

MN Board of Soil & Water Resources

**Targeted Watershed
Demonstration Program**

Request for Interest

Detroit Lake HUC 12 Subwatershed

Upper Pelican River Watershed, Becker County, MN

Pelican River Watershed District

Contact: Tera Guetter, Administrator



1) Strength of watershed as candidate for this demonstration program

A. Why would the proposed watershed and its associated water resource be a good candidate for this demonstration program?

Located in the upper Pelican River Watershed in Becker County, lies the Detroit Lake “chain of lakes” watershed area, a recreational destination for residents of Northwest Minnesota and North Dakota. Land use changes, drainage, runoff from urban and agricultural areas, and climate fluctuations have affected the watershed area resulting in degraded water quality. Big Detroit Lake is considered a “borderline lake” for water quality, a mesotrophic lake approaching the condition of eutrophic which, when reached would be accompanied by further rapid deterioration as well as negatively impact the downstream chain of lakes (Sallie, Melissa). A Clean Water Partnership Diagnostic Study for Lake Sallie, a hyper-eutrophic lake, identified Detroit Lake and Lake St. Clair (TMDL impaired for phosphorus) as major contributors to Lake Sallie’s water quality problems. Improving Detroit Lake’s water quality is a critical factor for improving downstream Lake Sallie’s impaired water quality.

Over the past two decades, the Pelican River Watershed District has focused on the Detroit Lake watershed area conducting diagnostic studies, monitoring, and modelling to pinpoint the largest contributors of nutrients within the watershed and has identified the necessary practices and actions needed to achieve the long range water quality goals.

Starting at the top of the Pelican River watershed, the Natural Resource Conservation Service, Becker County Soil and Water Conservation District, and the District partnered with agricultural landowners over a ten year period to address a small, targeted 1.5 mile stream stretch for reduction of sediment and nutrients. By 2013, a riparian buffer and 25 practices were installed on the adjacent highly erodible farm land to hold water and nutrients/sediment back from entering the stream. These practices cumulatively reduced the annual soil and sediment loss by 185 and 150 tons respectively and also reduced annual phosphorus loads by 150-200 lbs. to obtain the Minnesota Pollution Control Agency (MPCA) 50% phosphorus reduction goal for downstream Floyd Lake. Within the City of Detroit Lakes industrial and urban area, the District constructed 10 storm water treatment basins and implemented Water Management Rules in 1997 requiring development projects to remove 50% phosphorus and 90% sediment from rainwater runoff for the 5-year; 24-hour rainfall event to further reduce sediment and phosphorus loading to Detroit Lake.

In addition to the agricultural and urban industrial targeted areas, multiple studies and monitoring data identified the upstream Rice Lake Wetland, a hydraulically altered 280 acre wetland, as the largest source of phosphorus within the watershed, contributing 3,000-4,000 lbs/year to the Pelican River. The Natural Resource Conservation Service (NRCS) Small Watershed Assessment and Plan recommended restoring the hydrology of Rice Lake Wetland as the most technically and financially feasible solution to reduce the high spring and summertime “pulsing” of high phosphorus loads.

By building on this progress, the targeted demonstration project will achieve the Minnesota Pollution Control Agency (MPCA) recommended water goal for reducing the largest phosphorus loading contribution to the watershed by 50% (1,500 – 2,000 lbs P/annually) and stem the deterioration of water quality in Detroit Lake, as well as, downstream recreational lakes (Sallie, Melissa). The Detroit Lake Watershed Nutrient Reduction project is an ideal candidate for the targeted watershed demonstration project with having clearly defined water quality improvement goals, identified nutrient reduction actions (utilizing intensive watershed monitoring and studies), and a well-defined implementation plan (over a decade of detailed planning) which can be completed in a four-year timeframe. Using local water priorities, the District, community members, and other local organizations & units of government are committed to demonstrate that targeted practices and actions can have a positive impact on water quality.

- All affected land acquired, under easement, city or state owned.
- Specific water quality improvement goals with 100% Landowner Support
- Completed CWP Diagnostic Study, HEC-RAS, GLEAMS, BATHTUB and FLUX Models confirming goals
- PL-566 Economic study identifying over \$13,700,000 in public benefits over project lifespan (100 years)
- Watershed Plan reviewed & approved by USDA Agricultural Research Service National Technical Center
- Primary structure plans complete with project permits drafted and ready for submittal
- Prescribed Best Management Practices (BMPs) implemented upstream in 2012-13
- Adjacent sub-watershed recently placed under permanent protection
- Detailed water quality and water chemistry data dating back to 1995
- Comprehensive annual monitoring strategy throughout the watershed
- Leverages over \$1,073,000 in existing local and federal investments
- History of implementing extensive restorations and BMPs in the watershed

b. Describe the significance of the water resource in terms of economic, recreational, fish and wildlife habitat and/or source water impact.

