



## Mississippi River Basin Healthy Watersheds Initiative

### Background/Purpose

The Mississippi River—“America’s River”—is the largest river in North America, flowing more than 2,300

miles through the heartland of the United States to the Gulf of Mexico, and is the centerpiece of the second largest watershed in the world.

The natural capacity of the Mississippi River Basin to remove nutrients has been diminished by human activities, including modification of floodplains for agricultural and urban land. The Mississippi River Basin Healthy Watersheds Initiative (MRBI), led by the Natural Resources Conservation Service (NRCS), is designed to improve water quality, restore wetlands, and enhance wildlife habitat in the Mississippi River Basin, while maintaining agriculture productivity. This is being accomplished by helping agricultural producers in selected priority watersheds implement conservation and management practices through a systems approach to avoid, control, and trap nutrient runoff and restore wildlife habitat.

### Did You Know?

- More than 50 cities and 18 million people rely on the Mississippi for their daily water supply;
- Sixty percent of all North American birds (326 species) use the Mississippi River Basin as their migratory flyway;
- The Mississippi River Basin is host to more than 50 species of mammals; and
- At least 145 species of amphibians and reptiles inhabit the Mississippi River Basin environs.

## Goals/Objectives Achieved

Water quality, wetland restoration, and improved wildlife habitat are the primary resource concerns for MRBI. To address these concerns, NRCS and its partners are using a conservation systems approach to help producers optimize agricultural nitrogen and phosphorus use, and minimize runoff. The ultimate objective is to see measurable improvement in water quality, restored wetlands, and improved wildlife habitat within priority watersheds of the Mississippi River Basin.

The MRBI will use selected monitoring and modeling to assess water quality and evaluate effects of conservation systems and activities implemented through the project. The process employs a three-tiered monitoring and evaluation approach designed to assess environmental outcomes at the edge-of-field, in-stream, and on a watershed basis. Successful

measures of the initiative will include a reduced nutrient footprint and environmental impact through more efficient use of nutrients for crop production in priority watersheds.

## Conservation Funding/ Practices Applied

Through the Cooperative Conservation Partnership Initiative, which uses a set of the existing Farm Bill conservation programs, NRCS is providing producers a suite of practices to control soil erosion and improve soil and water quality. On a voluntary basis, participants can receive financial assistance to install edge-of-field monitoring systems in selected watersheds. This monitoring will help NRCS assess environmental outcomes of this work.

NRCS began offering this initiative in fiscal year 2010 and is committed to offering new project opportunities through 2013. Up to \$80 million in financial and technical assistance

will be made available in the thirteen initiative States each year. This is in addition to funding by other Federal agencies, states, partners, and the contributions of producers.

| State         | Number of Contracts | Financial Assistance |
|---------------|---------------------|----------------------|
| Arkansas      | 294                 | \$13,001,938         |
| Illinois      | 66                  | \$405,396            |
| Indiana       | 73                  | \$3,573,685          |
| Iowa          | 273                 | \$11,516,274         |
| Kentucky      | 82                  | \$4,071,642          |
| Louisiana     | 62                  | \$1,881,130          |
| Minnesota     | 112                 | \$4,130,978          |
| Mississippi   | 273                 | \$16,509,068         |
| Missouri      | 466                 | \$14,718,534         |
| Ohio          | 54                  | \$1,978,516          |
| *South Dakota | 0                   | 0                    |
| Tennessee     | 104                 | \$509,970            |
| Wisconsin     | 37                  | \$985,970            |
| <b>TOTALS</b> | <b>1,896</b>        | <b>\$73,283,101</b>  |

