PROJECT SUMMARY SHEET

1.01 Project Title: Wild Rice River PTMApp Prioritization and Implementation Project

Lead Project Sponsor:

Wild Rice Soil Conservation District
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State: North Dakota **Watershed:** Wild Rice River Watershed

Hydrologic Unit Code: 09020105 **High**
Priority Watershed: Yes

PROJECT TYPE	WATERBODY TYPES	NPS CATEGORY
Watershed/I&E Agriculture	Rivers, Streams, Wetlands, and Lakes	

Project Location: The project area lies within the Western Wild Rice Hydrologic Unit; 09020105, located in Southeastern North Dakota. This 8-digit HUC is particularly large covering over 1.4 million acres and encompasses nearly all of Sargent County except a small number of acres that lie in the western or northern part of the county. To pare down the focus of the project the 12-digit hydrologic units (12-digit HUs) in the watershed will be prioritized and the top five to seven 12-digit HUs will be focused on during this phase of the project. As the project progresses, the next highest priority 12-digit HUs will be addressed under subsequent phases.

Summarization of Major Goals: The Wild Rice Soil Conservation District's primary goal through the course of this new project is diverse and multi-faceted. Our first goal is to utilize the Prioritize, Target, and Measure Application (PTM App) from the International Water Institute (IWI) to isolate and prioritize five-seven sub watersheds (12-digit HU's) that are identified as the highest sources of nutrients and sediments. Targeting smaller subwatersheds should ensure greater success by concentrating financial and technical assistance in smaller areas. In addition to the priority sub watersheds in the Western Wild Rice watershed, we will also be evaluating options to assess water quality management needs for Silver Lake utilizing the PTM App. From there we will work within the targeted areas to promote and implement agricultural Best Management Practices (BMP) to restore and maintain the recreational and aquatic life uses. Reduction of nutrients (phosphorus & nitrogen) and sediment will be accomplished through implementing BMP's that will improve nutrient use efficiencies, reduce erosion and runoff from cropland, and restore degraded riparian areas. We are looking at this phase to serve as a template for application throughout the entire Wild Rice River watershed in Sargent County over the next decade.

Project Description: This watershed project will utilize comprehensive conservation planning, PTM App, BMP implementation, monitoring/assessment, educational events and demonstration projects in the priority watershed for the Western Wild Rice Watershed to reduce NPS pollution impacts to aquatic life and recreational uses. Emphasis will be placed on improving vegetative conditions, erosion control, and soil health management within the priority areas identified by PTM App as being high nutrient and/or sediment sources.

FY21 - 319 funds requested - $304,518.00 Match: $203,012.00
Total project cost: $507,530.00 319 Funded Full Time Personnel – 1.1

The main objectives are:

1. Utilize the PTM App to prioritize 5-7 sub-watersheds (e.g., 10-digit HUs) in the Wild Rice River watershed in Sargent County based on estimated nutrient and sediment loads at the priority resource point. Within each sub-watershed identify the top 40-50 priority catchments for BMP implementation to reduce the estimated loads for nutrients (N & P) and total suspended solids at the sub-watershed priority resource point.

2. Establish a long-term schedule for addressing the identified nutrient and sediment sources in the priority catchments in each sub-watershed in the Western Wild Rice Watershed in Sargent Co. This schedule may extend beyond 20 years.

3. Work with landowners within these areas to assess which acres on their operation are the biggest contributors of nutrient and sediment load. Then we can work together to provide cost-share to implement BMP's on those acres.

4. Document trends in water quality and beneficial use conditions (i.e. nutrient/sediment and E. coli bacteria concentrations, estimated reduction models from PTM App, etc.) as BMPs are applied to evaluate progress toward established goals.

5. Provide opportunities for producers, landowners, partner agencies, and the general public to increase their understanding and awareness of NPS pollution related to agricultural production and the potential cropping options that can be used to slow water runoff, enhance infiltration and improve soil health to reduce the delivery of sediments and nutrients to rivers, lakes, and streams in the project area.

2.0 STATEMENT OF NEED:

2.1 Project Reference: The Wild Rice Soil Conservation District (SCD) has worked to protect the natural, economic, and recreational value of the Wild Rice River since watershed planning began in 1999 through the Wild Rice Watershed Restoration Action Strategy (WRAS) by providing financial and technical assistance to reduce the effects of non-point source pollution. The SCD has received Section 319 funding for the previous NPS pollution management efforts in the Wild Rice River watershed. It is important to know that in the September 2017 North Dakota Department of Health newsletter; the Wild Rice River Restoration and Riparian Project was highlighted for achieving improved water quality in the Shortfoot Creek sub-watershed. Activities that led to these positive results can be found in Appendix A.

The Wild Rice River PTMApp Prioritization and Implementation Project (WRRPPPIP)will be targeted toward practices that improve the management and vegetative conditions in the riparian corridor and lands immediately adjacent to the river and its tributaries. In many areas of the

watersheds, excessive soil erosion is associated with intensive agricultural activity and/or frequent over land flooding due to heavy rains and abundant snowfall. These conditions are causing failing streambanks, scalloping, and fluvial erosion. In addition to erosion, E. coli levels are a concern throughout many of the watersheds in Sargent County causing several river reaches to be included on the 303(d) list due to recreational use impairments. Poor manure management and outdated residential septic systems are potential sources contributing towards elevated E. coli levels.

In order to build on the successes from previous projects we will add new technology in the PTMApp to change our focus from 10-digit HU's in our previous projects to 12-digit HU's to allow us to focus dollars in areas that will produce the greatest water quality improvements as well as develop a long range plan to prioritize all 12-digit HU's for future watershed projects. The Wild Rice Soil Conservation District will use funding through the Wild Rice River PTMApp Prioritization and Implementation Project to support the development and implementation of comprehensive conservation plans with producers in the priority 12-digit HUs. These plans will address resource issues such as soil erosion, livestock grazing, riparian management and soil health. Practices and management changes implemented through the plans will restore/protect the recreational and aquatic life uses of the Wild Rice River and its tributaries.

Outreach and education are a huge component of 319 operations in Sargent County. As social media keeps evolving, so does the way we communicate. Over the last year we have worked with a local web design company to improve out digital presence. With their help we have been able to merge the Wild Rice & CCSP webpages (https://www.wildricescd.com/) , create a YouTube channel that shows conservation videos from the district (click here for link), and incorporated a Urban Conservation tab for our high tunnel as well as a 60" corn tab in our CCSP tab. These social media and educational offerings will continue to be used throughout the effective period for the Wild Rice River PTMApp Prioritization and Implementation Project.

Although we took a step back in 2020 due to COVID, in-person outreach and education will always be a high priority going forward. In a standard year, the project's outreach events will include; an Eco-Ed Day in the fall, participation in Harvest North Dakota in early spring, Tom Gibson presentations to area schools, assistance with Envirothon in May, a Ladies Ag event biennially, and 1-3 soil health workshop/field days through our Conservation Cropping Systems Project.

The Conservation Cropping Systems Project (CCSP) farm demonstrates new and innovative methods for implementing the five soil health principles; soil armor, minimizing soil disturbance, plant diversity, continuous plant/root, and livestock integration. Through outreach and education at the CCSP cooperative sites, we can show producers different cropping and grazing options that can be implemented to improve water quality by keeping more residue on the soil surface, utilizing cover crops, and increasing water infiltration into the soil. Our CCSP cooperative sites help the project and staff establish credibility with local farmers and provides a local showcase to encourage widespread adoption of practices that improve water quality and soil health.

2.2Watershed Description: The Wild Rice River watershed is located in Cass, Dickey, Ransom, Richland and Sargent Counties in Southeastern North Dakota and Marshall and Roberts Counties in northeastern South Dakota. The Wild Rice River watershed lies within the Level III Northern Glaciated Plains (46) and Lake Agassiz Plain (48) Ecoregions.

The Wild Rice River (HUC09020105) is identified as a Class II stream. The quality of the waters in this class shall be the same as the quality of class I streams, except that additional treatment may be required to meet the drinking water requirements of the Department. Streams in this classification may be intermittent in nature which would make these waters of limited value for beneficial uses such as municipal water, fish life, and irrigation, bathing, or swimming.

The Wild Rice River Priority Project will utilize a new mapping system from the International Water Institute called the PTM App to prioritize areas likely to contribute the highest nutrient loads due to soil type, topography, land use, etc.

2.3 Maps: The Prioritize, Target, and Measure Application (PTMApp) will be utilized to understand and address nutrient/sediment loads in the 12-digit HU's in the Western Wild Rice watershed. Figure 1. shows an example of a PTM app map that delineates all the priority catchments for nitrogen management in the Wild Rice River Watershed. These priorities are based on the estimated amount of nitrogen exiting the catchments. The catchments range in size from 40 to 120 acres. The dark red areas denote catchments with higher potential nitrogen outputs than those that are light red. As previously indicated, to pare down the number of priority catchments for this phase of the project, similar maps to Figure 2. will be developed at the 12-digit HU scale to determine which 12-digit HU's are the highest priority sources of nitrogen, phosphorus and sediments. The end goal for this process is to target technical and financial assistance to the catchments and 12-dgit HU's that will deliver the highest return on investment in terms of pollutant reduction.

