Since the start of the MRBI project in the Upper North Fork Maquoketa River Watershed; landowners and producers have committed efforts toward installing conservation systems and practices aimed at nutrient runoff, soil erosion, and treatment of manure capacities. Through conservation programs such EQIP and CSP; cost share has been allocated to participants located within the watershed’s boundary. The project is co-sponsored by the Dubuque SWCD and the Delaware SWCD. Beginning in 2010 the project allocated $94,040 to MRBI EQIP contracts, with the bulk of the funding going toward terracing highly erodible ground. During 2011 project interest was very high, with over 44 MRBI EQIP applications submitted. To date fiscal year 2011 has seen 13 applications funded and a total of $495,210 allocated to those contracts. In addition CSP enrollment funding has totaled $70,440. Through MRBI EQIP; producers within the watershed will be funding a variety of conservation practices such as; ag waste structures, cover crops, terracing, waterways, no till/strip till, and nutrient management. These practices along with others scheduled to be implemented will reduce soil erosion, limit further sedimentation of water resources, control and trap nutrient runoff from fields, and help treat manure from livestock facilities. In 2011 the MRBI project allocated 63,840 for written nutrient management plans to be developed for producers in the watershed. These plans will help crop producers to manage the source, rate, timing, and placement of manure and other commercial fertilizers.
Practices Available through FY 2011 MRBI – EQIP

- Access Control
- Composting Facility
- CNMP
- Conservation Cover
- Cons. Crop Rotation
- Contour Buffering
- Contour Farming
- Cover Crop
- Critical Area Planting
- Denitrifying Bioreactor
- Dike
- Diversion
- Drainage Water Management
- Drainage Water Management---
- Written
- Fence
- Field Border
- Filter Strip
- Forest Site Preparation
- Grade Stabilization Structure
- Graded Waterway
- Heavy Use Area Protection
- Irrigation Pipeline
- Monitoring and Evaluation
- Mulching
- Nutrient Management
- Nutrient Management—Written
- Pasture and Hay Planting
- Pipeline
- Prescribed Grazing
- Pumping Plant
- No-Till/Strip-Till/Direct Seed
- Ridge-Till
- Rare/Declining Habitat Restore
- Riparian Forest Buffer
- Roof Runoff Structure
- Sediment Basin
- Separating Facility
- Strip-cropping
- Structure for Water Control
- Subsurface Drainage
- Terrace
- Tree/Shrub Establishment
- Underground Outlet
- Upland Wildlife Habitat
- Vegetated Treatment Area
- Waste Storage Facility
- Waste Transfer
- Waste Treatment
- Water/Sediment Control Basin
- Watering Facility
- Wetland Creation
- Wetland Enhancement
- Wetland Restoration

Edge of the Field Monitoring

In conjunction with implementing conservation practices the MRBI aims to analyze practice/system performance through monitoring stations. The purpose is not to monitor individual fields or operations, but to understand if current conservation methods/structures are effective at trapping and controlling nutrients from leaving fields. Data from edge of the field monitoring will aid in the understanding of nutrient transport, and help formulate more effective ways to limit sediment and nutrient losses into vital water resources. The parameters sampled by the stations are; N, P, dissolved oxygen, turbidity, and bacteria (Escherichia coli). Funding is available through the MRBI project to place edge of the field monitoring equipment on cropland. Iowa State University Extension is working together with the watershed project to help install the monitoring equipment for MRBI EQIP participants.

MRBI - Its Influence Locally and Nationally

The Mississippi River Basin Healthy Watersheds Initiative, otherwise known as MRBI is a federal program that helps producers in targeted watersheds within the Mississippi River Basin voluntarily implement conservation practices. One of the main goals of the project is to reduce nutrient loading contributions to both local water resources and also the Gulf of Mexico, which has been afflicted with the hypoxic dead zone. The Maquoketa River Watershed was one of 43 selected watersheds that could apply for MRBI funding. Three sub-watersheds within the greater Maquoketa basin including the Upper North Fork Maquoketa River submitted grant applications and were awarded funding. The project is funded from 2010-2014. The federal EQIP and CSP programs are the main programs for the MRBI project. Within the North Fork Project, effort has been placed on partner cooperation between existing organizations. Conservation Progress in the local watershed will benefit not only the greater Maquoketa River Watershed but also the Mississippi River Basin.

Denitrifying Bioreactors

One unique practice available through the MRBI project is installation of denitrifying bioreactors on cropland. A bioreactor is a structure designed to intercept tile water flow in order to reduce nitrates leaving the field through tile water. The physical dimensions of a bioreactor depend on the drainage area coming into the bioreactor. The structure is composed of an excavated trench filled with woodchips that are colonized by bacteria which strain out nitrates from tile flow. Installed bioreactors throughout the state of Iowa have shown a reduction in Nitrate-Nitrogen Concentration of water intercepted by the structures. Considerations such as tile size, drainage area, and tile slope are all factors that determine appropriate location and size dimensions of bioreactors. Cost share payments available through MRBI are a one-time payment of $5,999.
Above: Sediment control basin constructed above a feedlot in the Bear Creek Watershed.

