

**RESTORATION**  
OF THE  
**CLINTON RIVER**  
**WATERSHED**



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# HABITAT RESTORATION

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River and stream restoration takes many forms and has become a worldwide focus in recent years. Significant amounts of funding – measured in billions of dollars – have been allocated to restore and enhance river ecosystems around the world.

In the Clinton River watershed recent restoration efforts have focused on addressing the eight beneficial use impairments (BUIs) assigned to the watershed by the United States Environmental Protection Agency (USEPA) in the 1980s. In total, more than twenty restoration projects have taken place throughout the 760 square mile area that drains into the Clinton River and ultimately Lake St. Clair.

This book highlights just a few of the ongoing efforts undertaken by the stakeholders of the watershed.

## BUIs associated with the Clinton River Watershed:

- Restrictions on Fish & wildlife consumption
- Eutrophication or undesirable algae
- Degradation of fish & wildlife populations
- Beach closings
- Degradation of aesthetics
- Degradation of benthos (macroinvertebrates)
- Restriction on dredging activities
- Loss of fish & wildlife habitat





# HABITAT RESTORATION

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## What is a watershed Anyway?

A watershed is an area of land that drains into a central location. All land eventually drains water into a surface water body, this could be a stream, river, drain or lake.

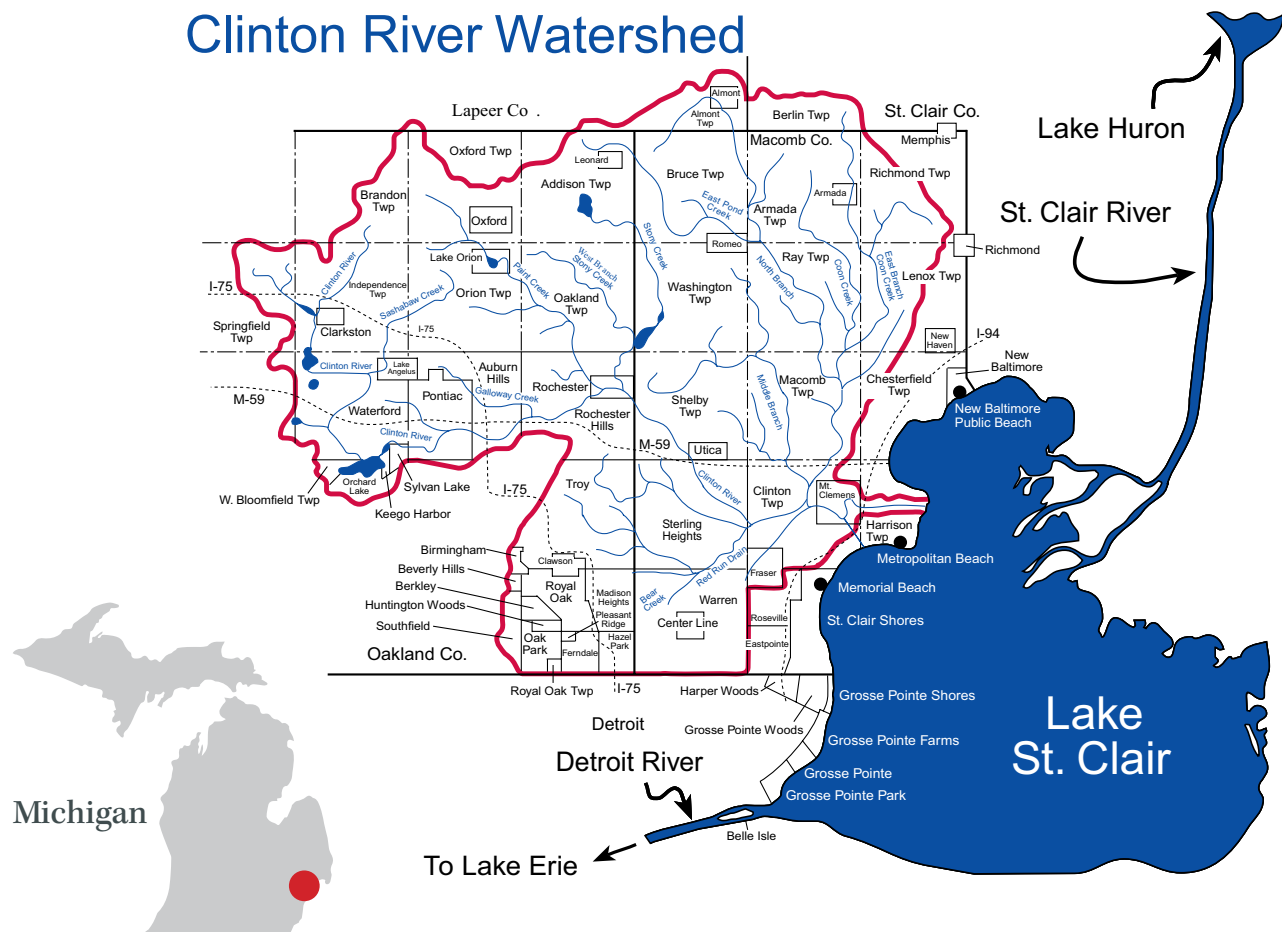
The Clinton River drains water from parts of four counties Oakland, Macomb and small areas of St. Clair and Lapeer counties.