Detroit Lakes, the Becker County seat, is the economic development engine of northwest Minnesota. A regional summer and winter recreation destination, this area draws an average of 637,000 visitors each year, nearly 300,000 who visit specifically for fishing, boating, swimming, and other water recreation events and activities on Big and Little Detroit lakes. Tourism is one of Becker County’s chief industries, ranking fourth highest in gross tourism sales in the northwest region (\$72 M 2013, Explore MN) with Detroit Lakes being the primary destination (83%).

Big and Little Detroit Lakes are located wholly within the City of Detroit Lakes and are considered “flagship” lakes because of their location relative to the City of Detroit Lakes, their size, and related amenities. Detroit Lake is considered a diverse, productive, and valuable fishery

by MN DNR, nationally recognized as a top five fisheries for large muskellunge, and supporting healthy populations of walleye, largemouth bass, black crappie, bluegill, northern pike, lake sturgeon, and perch. A mile long city-owned beach and 4.8 acre park area on Detroit lake provide a public swimming beach, handicapped accessible fishing pier and launch areas for boats, paddleboards, and kayaks. Within the upstream Rice Lake wetland restoration project area also lies the MN DNR Frank Wildlife Management Area, a 309 acre recreational wetland and upland area open to hunting, trapping, and compatible wildlife uses. The WMA is managed to provide habitat for small mammals, furbearers, grassland species, and wetland species (mallards, blue-winged teal, bitterns, terns, and marsh wrens).

Increases in nuisance and severe algae blooms would likely deter visits from recreational users (anglers, swimmers, boaters), affect demand/valuation of waterfront property, and decline in tourism revenue. Big Detroit's further eutrophication will have significant negative economic and social consequences as documented in the USDA NRCS Upper Pelican River Watershed Assessment, which determined that a 1 foot decline in lake transparency levels would equate to \$11,500 loss in the assessed value of lakeshore property. With 390 Lakeshore parcels in the project area and the dominant taxation rate in the project area it could be argued that preservation or improvement of existing clarity levels yields (or protects) nearly \$5,850,000 in public revenue. Finally, no negative impacts to source water are anticipated, as the City of Detroit Lakes Drinking Water Supply Management Area (DWSMA) MN-00492 is listed as "not vulnerable".

c. Describe land use/land cover, hydrologic conditions, soil, topography, and ownership patterns within the watershed. No more than two maps that represent this information may be submitted.

The Detroit Lake- Rice Lake Wetland targeted watershed area is 24,511 acres lies within the upper Pelican River watershed, located in the Otter Tail River Water basin, a region with many lakes and wetlands, fertile soils and deciduous forests.

Land use/cover. The area is located in the North Central Hardwood Forest region, however it lies astride an ecotone transition between the northern pine forest (10 miles east) and the prairie (15 miles west). At the time of European immigrant settlement, historic land cover was greatly modified with intensive clearing of forests (oak, maple, basswood, aspen, birch, poplar) and draining of wetlands for agricultural production and timber. Most of the land use is agricultural in the upper watershed area and decreases from northwest to southeast. Though this area contains a portion of the City of Detroit Lakes, more than 90% is in forest, cropland, wetland/lakes, or pasture. About 5% of the land area is impervious, but near Detroit Lake itself, that figure is closer to 15%.

Hydrologic conditions. The Pelican River connects a chain of recreational lakes (North Floyd, Big Floyd, Little Floyd, Rice, Little Detroit and Big Detroit Lakes, Muskrat, Sallie, Melissa and continues to connect numerous lakes through Ottertail County to the Otter Tail River eventually draining to the Red River of the North. The Detroit Lake sub-watershed area includes the immediate shoreline drainage areas and portions of the Pelican River and its tributaries which flow into Big Detroit. Much of this drainage is through the hydraulically modified Upper Pelican River (County Ditch 13 – 1919), passing through drained or partially drained wetlands and the Rice Lake Wetland complex before discharging into Detroit Lake. Flows from the Upper Floyd Lake/Campbell Creek area and private ditches are also connected to the system. Big Detroit receives some surface discharges via Sucker Creek (designated trout stream) and from another small wetland along the eastern shore. Groundwater generally moves through the watershed in a south-southwestern fashion, with wetlands and lakes acting as groundwater recharge areas along the way.

Soils. The area contains a mixture of sandy, gravelly soils; hydric soils cover almost one-third of the land area. The watershed's upland soils range from medium textured, sandy-loams, to sandy soils developed on the deposits of glacial moraine and outwash. The soils of the morainic areas are medium textured, sandy soils. The soils formed in the outwash area are darker, and medium to coarse in texture. Ponding and waterlogging are characteristic of the organic soils occupying low-lying areas throughout the watershed.

Topography. Topography in the upper end of the watershed is characterized by low, irregular, gentle undulating slopes that have a total relief of about 50 feet, giving way to a long, relatively flat "valley" at Campbell Creek's confluence with the Floyd chain of lakes. As the Pelican River leaves Big Floyd Lake, relief drops only 3 feet before reaching the historic outlet of Rice Lake Wetland and continues towards the City of Detroit Lakes through the lowest portions of a series of broad, undulating hills surrounding Big and Little Detroit Lakes.

