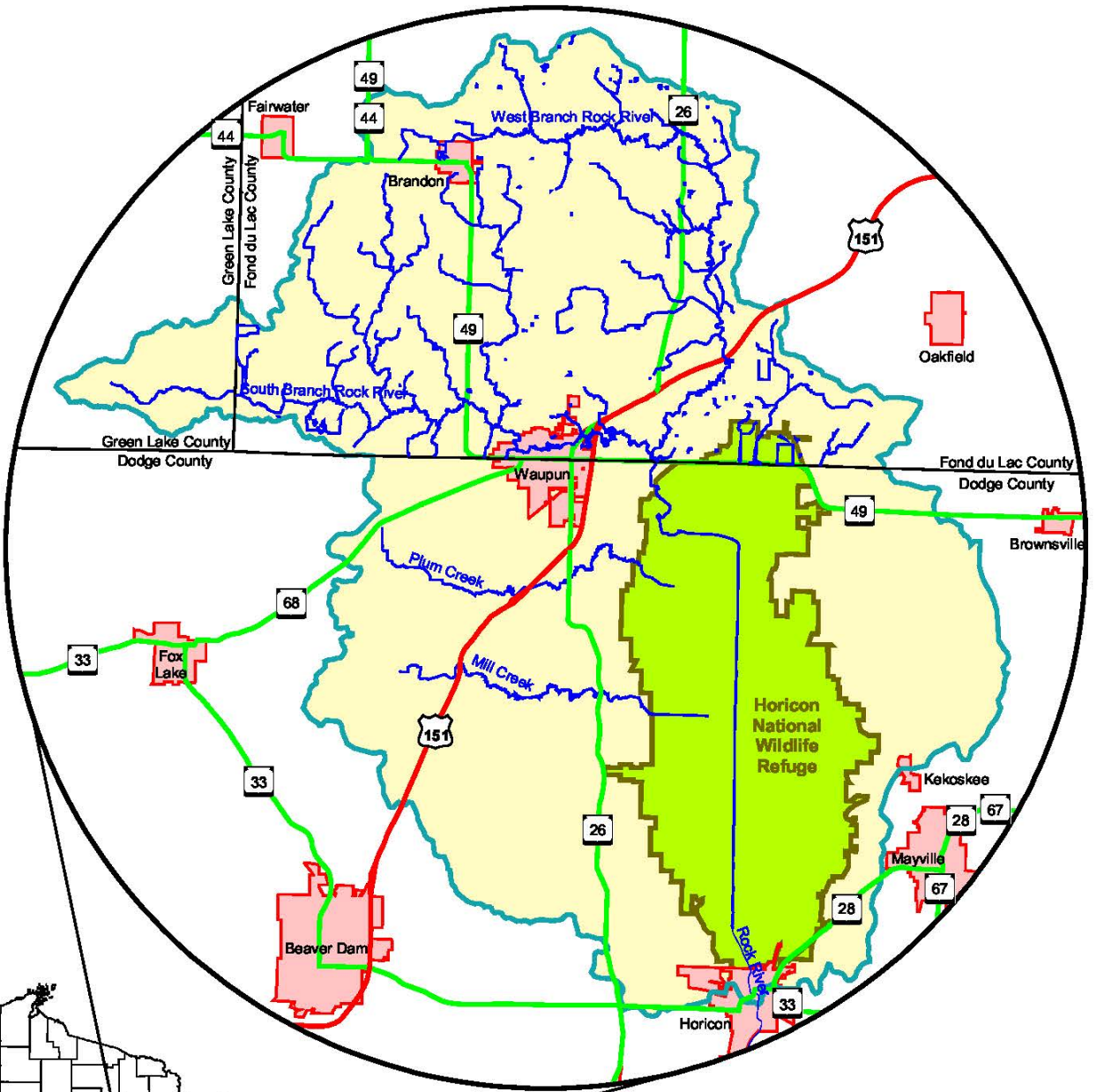


UPPER ROCK RIVER PRIORITY AREA



Prepared by: Jim Anderson
Fond du Lac County Land & Water
Conservation Department
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UPPER ROCK RIVER WATER QUALITY PROJECT