River restoration involves addressing many ecosystem characteristics such as flow, sediment movement, and habitat availability to the native organisms that call the river home. Common techniques include bank stabilization, woody material management, native vegetation plantings and many other efforts to restore connectivity between the river and its surrounding floodplains. Some of the restoration techniques that can be seen in the projects highlighted in this book include, rock and log vanes, bank stabilization with large wood, and culvert widening to allow for fish passage to upstream habitat.

*Decisions, decisions, decisions, what goes into the planning process of river restoration?* Before a restoration project can take place, the first step is to collect data and monitor the river over time. This will guide what sort of techniques can be used to restore the ecosystem. Data collected addresses the physical, chemical, and biological make-up of the river. All this data then leads to development of a project that will help to enhance the structure and function of the river.

As you read through this book, you will find details about each project. These projects have led to a significant increase in habitat available to our native organisms. However, our work is not done, with over 1.5 million residents within the watershed, we must all stay vigilant in our efforts to protect, enhance, and celebrate the Clinton River, its watershed, and Lake St. Clair. We do this for everyone and everything that calls the Clinton River watershed home.

# RESTORATION PROJECTS IN THE CLINTON RIVER WATERSHED



# CLINTON RIVER SPILLWAY HABITAT ENHANCEMENT

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**Funding Amount // \$4.3 Million**

The Clinton River Spillway was built by the Army Corps of Engineers in 1950 as an off channel from the Clinton River to Lake St. Clair.

The purpose was to mitigate flooding issues in Mt. Clemens, Harrison Township, and Clinton Township.

Habitat was created in this man made channel by controlling invasive species, adding native plants, small inlets, and large woody debris, mimicking habitats found in a naturally formed waterway.

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**Project Partners //** Clinton River Spillway Inter-County Drain Drainage Board, Clinton River Watershed Council, Clinton Township, Harrison Township, Hubbell Roth & Clark, Macomb County Public Works Office, and NOAA

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# PARTRIDGE CREEK COMMONS

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**Funding Amount // \$2.3 Million**

The vacant land once was a golf course, and contains one mile of the Gloede drain. Prior to the restoration, water quality issues within the area were fragmented wetland habitat, erosion along the drain and persisting golf cart pathways.

Completed in 2016 the restoration includes, 52 acres of habitat restored, 5,500 lineal feet of multi-staged open channel restoration and 5 acres of wetland restored.

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**Project Partners** // Clinton River Watershed Council, Clinton Township, Hubbell Roth & Clark, and Macomb County Public Works Office

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# MCBRIDE DRAIN

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**Funding Amount // \$2.5 Million**

McBride drain provided limited habitat for wildlife due to grading and lack of vegetation. The area was re-worked to include the habitats and characteristics of a traditional stream.

Included improvements to McBride Drain were naturalized stream banks, restored vegetation, riparian buffer, invasive species control and fish habitat creation.

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**Project Partners** // Anderson, Eckstein & Westrick Inc., Clinton River Watershed Council, Macomb County Public Works Office, Macomb Township, and Soils & Materials Engineers Inc.

