

FACES OF RESTORATION

PEOPLE WORKING TO RESTORE THE GREAT LAKES



MUSKEGON LAKE SHORELINE RESTORATION



DUNES CREEK WATERSHED RESTORATION

The U.S. Congress and President Obama have made Great Lakes restoration and economic recovery a national priority—in no small part due to the growing awareness that the health of the regional economy is inextricably linked to the health of the Lakes.

The Brookings Institution found that the eight-state region of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin stands to gain at least \$2 in economic benefit for every \$1 invested in Great Lakes restoration from increases in tourism, the fishing industry, recreational activity and home values.

Great Lakes restoration is not only a sound long-term investment—it creates jobs now.



Healing the Great Lakes is a mammoth undertaking, one that involves removing tons of toxic mud from polluted harbors, restoring miles of coastal wetlands and other habitat critical to the survival of fish and wildlife, and fighting an endless war to control invasive species that disrupt entire ecosystems.

Doing the job requires time, money and a small army of workers with a wide-ranging set of skills—from chemists and biologists to information technology specialists and administrators, ecologists and helicopter pilots, to name just a few.

These individuals are the faces of Great Lakes restoration.

Thousands of people work on a daily basis to restore the natural splendor of the Great Lakes that was lost over the past two centuries, as sewage overflows, invasive species, toxic pollution and habitat destruction wreaked havoc on the Lakes

This report is an attempt to shed light on a handful of the unsung heroes working to restore these majestic lakes.

No one knows precisely how many jobs have been created by the burgeoning effort to clean up the Great Lakes and restore fish and wildlife habitat, but the figure is likely in the thousands. Consider:

- > 125 jobs were created for a \$10 million project to restore fish and wildlife habitat in Muskegon Lake, a Great Lakes Area of Concern in Michigan.
- > 177 people are employed to control the invasive sea lamprey in the Great Lakes, which costs the U.S. and Canadian governments \$20 million annually.
- > 174 jobs were created, some of which were filled by at-risk youth, to remove dams and other barriers in a 150-mile stretch of the Milwaukee River system.

The number of jobs created by restoring the lakes will almost certainly increase in the coming years, as President Obama and Congress invest hundreds of millions of dollars as part of the Great Lakes Restoration Initiative.

Investments in Great Lakes restoration create short-term jobs and lead to long-term economic benefit for the Great Lakes states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin. Here is a sampling of jobs generated by restoration work.

JOB TYPE	MEAN ANNUAL WAGE	JOB TYPE	MEAN ANNUAL WAGE
Wetland scientist	\$45,730	Fisheries biologist	\$60,670
Research scientist	\$45,730	Archeologist	\$57,230
Construction manager	\$93,290	Operating engineer	\$44,180
Biologist	\$69,430	Environmental engineer	\$80,750
Toxicologist	\$70,000	Hydrogeologist	\$92,710
Chemist	\$72,740	Environmental planner	\$64,680
Geologist	\$58,000	Plumber, pipefitter	\$49,870
Helicopter pilot	\$90,000	Carpenter	\$43,640
Information technology	\$70,930	Electrician	\$50,850
Administrative staff	\$32,990	Truck driver	\$39,260
Mechanics	\$37,000	Concrete workers	\$39,410
Excavator	\$38,540	Dredge operator	\$38,330
Landscape architect	\$65,910	Conservation scientists	\$61,180
Civil engineer	\$81,180	Biological technicians	\$41,140
General laborer	\$33,190	Pile drive operators	\$51,410

Sources U.S. Bureau of Labor Statistics, www.salary.com

CASE STUDIES

DUNES CREEK WATERSHED RESTORATION

COST: \$1.4 million

JOBS CREATED: 60

CREWS LIBERATE BURIED CREEK IN INDIANA

The gurgling creek that flows alongside the parking lot at Indiana Dunes State Park might still be hidden under pavement were it not for a storm that exposed the risks that come with reconfiguring nature.

A flood in 2008 sent a torrent of water down the creek, which was buried under the parking lot at the time. The storm surge collapsed part of the parking lot and gave rise to efforts to liberate the remainder of the submerged waterway.