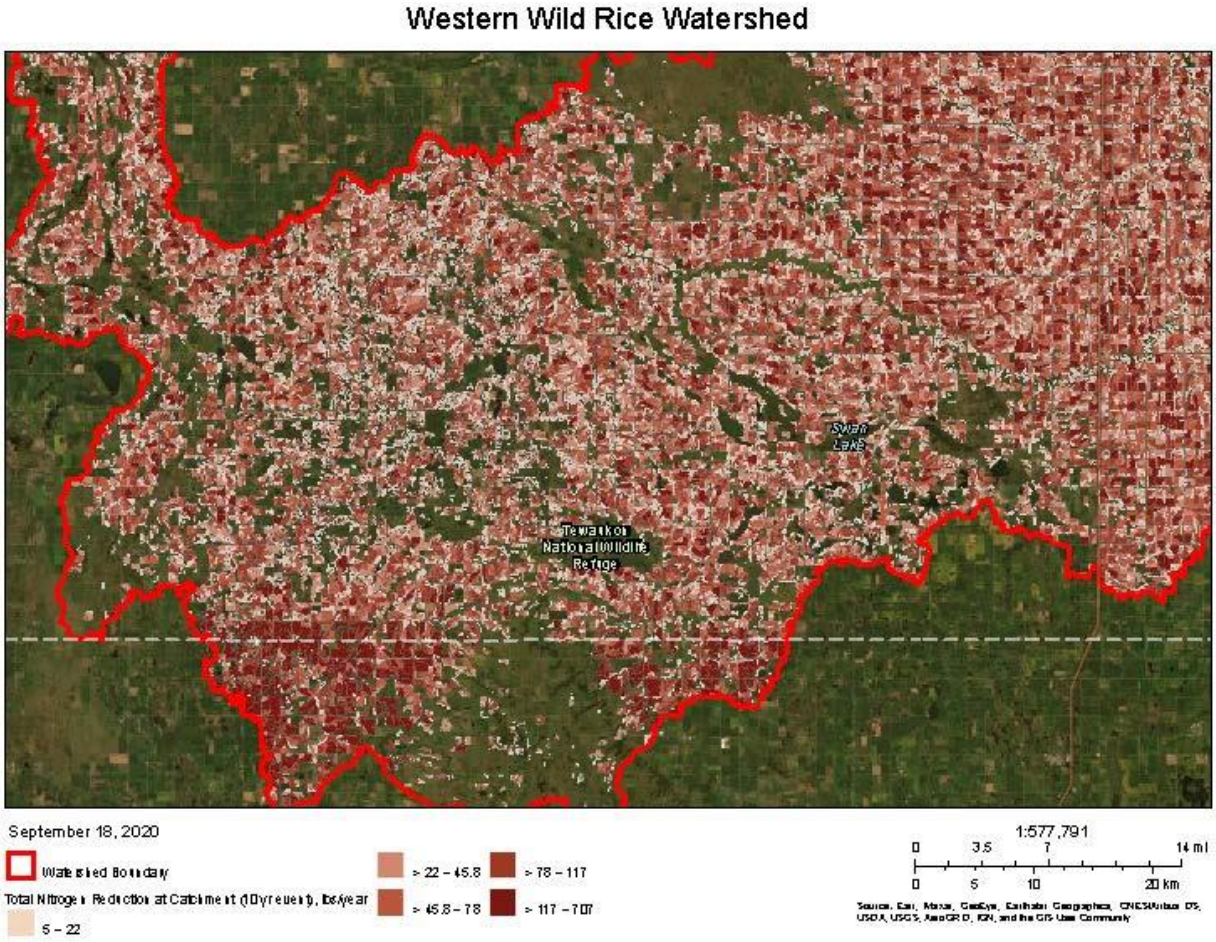


Figure 1. PTM App Example (Nutrient Reduction @ Catchment) 8-Digit HU

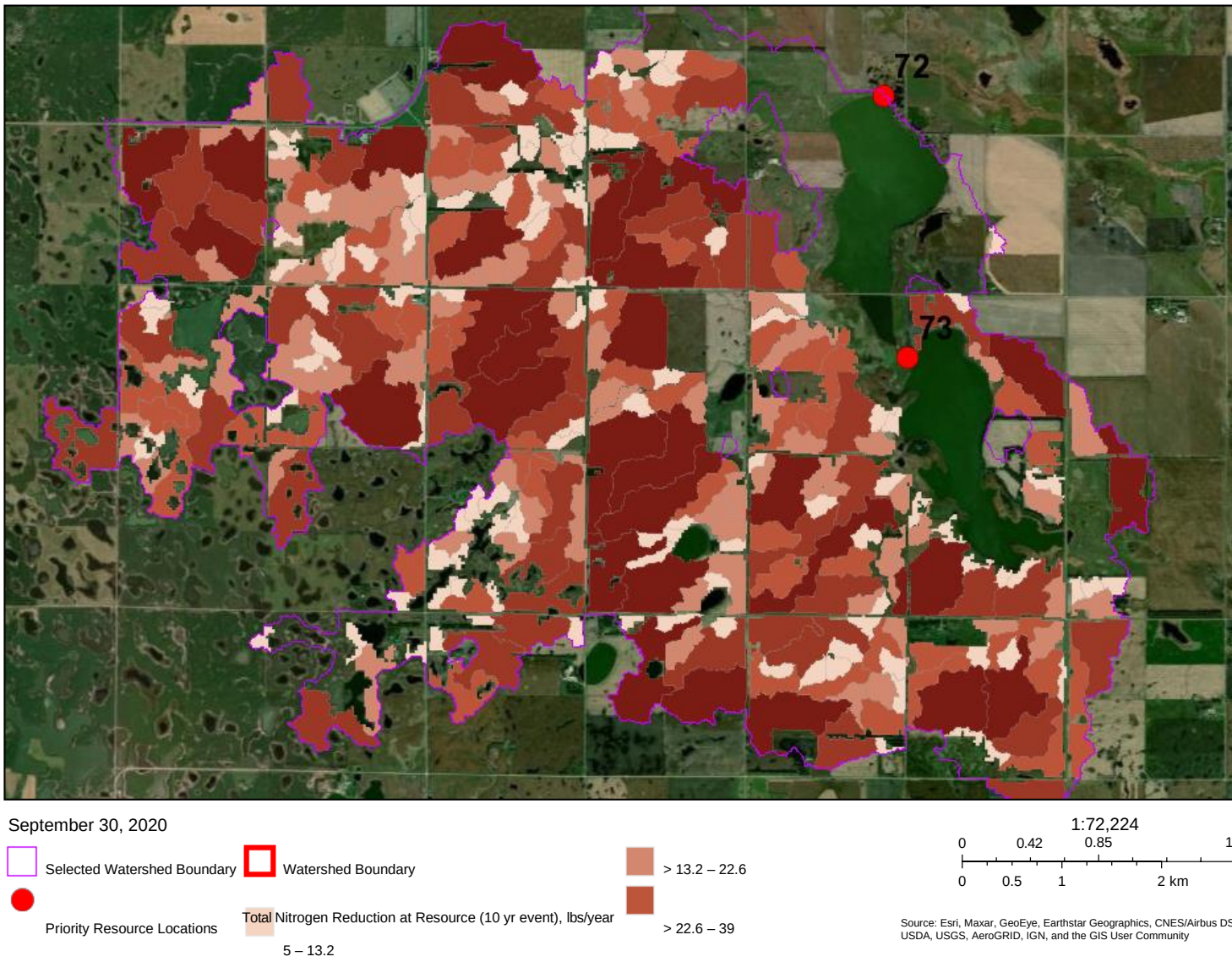


Figure 2. PTM App Example (Nutrient Reduction @ Catchment) 12-Digit HU

2.4 General Watershed Information The Western Wild Rice River watershed is over 1.4 million acres in size and the river itself originates in Sargent County where it encompasses a majority of the county (see Figure 3). The climate is sub-humid characterized by warm summers with frequent hot days and occasional cool days. Average temperatures range is from 12º F in winter to 60º F in summer. Precipitation occurs primarily during the warm period and is normally heavy in later spring and early summer. Total annual precipitation is about 24 inches.

The Western Wild Rice River is characterized by highly fertile upland, primarily used for row crop, small grain, and livestock production. According to the Sargent County Soil Survey, the predominant soils in the watershed are Forman - Aastad loam. These soils are formed on slopes of 3 to 6 percent and are deep, medium textured, well to moderately well drained, very fertile, and possess high moisture holding capabilities. Typically, Forman - Aastad loams are resistant to wind erosion but moderately susceptible to water erosion. The dominant land use in Sargent County is row crop agriculture with 79% percent of the acres in the county cropland. Dominant crops include wheat, soybeans, and corn.

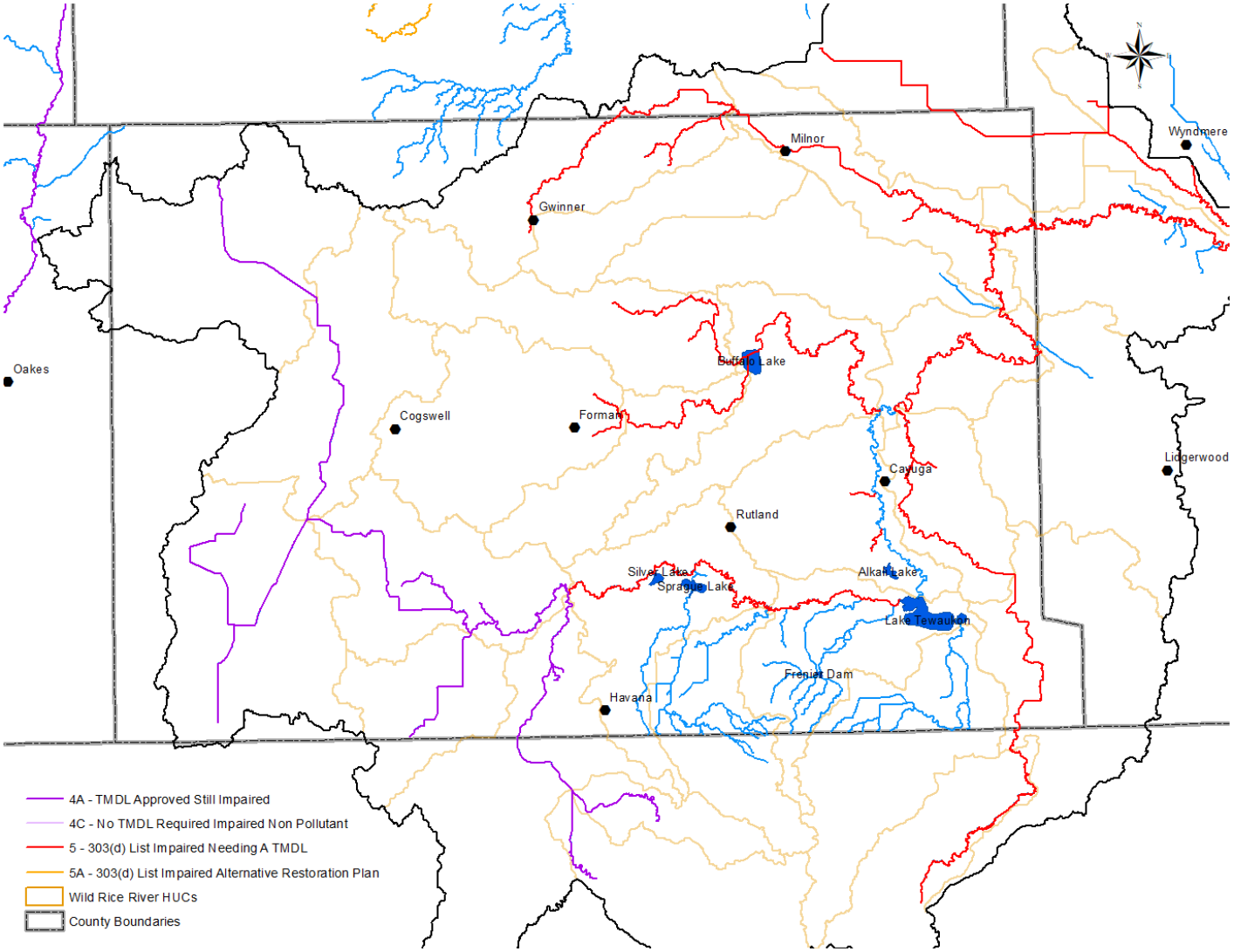


Figure 3. Western Wild Rice Watershed in Sargent County with TMDL and 303(d) Status

The river and its tributaries as well as the lakes connected to the river are classified as a warm water fishery, "waters capable of supporting growth and propagation of non-salmonid fishes and associated aquatic biota (NDDEQ). Approximately 24 fish species are found in the Wild Rice River Watershed, offering a fishery for local fisherman, particularly in the lower reaches of the river. Documented species include; Northern Pike, Walleye, White Sucker, Shorthead, Redhorse, Quillback, Black Bullhead, Tadpole Madtom, Carp, Fathead Minnow, Spotfin Shiner, Common Shiner, and Iowa Darter (NDDoH 1994-1995 test netting).

2.5 Watershed Water Quality

2.5.1 Background and Overview

The Wild Rice River is a tributary to the Red River of the North located in Cass, Dickey, Ransom, Richland and Sargent Counties in southeastern North Dakota and Marshall and Roberts Counties in northeastern South Dakota. The Wild Rice River sub-basin (hydrologic unit 09020105) has an aerial extent of approximately 1.4 million acres.

The Wild Rice River PTMApp Prioritization and Implementation Project will focus on;

comprehensive conservation planning at the field scale, BMP implementation, monitoring/assessment, and information/education to reduce NPS pollution impacts to aquatic life and recreational uses in the watershed. Aquatic habitat degradation and deposition of fine sediments are the primary causes of impaired aquatic life uses. Elevated nutrient concentrations may also be negatively impacting the type and amount of macrophytes in some tributary reaches in the watershed. Degraded riparian vegetation, reduced riparian corridor width, unstable streambanks and eroding cropland are the likely sources of the sediments impacting aquatic life uses. Over utilization of the riparian corridor for livestock grazing can also destabilize streambanks, reduce vegetative buffering capabilities and increase E. coli bacteria concentrations in the river. Nitrogen, phosphorus and sediment will be the primary NPS pollutant addressed by the project. E. coli bacteria concentrations will also be addressed through the practices focused on improving livestock grazing management in the riparian areas. Financial and technical assistance delivered by the project will be targeted toward the priority areas identified with PTMApp. Within these areas, emphasis will be placed on improving nutrient use efficiencies, soil health, riparian conditions and livestock grazing.

2.5.2 Water Quality Data

The portion of the mainstem Wild Rice River in Sargent County has four (4) STORET sampling sites and one (1) USGS river gauging station. These four sites and one station were used to compile water quality trends over the past two years, as a baseline for the project.

Three water quality indicators were analyzed; Total Nitrogen (TN), Total Phosphorus and Total Suspended Solids (TSS) (all three measured as **mg/L**). These three indicators were graphed together with river flow data (measured as **CFS**) from the USGS station. The purpose of graphing them together was to look for correlations between concentrations and river flows.

Based on macroinvertebrate Index of Biological Integrity (IBI) scores determined by the NDDEQ, the Wild Rice River is not supporting aquatic life uses. The macroinvertebrate IBI scores for the Wild Rice River ranged from 36 to 55. These IBI scores all fall in the 59-0 and 58-0 ecoregion IBI scoring ranges for the Wild Rice River watershed. IBI scores below 59 are assigned to the "Most Disturbed" biological condition class and "Not Supporting" status for aquatic life.

Total Nitrogen and Total Phosphorus graphs include a 'Most Disturbed' reference line, which is based on the Threshold Values used to determine the condition class for chemical stressors specific to the Northern Glaciated Plains Ecoregion (46). When evaluating potential impacts to aquatic life use, the chemical stressor threshold value for 'Most Disturbed' was drawn at the 75 percentile of stressor sample concentrations. The "Most Disturbed" chemical stressor concentration thresholds established for the Wild Rice River for total nitrogen and total phosphorus are 1.047mg/l and 0.215mg/l, respectively. Sites/reaches with concentrations above these values have potential aquatic life use impacts due to excess vegetative growth, channel embedment, etc. Figures 1-13 in Appendix J show graphs for nitrogen, phosphorus, and sediment concentration trends as well as the annual stream flow trends at the 4 sampling sites on the Wild Rice River.

2.5.3 Conclusion

Total Nitrogen: Total Nitrogen levels tend to show similar patterns across all sites. Spikes in TN tend to follow closely after high spikes in river flow. Major rain events and snowmelt runoff are the major factors influencing the river flow levels. Since nitrogen is highly soluble in water, these events are also the primary means nitrogen from the surrounding landscape is delivered to the river and its tributaries. Data collected from all four (4) sites indicates total nitrogen concentrations were constantly above the 'Most Disturbed' threshold value, even during periods of low river flow.

Total Phosphorus: Total Phosphorus levels tend to show similar patterns across all sites. The main difference appears to be that once a TP spike is present, it takes a longer time period for concentrations to return to pre-event levels. This indicates eroding stream banks may be a TP source after runoff ends and flows slowly recede.
Total Phosphorus was also different from total nitrogen in that concentrations were above and below the threshold reference line. This was more evident in 2014, which appears to have had more intense and frequent rainfall events throughout the summer. Under intense rain events, phosphorus loads delivered to the river are typically higher, but the increased water volume and corresponding dilution effects may have been factors to reduce the TP concentrations. In 2013, river flow levels were very high in the spring and rainfall was minimal throughout the summer and fall. This wide range of runoff volume in the spring versus the summer/fall, may have caused higher TP concentrations throughout the summer months due to low flows, reduced water volume and detritus (decaying vegetation, etc.) in the river. Given the variability in the timing and delivery process for TP in the watershed, potential TP sources in the watershed likely include eroding cropland and unstable streambanks.

