lake
29031000	Brush	79.6	Hubbard	070101060102	Straight River
29031100	Unnamed	46.2	Hubbard	070101060302	Blueberry River
29031200	Cedar	102.0	Hubbard	070101060204	Dinner Creek
29031300	Little Mantrap	381.0	Hubbard	070101060204	Dinner Creek
29031700	Pork Chop	13.2	Hubbard	070101060605	Bender Creek
29031800	Unnamed	11.7	Hubbard	070101060605	Bender Creek
29032300	Frandsen Slough	37.3	Hubbard	070101060405	Shell River
29032500	Unnamed	17.1	Hubbard	070101060504	Belle Taine Lake
29032600	Unnamed	15.9	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29032700	Unnamed	54.8	Hubbard	070101060504	Belle Taine Lake

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
29032800	Daisy	42.7	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29032900	Unnamed	75.9	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29033000	Unnamed	13.1	Hubbard	070101060802	Burgen Lake
29033100	Unnamed	65.4	Hubbard	070101060606	First Crow Wing Lake-Crow Wing River
29033200	Unnamed	18.4	Hubbard	070101060405	Shell River
29033500	Keske	22.5	Hubbard	070101060405	Shell River
29033900	Scott's Pond	16.9	Hubbard	070101060405	Shell River
29034100	Branham	28.2	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29034200	Unnamed	16.7	Hubbard	070101060208	Fishhook Lake
29034300	Foss	14.5	Hubbard	070101060208	Fishhook Lake
29034500	Unnamed	18.0	Hubbard	070101060102	Straight River
29035100	Unnamed	22.6	Hubbard	070101060605	Bender Creek
29036400	Idaho	12.9	Hubbard	070101060601	Eleventh Crow Wing Lake
29039300	Unnamed	15.5	Hubbard	070101060605	Bender Creek
29040500	Unnamed	14.2	Hubbard	070101060602	Fifth Crow Wing Lake-Crow Wing River
29040700	Unnamed	14.6	Hubbard	070101060504	Belle Taine Lake
29041200	Unnamed	18.0	Hubbard	070101060504	Belle Taine Lake
29041300	Unnamed	13.8	Hubbard	070101060503	Little Sand Lake
29041800	Unnamed	11.8	Hubbard	070101060601	Eleventh Crow Wing Lake
29042100	Unnamed	11.7	Hubbard	070101060503	Little Sand Lake
29044300	Unnamed	25.2	Hubbard	070101060603	Big Stony Lake-Crow Wing River
29045400	Unnamed	17.4	Hubbard	070101060504	Belle Taine Lake
29045600	Unnamed	18.2	Hubbard	070101060504	Belle Taine Lake
29045700	Neal	33.6	Hubbard	070101060504	Belle Taine Lake
29045900	Unnamed	15.6	Hubbard	070101060504	Belle Taine Lake
29050400	Fish Hook River Dam	128.1	Hubbard	070101060208	Fishhook Lake
29050500	Unnamed	27.6	Hubbard	070101060209	Long Lake
29051600	Unnamed	16.3	Hubbard	070101060207	Potato Lake
29051700	Unnamed	11.3	Hubbard	070101060208	Fishhook Lake
29052400	Unnamed	11.1	Hubbard	070101060206	Eagle Lake
29052600	Unnamed	14.8	Hubbard	070101060206	Eagle Lake
29055000	Unnamed	17.8	Hubbard	070101060102	Straight River
29055200	Unnamed	11.2	Hubbard	070101060208	Fishhook Lake
29055300	Unnamed	11.0	Hubbard	070101060208	Fishhook Lake
29055400	Unnamed	38.3	Hubbard	070101060205	Hay Creek
29055800	Unnamed	19.8	Hubbard	070101060204	Dinner Creek
29055900	North Mantrap	25.9	Hubbard	070101060204	Dinner Creek
29056500	Unnamed	19.0	Hubbard	070101060207	Potato Lake
29057500	Unnamed	13.7	Hubbard	070101060601	Eleventh Crow Wing Lake
29057700	Unnamed	41.1	Hubbard	070101060603	Big Stony Lake-Crow Wing River