Ownership patterns. While much of the watershed is rural with scattered homesteads there is a major urban center within the watershed, the City of Detroit Lakes. Approximately 80% of land interests in the watershed are small, privately held tracts, with the remainder being part of Local, State or Federal interests. Much of Detroit Lake is densely developed, with 80% of its shoreline extensively modified. Originally ringed with summer homes and resorts catering to summer visitors, nearly all the residences are used for year-round purposes and resorts converted to high density residential or commercial purposes.

d. Identify the specific comprehensive local water management plan, TMDL study and implementation plan, or Clean Water Partnership diagnostic study and implementation plan in which this watershed is identified.

- **Pelican River Watershed District Revised Management Plan (2005-2016).** 11.2 Detroit-Rice Lake Water Quality Management Area Plan. Pg 100, calls for the management of the Upper Pelican River watershed particularly Rice Lake Wetland area and its associated wetlands to reduce bioavailable external phosphorus loads to Big Detroit.
- **Detroit Lake Clean Water Partnership (CWP) Diagnostic Study and Implementation Plan.** Pelican River Watershed District and Minnesota Pollution Control Agency, Pg 4 recommends a reduction in episodes of high nutrient loading from upstream areas (urban and agriculture) and from the Rice Lake ditched wetland complex in particular.

- **Upper Pelican River Watershed Plan and Environmental Assessment, MN USDA NRCS, March 2007.** Watershed Problems and Opportunities, Pg 11 recognizes degrading phosphorus levels in the Upper Pelican River Watershed contributing to Detroit Lakes; Recommended Plan, Pg 51 prescribes Campbell Creek BMPs and Restoration of Rice Lake Wetland.
- **Becker County Local Water Management Plan.** Surface Water Quality, Pp 8-11; Goals, Objectives and Action Items, Pg 21 calls for reducing nutrients delivered to Detroit Lake; Storm water Management, Pg 22 gives high priority consideration to BMP installation in Upper Pelican and Campbell Creek sub basins.

e. Define the water quality concern to be addressed, and the needed reduction in pollutant loadings. Describe how proposed activities address action items in the plan listed above, address water quality concern in the identified watershed and will lead to significant pollutant reductions specifically identifying the percentage of overall pollution reduction goals this project is estimated to accomplish with the four year timeframe.

Back in the 1980's, residents and visitors to Big and Little Detroit lakes observed reduced water clarity, algal blooms and excessive aquatic vegetation growth. Concerned by these observations, in 1995 the Pelican River Watershed District (PRWD) began a "sequential" monitoring program to identify and quantify nutrient loading areas.

A Minnesota Pollution Control Agency (MPCA) Phase I Clean Water Partnership (CWP) Diagnostic Study determined portions of Big Detroit Lake's northern watershed area has having exceptionally high phosphorus concentrations and identified three targeted nutrient reduction areas within the Detroit Lake HUC 12 watershed area to reduce the major phosphorus contributions to Big Detroit Lake: (1) Detroit Lakes Urban Industrial Park area, (2) Floyd Lake/Campbell Creek area, and (3) the Rice Lake Wetland Complex.

A number of practices were implemented such as the installation of city water and sewer around the lakes (1990's), construction of 10 storm water detention basins in the upstream urban industrial park (1990's), and implementation of the Pelican River Watershed District's Water Management Rules in 1997, requiring storm water management plans for residential and commercial development projects. The District's Rules require nutrient removal rates for phosphorus of 50% and total suspended solids of 90% for the five-year, 24 hr. rainfall event. Little Detroit Lake water quality improved, however, Big Detroit water quality continued to decline.

To further address the other CWP diagnostic study findings, a NRCS Small Watershed Assistance team conducted an in-depth study (2003-2007) analyzing various options to reduce the phosphorus loadings within the watershed area. The findings further refined and identified agricultural BMPs for a 1.5 mile section of Campbell Creek to reduce long term phosphorus loading to Floyd lake by 50% and also identified restoration of the ditched Rice Lake Wetland as the most technically feasible solution to reduce the high spring and summertime phosphorus "pulsing" (3,000 – 4,000 lbs/yr) to Detroit Lake by 40-60%.

Towards achieving the nutrient reduction goals for the Campbell Creek agricultural area, the Natural Resource Conservation Service, Becker County Soil and Water Conservation District, and the District partnered with agricultural landowners over a ten year period to address a small, targeted 1.5 mile stream stretch for reduction of sediment and nutrients. By 2013, a riparian buffer and 25 practices were installed on the adjacent highly erodible farm land to hold water and nutrients/sediment back from entering the stream. These practices cumulatively reduced the annual soil and sediment loss by 185 and 150 tons respectively and also reduced annual phosphorus loads by 150-200 lbs to obtain the MPCA 50% phosphorus reduction goal for downstream Floyd Lake.