Total Suspended Solids: Average annual concentrations for Total Suspended Solids appear to increase somewhat the further down river the site was located. This indicates a continuous contribution of sediments throughout the length of the river that exceeds the ability of the river to reduce sediment loads through natural deposition. Sediments delivered from low residue cropland and over-utilized grazing land are potential sources in the watershed. However, unstable streambanks may also be a significant source for continuous sediment and detritus contributions throughout the river. This in-channel source may cause the TSS concentrations to persist throughout the summer and accumulate from site to site if bank erosion is severe.
At all four (4) sites, TSS concentrations were predominantly above the NDDEQ guidance reference level. Higher concentrations typically occurred during mid-summer to late fall, which indicates runoff from intense rain events is the primary delivery process for TSS.

Aquatic life uses in the watershed can be improved over the long term by reducing average annual nutrient (N & P) and TSS concentrations in the watershed. Progress toward such a project goal will take multiple years but can be tracked over time by evaluating trends in macroinvertebrate IBI scores as well as trends in the average annual concentrations for nitrogen, phosphorus and total suspended solids (TSS). The IBI chemical stressor thresholds for nitrogen and phosphorus (i.e., 1.047 mg/l and 0.215 mg/l) and the TSS target concentration (i.e., 35 mg/l) can be used to evaluate BMP success in reducing impacts to aquatic habitats. Ultimately, attainment of the aquatic life use restoration goal will be based on the prolonged maintenance of IBI macroinvertebrate scores above 60, which translates to an aquatic life use support status of "Fully Supporting but Threatened."

3.0 PROJECT DESCRIPTION

3.1 Goal for the Project: The long-term goal of the project is to restore and protect the aquatic life use in the Wild Rice River in Sargent County by reducing the nitrogen, phosphorus and sediment mean annual concentrations. For this initial phase, the goal is to verify the effectiveness of the PTMApp model for establishing watershed priorities by tracking and evaluating the estimated nitrogen, phosphorus and sediment loadings associated with practices applied within the priority sub-watersheds (e.g., 10 digit HUs) identified with PTMApp. The estimated PTMApp load reductions from BMP applied within the priority catchments of each sub-watershed will be used to evaluate if the chemical stressor threshold concentrations for N and P (i.e., 1.047 mg/l and 0.215 mg/l) and the TSS target value of 35 mg/l are reached at each sub-watershed priority resource point. During this phase, progress towards the long-term goal will be accomplished by completing the tasks listed below.

3.2 Objective 1: Reduce estimated nutrient and sediment loads from the priority sub-watersheds (e.g., 10-digit HUs) to achieve the IBI chemical stressor threshold concentrations for nitrogen and phosphorus as well as the target TSS target concentration at the sub-watershed priority resource points.

Task 1. SCD will employ personnel to manage the project during the grant period. Responsibilities will include BMP inventories, producer contacts, outreach/education, and water quality sampling. SCD will also employ an Office Coordinator to assist with administrative duties associated with the watershed project.

Product: 1 Full-Time Watershed Coordinator and .1 Full-Time Office Coordinator
Cost: $380,700

Task 2: Utilize the PTM App to identify priority areas for BMP implementation at the sub-watershed/field level.

Product: Work with the International Water Institute to prioritize sub-watershed (e.g., 10-digit HUs) and identify priority catchments within each sub-watershed that have the highest potential contribution of nutrients and sediments at the priority resource point. Maps will be developed depicting the priority sub-watersheds and priority catchments. A long-term schedule will also be developed for implementing subsequent watershed project phases according to the established sub-watershed priorities. Cost: Staffing cost (Task 1)

Task 3: Utilize the "Scenario Builder" in PTMApp to determine the amount of additional BMP needed to achieve the estimated N, P and TSS load reduction targets for the sub-watershed being addressed under this phase.

Product: Location, types and amounts for the most cost-effective BMP still needed to achieve the N, P and TSS load reduction targets for the sub-watershed.
Cost: Staffing cost (Task 1)

Task 4: Solicit additional funding to support remaining BMP needed to achieve the load reduction targets for the sub-watershed.

Product: Additional cost share funds to be used to support remaining BMP needs identified with the PTMApp Scenario Builder
Cost: Staffing cost (Task 1)

Task 5: Restore, protect, and maintain approximately 250 acres along the Wild Rice River and its tributaries by installing/maintaining easements and/or implementing BMP's such as grassed waterways, filter strips and trees. Short term management agreements of 3-5 years or easements of 5-20 years can be created to establish and maintain vegetation on riparian areas

Product: Riparian BMP's on 250 acres.
Cost: $50,000

Task 6: Assist landowners with the development and implementation of cropland management plans on 1,000 acres of priority cropland acres. The plans will include BMP's such as conservation crop rotation, cover crops, nutrient management, residue management and soil testing.

Product: Cropland Management BMP's on 1,000 acres
Cost: $30,000

Task 7: Assist landowners with the development and implementation of grazing management plans. These BMP's may include fencing, pipelines, wells, spring development, prescribed grazing, solar pumps, tanks, troughs, portable windbreaks and/or winter grazing plans on 5 grazing systems.

Product: Technical / Financial Assistance on Grazing Management BMP's on 5 grazing systems

Cost: $20,000

3.2: Objective 2: Increase the awareness of rural and urban residents of practices and daily activities that can be implemented to help achieve and maintain fully supporting status of the recreational and aquatic life uses of the Wild Rice River.

Task 8: The Watershed Coordinator and the Soil Conservation District will host/present at a variety of events annually to educate all land users and age groups on Best Management Practices to improve soil health; protect water quality and reduce soil erosion.

Product: 15 Outreach Events (Green Talks, Eco-Ed, Ladies Ag, Envirothon, etc.)
Cost: $1,500

3.2: Objective 3: Maintain funding support thru 2026 for the Conservation Cropping System Project Farm (CCSP) as a demonstration site to increase producers' awareness and understanding of: 1) the 5 soil health principles; 2) connection between water quality and soil health; and 3) feasible options for improving soil health under different crop rotations. See Appendix F for a list of contributing sponsors of the CCSP Farm.

Task 9: Coordinate with up to 3 producers in the CCSP area to secure field size plots that we can utilize to showcase BMP's that area producers might not be aware of through field days or social media. The demonstrations will focus on soil health improvement using winter annuals as cover and cash crops, cover crop seeding techniques in standing crop, and establishment of a year-round "living root" crop rotations. We will also be implementing grazing and/or haying practices on cover crops to showcase the added forage value to cattle producers.

Product: CCSP will secure demonstration sites and host 10 events (2 events annually) (Field Day, Soil Health Workshop, ShopTalks, or Web Based (if necessary) highlighting water quality practices that will improve soil health being performed by CCSP
Cost: $22,000

Task 10: The CCSP Farm in conjunction with the Wild Rice Soil Conservation District has a cooperative agreement with the Natural Resources Conservation Service to help assist with CCSP operations as well.

Product: 150 acres of cropland across 3 different operations that will host a total of 12 events by the end of 2021 with an estimated 400 attendees.
Cost: See Appendix H

Task 11: CCSP will assist cooperative producers with design and implementation of new, innovative soil health BMP's on 1-3 trial plots within their operation. Activities completed in past years; cover crop broadcast seeding rate/species trial, 60" corn with cover crops, and exploring varieties of cover crops for fall grazing that work well on flooded cropland.

Product: Cropland BMP's on 4 plots under 100 acres per producer
Cost: $3,300

3.3 See Attached Milestone Table in Appendix B

3.4 Permits: All necessary permits will be acquired. These may include CWA (Clean Water Act) Section 404 permits, cultural resource inventories, etc. Project sponsors will also work with NDDEQ to determine if National Pollution Elimination System permits are needed for proposed livestock manure management systems.

***3.5* Lead Project Sponsor** Wild Rice Soil Conservation District (WRSCD) is the lead sponsor. Wild Rice SCD has sponsored three 319 projects. The WRSCD's annual and long-range plans help to prioritize and guide the field service staff. The WRSCD has legal authorization to employ personnel and receive and expend funds. They have a track record for personnel management and addressing conservation issues for their constituency.

3.6 Operation and Maintenance The Wild Rice SCD will be responsible for auditing Operation and Maintenance Agreements (O&M) for Section 319 cost shared BMP through yearly status reviews of EPA Section 319 contracts. The lifespan of each BMP will be listed in each individual contract to ensure longevity of the practices. The producer signs the "EPA 319 Funding Agreement Provision" form which explains in detail the consequences of destroying a BMP before the completion of its lifespan.

Any easements with the Wild Rice Soil Conservation District will be filed with the County Office Recorder at the Sargent County Court House. The original document will be filed in a custody file at the Wild Rice Soil Conservation District Office.

4.0 Coordinating Plan

4.1 Cooperating Organizations

4.1a The Wild Rice Soil Conservation District signs the Section 319 contract and is the lead agency responsible for administration. They will provide office space, clerical assistance, access to equipment, and supplies as well as annual financial support. The WRSCD board will oversee implementation of the scheduled project activities and provide for staff time if feasible. The board (WRSCD) will be the primary supervisors of the watershed coordinator and all Section 319 funded activities.

4.1b The Sargent County Water Resource Board (SCWRB) will assist the WRSCD in project implementation as applicable.

4.1c Sargent County Commission (SCC) - The Sargent County Commission supports the mission of the Wild Rice Soil Conservation District and the goals of this project.

4.1d. Natural Resources Conservation Service (NRCS): NRCS has entered into a contribution agreement with the CCSP Farm to help showcase conservation practices to producers by providing funding to create satellite CCSP locations in southeast North Dakota within producers' operations. They have agreed to contribute up to $225,599 towards CCSP operations from September 2017 through December 31st of 2021 with an opportunity for an extension if deemed necessary. Current expenditures through July 31, 2020 are $35,360.75. As far as BMP implementation goes, for areas that are not located within the watershed or practices that are not cost-shared by 319 we will encourage producers to utilize NRCS programs such as the Conservation Stewardship Program, Wetland Reserve Easements, or Environmental Quality Incentive Program.

4.1e North Dakota Department of Environmental Quality (NDDEQ). The NDDEQ will oversee 319 funding as well as develop the Quality Assurance Project Plan (QAPP) for this project. NDDEQ will provide training for proper water quality sample collection, preservation and transportation, to ensure reliable data is obtained. The NDDEQ will provide oversight to ensure proper management and expenditure of Section 319 funds. They will assist NRCS and SCD personnel in the review of O&M requirements for Section 319 cost shared BMP's.

4.1f Farm Services Agency (FSA) - Programs available through FSA will be pursued for cost share assistance.

4.1g North Dakota State University (NDSU) – Extension & Research **-** Local and State personnel and educational materials will be utilized to compliment the projects I/E activities and on farm research at demonstration sites. This will include such things as specific BMP publications and assistance with workshops and field tours. The specific role of NDSU - Extension will be dependent on the type of I/E activity being implemented and availability of staff and materials. Research staff at the Oakes Irrigation Site will also coordinate with CCSP Farm on research and demonstration of on-farm operations and may also assist with field work if time and staffing permits.

4.1h USFWS Programs and technical assistance available through USFWS will be pursued for project assistance.

4.1i Ducks Unlimited Inc. (DU) - Programs available through DU will be pursued for cost share assistance.

4.1j Pheasants Forever (PF) – PF has received 319 funding through the North Dakota Department of Environmental Quality for their Precision Ag program. Watershed Coordinator will work with PF to deliver eligible BMP's through the Precision Ag program.

4.1k The Conservation Cropping System Project (CCSP) board – The CCSP Board will provide oversight and guidance as to operations and mission of CCSP. The board consists of representatives from all the participating Soil Conservation Districts (Day and Marshall in South Dakota and Ransom, Sargent, and Richland in North Dakota as well as NDSU Extension and Ducks Unlimited.

4.2 Local Support The WRSCD Board is composed to represent concerns for the Sargent County community at large. In addition to our board, we receive local support from a multitude of businesses for our CCSP activities and outreach events. Whether it be goods and services or sponsoring a meal; the people of Sargent County are always open to helping the WRSCD and our 319 Project. This is something we take great pride in and aim to continue on with that in this new proposal.

4.3 Partnership The WRSCD will work with multiple partners (e.g., NRCS, other SCDs, WRD, Extension Service, CCSP Farm, etc.) to increase awareness of solutions to water quality and NPS pollution issues in the area. This will be accomplished through educational events and/or demonstrations that focus on the benefit's various conservation practices. Coordination with partners will also enhance efforts to protect soil resources, improve air and water quality, expand fish and wildlife habitat, and improve cropland and rangeland management. We are in the process of securing letters of support now and will have them available with the PIP.

4.4 Similar Activities N/A

5.0 EVALUATION AND MONITORING PLAN

The project sponsors are currently coordinating with the ND Department of Environmental Quality to develop the Quality Assurance Project Plan (QAPP). The QAPP will be part of the final PIP when it is fully approved.

6.0 BUDGET

6.1 See Appendix C & E, the budget worksheet.

7.0 PUBLIC INVOLVEMENT

The Wild Rice Watershed Program has a past history of watershed projects. The success of the program has secured public involvement on a widespread basis. The Wild Rice Restoration and Riparian Project Phase II and Sargent County SCDs are active in youth education. The county sponsors an ECO-ED Day every year for middle school children. The purpose of the camp is to help stimulate the need for natural resource conservation. Public tours and demonstrations are held each year to inform the public on various conservation issues such as no-till farming, strip tillage, cover crops. The Wild Rice River Priority Project will be handled in a manner like that of other projects. With this, local project staff feels that public involvement is guaranteed.