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
49003600	Sylvan	321.5	Morrison	070101061108	Crow Wing River
49007600	Unnamed	13.3	Morrison	070101061108	Crow Wing River
49008000	Placid	537.5	Morrison	070101061106	Lake Placid-Crow Wing River
49011800	Stanchfield	116.0	Morrison	070101061106	Lake Placid-Crow Wing River
49012000	Unnamed	24.4	Morrison	070101061106	Lake Placid-Crow Wing River
49012100	North Twin	23.0	Morrison	070101061106	Lake Placid-Crow Wing River
49012200	South Twin	29.2	Morrison	070101061106	Lake Placid-Crow Wing River
49012300	Unnamed	20.4	Morrison	070101061106	Lake Placid-Crow Wing River
49012500	Unnamed	13.8	Morrison	070101061106	Lake Placid-Crow Wing River
49012900	Perch	87.6	Morrison	070101061106	Lake Placid-Crow Wing River
56001400	Mud	36.1	Otter Tail	070101060804	Cat River
77007900	Benz	13.9	Todd	070101061104	City of Motley-Crow Wing River
77008000	Hayden	187.2	Todd	070101061101	Hayden Creek-Crow Wing River
77008100	Stones	45.6	Todd	070101061104	City of Motley-Crow Wing River
77020700	Pendergast	85.6	Todd	070101060901	Little Partridge Creek
80000200	Radabaugh	35.9	Wadena	070101060809	Simon Lake-Crow Wing River
80000300	Simon	102.8	Wadena	070101060809	Simon Lake-Crow Wing River
80000400	Lovejoy	40.1	Wadena	070101060903	Partridge River
80000500	Hazel	28.7	Wadena	070101061101	Hayden Creek-Crow Wing River
80000600	Unnamed	11.8	Wadena	070101061101	Hayden Creek-Crow Wing River
80001000	Unnamed	35.5	Wadena	070101060809	Simon Lake-Crow Wing River
80001100	Sand	49.3	Wadena	070101060808	Farnham Creek
80001200	Granning	14.2	Wadena	070101060806	City of Nimrod-Crow Wing River
80001300	Strike	51.1	Wadena	070101060806	City of Nimrod-Crow Wing River
80001500	Unnamed	43.3	Wadena	070101060802	Burgen Lake
80001600	Unnamed	51.7	Wadena	070101060802	Burgen Lake
80001700	Unnamed	38.7	Wadena	070101060803	Town of Huntersville-Crow Wing River
80001800	Burgen	31.0	Wadena	070101060802	Burgen Lake
80001900	Round	44.5	Wadena	070101060803	Town of Huntersville-Crow Wing River
80002200	Yaeger	79.4	Wadena	070101060801	Yaeger Lake
80002500	Unnamed	18.2	Wadena	070101060405	Shell River
80002600	Unnamed	19.0	Wadena	070101060801	Yaeger Lake
80002701	Jim Cook (west)	60.9	Wadena	070101060801	Yaeger Lake
80002702	Jim Cook (east)	71.7	Wadena	070101060801	Yaeger Lake
80002800	Finn	140.4	Wadena	070101060801	Yaeger Lake
80002900	Unnamed	39.8	Wadena	070101060803	Town of Huntersville-Crow Wing River
80003000	Lower Twin	251.9	Wadena	070101060405	Shell River
80003200	Unnamed	40.6	Wadena	070101060804	Cat River
80003300	Bill	22.8	Wadena	070101060405	Shell River
80003400	Blueberry	532.5	Wadena	070101060403	Blueberry Lake-Shell River

Lake ID	Lake Name	Area (acres)	County	HUC 12	HUC 12 Name
80003500	Star	12.9	Wadena	070101060302	Blueberry River
80003600	Unnamed	31.7	Wadena	070101060405	Shell River
80003700	Stocking	356.9	Wadena	070101060404	Stocking Lake
80003800	Morgan	21.8	Wadena	070101060405	Shell River
80003900	Spirit	113.9	Wadena	070101060404	Stocking Lake
80004800	Unnamed	10.5	Wadena	070101060806	City of Nimrod-Crow Wing River
80005000	Huntersville	42.7	Wadena	070101060802	Burgen Lake
80005200	Unnamed	22.6	Wadena	070101060803	Town of Huntersville-Crow Wing River
80006200	Unnamed	16.0	Wadena	070101060801	Yaeger Lake
80007700	Unnamed	13.3	Wadena	070101060402	Mission Creek-Shell River
80007900	Unnamed	11.3	Wadena	070101061101	Hayden Creek-Crow Wing River