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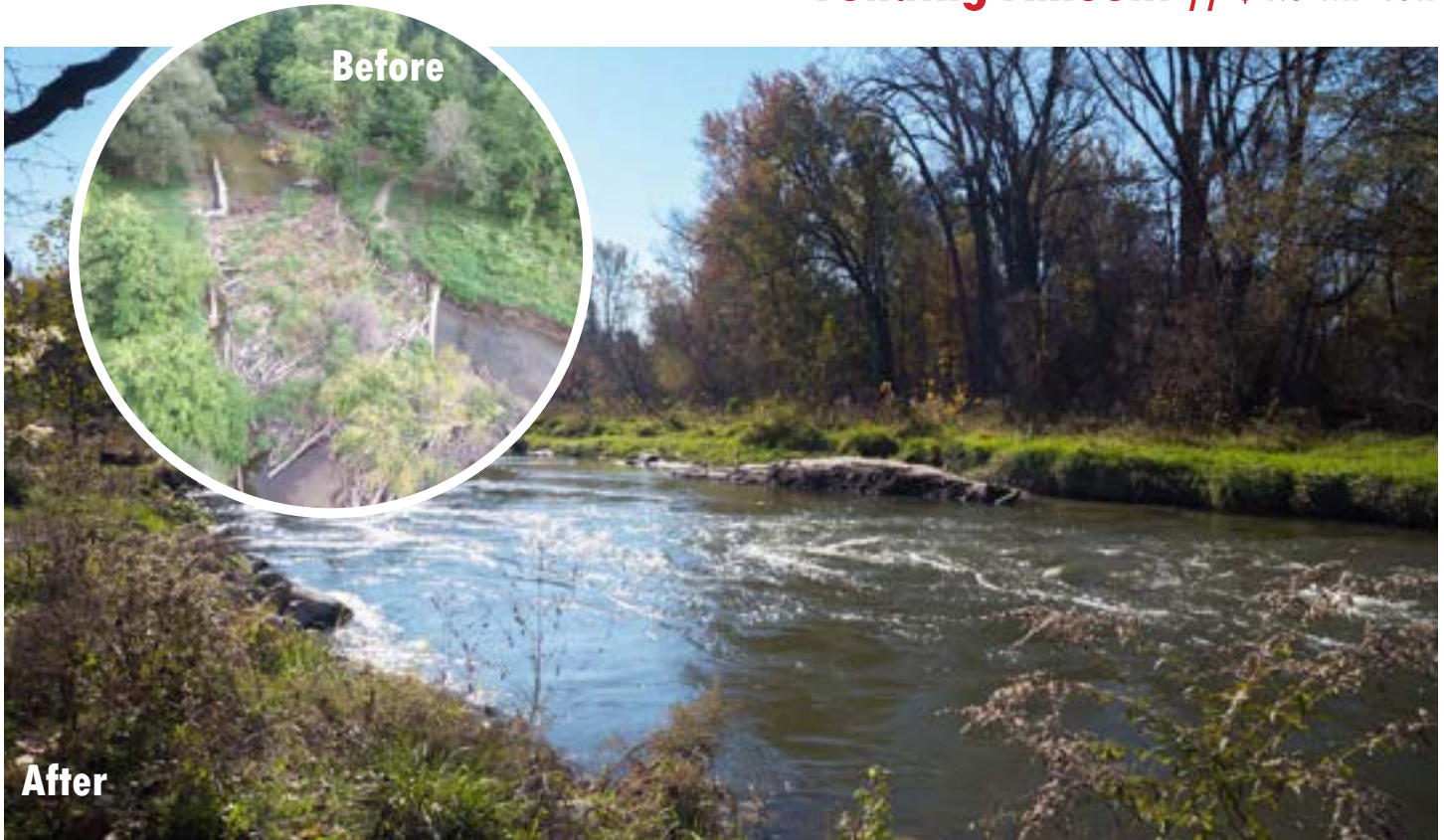
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# CLINTON RIVER CORRIDOR RESTORATION

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**Funding Amount // \$4.5 Million**



The Clinton River Corridor was experiencing sedimentation, erosion and flow increase. Ultimately 25 log jams containing approximately 385,000 cubic feet of debris were removed, 24 log vanes installed as stream bank protection and 7,600 feet of eroding riverbanks were stabilized. This opened up the 9 mile stretch of the Clinton River through Sterling Heights and Utica rendering it navigable for the first time since the 1970s.

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**Project Partners //** City of Sterling Heights, City of Utica, Clinton River Watershed Council, Hubbell, Roth & Clark, Macomb County Planning and Economic Development, and Macomb County Public Works Office

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# WOLCOTT MILL METROPARK WETLAND RESTORATION

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**Funding Amount // \$335K**



The North Branch of the Clinton River flows through Wolcott Mill Metropark. Within the park were drained agricultural fields that historically were wetlands.

Invasive species were controlled and over 60 acres of wetlands were restored, creating new wildlife habitat and reducing flashiness.

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**Project Partners** // Huron-Clinton Metropark Authority, Oakland University, State of Michigan Fish and Wildlife Services, and Wayne State University

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# CASCADE DAM REMOVAL

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**Funding Amount // \$226K**



Two failed dams within the North Branch of the Clinton River were removed. These dams inhibited fish passage, presented a safety hazard and degraded the area aesthetics. Only a small piece of dam was left as a piece of history. This opened up aquatic habitat and created access for resident and migratory species from Lake St.Clair.