Appendix A. Prior Project Activities & Success Story

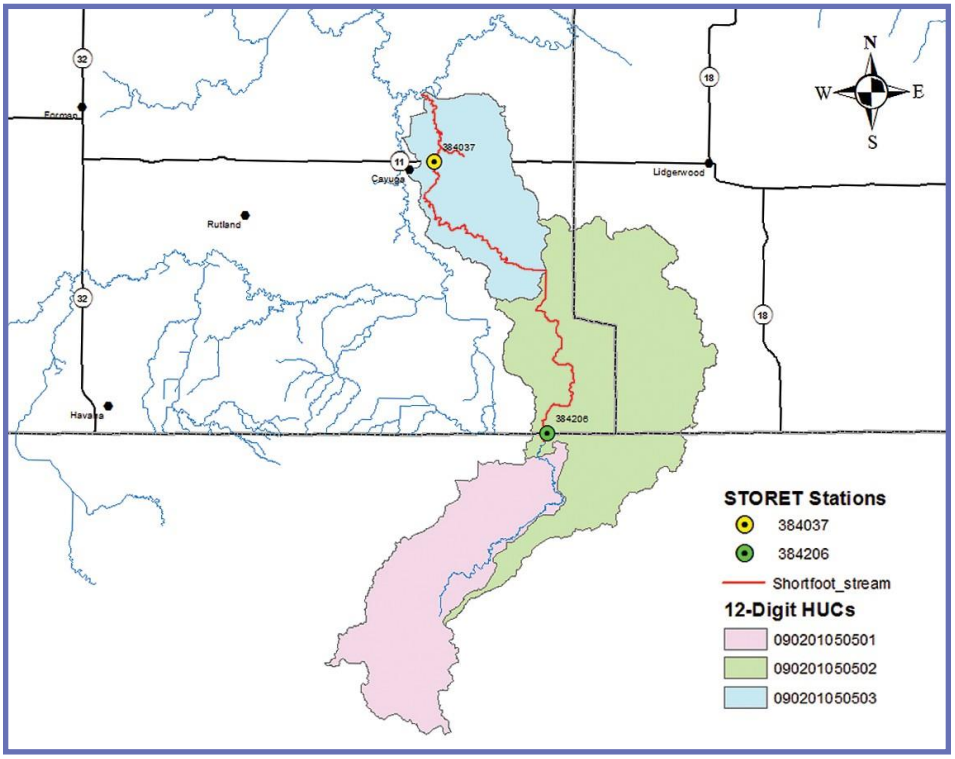
Past BMP's & Amount Applied (10/14/2014-2/16/2021)	
Septic System Renovation	2 systems
Riparian Easement (On Cropland)	211.98 ac
Livestock Manure Mgmnt System (Irrigation)	1 system
Cover Crops	3383.44 ac
Critical Area Planting	27.6 ac
Well Decommissioning	2 wells
Windbreak/Shelterbelt Establishment	4,042 ln ft
Fencing	15,947.8 ft
Riparian Herbaceous Cover	204.18 ac
Pasture & Hayland Planting	60 ac
Trough and Tank	7 tanks
Past Outreach Events & Attendees (8/31/2017 - 2/16/2021)	
CCSP Field Days & presentations	876 attendees
Youth Education (Eco-Ed, Envirothon, etc.)	964 attendees
Watershed & Urban Conservation Mtgs.	208 attendees

Our Water Keeping it Clean

North Dakota Department of Health | Environmental Health Section

Shortfoot Creek: Improving Water Quality

By Jim Collins, Jr., Environmental Scientist, North Dakota Department of Health



Shortfoot Creek watershed, sampling (STORET) locations and associated sub-watersheds in southeastern North Dakota.

The Resource

Shortfoot Creek is a 55,203-acre watershed located in Sargent county in southeastern North Dakota and Marshall County in northeastern South Dakota. It is a sub-watershed of the larger Western Wild Rice River watershed.

The dominant land use on the North Dakota side of the Shortfoot Creek watershed is row crop agriculture. According to the National Agricultural Statistical Service (NASS, 2007a) land survey data, approximately 53 percent of the land is active cropland, 9 percent is wetlands, 6 percent is water, 6 percent is grassland, and 26 percent is in the Conservation Reserve Program (CRP), pasture, woods, or open space. The dominant land use on the South Dakota side of the Shortfoot Creek watershed is also row crop agriculture, with 68.8 percent of the 9,814 acres of the watershed in corn (38.7 percent) and soybeans (31.1 percent) (NASS, 2007b). Another 6.1 percent is in other agricultural uses (e.g., small grains, alfalfa, and pastureland). The remaining acreage in the South Dakota portion of the watershed is wetlands (10.4 percent), grasslands (4.4 percent), and forest (2.1 percent).

Assessment and Focus

In 1999, the Wild Rice Soil Conservation District (SCD), along with the North Dakota Department of Health (NDDoH), developed a Watershed Restoration Action Strategy (WRAS) to improve water quality and land use conditions within the Wild Rice River watershed. In 2010, the Wild Rice SCD worked with the NDDoH to refocus its efforts on the Shortfoot Creek sub-watershed. From assessment data, the SCD was able to determine the land use practices and potential sources of nonpoint source pollution (NPS) included: cropland erosion, degraded riparian areas, and livestock concentration areas in close proximity to the river. Efforts to address these NPS pollution sources in the Shortfoot Creek watershed were renewed again in 2014 and 2016.

The Goal

In 2014 and 2016, the project sponsors identified four major objectives that remained consistent with the original goal of restoring and maintaining the recreational use within the Shortfoot Creek watershed.

1. Target areas for reducing sediment. The naturally flat stream channels in the sub-watershed allow tillage and livestock grazing right to the water's edge, so the installation of long-term riparian and grass buffers will help prevent sediment, nutrient, and E. coli bacteria from reaching the streams. Cost-sharing assistance for best management practices (BMPs) and technical assistance for long-term planning will help improve these areas.

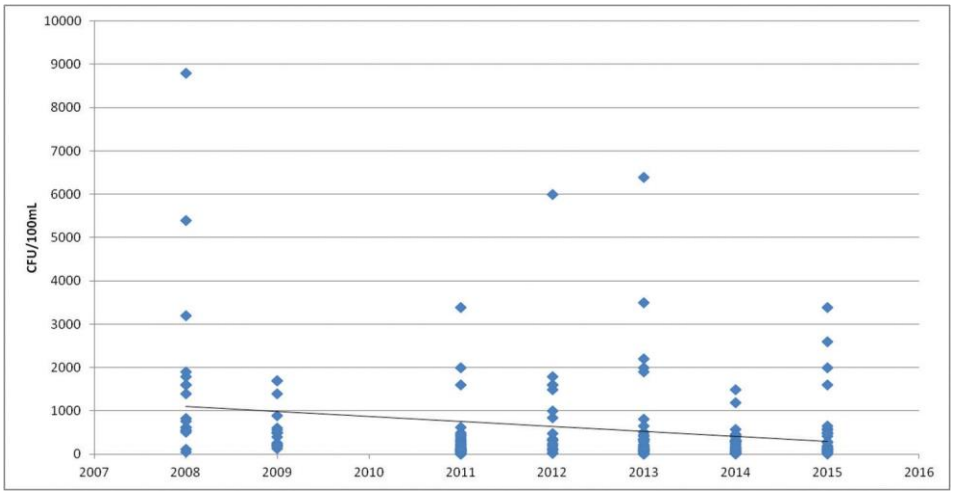

Livestock waste management containment pond and fencing.

2. Increase the index of biotic integrity (IBI) score for the specific reaches of the creek being addressed by the project to achieve a fair to good ranking (59-70 for fair and >70 for good).
3. Evaluate progress, document trends in water quality and beneficial use conditions (e.g., nutrient/sediment and E. coli bacteria concentrations, riparian conditions, fish and macro invertebrate diversity, etc.) as BMPs are applied.
4. Provide opportunities for producers and the public to increase their understanding of (1) NPS pollution related to agricultural production and potential cropping options and (2) the importance of slowing water runoff and enhancing infiltration using management systems to reduce the delivery of sediments and nutrients to water bodies in southeastern North Dakota.

Restoration Efforts

The Wild Rice SCD has worked with local landowners to implement the following BMPs in the watershed:

Cover Crop	2,906.34 acres
Critical Area Planting	22.6 acres
Fencing	12,331 feet
Rural Water Hookup	1
Trough and Tank	8
Well (livestock only)	3
Manure Irrigation	1 system
Portable Windbreaks	584 feet
Waste Utilization	2,020 tons
Well Decommission	3
Riparian Easement	474.80 acres
Riparian Herb Cover	69.7 acres
Pipeline	9,917 feet
Filter Strip	80 acres
Pasture/Hay Planting	60 acres



E. coli bacteria results at sampling station 384037 indicate a decreasing trend

Results

Through the hard work of the SCD staff and cooperation of landowners to install BMPs in the sub-watershed, bacteria levels have started to show a decreasing trend according to sample results. While current levels still exceed state standards for recreation, project sponsors and the NDDoH are encouraged by the trend. It is possible that water quality can be improved enough in Shortfoot Creek for it to be removed from the 303(d) list of impaired waters.

Future Efforts

The SCD recently hired Matt Olson as the new watershed coordinator, replacing Trace Hanson who retired this past spring. Olson has an extensive background in working with producers to implement BMPs. With cost-share and technical assistance readily available, the key to continued project success will be producer interest throughout the watershed.

Questions?

For more information contact:

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Appendix B. Milestone Table

Milestone Table for WRRPPIP							
Task/Responsible Organizations	Output	Quantity	Year 1	Year 2	Year 3	Year 4	Year 5
Objective 1: Staff/BMP's							
Task 1: 319 & Office Coordinator	1.1 FT Employee	1.1					
Group 3			1.1	1.1	1.1	1.1	1.1
Task 2: PTM App Support	Priority Subwatersheds	5					
Group 3, 4, & 6			5				
Task 3: PTM App Scenario Builder	BMP Prioritization Maps						
Group 3, 4, & 6			X			X	
Task 4: Program Funding	BMP Funding Needed						
Groups 3 & 4					X		X
Task 5: Riparian	Acres	250					
Groups 1, 2, 3, & 4			50	50	50	50	50
Task 6: Cropland	Acres	1,000					
Groups 1, 2, 3, & 4			200	200	200	200	200
Task 7: Grazing Mgmnt.	Systems	5					
Groups 1, 2, 3, & 4			1	1	1	1	1
Objective 2: Watershed Outreach							
Task 8: Education	Outreach Events	15					
Groups 1 & 3			3	3	3	3	3
Objective 3: CCSP Oureach							
Task 9: Education	Outreach Events	10					
Groups 1, 3, 4, 5			2	2	2	2	2
Task 10: Education	Attendees	400					
Groups 1, 3, & 5			80	80	80	80	80
Task 11: Soil Health BMP's	Cooperative Sites	15					
Groups 1, 2, 3, 4, 5			3	3	3	3	3
Group 1: NRCS - Provide technical assistance to pland, design and implement BMPs							
-Also provide financial assistance to CCSP Farm through Contribution Agreement							
Group 2: Private landowners - Make land management decisions to implement BMP's							
-Provide cash / In-Kind match for Best Management Practices							
Group 3: Wild Rice SCD - Local project manager and sponsor; including responsibilites for project							
-Coordination, payments, match tracking, and progress reports to NDDEQ							
Group 4: North Dakota Department of Environmental Quality - Section 319 program							
-Management including oversight of planning/expenditures							
Group 5: CCS Farm Manager and CCSP Board Members							
-Will Assist with oversight, recommendations, securing local match and time							
Group 6: International Water Institute - Provide training and assistance on PTM App							
-Help with Scenario Builder and GIS Work in PTMApp							

Appendix C. Funding Sources

WRRPPIP - Budget Table						
Part 1: Funding Sources	**2021**	**2022**	**2023**	**2024**	**2025**	**Total Cost**
EPA Section 319 Funds						
1) FY 2021 Funds	$ 60,759.60	$ 60,759.60	$ 60,759.60	$ 60,759.60	$ 61,479.60	$ 304,518.00
Subtotal	$ 60,759.60	$ 60,759.60	$ 60,759.60	$ 60,759.60	$ 61,479.60	$ 304,518.00
State/Local Match						
1) Wild Rice SCD	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 1,000.00	$ 5,000.00
2) Landowners	$ 8,000.00	$ 8,000.00	$ 8,000.00	$ 8,000.00	$ 8,000.00	$ 40,000.00
3) CCSP (In-Kind)	$ 31,506.40	$ 31,506.40	$ 31,506.40	$ 31,506.40	$ 31,986.40	$ 158,012.00
Subtotal	$ 40,506.40	$ 40,506.40	$ 40,506.40	$ 40,506.40	$ 40,986.40	$ 203,012.00
Total	$ 101,266.00	$ 101,266.00	$ 101,266.00	$ 101,266.00	$ 102,466.00	$ 507,530.00

Appendix D. Best Management Practices

WRRPPIP - BMP's	
Projected BMP List	
19	Septic System Renovation
340	Cover Crops
342	Critical Area Planting
351	Well Decommissioning
380	Windbreak/Shelterbelt Establishment
382	Fencing
390	Riparian Herbaceous Cover
391	Riaprian Forest Buffer
393	Filter Strip
412	Grassed Waterway
512	Pasture & Hayland Planting
516	Pipeline
550	Range Planting
610	Salinity & Sodic Soil Management
614	Trough and Tank
638	Water & Sediment Control Basin
642	Well

