

Engineering with Nature

For hundreds of years, engineers considered nature something to manipulate, control and overcome. Today we realize that engineering projects that work WITH nature are more successful, efficient and beneficial to people, wildlife and ecosystems. "Engineering with Nature" is a nationwide U.S. Army Corps of Engineers program working on engineering solutions in harmony with natural processes. Several projects in the Detroit District show this effort and our commitment to protecting our water resources.





Compensating Works - Sault Ste. Marie, Mich. Stabilizing Spawning Grounds

The rapids next to the locks are one of only two rocky spawning beds in the St. Marys River and critical to the survival of several fish species. A gated dam has spanned the upper end of the rapids since 1921 to regulate the flow of water from Lake Superior into the lower lakes. In the past, raising and lowering its gates created a rush of water flushing eggs from the riverbed, or left fish stranded when water quickly disappeared. A project funded through the EPA's Great Lakes Restoration Initiative has allowed for the automation of the gates. This allows the gate positions to change over hours or even days reducing the impact on fish while still regulating flows into the lower lakes.

Rock Ramp – Frankenmuth, Mich.

Restoring Upstream Passage

This project, one of the Detroit District's largest ecosystem restoration projects yet, restores more than 70 miles of spawning habitat. A dam built to power a mill in the 1850s blocked fish from reaching spawning grounds upstream until the Corps replaced the dam with a 350-foot long rock ramp structure in 2015. Built of limestone, it simulates natural rapids and maintains water levels upstream while allowing fish to pass through. Native fish have already begun returning to these previously unreachable spawning areas.



21st Avenue West Embayment - Duluth, Minn. Restoring Harbor's Wetlands

Before becoming a commercial harbor, a broad delta filled with shallow marshes marked where the St. Louis River meets Lake Superior. In the 19th Century, crews deepened the harbor and altered the character of the waterway; industrial sites lined its shores and pollutants settled into its sediment reducing and damaging wildlife habitat. The 21st Avenue West Embayment project seeks to undo some of this impact. In 2013, the Corps began this "Engineering with Nature" test project using clean dredged fill to encapsulate polluted soils. The 21st Avenue Embayment was not only the least costly location to place dredge material, it also helped restore 75 acres of wetlands by reducing water depths to help the growth of aquatic plants that support a healthy ecosystem.



Regulatory Professionals

Protecting Water Resources Everyday

In addition to major projects, the U.S. Army Corps of Engineers is busy protecting our water resources on a daily basis through the efforts of a team of regulatory project managers active throughout the Detroit District. These specialists in wildlife biology, physical sciences and ecology oversee permits for private and public projects that could affect waterways and wetlands. They travel all over the District inspecting proposed building sites along federal navigable waters, monitoring work and ensuring that the needs of development and navigation are met while protecting critical ecosystems throughout the Great Lakes.





Cat Island – Green Bay, Wis.

Rebuilding Lost Islands

In Green Bay, the Corps dredges 100,000-250,000 cubic yards of sediment from the lower Fox River and Green Bay channel each year. The Cat Island project offers an opportunity to economically place dredged material while also restoring 274 acres of island and wetland habitat lost in the 1970s. Once an important wildlife haven, the Cat Island chain was heavily eroded over the years to the point where very little of the historic chain of islands remained. In 2012, the Corps and local partners built a dredged material disposal facility that will eventually restore this island chain in 2012. Over the next 15-20 years, the Corps will place dredged sediment from Green Bay's outer navigation channel into the Cat Island dredged material disposal facility. This will eventually rebuild the islands, restore the wetlands and protect over 1,400 acres of wildlife habitat. Since 2014, birds, fish, and small mammals have returned to this area and are thriving.



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