

## **Application Summary Awarded Projects – 2011**

### **1102 -001 Twelve Mile Lake Watershed**

The 12-Mile Lake Watershed is a 13,964-acre watershed that drains into the 800 acre 12-Mile Lake northeast of Creston. The watershed is located in rural Union and Adair counties. There has been a concerted effort by Iowa DNR, NRCS, Union County SWCD and the Creston Water Board to improve the water quality within 12-Mile Lake and throughout the watershed. One portion of the improvement plan is to create a wetland and sediment structure at the head of 12-Mile Lake. This structure would allow for excess nutrients to be filtered out prior to entering the lake, which is a water supply source for the City of Creston and a nine-county rural water district. The structure would help to minimize damage to the recently renovated 12-Mile Lake and extend the life of the improvements. This project was developed as a result of the thorough assessment of this watershed following the recent lake renovation and extensive upland practices installation, including terraces, grade stabilization ponds, and grassed waterways. This project involves the purchase of over 100 acres of land into public ownership to ensure proper water treatment before it enters the vital water source lake. It allows other parties to then install the improvements on the property in perpetuity.

Beyond this project the partners plan to continue water monitoring, implementation of best management practices and the execution of a management planning being created by NRCS.

### **1103-002 Rathbun Lake Watershed**

The Rathbun Land and Water Alliance and partners have undertaken a highly effective approach to water quality protection through the Rathbun lake Special Project. This approach is achieving a significant reduction in the sediment and phosphorus that impair water quality in Rathbun Lake and its tributaries as a result of the targeted application of best management practices (BMPs) for priority land in the watershed. This application proposes to continue to assist landowners to apply BMPs that will reduce sediment and phosphorus delivery from priority land in four targeted sub-watershed as part of the Rathbun Lake Special Project. Features of this project are: (1) use of geographic information system (GIS) analysis to identify priority land that requires BMPs; (2) assistance for landowners to apply BMPs for 700 acres that will reduce the annual delivery of sediment by 1,050 tons and phosphorus by 3,490 pounds; (3) evaluation of benefits from BMP application using GIS analysis and water quality monitoring; and (4) watershed outreach activities that encourage landowners to apply BMPs for priority land to protect water quality.

### **1109-003 Coe Creek Watershed**

The City of Elliott has had an increase in nitrate levels in their community water supply located in the Coe Creek Watershed. They have been working with the IDNR Source Water Protection (SWP) Programs to conduct site investigations and have formed a SWP Planning Team. This Team has been reviewing the investigation findings, formed an action plan and studied different Best Management Practices (BMPs). After considering the BMPs the SWP Team made a recommendation to the Elliott City Council which included native grass seeding and a shallow water wetland. The Team also held an informational meeting for the citizens of Elliott. The goal of this meeting was to inform and educate the public of the Team findings and BMPs. The Elliott City Council approved the restoration of a shallow wetland with a native grass buffer. This whole project is 27 acres and includes a shallow water wetland with native grass buffer. This would be a long term method to reduce nitrates in the city wells. Elliott is partnering with the Natural Resources Conservation Service, Montgomery County Soil and Water Conservation District, Pheasants Forever, the Montgomery County Conservation Board, US Fish and Wildlife Service and the Montgomery County Board of Supervisors in the restoration of the shallow water wetland and native grass buffer.

### **1112-004 Price Creek Watershed**

Price Creek is a warm water stream with an 18,838 acre watershed, located in east-central Iowa. Price Creek is listed on the draft 2010 303(d) list of impaired waters for bacteria and is thought to be a significant contributor to the Iowa River's 303(d) impairment in Iowa and Johnson Counties. Existing practices in the watershed, such as uncontrolled livestock access to the stream, limited manure and grazing management, and inadequate septic systems, have resulted in excessive bacteria and nutrient loadings to Price Creek.