The NRCS Watershed Assessment and Implementation Plan involved extensive monitoring and study of the wetland and its hydrology. The assessment reaffirmed the Rice Lake wetland is the primary source and contributor of "legacy" phosphorus loading to Big Detroit. The spring runoff and the July/August periods accounts for about two-thirds of these loadings – the worst time to be adding phosphorus to a recreational lake. It concluded causes of the episodic phosphorus discharges were heavy rainfall runoff events caused flows to sluice through the peat bogs, thereby picking up and carrying large quantities of phosphorus enriched organic sediments; and also through chemical reactions (iron/P release) during periods of low oxygen availability which cause wetland peat sediments to release a high fraction of soluble, reactive phosphorus to the water column. Both processes result in excessive downstream discharges of phosphorus averaging between 3,000-4000 lbs/year and sediments averaging 100 tons per year. The water quality goal is to reduce by 40-60% the spring and summer episodes of reactive phosphorus release by increasing and stabilizing the water level to increase water residence time and immobilize organic/peat soil phosphorus to prevent reactive phosphorus from leaching and releasing downstream to Big Detroit Lake.

In addition to these studies, a MPCA Clean Water Partnership Diagnostic Study for Lake Sallie, a downstream hyper-eutrophic lake, identified Detroit Lake and Lake St. Clair (TMDL impaired for phosphorus) as major upstream contributors to Lake Sallie's water quality problems. Improving Detroit Lake's water quality to in-lake phosphorus concentrations of 22ppb by reducing the high phosphorus loads from the Rice Lake Wetland was identified in the study as a critical factor for improving Lake Sallie's impaired water quality.

Restoration of Rice Lake wetland and its associated wetlands fits the management goals of multiple entities and the above mentioned plans to reduce bioavailable external phosphorus loads to the Detroit Lake and downstream recreational waterbodies.

f. Describe how the resource of concern aligns with the at least one of the Nonpoint Priority Funding Plan statewide priorities referenced in the "About the program" section of page 1 of this RFI.

The MN DNR's recently published work examining phosphorus sensitivity and establishing Lakes of Phosphorus Sensitivity Significance was used to evaluate the significance of this project in relation to statewide priorities. This work formulated a phosphorus sensitivity significance index ranking lakes in specific relation to Minnesota's Nonpoint Priority Funding Plan's (NPPF) policy objective of focusing on

“high quality, unimpaired lakes at greatest risk of becoming impaired” and “Restoring those waters closest to meeting state water quality standards”. Lakes have been ranked and grouped based on phosphorus sensitivity, the significance of that sensitivity and the presence of any negative trends in water clarity, then assigned to one of three priority classes (high, higher, or highest). Of the 2,717 Lakes assessed across Minnesota, Detroit Lake is clearly nearing a tipping point and was ranked as the 253rd most sensitive, falling in the top 10% of evaluated lakes and the highest priority classification for phosphorus reduction efforts. Further displaying the need for phosphorus reduction in Detroit Lake, this analysis puts downstream lakes Mellissa and Sallie in the 23rd percentile of phosphorus sensitivity, and the higher category of State-wide phosphorus reduction strategies, ranking 710 and 728 respectively. By cutting average phosphorus loading by the order of 22 ppb this project will stem further degradation and significantly reduce the likelihood of impairments in Detroit Lake, while subsequently achieving key load reductions to two downstream waterbodies approaching their annual nutrient thresholds.

g. Provide one map that outlines the proposed watershed, monitoring locations, and all jurisdictional boundaries.

2) Extent of water quality and quantity monitoring

a. Describe the extent to which water quality and quantity monitoring has occurred to date in the proposed watershed.

As part of its annual monitoring plan The Pelican River Watershed District (PRWD) monitors nutrients and other parameters throughout the watershed. In-lake water quality data and tributary data are available since 1995, as collected and reported into EQuis by the PRWD (TP, OP, TSS, DO, Temp, pH). In addition, University of MN Graduate studies were conducted to study the Rice Lake Wetland phosphorus pulsing phenomena and contributing groundwater gradients from 2003-06, and wetland experts from the USDA’s Agricultural Research Service extensively monitored and studies the Rice Lake complex from 2006-2007.

b. Include a table that details the monitoring location(s) along with the year(s), month(s), and parameters monitored.

Year (s)	Parameters	Lake or River Station ID
1995-2015 (May – October)	TP, OP, Chl, Temp, DO, pH, Cond, Secchi	Sands, North Floyd, Big Floyd, Little Floyd, Big Detroit, Little Detroit, Curfman, Sallie
1995-2015 (May – November)	Grab samples - TP, OP, TSS; Gage/Elevation Flow Velocity (CC1, CC2, CC2A, PR2, PR2A, PR4, PR6);	CC1, CC2, CC2A, PRO, PR1, PR2, PR2A, PR3, PR4, PR5, PR6, PR7, PR8

c. Describe any plans to monitor this watershed in the future.