Appendix E. Budget Table

WRRPPIP - Budget Table								
Sect 319/Non-Fed	Year 1 Total Cost	Year 2 Total Cost	Year 3 Total Cost	Year 4 Total Cost	Year 5 Total Cost	Total Cost	In-Kind/Match	319 Funds
	7/21-6/22	7/22-6/23	7/23-6/24	7/24-6/25	7/25-6/26			
Personnel/Support - Tasks 1 - 4								
A. Personnel - 1 FTE	$ 56,000.00	$ 56,000.00	$ 56,000.00	$ 56,000.00	$ 56,000.00	$ 280,000.00	$112,000.00	$ 168,000.00
B. Fringe Benefits	$ 9,000.00	$ 9,000.00	$ 9,000.00	$ 9,000.00	$ 9,000.00	$ 45,000.00	$ 18,000.00	$ 27,000.00
C. Travel, Food, Lodging	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 2,500.00	$ 1,000.00	$ 1,500.00
D. Supplies	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 2,500.00	$ 1,000.00	$ 1,500.00
E. Rent/Utilities	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 6,000.00	$ 2,400.00	$ 3,600.00
F. Communications	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 1,200.00	$ 6,000.00	$ 2,400.00	$ 3,600.00
G. Equipment	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 2,500.00	$ 1,000.00	$ 1,500.00
H. Consultant/Contractual	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 1,500.00	$ 2,700.00	$ 8,700.00	$ 3,480.00	$ 5,220.00
I. Other	$ -	$ -				$ -	$ -	$ -
J. Training	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 500.00	$ 2,500.00	$ 1,000.00	$ 1,500.00
K. Administration Asst. - .1 FTE	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00	$ 25,000.00	$ 10,000.00	$ 15,000.00
Subtotal	**$ 75,900.00**	**$ 75,900.00**	**$ 75,900.00**	**$ 75,900.00**	**$ 77,100.00**	**$ 380,700.00**	**$152,280.00**	**$ 228,420.00**
BMP's : See Appendix D For Examples of BMP's								
Task 5. Riparian	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 50,000.00	$ 20,000.00	$ 30,000.00
Task 6. Cropland	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00	$ 30,000.00	$ 12,000.00	$ 18,000.00
Task 7. Grazing/Manure Mgmnt	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 4,000.00	$ 20,000.00	$ 8,000.00	$ 12,000.00
Subtotal	**$ 20,000.00**	**$ 20,000.00**	**$ 20,000.00**	**$ 20,000.00**	**$ 20,000.00**	**$ 100,000.00**	**$ 40,000.00**	**$ 60,000.00**
**Additional BMP Dollars may be provided through partners (NDGF, Pheasants Forever, Ducks Unlimited, etc.) or requested from NDDEQ as needed*								
Outreach								
Task 8. Meetings/Outreach Events	$ 300.00	$ 300.00	$ 300.00	$ 300.00	$ 300.00	$ 1,500.00	$ 600.00	$ 900.00
Subtotal	**$ 300.00**	**$ 300.00**	**$ 300.00**	**$ 300.00**	**$ 300.00**	**$ 1,500.00**	**$ 600.00**	**$ 900.00**
CCSP Farm: See Appendix G for CCSP Estimated Match/In-Kind and Appendix H for Task 8 Budget								
Task 9: Field Demo Events	$ 4,400.00	$ 4,400.00	$ 4,400.00	$ 4,400.00	$ 4,400.00	$ 22,000.00	$ 8,800.00	$ 13,200.00
Task 11: Conservation BMP's	$ 666.00	$ 666.00	$ 666.00	$ 666.00	$ 666.00	$ 3,330.00	$ 1,332.00	$ 1,998.00
Subtotal	**$ 5,066.00**	**$ 5,066.00**	**$ 5,066.00**	**$ 5,066.00**	**$ 5,066.00**	**$ 25,330.00**	**$ 10,132.00**	**$ 15,198.00**
Total 319/Non-Federal Budget	**$ 101,266.00**	**$ 101,266.00**	**$ 101,266.00**	**$ 101,266.00**	**$ 102,466.00**	**$ 507,530.00**	**$203,012.00**	**$ 304,518.00**
Section 319 Funds per year	$ 60,759.60	$ 60,759.60	$ 60,759.60	$ 60,759.60	$ 61,479.60			
Total local match per year	$ 40,506.40	$ 40,506.40	$ 40,506.40	$ 40,506.40	$ 40,986.40			

Appendix F. CCSP Background

The Conservation Cropping Systems Project (CCSP) board is composed of local producers representing counties with the targeted region from both sides of the ND - SD border. Professionals from agricultural research, as well as natural resources conservation agencies, and non-profit interest groups will assist the directing board with technical advice and support. The projects activities take place on two demonstration sites. The first is located 3 miles south of Oakes, ND and the other producer is located 2 miles southeast of Milnor.

The mission of the Conservation Cropping Systems Project is to evaluate and demonstrate profitable crop rotations and crop management strategies that are uniquely adapted to the local climate. These strategies will strive to protect the natural resources of southeast North Dakota and northeast South Dakota through research, demonstration and education. The most unique thing about the CCSP Farm is that it is not only broadly supported by SCD's across southeast North Dakota and northeast South Dakota; but it is also supported by many ag-related businesses locally which really increase buy-in from the local community. If you look at Appendix G, we have created a summary of our In-Kind and Cash donations from 2019 for the CCSP Farm which we have used to estimate In-Kind for the CCSP Farm over the next five years.

Since moving away from the Forman site, the Conservation Cropping System Project has been focused on using larger plots within producer's active operations. This allows us to take what we have learned in the past years on small research plots and engage producers in trying BMP's that CCSP and the producer feel may provide soil health and water quality benefits on their operation. The large plots will be more efficient to work with, better for weed control, and less likely to have herbicide drift issues as well as provide more of a real-world example for the implementation of practices. Rotations implemented all try to towards having a 365-day living root. Rotations that have been used to accomplish this are full season cover crops for grazing on what has been wet cropland (PP), experimenting with broadcast seeding different cover crops at different rates on corn/soybeans, and interseeding cover crops into corn planted on 60" corn rows.

Appendix G. CCSP Match Table

CCSP Farm Summary of In-Kind and Cash Donations for WRRPPIP

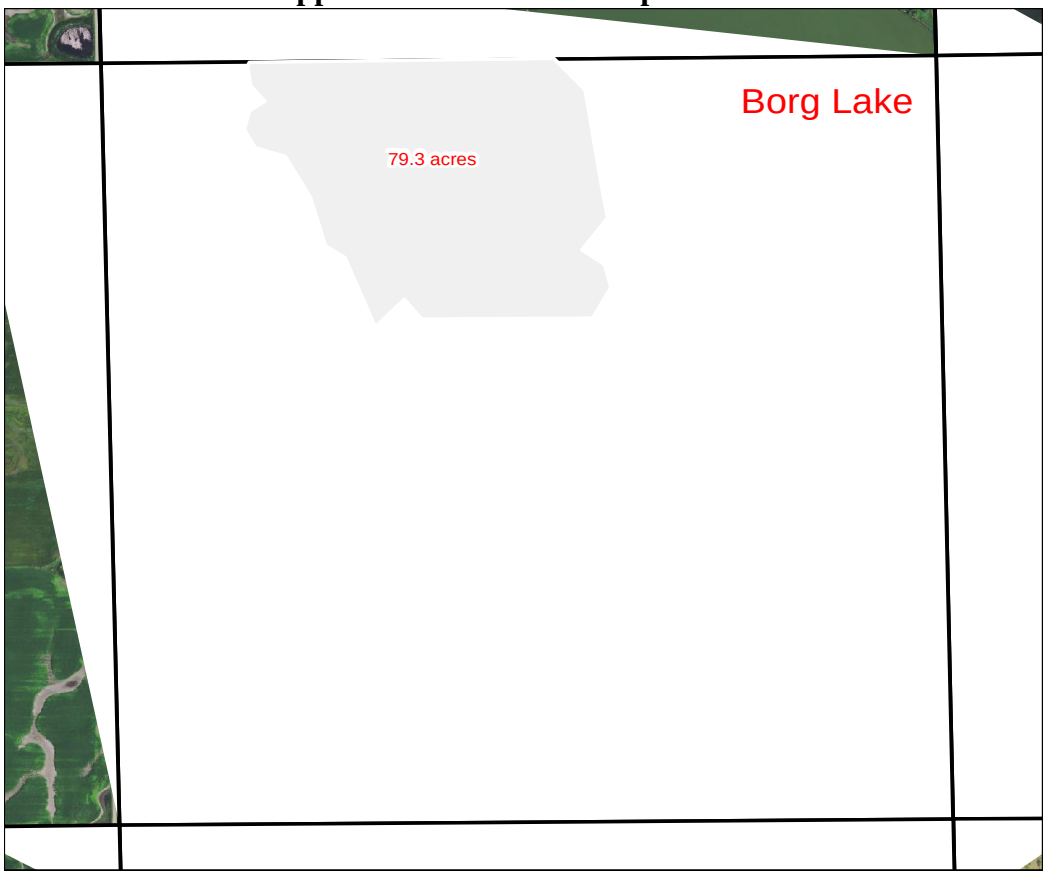
Donor / Organization Name	Match Donation	Match Item
Agtegra	$ 2,500.00	Fertilizer/Herbicide
Millborn Seed	$ 500.00	Cover Crop Seed
Titan	$ 20,000.00	Tractor
Wild Rice SCD	$ 4,500.00	Financial Support
Cooperator	$ 5,000.00	Time Towards Project
Totals	$ 32,500.00	
Projected off of Numbers from last year		

Appendix H. CCSP – NRCS Grant Table

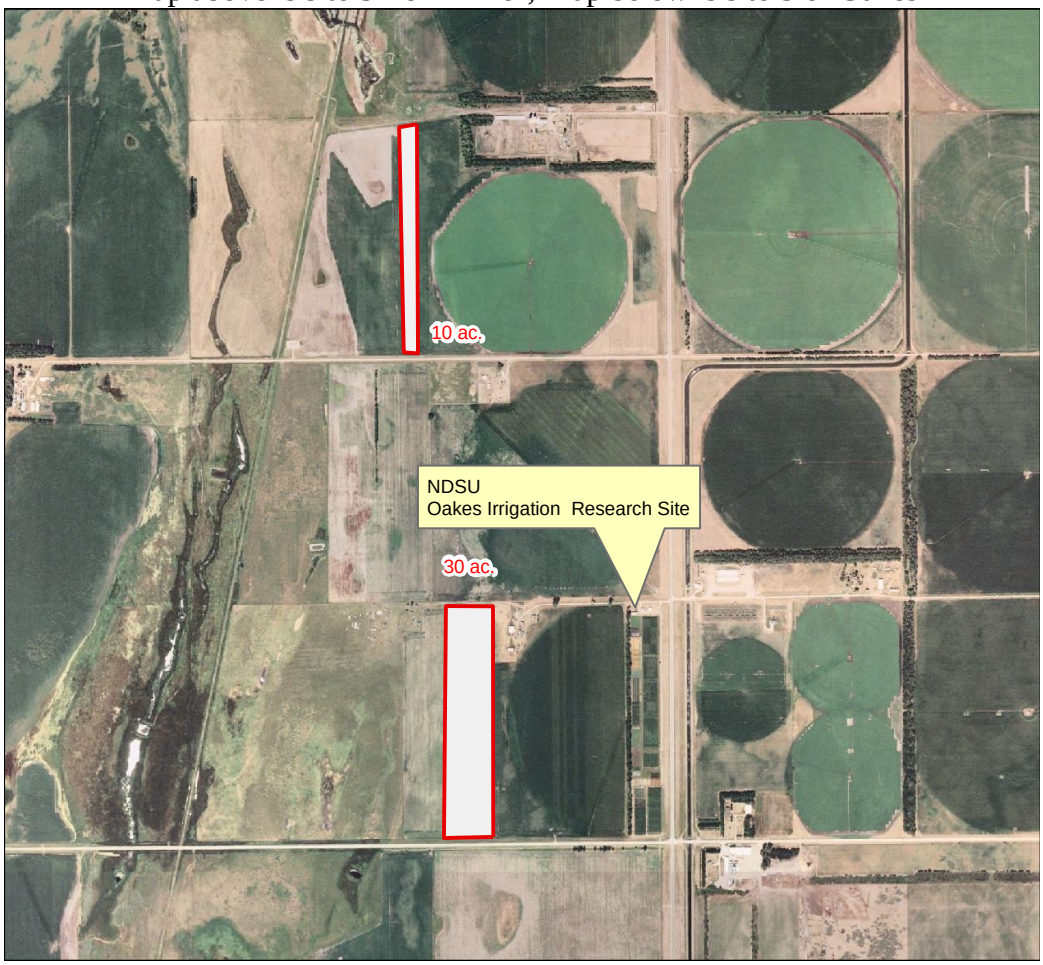
CCSP Budget Table

NRCS Grant Funds Requested	Producer Match / In-Kind	CCSP Cash Match / In-KInd Provided	Total Grant	Grant Year
$ 61,590.00	$ 37,100.00	$ 24,490.00	$123,180.00	1
$ 57,919.00	$ 33,100.00	$ 24,819.00	$115,838.00	2
$ 44,500.00	$ 19,700.00	$ 24,800.00	$ 89,000.00	3
$ 61,590.00	$ 37,100.00	$ 24,490.00	$123,180.00	4
$ 225,599.00	$ 127,000.00	$ 98,599.00	$451,198.00	Grant Totals
	Total Match/In-Kind	**$ 225,599.00**		

