CASE STUDY 2

From Cleanup of the Detroit River to Revitalization of the Waterfront

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In the midst of Detroit's growing population and industrial expansion during the early to mid-1900s, people clearly viewed the Detroit River as a working river that supported commerce and technological progress. As a result, the Detroit River became one of the most polluted rivers in the United States.

This pollution peaked in the 1960s: oil pollution caused winter waterfowl kills; phosphorus pollution caused accelerated eutrophication; municipalities and industries caused violations of water quality standards; toxic substances' contamination caused both fish consumption advisories and reproductive impairment in wildlife; and land use practices destroyed wetlands.

Like many other large North American cities, the Motor City made the Detroit River its back door, with businesses facing inland and away from the river. Indifference compounded the problem, as Detroit perceived water pollution as just part of the cost of doing business. As a result, Detroit residents lost connection to their river.

Water pollution of the Detroit River in 1966. Credit: Michigan Department of Natural Resources.

Detroit River Cleanup and Revival

The Detroit River flows approximately 32 miles (51.5 km) from Lake St. Clair to Lake Erie, forming the international border between Canada and the United States. As far back as the 1970s, the International Joint Commission identified the river as a "problem area" and later designated it as one of 43 Great Lakes Areas of Concern. Decades of pollution prevention and control, as well as cleanup, have resulted in substantial environmental improvements (Table 1).

The Detroit River Remedial Action Plan, started in 1985, has played an important role in sustaining and furthering the restoration of impaired beneficial uses (Michigan Department of Natural Resources and Ontario Ministry of the Environment, 1991). Supporting this cleanup effort, the Great Lakes Legacy Act helped fund remediation of contaminated sediment in the Black Lagoon ($9.3 million). In addition, the Great Lakes Restoration Initiative helped construct three fish spawning reefs ($3.75 million), restore bottomland habitat off Belle Isle's South Fishing Pier ($500,000), restore riparian habitat at U.S. Steel ($670,000), restore Blue Heron Lagoon on Belle Isle ($1.43 million), achieve brownfield cleanup and habitat restoration at the Refuge Gateway in Trenton ($500,000), and restore habitat around Celeron ($8.61 million) and Stony ($7.65 million) islands.

This cleanup of the Detroit River has resulted in one of the most remarkable ecological recovery stories in North America. In the late 1960s, when the Detroit River was one of the most polluted rivers in North America, no bald eagles, peregrine falcons, or osprey were reproducing in the Detroit River watershed, nor lake sturgeon or lake whitefish in the river. Beavers had disappeared, as had the common terns from the 980-acre island park called Belle Isle. The Great Lakes Fishery Commission considered walleye to be in a state of crisis. Today, bald eagles, peregrine falcons, osprey, lake sturgeon, and lake whitefish are reproducing again, beavers have returned, common terns are back on Belle Isle, and the Detroit River is now considered part of the "Walleye Capital of the World" (Hartig, 2014).

This ecological recovery is remarkable, but restoration is not complete. Monitoring has documented the following environmental and natural resource challenges: population growth, transportation expansion, and land use changes; nonpoint source pollution; toxic substances contamination; habitat loss and degradation; introduction of exotic species; and climate change (Hartig et al., 2009).

ENVIRONMENTAL IMPROVEMENTS
More than 97% reduction in oil releases
More than 98% decrease in phosphorus discharges
4,600 tons/day decrease in chloride discharges
Substantial improvement in municipal wastewater treatment by upgrading all plants from primary treatment to secondary treatment with phosphorus removal
95% reduction in untreated waste from combined sewer overflow discharges (i.e., in sewerage systems that carry both sanitary sewage and storm water runoff, the portion of the flow that goes untreated into rivers or lakes because of wastewater treatment plant overloading during storms)
85% reduction in mercury in fish
91% decline in PCBs, a 92% decline in DDE, and a 94% decline in TCDD in herring gull eggs from Fighting Island
Remediation of one million cubic yards of contaminated sediment at a cost of more than $154 million

Table 1. Summary of environmental improvements. (Khan et al., 2017; Coffey et al., 2017; Hartig et al., 2009).

Waterfront Revitalization

As recently as the early 2000s, abandoned buildings, underused street parking lots, material storage piles, and cement silos dominated a considerable portion of Detroit's waterfront between the MacArthur Bridge to Belle Isle and the Ambassador Bridge to Canada, prohibiting access to the Detroit River (Hartig and Wallace, 2015). For more than 100 years, city planners identified the highest and best use of this land to be "industrial" because of obvious revenue returns. Detroit was an industrial town with a working riverfront that supported industry and commerce. Over time, however, Detroit lost people and industries, and had much underused and undervalued riverfront land. Detroiters had long lost their connection to the Detroit River. They wanted to improve public access to it and redevelop it in a fashion that would improve quality of life, catalyze economic development, and help change the perception of Detroit from that of a Rust Belt city to one that is actively engaged in sustainable redevelopment (Hartig and Wallace, 2015).