With 25 monitoring stations in the targeted watershed PRWD is able to measure monthly and annual water quality parameters and quantify pollutant load reductions post implementation. The District monitors these and twelve additional lake and stream sites on a regular basis, placing particular emphasis on tracking phosphorus levels and loads. In lake and stream monitoring will continue through the project’s lifespan as part of the District’s Annual Water Quality Monitoring Plan. Annual analysis of data will be accompanied by evaluation of the data collection system. Specifics on continued monitoring can be found in Pelican River Watershed District Revised Management Plan (2005-2016) <http://www.prwd.org/about-prwd/revised-mgt-plan/> on Page 80, as well as in their annual monitoring plan.

3) Local knowledge of pollution sources and pathways within the watershed

a. Describe the breadth of the knowledge your organization has about the pollution sources and pathways in the watershed.

Over the past 30 years, the Pelican River Watershed District and its partners have gained a thorough understanding of pollution sources and pathways through sequential intensive watershed monitoring and numerous studies and assessments including: MPCA Clean Water Partnership Diagnostic Studies and Implementation Plans for Detroit, Sallie and Pearl lakes; City of Detroit Lakes Storm water Management Plan; NRCS Small Watershed Assessment and Implementation Plan for the Upper Pelican River Watershed; and Pelican River Watershed District Campbell Creek Plan. The NRCS Small Watershed Assessment and Implementation Plan included extensive Rice Lake Wetland assessment work conducted by the District, USDA-NRCS, USDA-ARS, and the University of Minnesota which included including soil boring analysis, ditch and wetland pore water analysis, enhanced flow monitoring and groundwater flow analysis. In addition to extensive field and laboratory analysis, hydraulic engineers constructed and calibrated a HEC-RAS hydrologic model to use in conjunction with nutrient concentration data to simulate total loadings throughout the watershed. The continuous model used daily runoff values from the GLEAMS water quality model to route hydrographs and nutrient loads through the hydrologic system to simulate runoff conditions for a 40 year period as well as 2, 10, and 100 year storm events.

b. Describe the methods and results of inventory and source targeting done to date, or that are in progress, to identify the most critical pollution sources or risks within the watershed that are responsible for causing impairments or threats to the surface water quality.

The Pelican River Watershed District has focused on the Detroit Lake watershed area by conducting diagnostic studies, long term sequential monitoring, and data modeling to pinpoint the most critical sources of phosphorus and sediments that are causing declining water quality: (1) the City of Detroit Lakes urban industrial area, (2) Campbell Creek agricultural area, and (3) the Rice Lake Wetland. The District has identified the necessary practices and actions needed within these areas to achieve the long range water quality goals for the watershed area (see above sections for additional information).

4) Landowner interest in the watershed

a. Describe the known level of landowner/occupier interest and willingness to participate in implementing actions.

Agricultural landowners in the area have a visible history of adopting systematic approaches to resource management on their farms, converting critical areas into perennial vegetation, and placing marginal lands into permanent protection. In the Campbell Creek Nutrient

Reduction area, the NRCS, Becker SWCD, and PRWD experienced 100% landowner participation in implementing the prescribed best management practices upstream of Floyd Lakes, installing water and sediment control basins, filter strips, riparian buffers and wetland restorations.

Using the citizen’s advisory committee (CAC) process, the District and the NRCS have worked extensively over the last ten years to inform each landowner of the Detroit Lake watershed nutrient problems, reduction goals, and the land practices required to achieve these goals. Through the CAC meetings, the District was able address all landowner concerns, purchase necessary property and secure easements where needed to ensure control and offer due compensation for every parcel affected by land practices, with 100% landowner support.

Community support is high as well, with a progressive coalition of lake associations and active residents and visitors aware of their vested interest in the protection of the Detroit Chain of lakes. The City of Detroit Lakes is a key active and willing partner in our targeted efforts, donating land and granting flowage rights for the project.

b. What evidence supports the conclusion?

- Local landowners that have voluntarily placed over 5,310 acres of wetlands in permanent protection
- 100% operator participation in targeted & prescribed upstream BMP implementation (Campbell Creek)
- Adjacent sub-basin recently placed in permanent protection (Sucker Creek Preserve) by the City of DL.
- 40 of the 43 required parcels acquired under flowage easement, fee tile, or City/State owned; 3 parcels under options for easements totally 1,250 acres of land.
- Conveyance by agreement granted on State and City owned Lands
- Annual reports documenting voluntary implementation of over 1200 BMPs in the last decade
- A multitude of lakeshore residents implementing native shore land buffers
- Numerous local investments in community supported storm water retrofit projects

5) Financial and technical resources available, local expertise, and project budget

a. Describe the expected financial and technical resources available to the proposed watershed (local, state, and federal) and the relevant experience within the watershed area to successfully demonstrate a significant reduction in water pollution.