The Price Creek Watershed Project's 9-element Watershed Management Plan (WMP) was approved by the EPA in 2010. The WMP, which is one of only twelve in Iowa, is a comprehensive assessment that identifies best management practices (BMPs) needed to reduce bacteria loading in Price Creek. Practices including improved grazing systems, alternative watering sources, manure/nutrient management and septic updates will be promoted through the project. In addition, water quality monitoring will be conducted and an education program will be incorporated to promote water quality practices in the watershed.

The enclosed application is for Phase 1 of the Price Creek WMP, which accounts for approximately 30% of the BMPs needed to meet the overall sediment and bacteria delivery goals. The project is generating strong landowner interest and cost-share /incentive payments will be an important tool in the future of the project. The district has had a successful history with IWIRB's assistance and is requesting financial support for BMPs that focus on the bacteria impairment and WMP goals. A previous Price Creek IWIRB grant addressed soil loss in the watershed and successfully reduced sediment delivery to Price Creek.

### **1113-005 Duck Creek Watershed**

The Duck Creek watershed has been the target study area of multiple reports by multiple agencies including a 2009 DNR Watershed Master Planning Grant, and the 2011 Duck and Blackhawk Creek Stream Assessment. The information obtained from these reports has lead the City of Davenport to take a micro-watershed approach to identifying the significant contributors to flooding and water quality issues that affect Duck Creek, its tributaries and the surrounding landscape, and devise solutions to mitigate these concerns. The construction of the proposed Littig Area Detention Basin comes as a recommendation from the Comprehensive Stormwater Management Plan for Pheasant, Goose, and Silver Creeks as prepared by James M. Montgomery, Consulting Engineers, Inc. in September 1991. At the time this report was prepared this basin was one of eight regional detention basins proposed in the upstream watersheds to alleviate flooding on tributaries to Duck Creek. The basin is designed and situated to detain runoff from approximately two hundred and twenty-seven (227) acres of previously developed moderate density residential area with intermixed light business and schools. This basin will reduce flow rates entering the receiving waters from the two, five and ten year storm events by an average of eighty-five percent (85%) and reduce flow rates from the twenty-five, fifty, and one hundred year events by all average of fifty percent (50%). With this flow rate reduction it is anticipated that streambank erosion in the immediate downstream receiving waters can be reduced or even stopped. The reduction in sediment leaving this upstream area will greatly enhance the water quality further downstream in Goose and Duck Creeks.

### **1114-006 Walnut Creek Watershed**

The specific mindset and act of putting conservation on the land has swept through the Walnut Creek Watershed like wildfire the past three years. Landowners whom in the past have never darkened the door of their local soil conservation office are now leading by example, installing practices that conserve their soil, ensuring a livelihood for future generations while at the same time giving the gift of clean water to their neighbors downstream. Many of those landowners are also making conservation a part of their lives by donating time and money to the local SWCD. Funding provided by the WIRB Board was the fuel that ignited this monumental change in lifestyle. Conservation now flows through the veins of all who live and work in the watershed.

With or without cost share conservation will be put on the land for years to come. But the fact of the matter is there is still much more work to be done in the watershed and cost share enables landowners to do more work in a year's time than they could afford to do on their own. Conserving this size of watershed is not and never was something that could be done in a three or five year time frame. Conservation takes time. The two projects we have completed thus far should be considered as phases of a much larger project, reasonable goals that were accomplished in the timeframes allowed by the grants. Walnut Creek is not privy to other special funding sources such as the Publicly Owned Lakes fund, which means that WIRB funding is basically our only chance at securing an outside special source of money for our watershed. The Montgomery and East Pottawattamie SWCD's would love to continue working with the WIRB board to fuel this fire of conservation which was ignited three years ago.