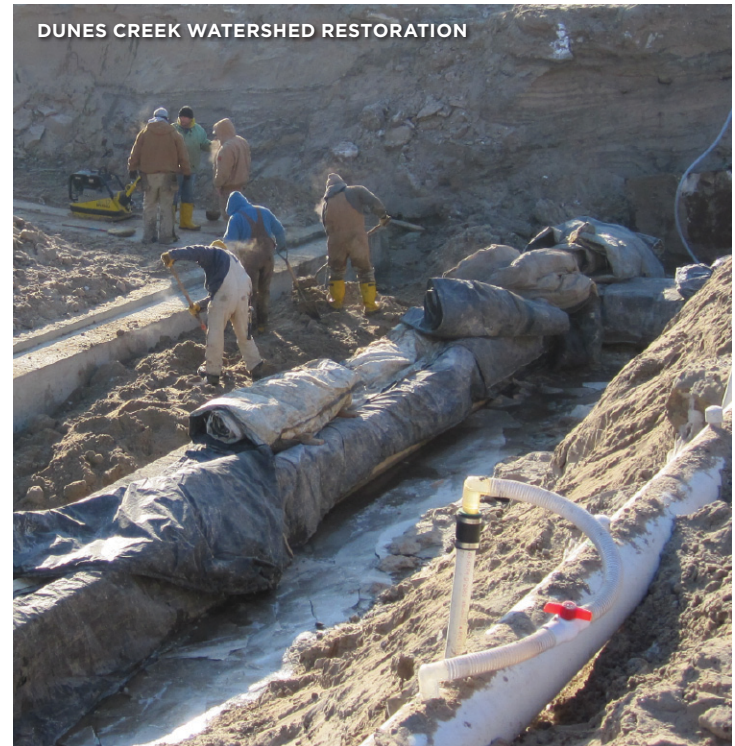
Over the course of two years, a team of landscape architects, biologists and heavy equipment operators worked to uncover 700-linear feet of the waterway as part of a so-called creek “daylighting” project.

Uncovering the stream and restoring its natural flow has improved water quality in the creek and at the nearby Lake Michigan beach. Salmon and trout now live in a waterway that was hidden from view for several decades, said Brandt Baughman, property manager at Indiana Dunes State Park.

“This is a dramatic change in the park but also a change in how we are managing our natural resources,” Baughman said. “Now, instead of looking at an asphalt parking lot there is a very beautiful, meandering stream with two bridges going over it.”

The \$2 million project has earned national recognition and led to more satisfying experiences for visitors, Baughman said.

With fewer parking spaces, the park is no longer jammed with visitors on hot summer weekends.



“We need revenue but the parking lot reduction has led to the park being less overrun on busy weekends,” Baughman said. “People are now having a better visitor experience and our weekday visitation has increased dramatically.”

MILWAUKEE RIVER AND WATERSHED RESTORATION

COST: \$4.7 million

JOBS CREATED: 174

MILWAUKEE DEPLOYS TROUBLED TEENS TO HEAL RIVER

A massive effort to restore 150-miles of the Milwaukee River and several of its tributaries—by removing 113 small dams and other obstructions—has become a model for community involvement in natural resource conservation projects.

Ozaukee County received \$4.7 million in federal funds to remove obstructions in the Milwaukee River and reconnect 119,000 acres of fish and wildlife habitat.

Milwaukee River and Watershed Restoration photo courtesy of Ozaukee County; Dunes Creek Watershed Restoration photo courtesy of Indiana Dunes State Park

The project, which will restore a 158-mile stretch of free-flowing river, is certainly laudable. What made the project remarkable was the fact that much of the fieldwork was carried out by at-risk Milwaukee teens.

Ozaukee County partnered with the Milwaukee Community Service Corp., a program for at-risk children, to remove dozens of barriers in the river. The unusual partnership benefited the river and the teenagers who carried out the work, said Matt Aho, the project manager for Ozaukee County.

“We had about 80 barriers in the river that could be removed by hand.” Aho said. “We used troubled, inner-city youth to work on stream restoration. They enjoyed the work and they were paid for it.”