Appendix I. CCSP Site Maps



Map above is site SE of Milnor; Map below is site S of Oakes



Appendix J. Wild Rice River Water Quality Data

Figure 1. 4 STORET Locations and USGS River Gauging Station

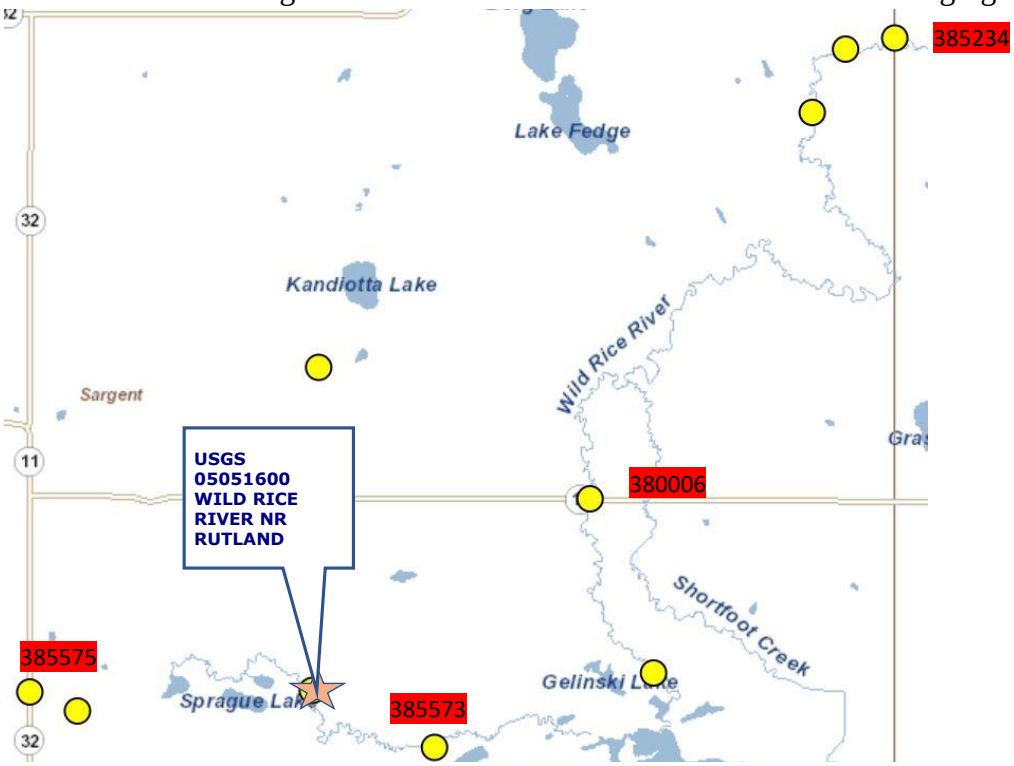


Figure 2. Flow Rate Vs. Total Nitrogen @ 385575 (Upstream)

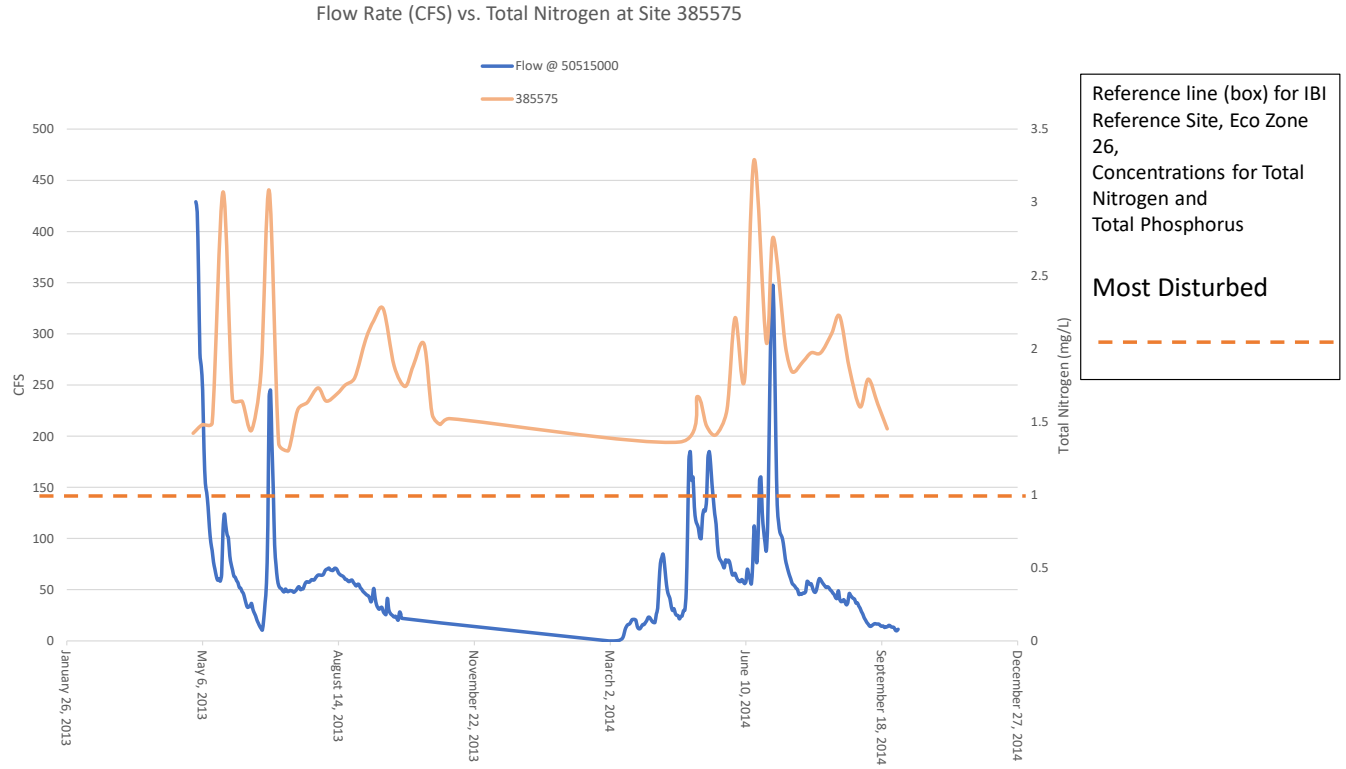


Figure 3. Flow Rate Vs. Total Nitrogen @ 385573 (Mid-stream)

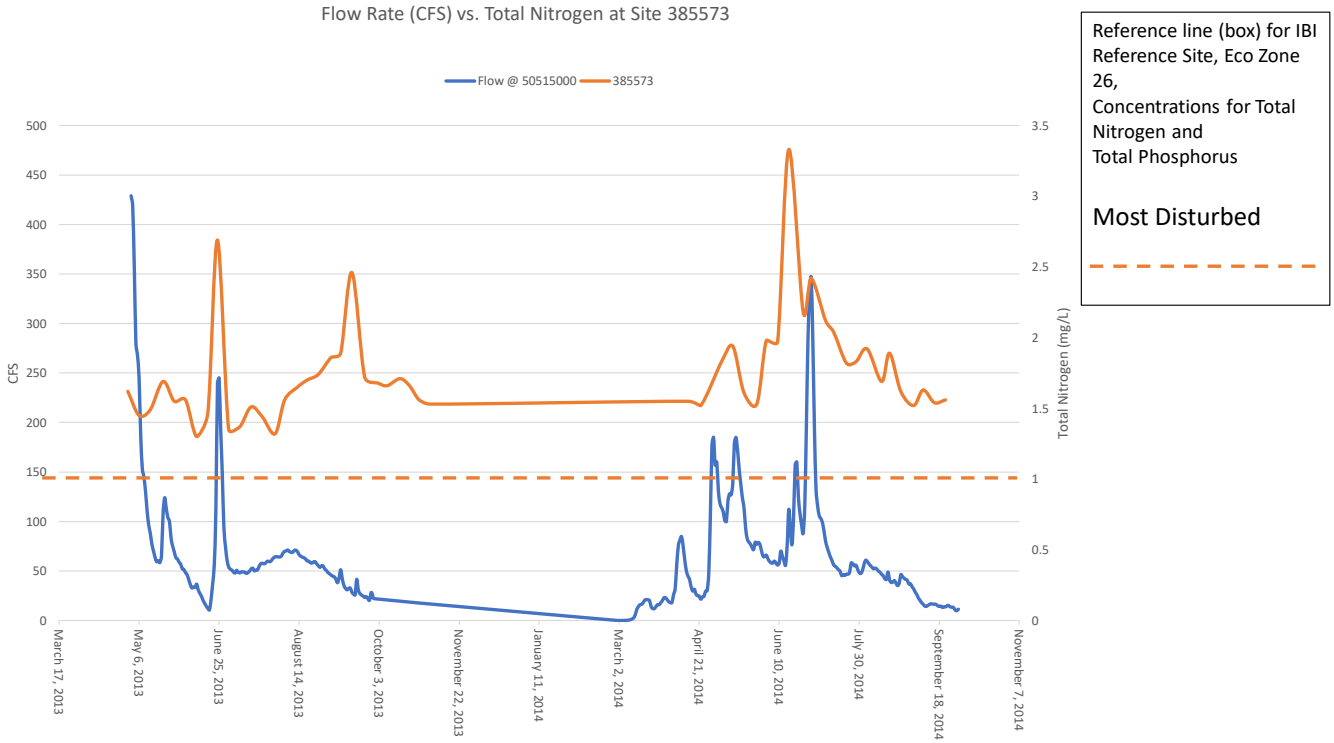


Figure 4. Flow Rate Vs. Total Nitrogen @ 380006 (Mid-stream)

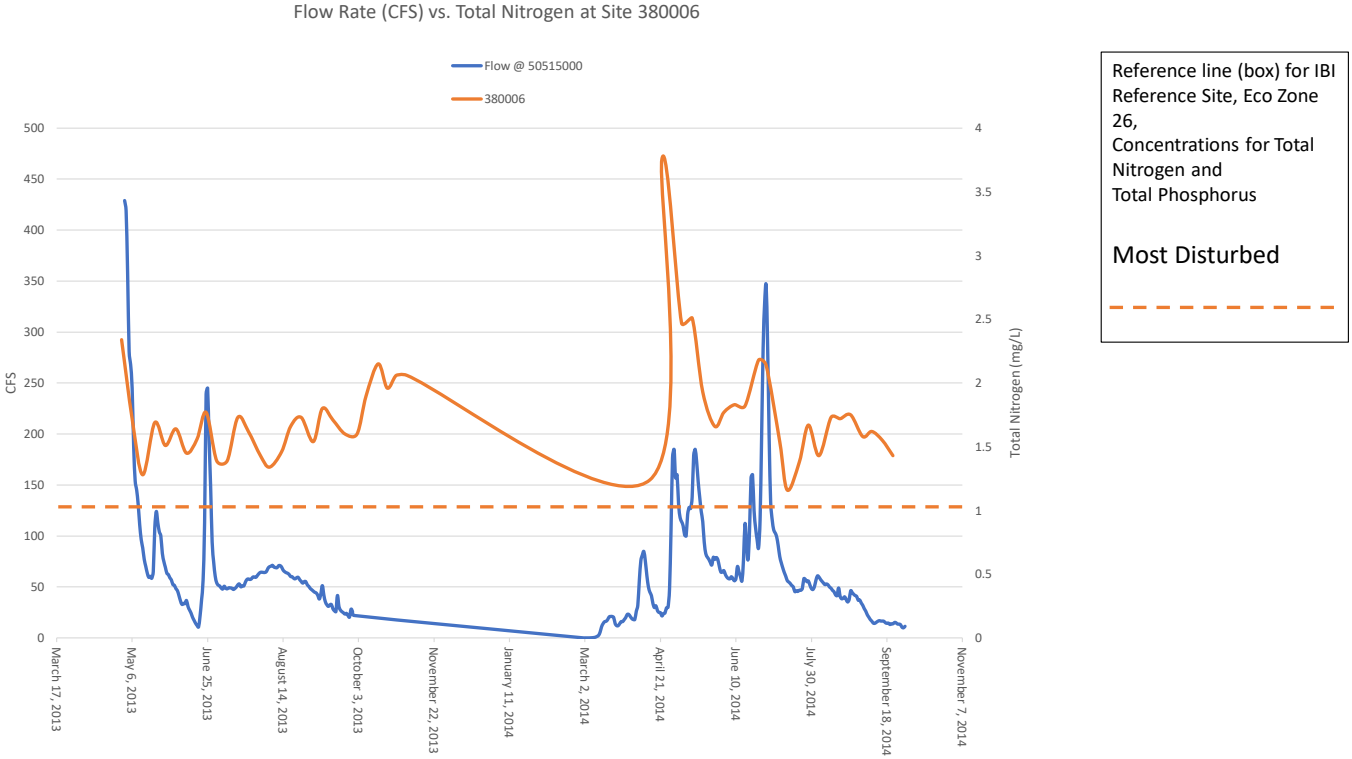


Figure 5. Flow Rate Vs. Total Nitrogen @ 385234 (Downstream)

