United States Environmental Protection Agency

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EPA'S TARGETED WATERSHED GRANTS 2005 ANNUAL REPORT

December 2005

Upper Mississippi River

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WHY IS THIS WATERSHED SPECIAL?

The Des Moines Lobe, the central focus of this project, is drained mostly by the Des Moines, Raccoon, Iowa, and Skunk rivers in the "prairie-pothole" region in north-central Iowa. Thanks to artificial drainage, this land boasts some of the most valuable and productive farmland in the country. In 2002, the average land value for the 22-county area making up most of the Lobe was approximately $2,500 an acre, and more than 80 percent of that area was used for row crops, 42.9 percent for corn and 37.6 percent for soybeans.

ENVIRONMENTAL CHALLENGES

Nitrate leaching from extensive areas of drained cropland in Iowa and other areas along the Corn Belt is transported down the Mississippi River and is believed to be a contributor to hypoxic (low in dissolved oxygen) conditions in the Gulf of Mexico and to local drinking water quality concerns. Although mismanagement and overuse of fertilizer and manure contributes to water quality problems, hydrological and land-use changes (that is, the conversion of prairies and marshes to row crops) are the leading causes of degradation.

- Extensive subsurface drainage of the Corn Belt (25 percent of Iowa is drained) accelerates the transport of nitrate entering the Mississippi River.
- Subsurface drainage creates very productive croplands and reduces other water quality concerns.

Scientists examine a soil sample. (Charlie Rahm)

RESTORATION ACTIVITIES

A permanent solution to this watershed's challenges involves "structural modifications" of the drainage systems that could have both water quality and crop production benefits. EPA Targeted Watersheds Grants funds will be used to test new technologies involving modified drainage systems, combined with nitrate-removing wetlands. Project partners will:

- Use actual soils, topography, and weather data with improved crop growth, hydrologic, and wetland models to design integrated wetlands and controlled or shallow drainage systems to reduce nitrate loading while maintaining or improving crop performance
- Develop an optimum drainage-wetland system design for specific study areas with landowner cooperation, install it, and monitor its water quality performance
- Conduct outreach to publicize the results to other landowners, the farm media, downstream water users, and policy makers at all levels and explore technology transfer opportunities to other areas in Iowa and beyond

A STRONG PARTNERSHIP FOR CHANGE

The Iowa Department of Agriculture and Land Stewardship and Iowa State University, which together developed the nitrate removal wetland technologies that led to Iowa's Conservation Research Enhancement Program, lead the project team. Further support through expertise, staff, and financial resources comes from:

- Iowa Drainage District Association
- Agri Drain Corporation
- Natural Resources Conservation Service
- Iowa Farm Bureau Federation
- Iowa Environmental Council
- City of Cedar Rapids
- Des Moines Water Works

A restored wetland. (Lynn Betts)

"Our TWG project is developing new approaches for managing water on cropped landscapes to reduce the movement of nitrate to streams, and ultimately, to the Gulf of Mexico hypoxic zone. Farmers will be able to see these technologies through demonstrations under actual field conditions, both to demonstrate the environmental gains as well as impacts upon crop production and farming practices."

– Dean W. Lemke, P.E., Iowa Department of Agriculture and Land Stewardship