Horicon and Fox River

National Wildlife Refuges

Summary

Comprehensive Conservation Plan

April 2007

Introduction

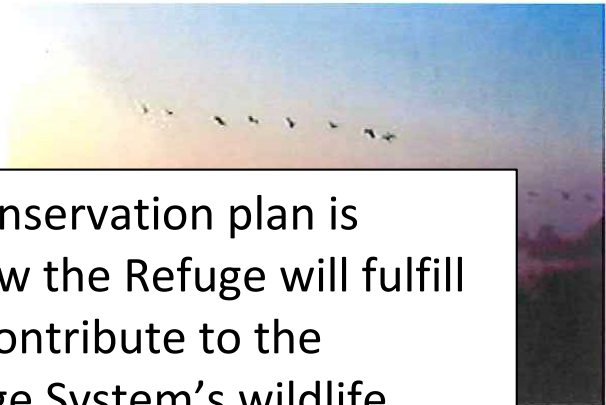
A planning effort that involved neighbors, non-government organizations, local officials and many interested citizens has concluded with the completion

(CCP) for Horicon and Fox River National Wildlife Refuges, U.S. Fish & Wildlife Service, and is making

<http://www.fws.gov>

Paper copies are available for libraries in Horicon, Wisconsin. Please call the refuge office for more information. A copy or CD-ROM is available for libraries in Horicon, Wisconsin. Please call the refuge office for more information.

The comprehensive conservation plan is intended to outline how the Refuge will fulfill its legal purpose and contribute to the National Wildlife Refuge System's wildlife habitat and public use goals. The plan articulates management goals for the next 15 years and specifies the objectives and strategies needed to accomplish these goals.



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maintenance increases, or funding for future land acquisition.

Vital Statistics

Horicon NWR

Horicon Marsh is the largest freshwater cattail marsh in the United States, consisting of some 32,000 acres. The marsh is 14 miles long and 3 to 5

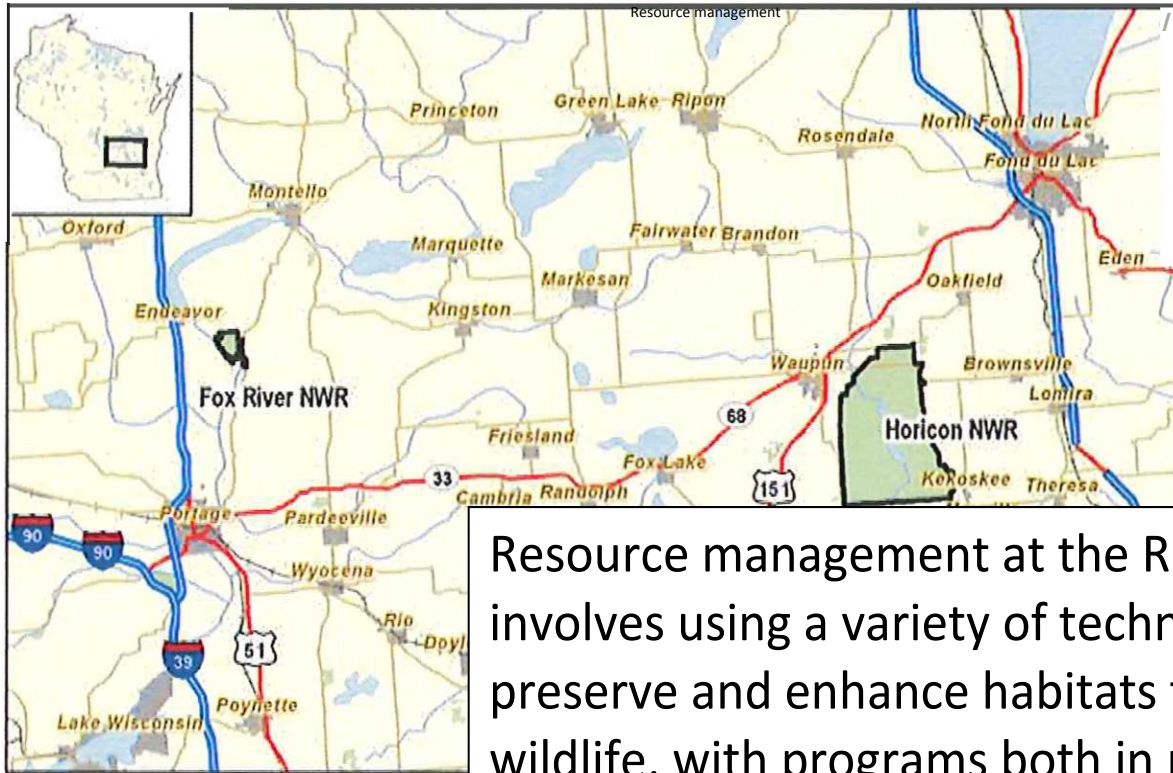
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Figure 1: Location of Horicon and Fox River National Wildlife Refuges