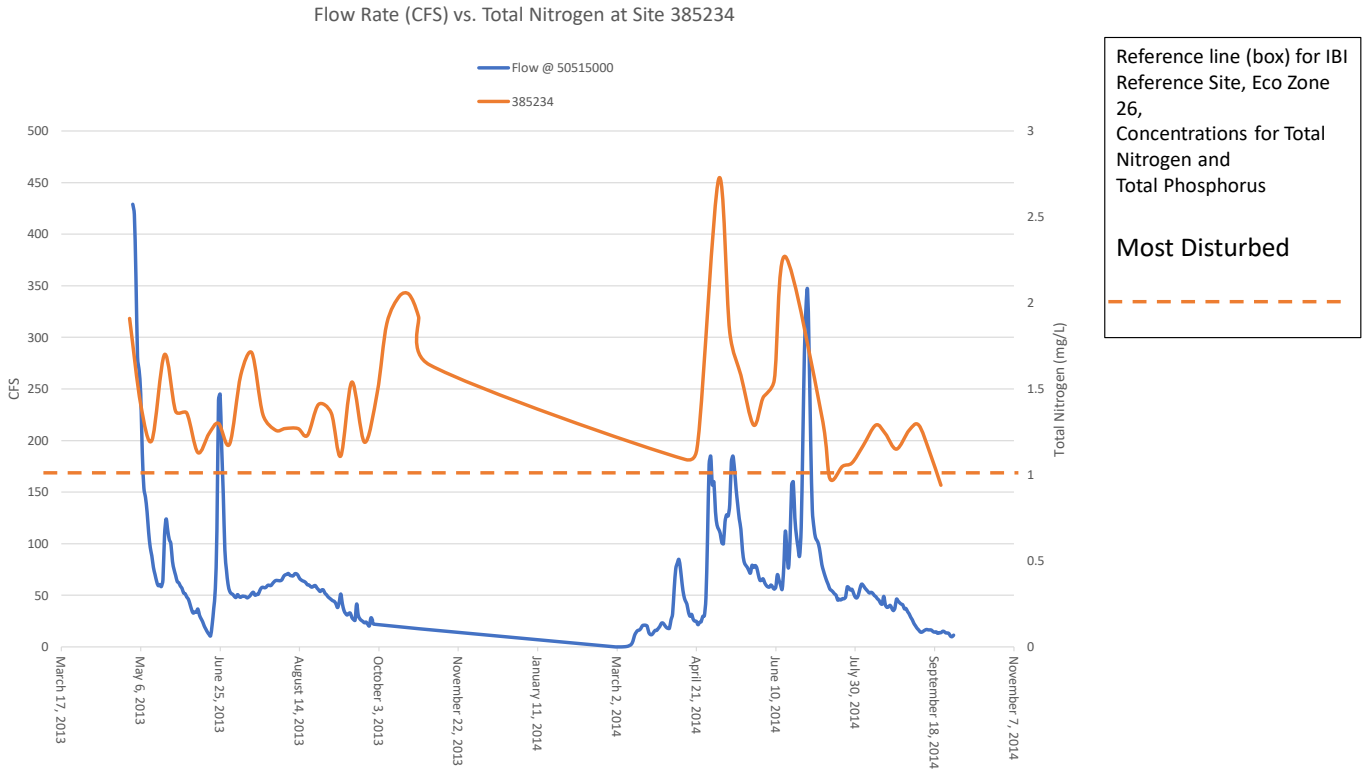


Figure 6. Flow Rate Vs. Total Phosphorus @ 385575 (Upstream)

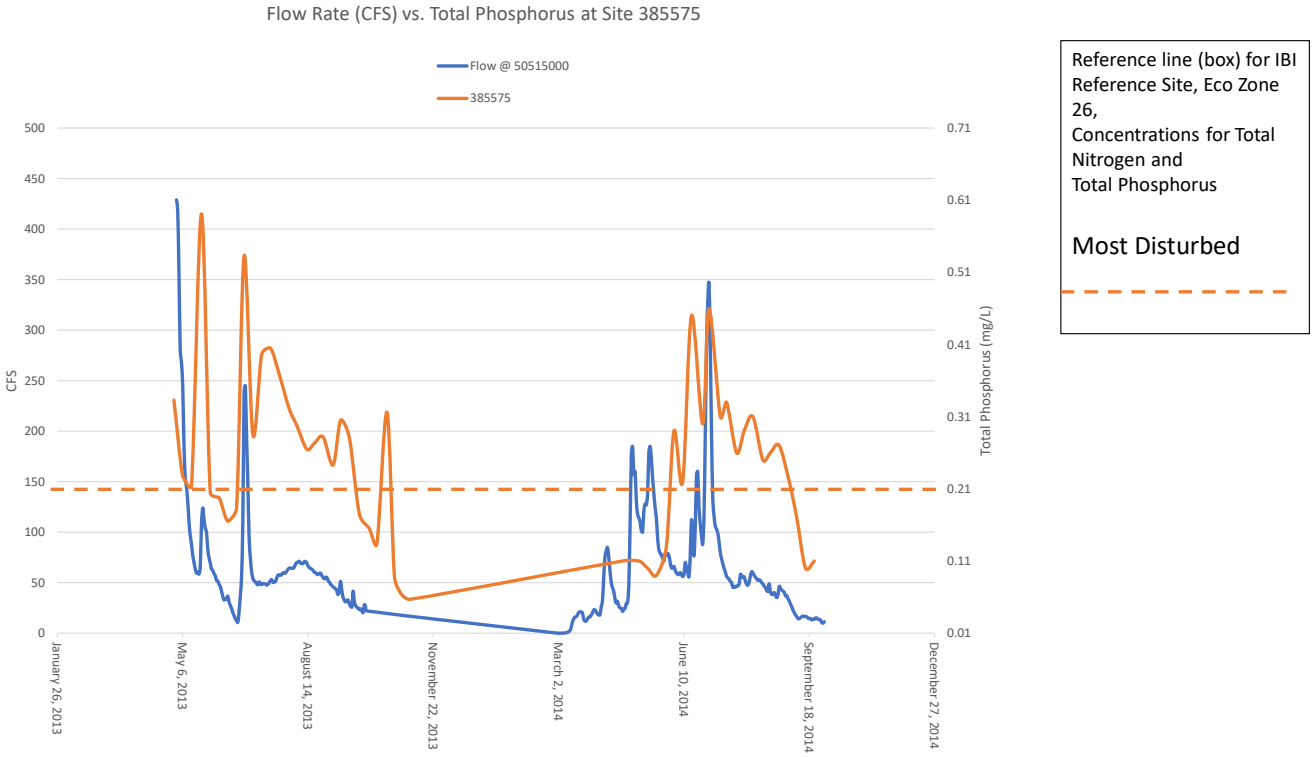


Figure 7. Flow Rate Vs. Total Phosphorus @ 385573 (Mid-stream)

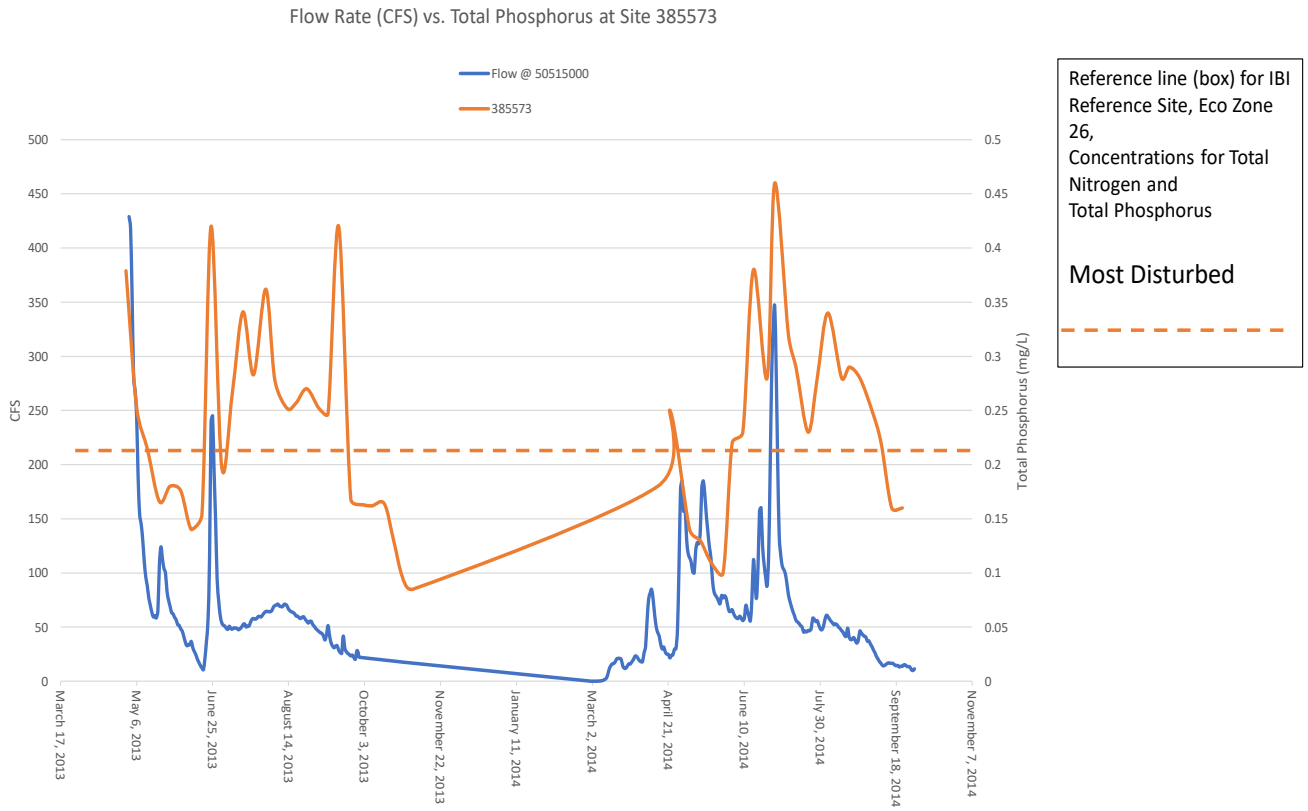


Figure 8. Flow Rate Vs. Total Phosphorus @ 380006 (Mid-stream)

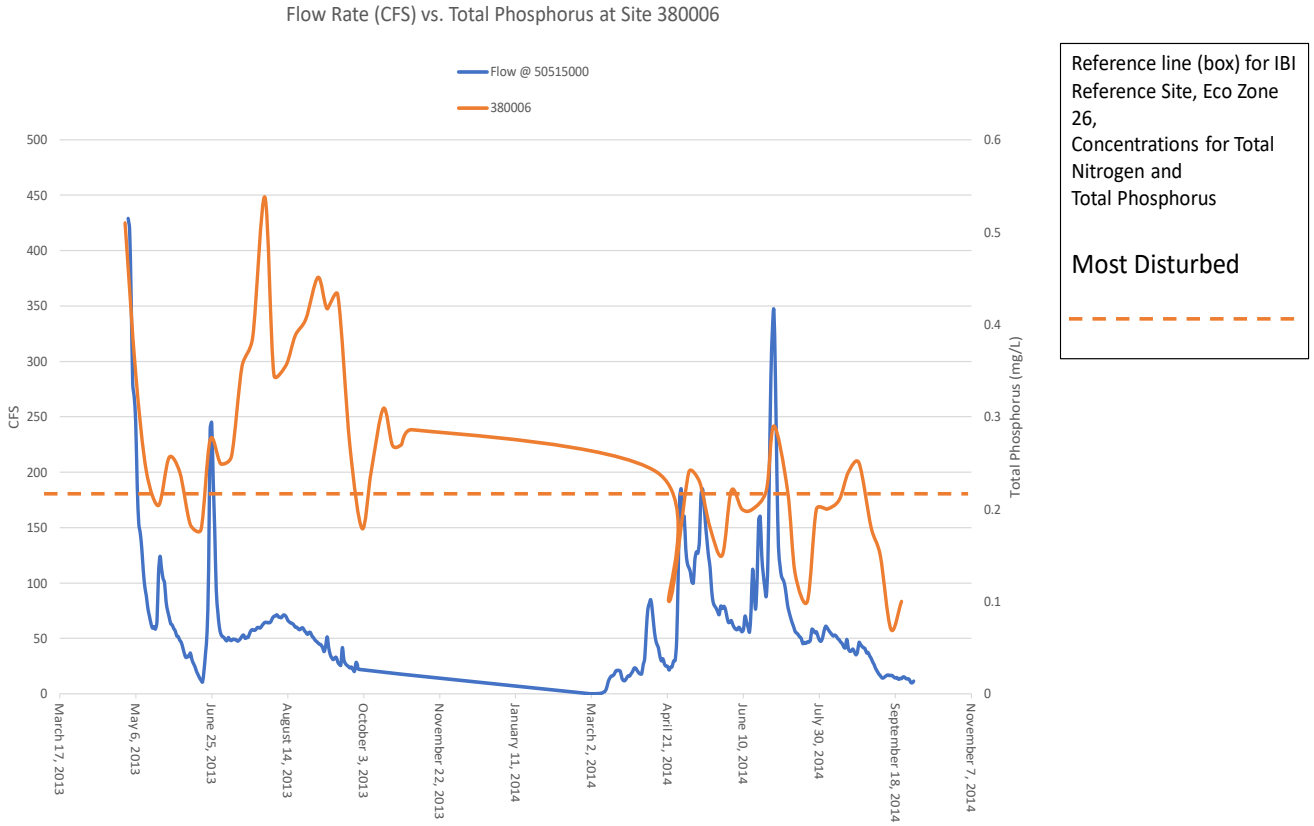
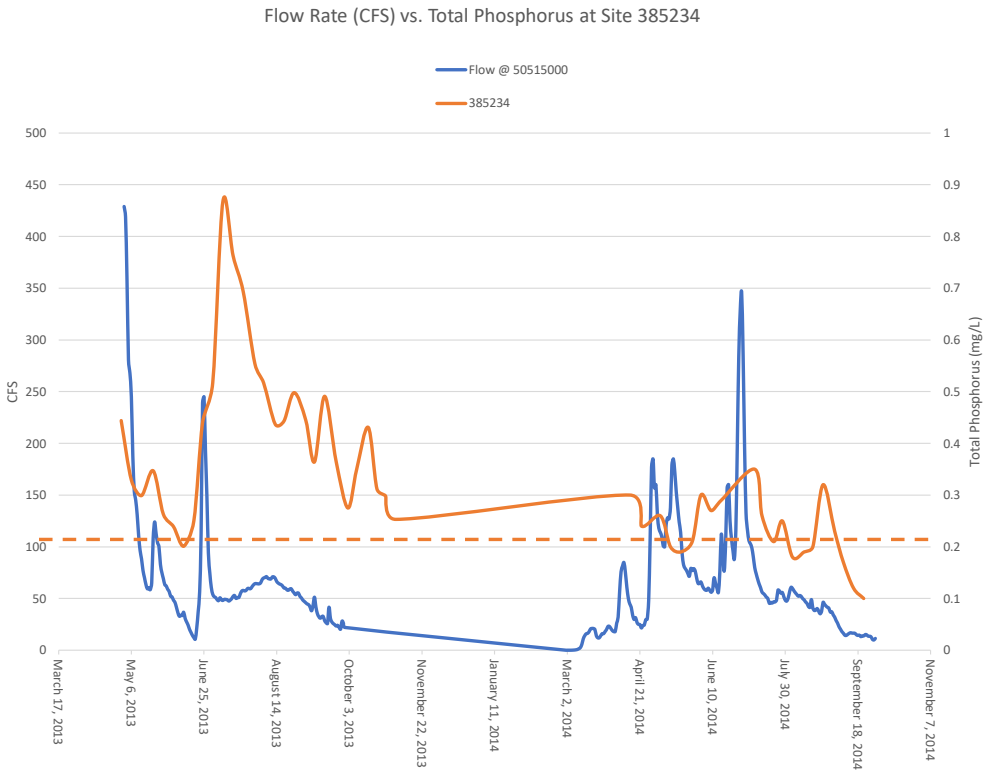