*\*South Dakota received first contract in 2012*

| <b>FISCAL YEAR 2011 - MISSISSIPPI RIVER HEALTHY WATERSHEDS INITIATIVE</b>                      |   |                           |  |                           |                                |                           |                                     |                           |  |                           |   |                           |
|--|---|---------------------------|--|---------------------------|--------------------------------|---------------------------|-------------------------------------|---------------------------|--|---------------------------|---|---------------------------|
| <b>NRCS - Financial Assistance (FA) and Active and Completed Contracts/Agreements/Projects</b> |   |                           |  |                           |                                |                           |                                     |                           |  |                           |   |                           |
| MRBI   | Environment Quality Incentives Program (EQIP) |                           | Wildlife Quality Incentives Program (WHIP) |                           | Wetlands Reserve Program (WRP) |                           | Conservation Security Program (CSP) |                           | EQIP-Conservation Innovation Grants (EQIP-CIG) |                           | State Totals for Programs by Initiative |                           |
|  | Number of Contracts                           | FA (Contract Obligations) | Number of Contracts                        | FA (Contract Obligations) | Number of Contracts            | FA (Contract Obligations) | Number of Contracts                 | FA (Contract Obligations) | Number of Contracts                            | FA (Contract Obligations) | Number of Contracts                     | FA (Contract Obligations) |
| Arkansas   | 224   | 6,359,436                 | 2  | 23,586                    | 7                              | 3,143,844                 | 12                                  | 363,146                   |  |                           | 245                                     | 9,890,012                 |
| Illinois   | 12  | 77,155                    | 0  | 0                         | 0                              | 0                         | 17                                  | 199,130                   |  |                           | 29                                      | 276,285                   |
| Indiana  | 41  | 2,189,810                 | 0  | 0                         | 1                              | 728,974                   | 2                                   | 51,931                    |  |                           | 44                                      | 2,970,715                 |
| Iowa   | 189   | 6,498,468                 | 0  | 0                         | 6                              | 3,631,422                 | 7                                   | 35,773                    |  |                           | 202                                     | 10,165,663                |
| Kentucky   | 40  | 818,119                   | 0  | 0                         | 1                              | 1,660,608                 | 0                                   | 0                         |  |                           | 41                                      | 2,478,727                 |
| Louisiana  | 33  | 1,132,160                 | 3  | 5,315                     | 1                              | 126,000                   | 6                                   | 320,910                   |  |                           | 43                                      | 1,584,385                 |
| Minnesota  | 62  | 1,398,554                 | 1  | 768                       | 7                              | 1,033,687                 | 3                                   | 77,919                    |  |                           | 73                                      | 2,510,928                 |
| Mississippi  | 136   | 8,650,444                 | 0  | 0                         | 6                              | 3,342,676                 | 0                                   | 0                         |  |                           | 142                                     | 11,993,120                |
| Missouri   | 240   | 7,922,691                 | 28   | 94,480                    | 0                              | 0                         | 9                                   | 118,154                   |  |                           | 277                                     | 8,135,325                 |
| Ohio   | 13  | 367,538                   | 0  | 0                         | 0                              | 0                         | 0                                   | 0                         |  |                           | 13                                      | 367,538                   |
| *South Dakota  | 0   | 0                         | 0  | 0                         | 0                              | 0                         | 0                                   | 0                         |  |                           | 0                                       | 0                         |
| Tennessee  | 52  | 509,970                   | 0  | 0                         | 0                              | 0                         | 0                                   | 0                         |  |                           | 52                                      | 509,970                   |
| Wisconsin  | 11  | 439,844                   | 0  | 0                         | 0                              | 0                         | 0                                   | 0                         |  |                           | 11                                      | 439,884                   |
| <b>TOTALS</b>  | <b>1,053</b>                                  | <b>36,364,189</b>         | <b>34</b>                                  | <b>124,149</b>            | <b>29</b>                      | <b>13,667,221</b>         | <b>48</b>                           | <b>750,622</b>            | <b>8</b>                                       | <b>3,758,610</b>          | <b>1,172</b>                            | <b>55,018,122</b>         |

a) Source: EQIP data from NRCS ProTracts 10/1/11 with 12/24/11 file update.

b) Source: WHIP data from NRCS ProTracts 10/1/11 with 12/24/11 file update.

c) Source: WRP data from Easement Program Division, NEST database, and FFIS 2/2/12.

d) Source: CSP data from NRCS CMT 10/1/11.

e) Source: EQIP-CIG-MRBI data from national program manager spreadsheets 9/2011; number of projects are used to report performance, not contracts.

\*South Dakota received first contracts in 2012.