Dozens of engineers, biologists, environmental planners, structural engineers and contractors also worked on the project. Once the work is done, the

Milwaukee River should be much more hospitable to northern pike and other species of fish and wildlife, Aho said.

MUSKEGON LAKE SHORELINE RESTORATION

COST: \$10 million

JOBS CREATED: 125

MUSKEGON LAKE NOT YOUR TYPICAL POLLUTION CLEANUP PROJECT

Kelly Rice stood on the edge of Muskegon Lake and kindly told a crew of construction workers precisely where she wanted them to place logs that would restore a portion of the lake’s scarred shoreline.

The wildlife biologist was one of 125 people working on a \$10 million project to restore several miles of the lake’s shoreline and, in the process, create more fish and wildlife habitat.

“This isn’t your standard Earth-moving contract,” said Rice, who was supervising part of the shoreline restoration project. “We’re replacing chunks of concrete at this site with logs and native vegetation. Some of the residents have told me they are already seeing wildlife where they haven’t seen it before.”

The Muskegon Lake project is one of the largest habitat restoration efforts in the Great Lakes. The project, funded by the National Oceanic and Atmospheric Administration, will restore several miles of coastal wetlands in a lake that was once one of the most polluted in the Great Lakes basin.

Teams of heavy equipment operators, biologists and landscape architects worked for two years to return the lake’s tattered shoreline to a more natural state.

The project prompted a retired doctor, who was a Muskegon native, to donate \$4 million to support ongoing efforts to heal the lake. The gift from the doctor, who wished to remain anonymous, was the largest donation ever given to the Community Foundation for Muskegon County.



MILWAUKEE RIVER AND WATERSHED RESTORATION

ST. CLAIR RIVER PHRAGMITES CONTROL

COST: \$40,000 annually

JOBS CREATED: 5

MICHIGAN USES HELICOPTERS TO FIGHT INVASIVE PHRAGMITES

When Michigan resident Kurt Homkes began flying helicopters for a living, nearly all of his work involved crop-dusting flights over farms.

Now the owner of Hamilton Helicopters spends nearly three months of the year using his Bell helicopter in a sort of air war against phragmites in the St. Clair River. Phragmites is an invasive reed that is taking over vast swaths of marshy land in the Great Lakes region.

“Invasive species have been good to my partner and me,” Homkes said. “We spray about 1,500 acres of phragmites every

year in Michigan but there are probably 200,000 acres of phragmites in the state— most people don’t realize how bad this problem is.”

Phragmites can grow to a height of 20 feet. The plants can become so dense they form an impenetrable wall of weeds that crowds out native vegetation and spoils waterfront views.

The Michigan Department of Natural Resources and Environment has been battling phragmites for nearly two decades. The agency began using Homkes’ company about 10 years ago to wage war on the invasive plants.

In some areas of the St. Clair River, between Lake Huron and Lake Erie, phragmites plants are so dense and tall that helicopters are the only way to kill large swaths of the plants, said Ernie Kafcas, a wildlife biologist for the Michigan DNRE.

“Helicopters allow us to treat large and remote areas in a short amount of time and the cost per acre is cheaper,” Kafcas said.

Homkes sprays an herbicide on the phragmites. The chemical kills all the plants in the treatment area but does not harm fish or wildlife.

After the chemical treatment, crews mow or burn the dead stalks of phragmites to keep the plant from coming back. Killing the phragmites allows native vegetation to return, Kafcas said.

“You have to use herbicides to knock down the phragmites—it’s the only tool we have to kill it,” Kafcas said.

The St. Clair River Delta, which is home to one of North America’s largest freshwater deltas, has become a focal point in the war on phragmites.

“We’re making headway in some areas and having some success in some prairies and Great Lakes marsh habitat,” Kafcas said. “But it’s mind-boggling how much of this stuff is still out there.”



BUFFALO RIVER RESTORATION

COST: Undetermined

JOBS CREATED: Undetermined

IN BUFFALO, A VILLAGE OF SCIENTISTS TACKLE COSTLY CLEANUP

Removing toxic mud from the bottom of the Buffalo River is far more complex than plunging a dredge into the murky depths and discarding the filthy haul in a landfill.