Resource management at the Refuge involves using a variety of techniques to preserve and enhance habitats for wildlife, with programs both in marsh and upland management.

Marsh management involves the manipulation of water levels to achieve a desired succession of wetland plant communities to meet the seasonal needs of wildlife populations.

Wisconsin Department of Natural Resources (DNR) while the northern two-thirds of the refuge is managed by the U.S. Fish and Wildlife Service.

Current Refuge ownership consists of over 100,000 acres of marsh and 5,600 acres of associated upland habitat. Marsh habitat is seasonally to periodically flooded and dominated by cattail, river cordgrass, common reed grass, sedges, and reed canna. Uplands include nearly 2,000 acres of woodlands and 3,600 acres of grasslands.

Resource management at the Refuge involves using a variety of techniques to preserve and enhance habitats for wildlife, with programs both in marsh and upland management.

Marsh management involves the manipulation of water levels to achieve a desired succession of wetland plant communities to meet the seasonal needs of wildlife populations. Upland management includes establishing and maintaining grasslands to provide nesting habitat for ducks, Sandhill Cranes, and various song birds. Management objectives include waterfowl production and migratory bird use, with Redhead ducks being emphasized.

Bobwhite Quail. Approximately 50 cranes use the Refuge during the summer and more than 300 use it as a staging area during fall migration.

Current management on the Refuge is focused on restoring historic upland habitats including oak savanna and open grass lands. The natural hydrology of the area is also being restored primarily through the filling of agricultural

drainage ditches. Visitor facilities and opportunities are minimal but include two parking areas, signs, and an annual deer hunt.

Fox River NWR is located across the highway from a County Park named after John Muir, a famous conservationist in the 19th and early 20th centuries who lived near the County Park and the Refuge during part of his boyhood years.

“The Refuge's hydrologic regime will include a functional Rock River riparian system with clean water flowing into and out of the Refuge.”

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public lands and waters. Most of these lands (82 percent) are in Alaska, with approximately 16

million acres located in the lower 48 states and several island territories. Overall, the Refuge System provides habitat for more than 5,000 species of birds, mammals, fish, and insects. Refuges also provide unique opportunities for people. When it is compatible with wildlife and habitat conservation, they are places where people can enjoy wildlife-dependent recreation such as hunting, fishing, wildlife observation, photography, environmental education, and environmental interpretation.

Refuge Vision Statements

Horicon NWR

Horicon National Wildlife Refuge will be beautiful, healthy, and support abundant and diverse native fish, wildlife and plants for the present and thoughtful use of current and future generations. **The Refuge's hydrologic regime will include a functional Rock River riparian system with clean water flowing into and out of the Refuge.** The Refuge will be a place where people treasure an incredible resource that upholds the distinction of a Wetland of International Importance.

Fox River NWR

Fox River National Wildlife Refuge will consist of diverse, productive habitats and wildlife that provides conditions found historically (pre-European settlement) in the Upper Fox River watershed. Specifically, the Refuge consists of a mosaic of oak savanna, dry and wet prairie, fens, sedge meadow, and shallow marsh habitats managed to perpetuate a variety of native plant and wildlife species namely those of priority to the Service.