## Arkansas

### Arkansas Rice Farmer installs Monitoring Systems to Study Nutrient Runoff in Little River Ditches Watershed

Steve Craig is a rice and soybean farmer in northeast Arkansas, with a desire to improve irrigation water management on his fields. He received technical and financial assistance through the Environmental Quality Incentives Program (EQIP) under MRBI to implement irrigation conservation practices and a nutrient management plan on his farm.

Through MRBI and partner funding, edge-of-field monitoring systems have been installed on Craig's two rice fields and two soybean fields to measure the velocity, depth, and turbidity of the water runoff from his fields for three years. The data from these monitoring systems will be used to assess the effectiveness of conservation practices. Further analysis will lead to improved water quality and water quantity on Craig's fields and in the lower Mississippi River Basin. Program used: (EQIP), (WHIP), (WREP), (CSP)



*Edge-of-field monitoring system captures field runoff data to help measure water quality improvements.*

## Illinois

### Improving Mississippi River Water Quality, One Farm at a Time

Terry Bachtold is proud of what the Indian Creek Watershed MRBI Project is doing for water quality in north central Illinois. Key to the project's success is research that provides guidance for precision nutrient control. The project partners, the Conservation Technology Information Center (CTIC) and Illinois Environmental Protection Agency, work with participants to create nutrient management test plots.

More than 120 producers recently toured five of the farms participating in MRBI and the CTIC study. They met with participating landowners to learn about the changes they made in their operations through MRBI assistance, and viewed test plots that focused on nutrient management and the "4-Rs" (Right Source, Right Time, Right Place, and Right Rate).

Bachtold hopes those attending the tour this year will be involved with MRBI and have their own operations featured in the Indian Creek Watershed Team Tour next year. Program used: (EQIP), (CSP)



*Producers tour a farm participating in the MRBI and CTIC study.*

## Indiana

### Partnership Reduces Runoff, Improves Wildlife Habitat

The Decatur, Bartholomew, and Jennings County Soil and Water Conservation Districts are collaborating to reduce nutrient runoff while improving wildlife habitat in the Upper East Fork White Watershed. To achieve this objective, three practices are being implemented: cover crops, nutrient management, and guided stalk sampling.

The partnership is working to implement a total of 3,300 acres of cover crops during the three-year implementation phase. The project also plans to implement 1,650 acres of nutrient management over three years within the same area. In addition to the nutrient management, a total of 50 fields will also implement guided stalk sampling, with five of these fields targeted for detailed research. Water monitoring by Indiana University is also taking place throughout the target watershed over the life of the project, which is scheduled to run through 2015. Program used: (EQIP), (WREP), (CSP)



*Barry Fisher, Indiana NRCS state agronomist, and Hans Kok, Indiana Conservation Cropping System Initiative coordinator, discuss soil health.*

## Iowa

### Seeing Water Quality's Larger Impact

Arlo Van Diest, a veteran corn and soybean producer in north central Iowa, prides himself on his soil conservation ethic. Van Diest is expanding his soil conservation ethic by improving water quality in the Boone River Watershed and beyond, with help from the NRCS's Mississippi River Basin Healthy Watersheds Initiative (MRBI).

In early September, Van Diest installed his second bioreactor. Bioreactors are underground structures filled with a carbon source, such as wood chips, that intercept and treat tile water flow to reduce nitrate levels in water leaving agricultural land and entering streams.

"It's a real win-win for Arlo," says Bruce Voigts, MRBI coordinator in the Boone River Watershed. "The bioreactor won't affect his cropland at all, so he won't have to really manage it at all. Plus, he is going to get improved water quality in the adjacent stream." Program used: (EQIP), (WREP), (CSP)



*A contractor pushes wood chips into Arlo Van Diest's newly installed denitrifying bioreactor in the Boone River Watershed in north central Iowa.*

## Kentucky

### Cover Crops Planned to Control Erosion

"Healthy Soils and Clean Water" has become the mantra of the NRCS in Fleming County, Kentucky, as they work with producers through MRBI. Being able to control erosion and nutrient runoff in harmony with sustainable agricultural production is the goal of implementing MRBI in the Licking River.

Local efforts are focused on areas where a large amount of row cropping of continuous soybeans or soybeans grass rotation is performed. These areas are located within the Fleming Creek Watershed, which is on the Kentucky Division of Water's list of impaired streams. The rate of soil loss in some fields can be as high as 11 tons per acre, carrying with it nutrients and pesticides into some of the major streams.