It takes a village of scientists to produce a successful cleanup of contaminated sediments.

For starters, contractors must make sure they don’t do more harm than good by re-suspending toxic mud and effectively widening the scope of the problem.

Enter the environmental engineers, geologists, toxicologists and chemists.

Dozens of scientists from several different consulting firms and government agencies are working to ensure that dredging toxic mud from the bottom of the Buffalo River improves water quality and creates a more hospitable environment for fish and wildlife.

“Our firm has 20–25 people working on the Buffalo River project,” said Marcia Galloway, a chemist and project manager for Ecology & Environment, Inc. The Buffalo area firm is one of several working with state and federal agencies, nonprofit groups and industries involved in the sediment cleanup and river restoration effort.

The Buffalo River is one of 42 Great Lakes Areas of Concern, or AOCs. Decades of industrial pollution and municipal wastewater discharges left the river a polluted mess.

Crews are scheduled to begin dredging parts of the river bottom in late 2010. The work could cost as much as \$100 million, according to U.S. Environmental Protection Agency estimates.

The dredging is just one part of a larger effort to restore the tortured river.

At Galloway’s firm, biologists studied how decades of pollution affected aquatic life; engineers worked on different cleanup options; and toxicologists evaluated the project’s possible threats to human health.

“This type of project really requires a multidisciplinary team,” Galloway said.

SEA LAMPREY CONTROL

COST: \$20 million annually

JOBS CREATED: 177

BATTLING SEA LAMPREY A NEVER-ENDING TASK

Nearly a century after blood-sucking sea lampreys snuck into the upper Great Lakes, teams of biologists and other scientists continue to combat an invader that nearly eliminated the native lake trout population.

Teams of scientists scout rivers across the Great Lakes region every year to trap migrating sea lampreys and kill juvenile lampreys before the parasitic fish can



swim into the lakes and feast on trout, salmon and whitefish.

Sea lamprey snuck into the upper Great Lakes in the 1920s by swimming through the Welland Canal, which

connects Lake Ontario and Lake Erie. Prior to the construction and modernization of the canal, Niagara Falls served as a barrier to prevent the sea lamprey from entering the Great Lakes. The eel-like fish, which cling to their prey, suck the blood and other bodily fluids out of fish.

The Great Lakes Fishery Commission, which manages the lamprey control program, spends \$20 million annually to keep the invasive fish in check. Absent those efforts, the sea lamprey population would explode and desirable fish species would be decimated.

Jeff Slade, supervisor of the U.S. Fish and Wildlife Service’s biological station in Ludington, Mich., said most people aren’t aware of the diverse skills needed to make the sea lamprey control program run smoothly. There is far more to the program than simply pumping chemicals into streams to kill sea lampreys, he said.

“Our program employs technicians, biologists, information technology specialists, maintenance workers and administrative staff,” Slade said. One of the most important tasks performed by employees of the program: Treating 90 to 100 streams in the United States and Canada each year with a chemical that kills larval sea lamprey while causing minimal damage to other species.

Their work allows the Great Lakes to maintain a \$7 billion fishery.

“If we didn’t treat any rivers with lampricide, in three years the effects of sea lamprey would be devastating,” Slade said.



About the Healing Our Waters®- Great Lakes Coalition

More than 115 organizations representing millions of people are uniting to restore one of America's greatest natural wonders—the Great Lakes. The coalition seeks to stop sewage contamination, shut the door on invasive species, clean up toxic pollution, reduce city and farm run-off, and restore wetlands and other damaged habitat—each of which is an essential component of restoring the health of the Great Lakes.

Learn more at
<http://www.healthylakes.org/>

For more information, contact:

Jeff Skelding
Campaign Director
202-797-6893
skeldingj@nwf.org

Chad Lord
Policy Director
202-454-3385
clord@npca.org

Jennifer Hill
Field Director
734-877-7104
hillj@nwf.org

Jordan Lubetkin
Communications Director
734-887-7109
lubetkin@nwf.org

Written by Jeff Alexander
Designed by Tuan Do Graphic Design

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(This page) Buffalo River Restoration photo courtesy of U.S. Environmental Protection Agency



BUFFALO RIVER RESTORATION