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**Project Partners //** Clinton River Watershed Council, and the Huron-Clinton Metropark Authority

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# HARLEY ENSIGN COASTAL WETLAND RESTORATION

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**Funding Amount // \$2.4 Million**



This restoration on the shores of Lake St.Clair softened the hardened shoreline, added 11 acres of wetland habitat, 4 acres of sedge meadow and mesic habitat and 11 large woody debris habitat structures.

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**Project Partners // EPA, United States Army Corps of Engineers, and the Michigan Department of Natural Resources**

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# GALLOWAY CREEK FISH HABITAT RESTORATION

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**Funding Amount // \$3 Million**



Barriers to fish passage from perched and undersized culverts to dams were posing threats to fish migration. The Galloway Creek Fish Passage project opened up two miles of tributary stream, reduced sediment load and restored floodplains.

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**Project Partners** // Clinton River Watershed Council, Consumers Energy, EPA, Oakland University, Stantec Inc., and the United States Army Corps of Engineers

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# SYLVAN GLEN GOLF COURSE HABITAT RESTORATION

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**Funding Amount // \$850K**



Located in the Sylvan Glen Golf course, the Gibson and Gibson-Renshaw drains were experience erosion, embeddedness and widening. Greater than 3500 feet along both streams were restored, decreasing sediments, improving stormwater quality and enhancing habitat.

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**Project Partners** // City of Troy, Clinton River Watershed Council, Hubbell, Roth & Clark, Red Run Watershed Advisory Group, and the Sylvan Glen Golf course

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# GALLOWAY CREEK WETLAND RESTORATION

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**Funding Amount // \$700K**



This project re-established approximately 2 acres of wetland and native vegetative habitat along the Galloway Creek in Auburn Hills. The site had been illegally filled in more than 30 years ago.

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**Project Partners // City of Auburn Hills, CRWC, and ASTI Environmental**

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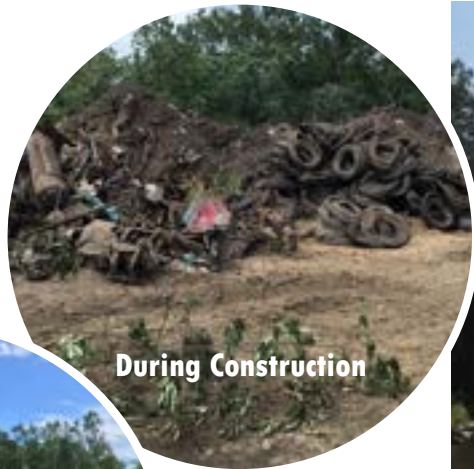
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# ST. LAWRENCE - AESTHETICS

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**Funding Amount // \$567K**

Historically this site at the rear of the St. Lawrence Cemetery was used as a non-regulated household dump. While being exposed to extreme erosion the solid waste at the dump site began to resurface.

The site was restored with solid waste being removed, and the stream bank re-graded for stability to a more suitable grade.

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**Project Partners // EPA, USACE, EGLE and the St. Lawrence Church**

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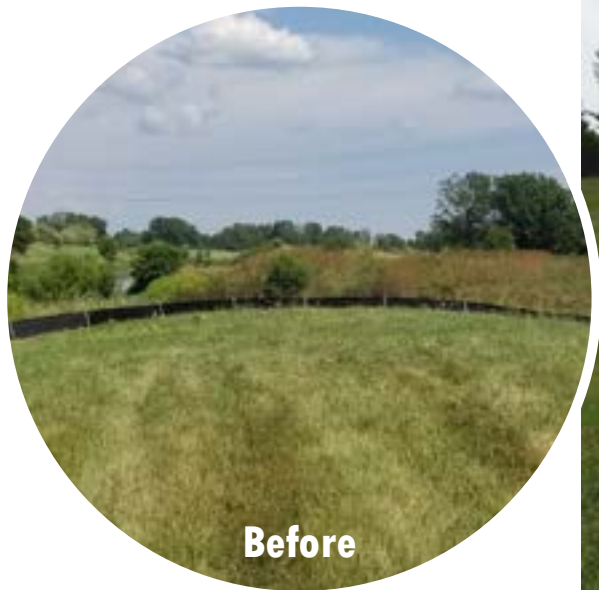
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# STERLING RELIEF

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**Funding Amount // \$1.85 Million**



The Sterling Relief drain was constructed during the 1970s and is found within the Red Run Subwatershed. Due to the Red Run's population density and high percentage of developed areas, stormwater runoff and pollution are an issue.

