



# Horicon Marsh & Rock River Watershed Recovery

U.S. ARMY CORPS OF ENGINEERS

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## Location

Horicon Marsh, Wisconsin

## State(s)

WI

## Congressional District(s)

IL-16, IL-17, WI-2

## Status

Planning Assistance to States Agreement between the Department of the Army and the Wisconsin Department of Natural Resources for the Section 22 Horicon Marsh Action Plan Project was signed 22 Aug 2011. A three day workshop was held with state and federal agencies and scientist from the Florida Everglades. It was concluded that the next step was the need to develop a conceptual model to better manage Horicon Marsh. As a part of Phase 2 the Wisconsin Department of Natural Resources and the Army Corps of Engineers developed an ecological conceptual model for Horicon Marsh. This project was completed under budget and is currently being closed out.

## Description

Horicon Marsh is a restored wetland system within a shallow peat-filled marshland basin. The marsh is one of the largest freshwater cattail marshes in the United States and is known as the "Little Everglades of the North". It encompasses about 32,000 acres in central Wisconsin, near the headwaters of the Rock River. Two branches of the river enter the marsh from the north and southeast. The marsh is a palustrine system dominated by persistent emergent vegetation and floating vascular aquatic beds. While the Marsh is renowned for its migrant flocks of Canada geese, it is also home to more than 290 varieties of birds, including endangered and threatened species. In 1991, the marsh was designated a "Wetland of International Importance" by the International Ramsar Convention. Six years later, the marsh was recognized by the American Bird Conservancy as a Globally Important Bird Area. Only a select number of sites in the US have received these designations making Horicon Marsh a national treasure. Over 300,000 people visit the Horicon Marsh each year. The northern two-thirds (about 21,000 acres) of the marsh is under the jurisdiction of the U.S. Fish and Wildlife Service and is known as the Horicon National Wildlife Refuge or "Federal Refuge". The southern one-third (about 11,000 acres) is owned by the State of Wisconsin, managed by the Department of Natural Resources, and is called the Horicon Marsh Wildlife Area or the "State Area." Main Problems and Challenges remain poor quality of tributary water with excessive in-flow of nutrients and sediment.

- Accumulation of sediment within the marsh, clogging waterways and ditches and degrading aquatic habitat.
- Cattail monoculture with limited aquatic and wetland vegetative diversity.
- Nuisance and invasive plant and animal species.
- Hydrology of the marsh has been altered limiting sheet flow flushing.
- Altered hydrology of the watershed, contributing to flooding conditions with increased sediment and nutrient loads to the marsh.
- High construction and maintenance costs of management systems, including dikes and



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water control structures.

- Inadequate levee system and ownership of adjacent uplands, which would provide capability to manage water levels.
- Downstream dams restrict natural hydraulic pulses.
- Agriculture and urbanizing landscape adjacent to marsh boundaries, leading to fragmentation and loss of upland wildlife habitat.

## Summarized Project Costs

Federal Cost	\$100,500
Non-Federal Cost (In-Kind-Services)	\$100,500
Total Cost	\$201,000
Total Final	\$159,000
Federal Allocations through FY 2014	\$50,500
Federal Allocation through FY 2015	\$50,000
Balance to Complete	0

## Additional Project Information

The south and west branches of the Rock River run through a large area of drained wetlands. The east branch of the river passes through cropland area that has the lowest compliance with best management practices and the highest soil erosion rate in Dodge County. Water quality monitoring by the Rock River Watershed Partnership and the USGS found that rural non-point pollution sources contributed 95 percent of the sediment load and 33 percent of the phosphorus load to the marsh. Urban runoff and municipal and industrial point sources contributed 61 percent of the phosphorus load, while fecal deposits from the large flocks of migrating Canada geese in spring and fall contributed an estimated 6 percent of the phosphorus load. Both river branches and the marsh itself appear on the federal EPA 303(d) list of impaired waters for pollutants of sediment and phosphorus and impairments of degraded habitat and low dissolved oxygen. Heavy sedimentation within marsh waterways, ditches, and pools has covered the native peat layer with semi-solid organic muck, silt, and clay. The sedimentation layer has altered benthic environments and covered submergent vegetation. Phosphorus, nitrogen compounds, and other nutrients carried with sediment particles accumulate in the bottom sediment and increase nutrient concentrations within the water column, leading to accelerated algae growth and over-nourishment of the cattail mats. The large population of carp throughout the marsh stirs up the bottom sediment, causing a recycling of nutrients, increased turbidity, and decreased water clarity. This environment is not conducive to establishment of desirable species of aquatic vegetation and, as a result, the habitat and food supply for gamefish, waterfowl, and other wetland birds have declined with the deterioration of a diverse aquatic plant community. The original hydrologic condition of the marsh was a braided stream system formed as the two river branches spread over the large basin. The marsh was a series of wetland communities, with river channels and open water areas interspersed with oxbow lakes, peat lands, and islands. This hydrology was significantly altered by construction of the main ditch and lateral drains about a century ago.

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The river through the marsh is a low-gradient system with downstream dams in the City of Horicon and Village of Hustisford controlling to a large degree the water level and flow velocity in the marsh. The reduced velocity of impounded flow through the marsh contributes to sediment aggradation in stream channels. Resource management has constructed dikes and bermed impoundments in certain parts of the marsh to manipulate and mimic the natural conditions of flood and drought, thus encouraging development of diverse aquatic and wetland vegetation. These management techniques have been successful in some cases, but there are severe limitations when assessing large-scale restoration efforts for the entire marsh ecosystem.

### **Major Work Item (This Fiscal Year)**

FY15: Finished the Ecological Conceptual Model in advance of the Horicon Marsh Master Plan.

### **Major Work Item (Next Fiscal Year)**

FY16: Currently there are no plans for further assistance in FY16, the project has been closed out.

### **Authority Details**

Phased allocation of Planning Assistance to States funding over several years

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