Federal (NRCS WRP & Small Watershed group), State (MnDNR, MPCA, BWSR), Local (Pelican River Watershed District, City of Detroit Lakes, Detroit Township), and landowners have already invested over \$ 4,000,000 for studies, monitoring, conservation land practices, flowage easements, and project/engineering plans within the Detroit watershed area.

Financial Resources and Responsibilities: The Pelican River Watershed District has authority to levy taxes, the ability to financially provide the required 25% funding match to the targeted watershed program funding, ability to obtain permits, land rights and easements, and power of eminent domain. The District will coordinate or lead public participation, and has a strong commitment for funding, installing, operating, and maintaining for the design lifespan the targeted land practices.

Technical Resources: The District and Natural Resource Conservation Service staff has experience in planning and implementing conservation projects including preliminary engineering, construction inspection, and as-built designs for conservation land practices and storm water management projects. Wenck Associates is the District’s consulting engineering firm. Mn DNR, MPCA, BWSR staff will also be consulted on the project.

b. Describe any additional technical resources that would be needed locally to implement this project.

The District will use the NRCS Small Watershed technical engineering staff and hire a consulting engineering firm as needed for project design modifications and construction oversight.

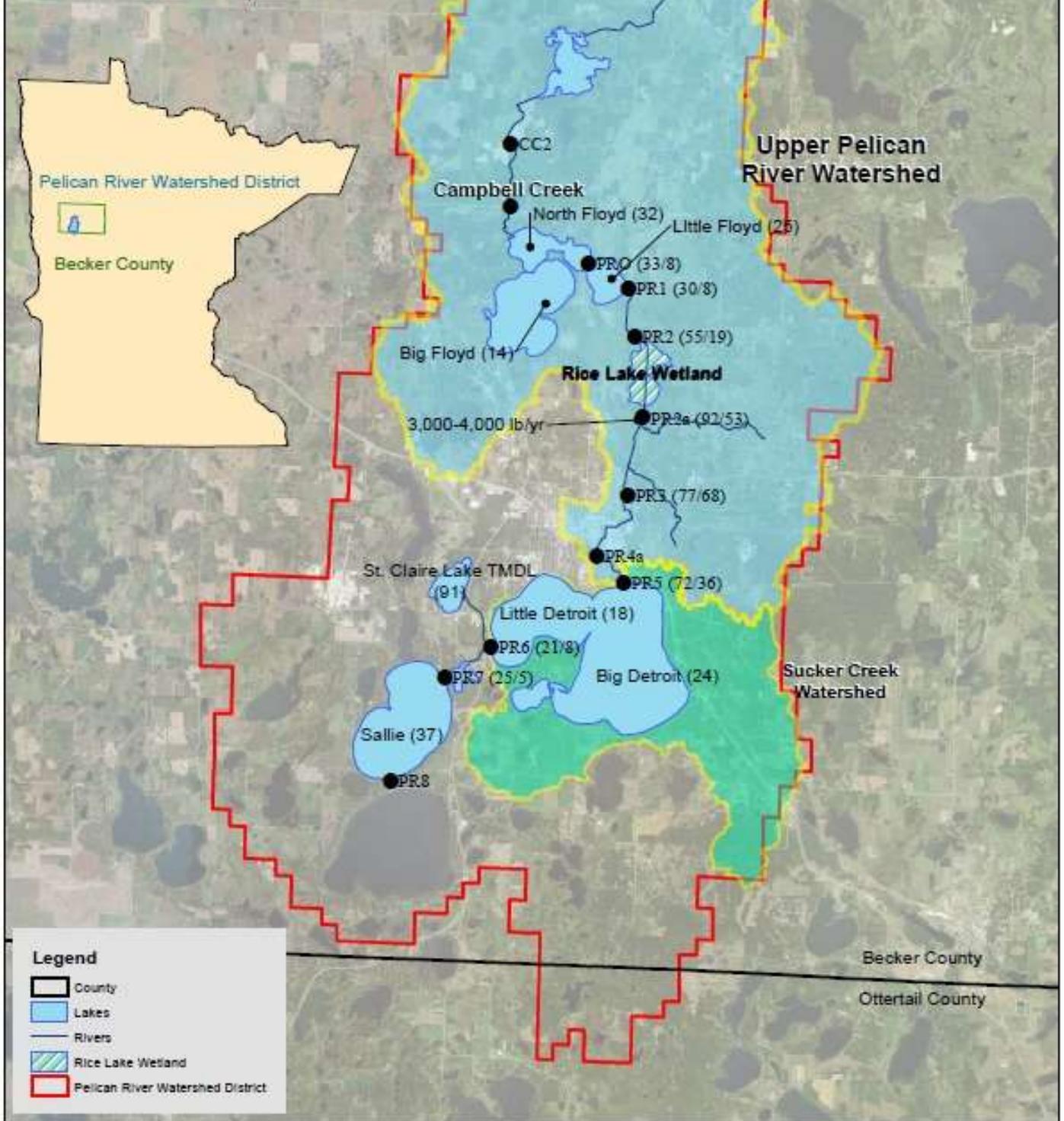
c. Include an overall budget for the requested Clean Water Funds. Please indicate the estimated cost for administration, project development, technical and engineering, and construction costs