Bear Creek Watershed

Recent and on-going watershed projects in the Bear Creek Watershed have helped implement conservation practices/structures aimed at reducing bacterial impairments to Bear Creek, slowing sediment losses, and improvement of manure storage/treatment. The MRBI project will allow applicants in the Bear Creek Watershed to fund more conservation projects than ever before. Operators and landowners in the Bear Creek Watershed can work with the Delaware SWCD to apply for MRBI funding. Technical resources and cost share rates are available for those interested in funding practices through the MRBI project. Efforts to protect water resources in the Bear Creek Watershed have been successful since the onset of watershed specific projects in 2004. Frequency of ammoniated manure discharge into Bear Creek has significantly decreased because of promotion and construction of waste treatment structures, along with increased awareness of manure handling/application practices. The Bear Creek Watershed being a livestock dense watershed presents challenges for containment and adequate application to the soil. Structures such as settling basins, above ground concrete tanks, stacking pad structures, roofed buildings, and overwintering stations are all funded practices through MRBI. CNMP’s are also available for producers who want to manage the amount, rate, and timing of nutrient application from their facility to crop fields and pasture.

Nutrient Management Options

The MRBI project has offered numerous opportunities to install and apply nutrient management to cropland. Applicants offered funding through MRBI will be required to have written nutrient management plans and nutrient management applied to fields conservation structures are installed on. Written nutrient management plans are a document to guide the application, timing, rate, and source of nutrient to crop fields. They utilize crop rotations details, field specific soils types, existing conservation systems, soil test results, and established book values for nutrients to determine optimum rates to apply. General guidelines for applying also contained within the document. Through MRBI producers can receive cost share by applying nutrient management provisions to fields. This is accomplished by following the written nutrient management plan and reporting application rates annually. Enhancements to basic nutrient management can be selected at the applicants choice. These enhancements can raise the cost share from $2.66/acre to as much as $36/acre.

Practical and Effective Conservation for Our Watersheds

Establishment of structural practices that reduce soil erosion from upland fields and regulate water flow not only aid field specific issues but also benefit the greater hydrology of watershed. In the Upper North-Fork Maquoketa River MRBI project area over 57% of the cropland is C slope or steeper. Controlling and trapping sediment, water, and nutrients on these fields is key to the long-term productiveness of these fields. The upper 1/3rd of the MRBI watershed area is located in the Driftless Area ecoregion. This region presents special challenges to conservation because of karst terrain. Controlling surface runoff in these karst areas is critical to mitigating groundwater contamination from nutrient runoff. Nutrient management applied to vulnerable cropland acres is very effective at keeping nutrients in suspension within the soil and not lost through leeching and surface erosion.

“In 2011 the MRBI project helped 19 producers have written nutrient management plans produced for their operation”

“MRBI cost share rates are set at 75% of the state wide average practice cost”
- Beginning farmer and historically underserved applicants are eligible for 90% cost share
- Payment rates are adjusted for each fiscal year

Filter strips and waterways installed in the Bear Creek Watershed
The Hewitt Creek Watershed Council has been administering performance incentive conservation funding since 2005. The projects have been funded through the Iowa Farm Bureau Federation and the State of Iowa’s Watershed Improvement Review Board. The WIRB funding allowed Hewitt Creek Watershed Council to expand its incentives program and continue with monitoring, both of which are central to the project. Key to the project success has been the 67 percent participation amongst watershed farm operators and landowners. In 2010 the Hewitt Creek Watershed Council applied for and was awarded a second WIRB grant, the first grant expired in 2008. This grant funding will help the Hewitt Creek Watershed Council to continue use of performance measures such as the Phosphorus Index, Soil Conditioning Index, and Cornstalk nitrate test to guide incentive implementation. The Coffee Creek-North Fork Council received WIRB (2008-2011) and CIG (Conservation Innovation Grant) funding during 2007 and 2008. To date performance incentive improvement has seen 19.8 miles of grassed waterways constructed, conversion to no-till and contour cropping, cover crop plantings and reduced tillage. Key aspects to the watershed councils objectives are to provide critical, decision making information to watershed residents and document the effectiveness of performance-based approach to benefit the implementation of performance-based incentives in other watersheds. Water quality monitoring of the Headwaters North Fork Maquoketa River has yielded water quality data from both high rainfall events and normal base flow in the North Fork Maquoketa River. The monitoring data collected by both committees has shown conservation efforts by involved watershed residents are contributing to a reduction in water quality impairments in the North Fork Maquoketa River and also Hewitt Creek.

- Those interested in applying for MRBI funding please contact either the Dubuque SWCD or the Delaware County SWCD
- Other watershed project funding exists within the three sub-watersheds; please contact either the Delaware County SWCD or Chad Ingles with Iowa State University Extension to learn more

Hewitt Creek Watershed Council
Coffee Creek-North Fork Maquoketa Watershed Council

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Hewitt Creek Watershed Committee members meeting with an EPA watershed project official