Refuge staff, located at Horicon NWR, are a multi-disciplined team dedicated to providing quality habitat and wildlife management, as well as quality wildlife-dependent public use opportunities compatible with Refuge purposes. Local communities and visitors value the Refuge for the personal, financial and societal benefits it provides. A strong conservation ethic is promoted in UIE surrounding communities where both John Muir and Aldo Leopold were inspired by nature's beauty, complexity, and value.



White-tail deer buck, Horicon NWR



Horicon NWR

Planned Refuge Program Highlights at Horicon NWR

Marsh Management: Management strategies will try to re-establish a meandering river system flowing through the north end of the Horicon Marsh. Rotational water management will continue on the Main Pool and 16 sub-impoundments to benefit specific Regional Resource Species of Concern.

Upland Habitat Restoration: The Refuge will restore historic vegetation and create habitats that are lacking in the area. Up to 100 acres of oak savanna will be restored to benefit regional habitat diversity and grassland-dependent wildlife species. Between 500 to 1,000 acres of upland grasslands, primarily native dry tallgrass prairie, will be restored and managed to benefit declining wildlife species that depend on this habitat type, including Bobolinks, Grasshopper Sparrow, Henslow's Sparrow, and Eastern Meadowlark.

Reduced Wildlife-Vehicle Collisions on State Highway 49: The CCP outlines physical and educational strategies to reduce the loss of wildlife along State Highway 49 which is a major high-speed roadway bisecting the northern section of the Horicon Marsh for 2.5 miles.

Increased Conservation Projects with Landowners in the Upper Rock River Watershed: Refuge staff will work closely with the federal Partners for Fish and Wildlife staff, Wisconsin DNR, counties, and non-profit groups to encourage understanding and action of private landowners in the watershed. Landowners and the public will be informed of the critical issue of soil erosion and contaminants impacting the Horicon Marsh.

Provided Recreational Opportunities: Opportunities for quality wildlife-dependent recreational activities, including hunting, fishing, wildlife observation, photography, and environmental education and interpretation, will increase over the course of the CCP through the expansion and enhancement of new and existing facilities and programs, seasons, and opportunities for access.

Opportunities include expansion of the deer and small game hunting season to match the state seasons, ice fishing, increased access and new facilities for education, wildlife observation and photography.

Goal 3, People - Provide quality wildlife-dependent recreational and environmental education opportunities to a diverse audience. These

Increased Conservation Projects with Landowners in the Upper Rock River Watershed: Refuge staff will work closely with the federal Partners for Fish and Wildlife staff, Wisconsin DNR, counties, and non-profit groups to encourage understanding and action of private landowners in the upper watershed. Landowners and the public will be informed of the critical issue of soil erosion and contaminants impacting the Horicon Marsh

Table 2. Annual Phosphorus Discharges -Upper Rock River Watershed

Year	SaputoCheese Annual Phosphorus (lbs)	City of Waupun Annual Phosphorus (lbs)
1999	53,064	30,801
2000	53,027	17,119
2001	48,687	28,495
2002	31,175	37,842
2003	18,878	22,002
2004	10,749	3,955
2005	6,475	2,066
2006	4,508	2,872
2007	4,661	3,432
2008	5,263	3,327
2009	6,656	4,554

Note: figures were rounded

In the East Branch Rock River Watershed, the point sources include: the City of Mayville wastewater treatment plant, Grande Cheese in Brownsville, Village of Brownsville wastewater treatment plant, Village of Theresa wastewater treatment plant, and the Village of Lomira wastewater treatment plant. Table 3 displays the 2 largest point sources that have more than a 93% reduction in phosphorus discharges since 1999.