One of the components of MRBI is to encourage producers to sow cover crops, through which soil loss can be reduced to less than one ton per acre. Through a systems approach, using cover crops, no-till and other management techniques, soil quality is improved and the amount of nutrients leaving the edge of field is reduced. Program used: (EQIP), (WREP)



*Landowner observes the benefits of a cover crop designed to reduce erosion.*

## Louisiana

### Saving the Farm—A Story of Economics and the Environment

Current economic conditions were about to take their toll on producer Donald Williams' farming operation until he turned to the NRCS for help. Local district conservationist, James Shivers, was able to offer Williams a solution to his economic problems as well as an opportunity to make a difference in the Mississippi River Basin ecosystem through the Bayou Lafourche Mississippi River Basin Healthy Watersheds Wetlands Reserve Enhancement Program (WREP).

Williams enrolled 90 acres of marginal cropland into the MRBI WREP. Thanks to the financial assistance provided through the initiative, Williams can continue farming, while restoring the offered land into a bottomland hardwood forest that his children and grandchildren will long enjoy. Program used: (EQIP), (WHIP), (WREP), (CSP)



*Donald Williams used NRCS assistance to protect and enhance critical wetland habitat through the MRBI.*

## Minnesota

### MRBI Improves Water Quality, Improves Farm Efficiency

Marvin and Mary Kuhn are excited about improvements made to their 150-head dairy operation with technical and financial assistance through the Environmental Quality Incentives Program (EQIP) under MRBI.

A two-stage manure storage facility was constructed in 2011, designed to store manure and milk house wastes while separating the liquids from the solids. The liquids are irrigated to adjacent alfalfa fields throughout the summer and the solids are incorporated into row crop fields, therefore eliminating runoff pollution and improving nitrogen and phosphorus utilization.

Bob Joachim, district conservationist for NRCS in Fillmore County, believes that providing financial incentives to help dairy producers stay in business has the added conservation benefits of keeping alfalfa hay in their rotation. "Alfalfa greatly reduces potential soil erosion, improves soil quality, and reduces commercial nitrogen inputs. It really is a win-win proposition for everyone," he says. Program used: (EQIP), (WHIP), (WREP), (CSP)



*Angela White, soil conservation technician for NRCS in Fillmore County, reviews the MRBI EQIP contract with Marvin Kuhn, while inspecting a newly constructed manure storage facility.*

## Mississippi

### Precision Leveling Improves Irrigation, Drainage

Fresh out of college, Adron Belk is working with NRCS to make his first farming operation more efficient and environmentally friendly. Belk farms 2,700 acres in the Mississippi Delta, including 280 acres in need of more level terrain. Precision leveling his ground allows better irrigation and drainage, which was one part of the improvements implemented through MRBI. The 22-year old's farm was also equipped with a tailwater recovery system, which creates a separate water system on the farm. All water on the soybean, corn, wheat, and rice farm is captured in a ditch and then pumped into an 18-acre pond for storage. This water is reused for irrigation and keeps nutrients and sediments from flowing into the nearby Sunflower River, and reduces the need to pump irrigation water from underground aquifers.

"I'm in support of anything that is better for the land," Belk said. "Farmers like us live off the land, and we have to take care of it." Program used: (EQIP), (WREP)



*Adron Belk is preparing to harvest soybeans on one of his fields in the Mississippi Delta.*

## Missouri

### Cover Crops Are Taking Root with Missouri MRBI Participants

MRBI is key to the successful promotion of cover crops in Chariton County. In February, as part of the county's MRBI informational program, two nationally recognized cover crop experts conducted the first in a series of soil health workshops. More than 100 people attended and the interest prompted the local NRCS office to organize a group of landowners to attend a soil health and cover crop field day in Ohio.