### **1118-007 Lake Hendricks Watershed**

Lake Hendricks is a 54 acre man-made lake that is encompassed by a 1,209 acre watershed. Lake Hendricks is currently on the 303(d) Impaired Waters List for algae and pH impairments due to an abundance of algae growth caused by nutrients being delivered to the lake via 11 separate tile lines draining adjoining cropland areas. In 2009, a Watershed Management Plan was developed in partnership with IDALS and the IDNR 319 programs and \$256,500 was awarded to address the nutrient and sediment loading of the lake. Over the past three years a total of \$251,000 were spent to implement one grade stabilization structure, two sediment basins, two bioreactors, 700 feet of streambank stabilization, 30.7 acres of timber stand improvement, and 39.4 acres of Conservation Reserve Program (CRP). A proposed wetland structure and three sediment basins are scheduled to be constructed in the fall of 2011. Current water monitoring data is showing an average of 54% Nitrate (N) loading reductions as a result of the installed BMPs. The District feels further reductions are possible by addressing nutrient management issues in the cropland areas, stabilizing additional streambanks, and improving the surrounding woodland areas. The goal is to reduce N loading by an additional 20% and sediment loading by 50 t/acre/yr. The resulting collaborative effort may lead to the future delisting of Lake Hendricks from the 303(d) Impaired Waters List.

### **1119-008 Lake Icaria Watershed**

Lake Icaria is a 660 acre man-made lake in rural Adams County. Lake Icaria is a popular recreational attraction providing ample fishing, boating, and swimming opportunities. Constructed in 1977 for water supply, Lake Icaria continues to provide reliable drinking water to nineteen-hundred households in Adams and Montgomery counties. No stranger to the water quality world, Lake Icaria was the primary lake in the 3Lakes Water Quality Project (1996-2004), an eight year water quality effort which came to be known as one of Iowa's first great water quality successes. At time of construction the Lake Icaria watershed was primarily grass. A shift towards maximizing crop production in the 1980's brought about the end of dairy farms and a concern for sediment loss and how that would affect water quality. This change in land use set the stage for the first water quality project at Lake Icaria. Since the conclusion of the 3Lakes Water Quality Project in 2004, land use in the watershed has made yet another monumental shift towards crop production. Nearly 2,000 acres of land that was once in the conservation reserve program is now being planted to a crop. This change in land use has once again brought about serious concerns for the quality of water being provided by Lake Icaria.

### **1199-000 Soil Nutrient Mass Balance Study**

Consistent with Senate File 509 we propose a soil nutrient mass balance study to investigate nutrient inputs to crop production systems and nutrient outputs to investigate long-term sustainability of these systems from a nutrient perspective. The study would be conducted by Iowa State University College of Agriculture and Life Sciences and the Iowa Department of Agriculture and Land Stewardship. In summary, the study will summarize the leaching of nutrients from the soil; the related impacts on soil sustainability; productivity; water quality, including erosion, sediment, and phosphorus attached to sediment; and the soil's capacity to absorb and hold water. Iowa has some of the most productive soils in the world for crop production but increasingly there are questions about the long-term sustainability of these soils relative to nutrients and resulting soil quality. Specifically, in some cases more nitrogen may be exported in grain from row-crop systems than is input through fertilizer, manure and legume crops. Under these conditions there is the potential that the soil could be mined of existing nutrients by breaking down organic matter that contributes to soil tilth and sustainability. Long term soil sustainability could be of increasing importance where soil organic matter will be an important defense for the potential impact from increased weather variability. The risk to soil sustainability is further threaten by the potential of reduced nitrogen application rates as a mechanism to reduce nitrogen leaching for surface and ground water or through the added removal of corn stover for cellulosic ethanol production. Based on these concerns there is a need to investigate how nutrient application contributes to soil sustainability which would include potential nutrient balance impacts on soil organic matter and associated impacts of changing soil organic matter on soil sustainability, soil productivity, soil erosion, nutrient losses, and water holding capacity of the soil. To address these essential underlying questions we propose to engage a multi-disciplinary team of scientists from Iowa to conduct a review of available studies and literature develop an overall assessment of nutrient balance on soil sustainability. We will also engage leading scientists from surrounding states working in nutrient fate and transport and soil characteristics to enhance our assessment of the literature and formulate comprehensive recommendations on nutrient mass balance, short-term water quality and long term soil sustainability. By engaging a broad group of scientists we believe we can develop comprehensive recommendations that will improve our understanding of the current cropping systems and its relationship to the environment.