Table 3. Annual Phosphorus Discharges -East Branch Rock River Watershed

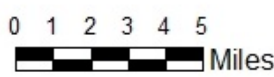
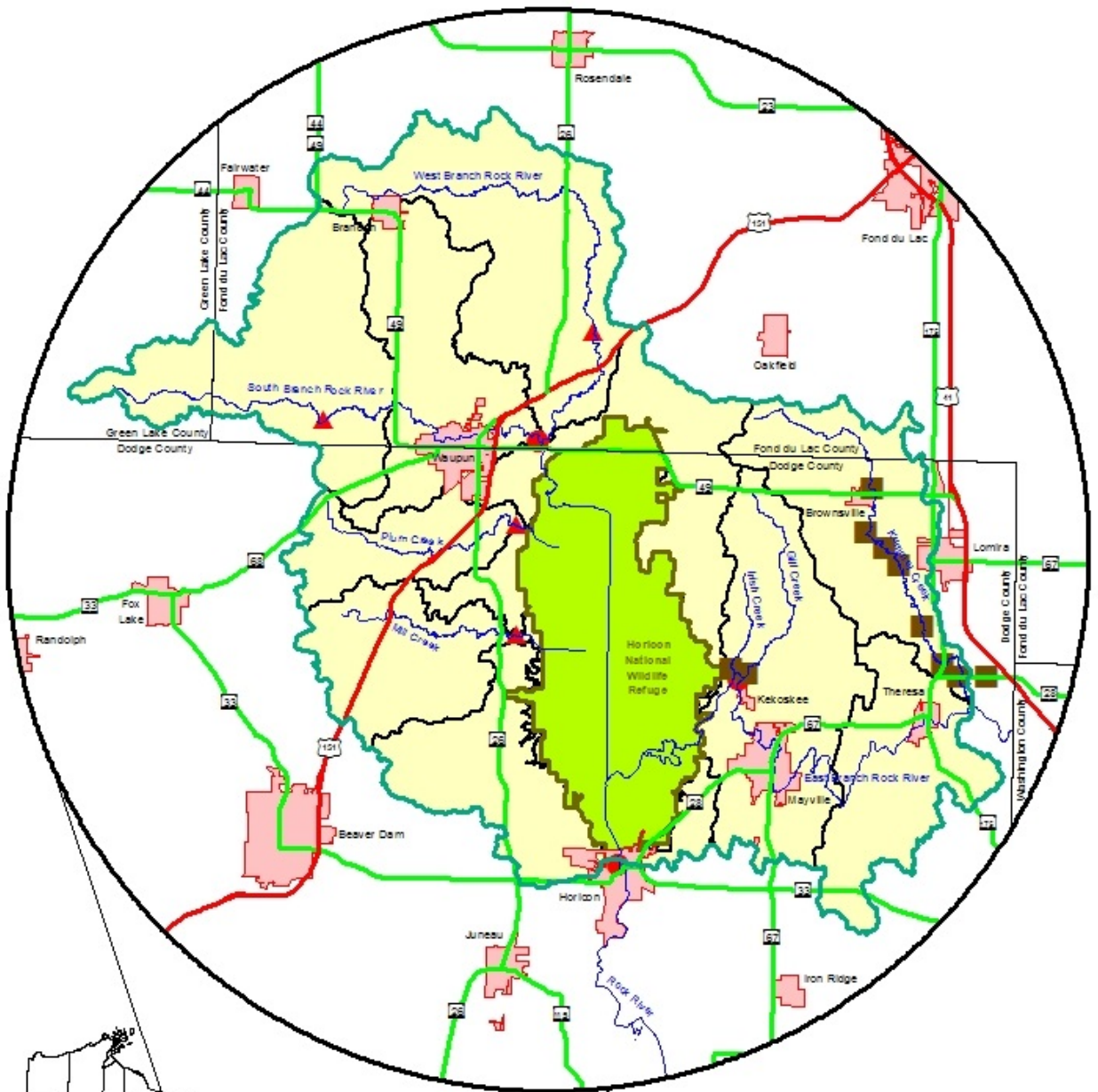
Year	City of Mayville Annual Phosphorus (lbs)	Grande Cheese Annual Phosphorus (lbs)
1999	13,862	21,678
2000	13,495	10,514
2001	13,953	10,985
2002	11,955	16,381
2003	3,134	2,795
2004	1,013	860
2005	1,042	9,423
2006	1,027	1,372
2007	992	613
2008	1,086	545
2009	971	563

Note: figures were rounded

Water Quality Comparisons

Preliminary results of the water quality data obtained in 2009-2010 show a reduction in phosphorus and total suspended sediment as compared to the data collected in 1997-2000. It is important to note that this data comparison will be more robust and statistically correct only after another year of data collection, and sediment and nutrient load computations (concentration x

UPPER ROCK RIVER PRIORITY AREA



- ▲ - Monthly Monitoring Trout Unlimited, Park Watch 2010, USFWS
- - Daily Monitoring USGS & Volunteers
- - Monthly Monitoring Grande Cheese

ACCOMPLISHMENTS

The major accomplishments completed by the various staff and landowners in Fond du Lac and Dodge Counties are contained in the " ACCOMPLISHMENTS " report found in the Appendix to this report.