The county's MRBI informational program greatly increased the adoption of cover crops, with more than 1,100 acres of cover crops planned in the MRBI project area alone. As interest grows, more producers are working with NRCS to implement more complex cover crop mixtures, and planning covers that benefit farms economically and environmentally. Several producers are planting tillage radishes and winter peas in wheat stubble or following red clover hay to control compaction and provide a nitrogen source for the upcoming corn crop. Others are using rye behind corn followed by no-till soybeans, while some are aerial seeding wheat into standing crops to scavenge residual nitrogen and build soil structure. Program used: (EQIP), (WHIP), (CSP)



*Planting no-till soybeans directly into cereal rye cover crop.*

## Ohio

### A Second Chance for Hickory Branch Producers

The Upper Wabash Watershed drains about half of Mercer County, Ohio, into the Mississippi River. A 2011 Cooperative Conservation Partnership Initiative (CCPI) grant to the Mercer County Soil and Water Conservation District gave farmers in one Upper Wabash sub-watershed an extra opportunity to apply for Environmental Quality Incentive Program (EQIP) funding.

Hickory Branch is a warm water aquatic habitat in an 8,084-acre watershed as designated by the Ohio Environmental Protection Agency. Water sampling revealed excessive nutrients including phosphorus, nitrate-nitrite, and total suspended solids, which results in a “non-attainment” status. Agricultural crop production, confined animal feeding operations, sparse riparian vegetation, on-site wastewater treatment systems, and stream channelization are all cited as causes of the “non-attainment” status.

The goal of the CCPI project is to improve water quality by the accelerated adoption of a suite of conservation practices, including management, proper application, handling, storage and transfer of animal waste; exclusion fencing; cover crops in concert with conservation tillage; two-stage ditches; and field / stream buffers. Combining these practices increases the water quality and wildlife habitat benefits. Program used: (EQIP)



*Forty-seven thousand tons of manure are produced annually in the Hickory Branch sub-watershed. Eleven of the 27 live-stock operations are located within 1,000 feet of a water body.*

## Tennessee

### Beginning Farmers in Obion County

Amanda and Lee Mulvaney moved from Wisconsin to Tennessee, where they now own and operate more than 300 acres. The Mulvaney family are beginning farmers who raise beef cattle and horses. After talking with the local NRCS staff, Amanda applied to do both structural and vegetative practices on the 95 acres of pasture on the farm. Using funds from MRBI and the Tennessee Department of Agriculture, they have installed cross fencing, exclusion fencing, critical area planting and mulching, a city water tap, pipeline, watering facilities, and heavy use areas.

“When we first purchased our farms, we knew we had our work cut out for us. We had several erosion problems, and we wanted to better utilize our pastures,” says Amanda. “And with the help of the NRCS, we were able to install conservation practices on both farms in a short period of time. We have seen a huge improvement in our pastures.” Program used: (EQIP)



*The Mulvaney family on their farm in Obion County.*

## Wisconsin

### Conservation Stewards

Many farmers realize the advantage of protecting water quality, and Charles Pearce of C & C Farms, LLC is one of them. Pearce has lived and worked on his family farm south of Delavan Lake for decades. He and his son, Charlie, now farm together and look for ways to improve the health of the lands they own. Because of additional funding available in the Delavan Lake Watershed through MRBI and the Environmental Quality Incentives Program (EQIP), Pearce planted a cover crop on several of his fields to reduce soil erosion. “If we get a hard rain in the spring, the soil stays where it is,” says Pearce. After the cover crop is removed, corn or soybeans are planted directly in the ground without tilling the soil. The roots of the cover crop continue to hold on to the soil, and residue left behind from harvesting helps hold soil in its place as well. Program used: (EQIP)