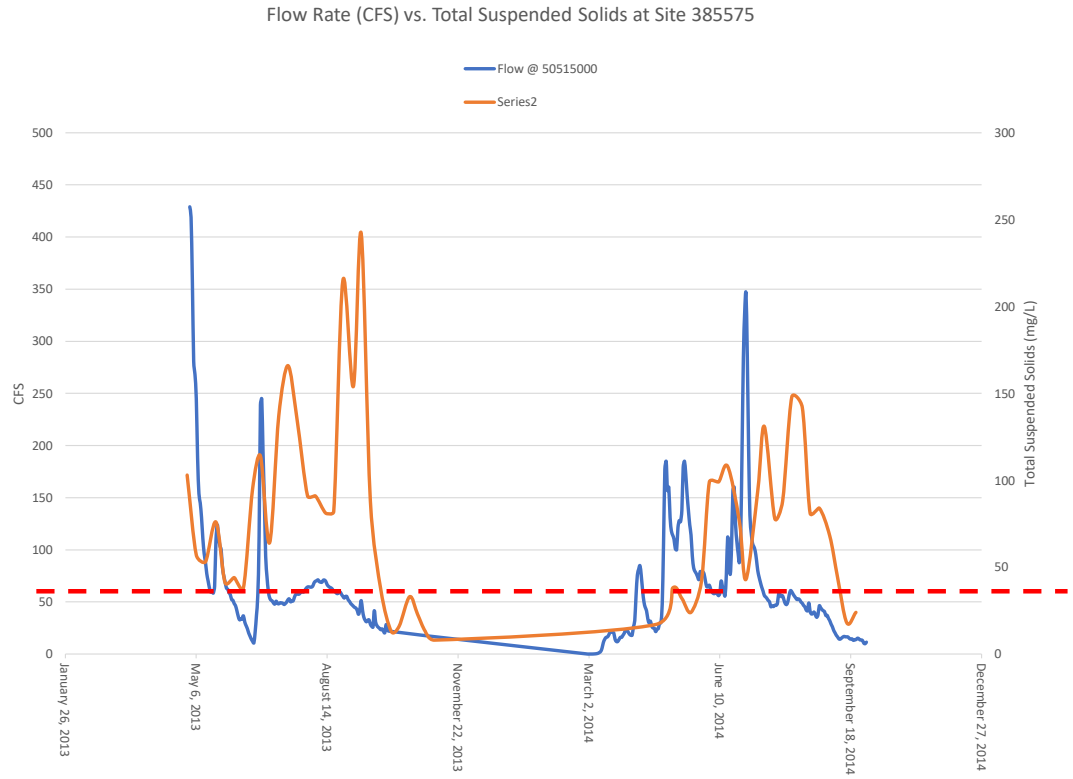
Figure 9. Flow Rate Vs. Total Phosphorus @ 385234 (Downstream)



Reference line (box) for IBI Reference Site, Eco Zone 26,
Concentrations for Total Nitrogen and
Total Phosphorus

Most Disturbed

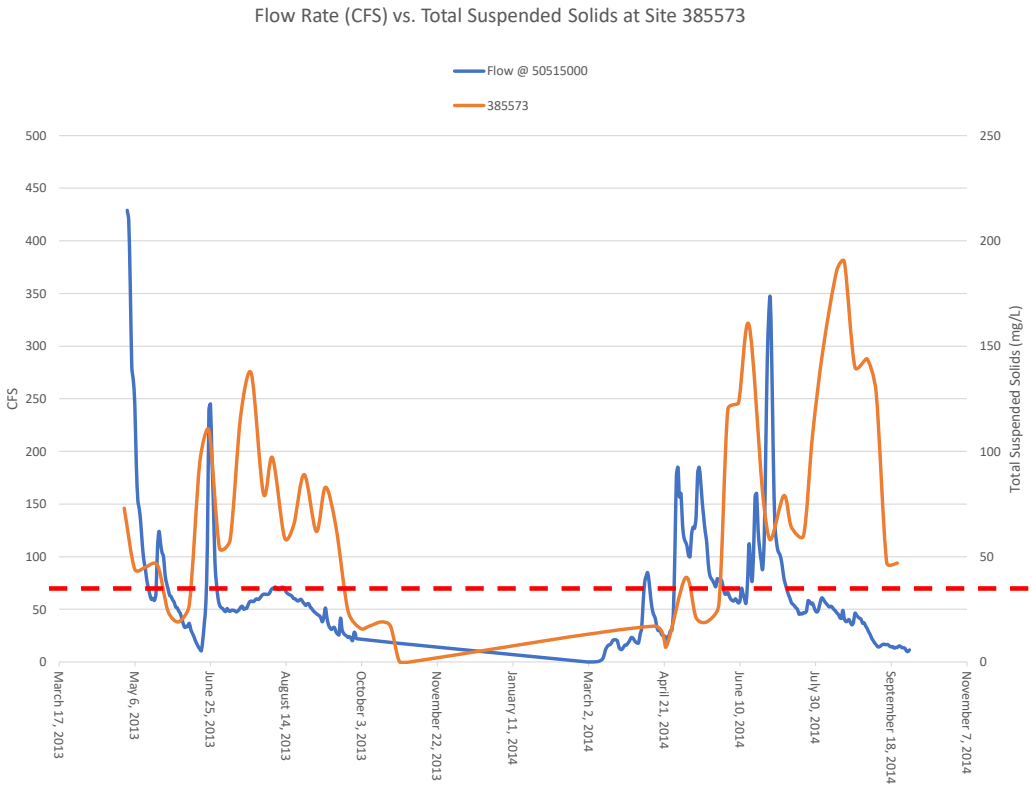
Figure 10. Flow Rate Vs. Total Suspended Solids @ 385575 (Upstream)



NDDEQ guidelines for Maximum amounts:

- TSS is set at 35 mg/L

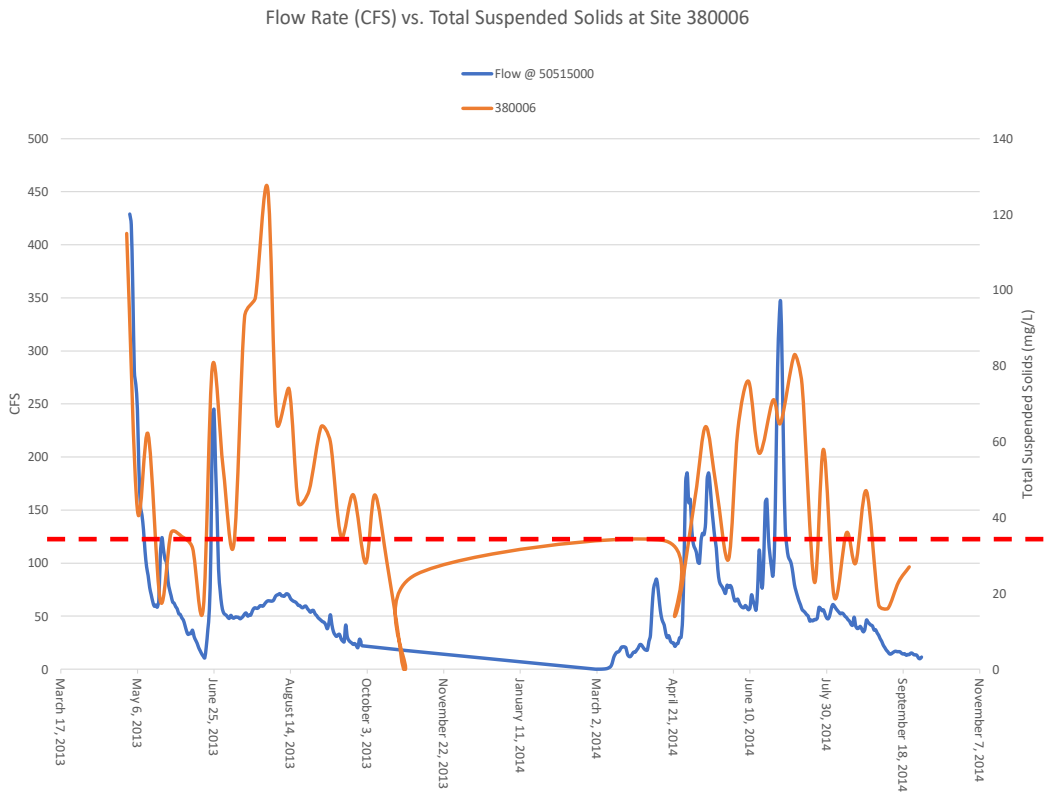
Figure 11. Flow Rate Vs. Total Suspended Solids @ 385573 (Mid-stream)



NDDEQ guidelines for Maximum amounts:

- TSS is set at 35 mg/L

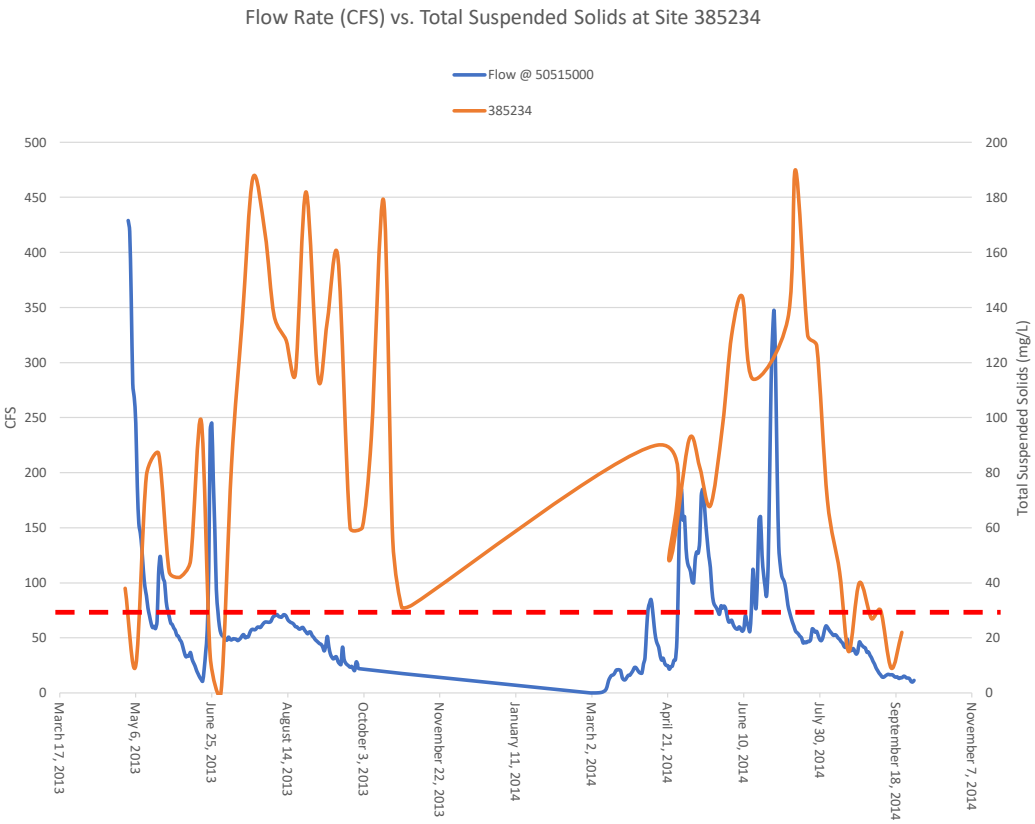
Figure 12. Flow Rate Vs. Total Suspended Solids @ 380006 (Mid-stream)



NDDEQ guidelines for Maximum amounts:

- TSS is set at 35 mg/L

Figure 13. Flow Rate Vs. Total Suspended Solids @ 385234 (Downstream)



NDDEQ guidelines for Maximum amounts:

- TSS is set at 35 mg/L