Out of this growing public interest to reconnect to the Detroit River, the ecological recovery, and strong public and private support to revitalize Detroit, the Detroit Riverfront Conservancy was created in 2003 to transform

Material storage piles, dilapidated and abandoned buildings, cement silos, and underused surface parking lots dominated the Detroit riverfront east of the Renaissance Center as recently as the early 2000s. Credit: Detroit Riverfront Conservancy.

Detroit's international riverfront—the face of the city—into a beautiful, exciting, safe, accessible world-class gathering place for all (Hartig and Wallace, 2015). In 2016, the Detroit Riverfront Conservancy celebrated the completion of the first phase of its capital campaign, raising $163 million to build 3.5 miles (5.6 km) of the Detroit RiverWalk. Nearly three million annual visitors are already using it. The next phase will be to complete the former Uniroyal portion of the Detroit RiverWalk, the nearly 2-mile (3 km) west riverfront, and other strategic connections to neighborhoods, and to ensure long-term operation, maintenance, and stewardship.

The Detroit RiverWalk has become a destination of choice for nearly three million annual visitors. Credit: Detroit Riverfront Conservancy.

Economic Benefits

In 2013, the Detroit Riverfront Conservancy decided to assess the impact of extensive riverfront improvements made since 2003. The organization hired CSL International to undertake an economic impact study, which noted not only significant economic impact associated with riverfront investment, but also the "transformation of a blighted area into a vibrant community asset."

The study reported that as of 2012 the east portion of the Detroit RiverWalk, which stretches more than 3.5 miles (5.6 km), was 80% complete. CSL International (2013) documented that nearly three million annual visitors enjoy the Detroit RiverWalk and its associated green infrastructure. In 2012, the riverfront hosted more than 100 events, ranging from small weekly gatherings to large annual events like the River Days Festival.

This stretch of the Detroit RiverWalk cost $80 million to construct, and the conservancy created a $60 million endowment for long-term operation and maintenance (CSL International, 2013). This investment catalyzed an additional $1.55 billion in total public and private sector investment (including the value of contributed land), of which approximately $639 million can be directly linked to riverfront improvements (Table 2). In addition, the study estimated potential future investment valued at $700-950 million (CSL International, 2013).

CSL International (2013) concluded its economic impact study stating that this segment of the Detroit RiverWalk had spurred approximately $1 billion in total public and private sector investment, with more than $1 billion expected over the next decade. The study

estimated total spending by visitors, residents, employees, and other operations along the Detroit RiverWalk at $43.7 million annually. Detroit riverfront improvements supported 16,700 construction jobs and provided 1,300 on-going, annual jobs. Of the three million annual visitors, 90% of their visits would not have taken place without the significant riverfront improvements. Clearly, these data show a substantial return on investment in building the Detroit RiverWalk, with more economic benefits yet to come.

"Without this early focus on cleaning up the river and improving water quality, this transformation of the river's edge would not have been possible," notes Mark Wallace, president and chief executive officer of the Detroit Riverfront Conservancy.

The revitalized riverfront is now a community asset that draws people to connect with their river once again. People consider the vibrant riverfront a "game changer" in improving the perception of Detroit, according to the CSL study. "The riverfront has evolved beyond a physical asset, and is now both a community in itself, and an asset to the entire downtown area."

Cover photo courtesy of Detroit Riverfront Conservancy.

All monetary amounts are in US dollars.

IMPACTS	
CONSTRUCTION IMPACTS	
Riverfront construction and land value	$1.548 billion
Portion attributable to riverfront	$639 million
Construction-period jobs	16,700
ANNUAL IMPACTS	
Total annual spending	$43.7 million
Combined annual spending: 2003-2013	$360.6 million
Annual value of positive media exposure	$600,000
Annual jobs	1,300
Total annual tax revenue generation	$4.5 million

Table 2. Summary of Detroit riverfront economic impacts in the first 10 years. CSL International 2013.

Cycling on the Detroit RiverWalk. Credit: Detroit Greenways Coalition.

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The Detroit River case study is part of a larger project to evaluate achievements and lessons learned from 32 years of efforts to clean up Great Lakes AOCs. Case studies will be used to help sustain support for cleaning up AOCs and to inspire and motivate others to restore other degraded aquatic ecosystems.

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