*Charles Pearce, Delavan Lake and Maggie Zoellner, Kettle Moraine Land Trust.*

## Participation/Partnership Successes

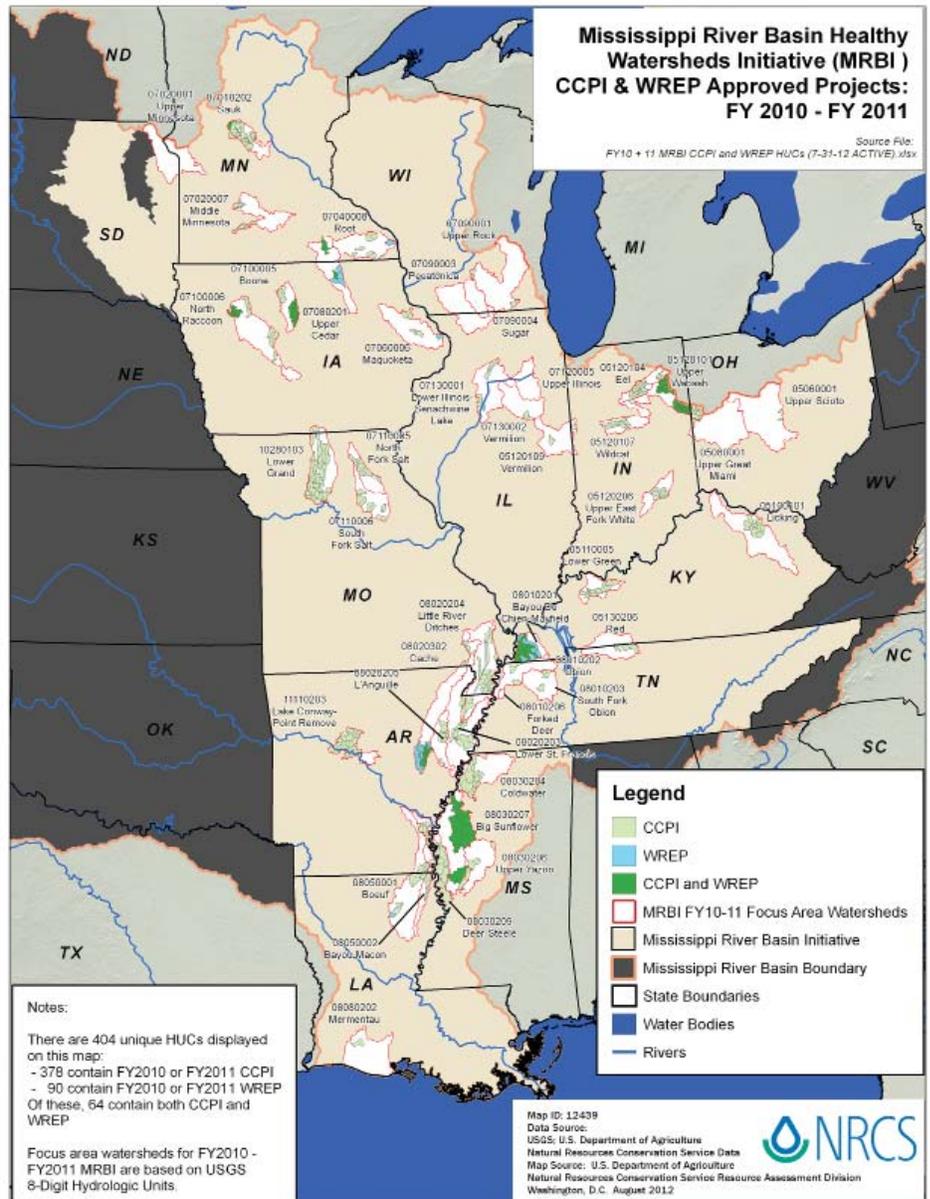
Conservation partners include Indian tribes, state and local units of government, farmer cooperatives, producer associations, universities, and other nongovernmental organizations. Within the MRBI focus areas, NRCS and these partners will target and leverage resources to improve water quality and wildlife habitat, plus carry out high priority wetland protection, restoration, and enhancement activities

## Benefits to Producers

Through approved projects, eligible farmers and landowners will voluntarily implement systems of conservation practices that avoid, control, and trap nutrient runoff; improve soil health; improve wildlife habitat; restore wetlands; and maintain agricultural productivity. Key conservation practices include nutrient management, conservation crop rotation, cover crops, and residue and tillage management. Producers also can restore wetlands and plant grasses and trees as riparian buffers along streams.

## Benefits to Resources/ Public

From its headwaters at Lake Itasca, Minnesota, to the mouth of the Gulf of Mexico, the Mississippi River is an American lifeline that supplies drinking water, sustains food production, powers industry, provides recreation for millions of people, and hosts a globally-significant migratory flyway that is home for over 325 bird species.



Map depicting watershed focus in the Mississippi River Basin Initiative