TOTAL PROJECT BUDGET:	CONSTRUCTION	LAND RIGHTS	ENGINEERING/TECHNICAL	ADMINISTRATION
	\$ 1,700,000	\$1,500,000	\$300,000	\$40,000

FUNDING SUMMARY	
Total Overall Budget	\$3,540,000
Cash Match	\$540,000
Remaining Costs	\$1,500,000
Easements & Acquisition Complete	\$1,500,000
CWF Request	\$1,500,000

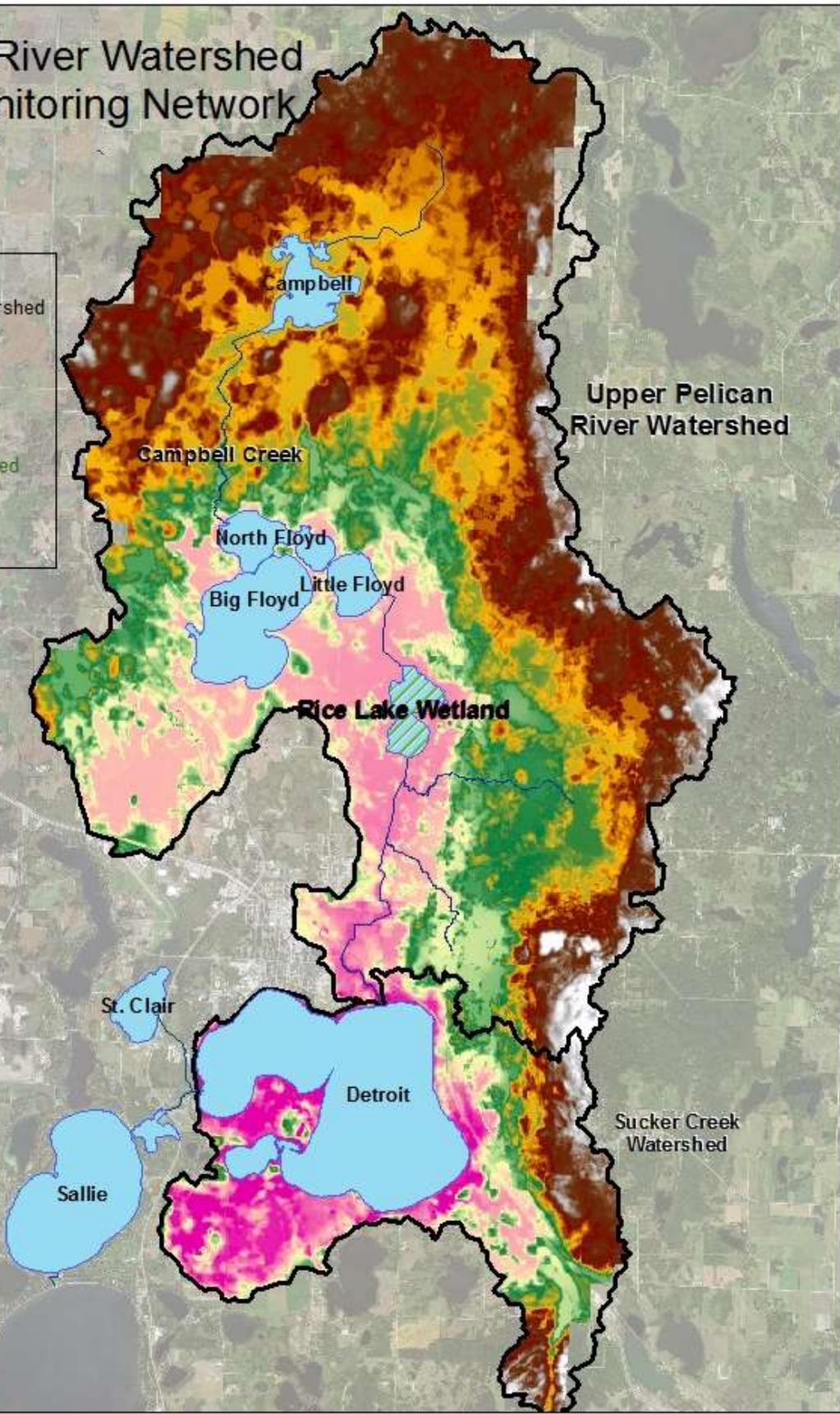
Pelican River Watershed District Sequential Monitoring Network 1995-2015 Annual Average Phosphorus Concentrations and Loads