An important factor to bear in mind for comparison purposes is that there are approximately 90,000 acres of cropland in the Upper Rock River Watershed area in Fond du Lac County, and, the western side of the Horicon Marsh in Dodge County.

In addition to the actual accomplishments on-the-ground to keep sediment and related pollutants from entering the surface waters of the Upper Rock River Watershed, the actual amounts of these contaminants that are kept out of these surface waters is of importance. Utilizing the Conservation Reserve Enhancement Program Environmental Report system that is utilized by the county LWCD's to evaluate buffers/filter strips effectiveness for CP.EP cost-sharing, the following accomplishments have resulted to-date:

REDUCTION OF CONTAMINANT

SEDIMENT	1,712 tons reduced per year
PHOSPHORUS	85% reduction per year 3,557# per year
NITROGEN	85% reduction per year (1,940# per year

The appendix also contains the Upper Rock River Watershed Accomplishment Mapping to visually identify the landowner accomplishments from the beginning of the project through the present.

PROGRAMS UTILIZED IN THE PROJECT

Positive long-term effects are being achieved in the water quality project area by utilizing federal, state, and local programs to plan and install the many land-use conservation practices. The following programs are providing cost-sharing, rental for acreage, monetary incentives, staff, and, employees to the many landowners who have already installed and will install these erosion-control-sediment control-contaminant control practices:

1. Conservation Reserve Program - new and re-enrollment contracts
2. Conservation Reserve Enhancement Program - new contracts
3. State Acres for Wildlife-Enhancement - new contracts
4. State of Wisconsin - Farmland Preservation Program/ Harking Lands Initiative
5. Federal Farm Program - Highly Erodible Land Portion
6. Federal Farm Program - EQIP
7. State of Wisconsin - NR243 - WPDES, siting statutes
8. Federal Legislation - CAFO
9. Fond du Lac/Dodge county - Animal waste Management and Animal Waste Storage Ordinances
10. Fond du Lac County - Soil & water Conservation Funding
11. US Fish & Wildlife Service - Private Lands Program
12. Wings Over Wisconsin - Private Lands Funding - Seed - Machinery - Staff
13. Department of Natural Resources - Forestry/Wildlife Management staff
14. Friends of Horicon Monetary Funding
15. Fond du Lac LWCD Management, Administrative, Technical Staff
16. Water Action Volunteers - Monetary Funding from the Citizen-Based Monitoring Program
17. UN - Stevens Point - Analysis of Water Monitoring Samples
18. City of Fond du Lac - Wastewater Treatment Facility analysis of Water Monitoring Samples
19. Park Watch - Fond du Lac Monitoring Volunteers from 2007 through present
20. USGS - Daily Monitoring at Highway 49 Station
21. TroutUnlimited-Monitoring Volunteers from 2007 through 2009
22. USDA - NRCS - Monetary funding through CCPI
23. Environmental Protection Agency - Monetary
24. funding
25. National Fish and Wildlife Foundation - Monetary funding National Wildlife Refuge Association - Staff
26. time and monetary funding -
27. MALWEG - monetary funding for Nutrient Management
28. Planning and nutrient management plan implementation
29. Rock River Coalition - publicity
- USDA - NRCS - CSP Program
- USDA - FSA - Staff, SAFE Program management

All of these programs and legislation have long-term positive effects built into them in the form of " years " required to maintain either the plans and/or practices as a result of receiving the assistance in the form of planning or monetary return.