By daylighting 2,000 feet of formerly enclosed drain this project allowed an open and more traditional stream habitat to be established. Along the drain a native vegetated corridor was also created.

These improvements provide 156.5 million gallons/year captured and infiltrated stormwater runoff, 17.77 million gallons of stormwater capacity added, 3,488 lbs of nitrogen avoided annually, 616 lbs of phosphorus avoided annually and 233,317 lbs of sediment avoided annually.

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**Project Partners** // Macomb County Public Works Office, Sterling Relief Drain Drainage District, Clinton River Watershed Council, Macomb County Planning and Economic Development, Hubbell, Roth & Clark, and Pieperzak

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# BLACK CREEK MARSH RESTORATION

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**Funding Amount // 1.2 Million**



Black Creek Marsh is located in Lake St. Clair and can be accessed from Lake St. Clair Metropark in Harrison Township. Due to development of land over time, excess sediment deposits built up in the natural channels of the marsh. The area was also colonized by invasive phragmites, limiting habitat and recreational use of the marsh.

Restoration work included treatment of phragmites and dredging to create shallow water habitat and areas for fish spawning. These improvements also increased flow and opportunities for recreation such as canoeing and kayaking.

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**Project Partners** // HCMA, ASTI, Clinton River Watershed Council, NOAA, Michigan Department of Natural Resources Fisheries Division, and Wayne State University

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# LAKE ST. CLAIR POINTE ROSA COASTAL MARSH RESTORATION

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**Funding Amount // \$1.5 Million**

A coastal marsh located within Lake St. Clair Metropark, Pointe Rosa Marsh experienced heavy sedimentation and problems with invasive species colonization. Results of which lead to habitat loss for native species.

Restoration efforts included creation of a variety of habitats to support biodiversity, invasive species treatments and removal of algal mats.

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**Project Partners //** Macomb County, Huron-Clinton Metropolitan Authority, Clinton River Watershed Council, Wayne State University, ASTI Applied Science, and Hamilton Anderson and Associates

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# LANE DRAIN RESTORATION

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**Funding Amount // \$985K**

Lane Drain was a channelized county drain located within the Red Run Subwatershed at the City of Troy's Civic Center. A dam located just upstream of Town Center Drive was installed in the early 1970s to create an aesthetic pond and detention basin near the City's Aquatic Center.

The impoundment acted as a sediment and nutrient sink, increasing water temperature, forming a barrier to aquatic organism passage, and fragmented habitat. The road culverts impeded the passage of fish and aquatic organisms. The dam was removed, improving fish passage, box culverts were installed.

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**Project Partners** // City of Troy, NOAA, TSP Environmental, HRC, Oakland County Water Resources Commissioner, and the Clinton River Watershed Council

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# AVON CREEK RESTORATION

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**(Above)**  
**During Construction**



**Funding Amount // \$375.5K**

Goals of the Avon Creek restoration were to reduce sediments entering the stream, reduce stream temperature and restore habitat. Channelization in the 1980s had degraded stream habitat and increased sediments flowing into the stream. To mitigate these effects improvements to the stream and surrounding area were made. The pond was dredged and a pond bypass to facilitate fish passage was created, streambanks were stabilized, the natural floodplain was restored and meanders were added.

The new bankful plan from creek construction hydrologically recharged the area. Finally a variety of native plant species were planted on the surrounding land to aid in the improvement of water quality, overall habitat and bank stabilization.

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**Project Partners** // U.S. Fish and Wildlife Service Great Lakes Basin Fish Habitat Partnership, City of Rochester Hills, Hubbell, Roth & Clark, and the Clinton River Watershed Council

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# SHELBY TOWNSHIP CLINTON RIVER RESTORATION

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**Funding Amount // \$1.7 Million**

This project restored two areas of severe bank erosion along the main branch of the Clinton River. Design elements included the use of wood structures for habitat and in-stream rock structures to prevent future bank erosion from occurring. Also included was an engineered logjam to provide ample cover for fish traveling the river. Native vegetation was used to provide additional habitat along the river corridor for pollinators and other native wildlife.

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**Project Partners** // Clinton River Watershed Council, EGLE, GLRI, Shelby Twp, and US Army Corps of Engineers

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# PROJECT PARTNERS & ACKNOWLEDGMENTS

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Clinton River Spillway  
Intercounty Drain Board