(TP/OP) or (TP)
Concentrations in ppb



Upper Pelican River Watershed Sequential Monitoring Network

2011 National Land
Cover Data



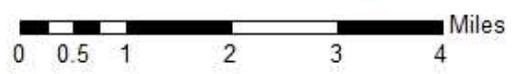
Legend

- Lakes
- Rice Lake Wetland
- Rivers

Elevation (NAVD 88)

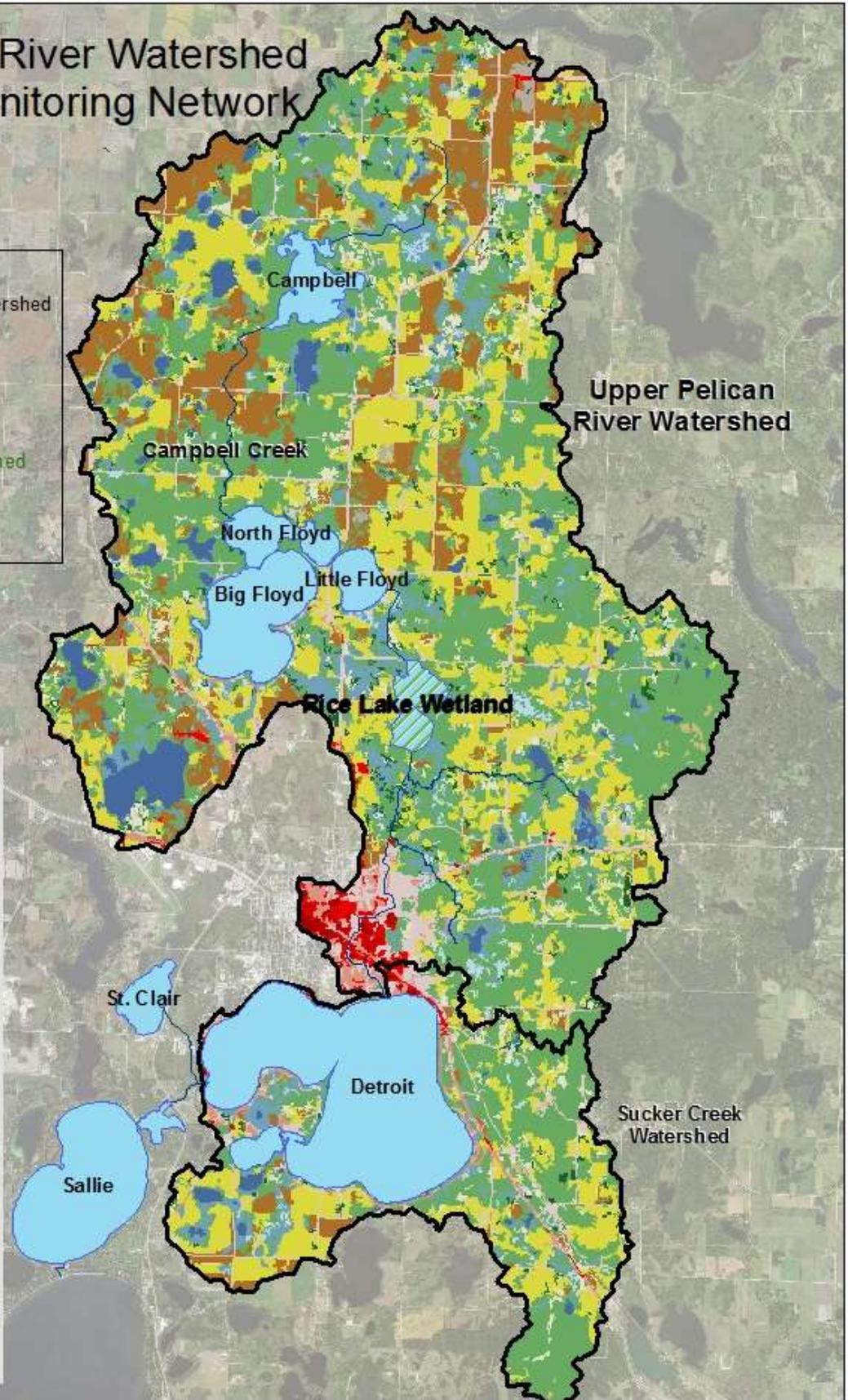
Value

- 1625
- 1335



Upper Pelican River Watershed Sequential Monitoring Network

2011 National Land
Cover Data



Legend

- Lakes
- Rice Lake Wetland
- Rivers

Land Cover

- Woody Wetlands
- Unclassified
- Shrub/Scrub
- Open Water
- Mixed Forest
- Herbaceous
- Hay/Pasture
- Evergreen Forest
- Emergent Herbaceous Wetlands
- Developed, Open Space
- Developed, Medium Intensity
- Developed, Low Intensity
- Developed, High Intensity
- Deciduous Forest
- Cultivated Crops
- Barren Land