Wings Over Wisconsin and the Wisconsin Department of Natural Resources continue to work with many landowners in this watershed area since 2008 to provide upland nesting cover planting services for planned SAFE, CREP, and CRP re-enrollment practices.

Monetary sources to meet the project needs include:

1. US Fish & Wildlife Service – Monies for contracted staff and incentives to install practices.
2. Land and Water Conservation Departments – Monies for staff
3. Environmental Protection Agency – Monies for contracted staff and cost-sharing incentives to install practices
4. USDA – Natural Resources Conservation Service – Monies for contracted staff and departmental staff
5. Friends of Horicon – Monies for contracted staff and volunteer monitoring needs.
6. USDA – Farm Services Agency – Monies [for](#) staff and Federal Farm Program [cost-sharing](#) programs.
7. National Fish & Wildlife Foundation – Monies for contracted staff, cost-sharing and [practice](#) incentives
8. Wings Over Wisconsin – Monies for seed availability, cost-sharing and planning assistance
9. National Wild Turkey Federation – Monies for practice installation
10. Pheasants Forever – Monies for practice installation
11. Ducks Unlimited – Monies for contracted staff and cost-sharing on practice installation
12. Wisconsin Department of Agriculture – MALWEG Grant monies for nutrient management plan preparation and cost-sharing for installation.
13. Citizen-Based Monitoring/Water Action Volunteer Program – Monies for water quality monitoring, monitoring equipment and water sample analysis
14. US Geological Survey – Monies and equipment for daily water quality monitoring sites.
15. Michels Corporation -
16. Grande Cheese -

The Conservation Reserve Program (CRP), the Conservation Reserve Enhancement Program (CREP) and the State Acres for Wildlife Enhancement Program (SAFE) have resulted in the contracting of many acres of new grassed buffers, filter strips, shallow water areas, wetland restorations and [upland](#) nesting cover in this Upper Rock River Quality Project area. Following are the up-to-present economic returns to [landowners](#) for the installation and maintenance of these practices to improve water quality:

	COST- SHARING Monetary to Landowner	RENTAL Monetary to Landowner
CRP	\$28,260	\$447,070
CREP	116,688	1,003,860
SAFE	185,912	1,250,808
	\$330,860	\$2,701,738

These economic returns to the landowners are only a portion of the total economic returns realized by these landowners, as there are tax credits realized by participation in the Wisconsin Working Lands Initiative; there are direct savings in production costs realized by planning and installing a nutrient management plan; and economic returns by installing the erosion control plans on the farms.

Overview of Project Continuation

The 2nd part of this project is continuing with further water sampling and analysis at all three collection sites for 2010-2011. This continued [work](#) is possible because of funding from the DNR River Planning Grant ([RP-197-11](#)), the US Fish & Wildlife Service Horicon National Wildlife Refuge, and the US Geological Survey. In addition, the City of Horicon will continue to act as the taxing authority to ensure the involvement of the USGS,

Flow and load data from samples collected in 2009-2010 will be published in 2011. Final data analysis and reporting will occur during 2011-2012 with the level of analysis contingent on the level of available funding.

water discharge) can be statistically evaluated to account for differences in hydrology among the study years. Such analysis was not funded with the current grant and is actively being pursued,

River flow in cubic feet per second and total suspended solids concentration are plotted in Chart 1. Data comparison showed total suspended solids (TSS) in the West Branch of the Rock River to have a peak level of approximately 302 mg/l in 1997-1998, and 584 mg/l in 1999-2000. Preliminary data for 2009-2010, showed a peak level of 98 mg/l TSS.

River flow and total phosphorus concentration are plotted in Chart 2. Data indicates total phosphorous levels having a peak of 3.1 mg/l in 1998-1999, and 3.2 mg/l in 1999-2000 as compared to only having a peak level of 0.6 mg/l in the 2009-2010 collection.

These preliminary results are encouraging and the reduction in suspended solids tentatively supports the idea that improvements in agricultural land management practices have likely contributed to an improvement in water quality in the upper Rock River Basin beyond the improvement from reduced point source contributions of total phosphorous. A second year of data collection will enhance this dataset. Targeted analyses of the data, as supported by future funding, will provide a better understanding of land management and water quality improvements.