

## Long-term care:

- ✓ Treatment of invasive plants will continue through 2015 by the landscaping contractor. Invasive plant management will need to continue beyond that through other means.
- ✓ The Wisconsin Department of Natural Resources will monitor fish and wildlife communities to assure that project goals are being met.
- ✓ The Wisconsin Department of Natural Resources and other agencies will periodically sample the fish and wildlife to determine the PCB loads remaining in the food chain and to determine when the consumption advisories on fish and waterfowl can be lifted.
- ✓ Citizens trained in various survey methods will survey the area annually for frogs and toads, birds, bats and other animals. They will also check on and maintain the nest boxes to increase the potential for success.

For more information, contact Wisconsin Department of Natural Resources Sheboygan River AOC Coordinator, Stacy Hron, 920-892-8756 x 3051 or stacy.hron@wi.gov

## Did you know?

More than **42,940 native trees, shrubs, wildflowers, grasses, and sedges** and **180 pounds of native seed** were planted to establish **102 species of native plants** on a total of 34.07 acres.

**Wetlands connected to rivers and streams are nurseries** for young fish, reptiles, and amphibians.



Streambank stabilization at the Taylor Wayside



Juvenile black tern

Approximately **15,000 dump-truck loads** (300,000 cubic yards) of contaminated sediment were removed from the river and hauled to landfills.



Wildwood Islands heron nest platforms

**Millions of birds and bats** migrate along Lake Michigan to their wintering grounds or summer nesting grounds. For **five miles inland**, habitat rich in berries, seeds, insects, and resting cover is critical for these long-distance fliers to re-fuel during their long, dangerous journeys.

By removing the contaminated sediment, **2,600 pounds of PCBs were removed from the river**, bringing the surface average concentration of PCBs in the river down to **1 ppm**, which is the goal and in balance with Lake Michigan.

**Sheboygan River – part of the largest fresh surface water resource in the world – the Great Lakes ecosystem**



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# Healing the Sheboygan River Habitat

## What are the habitat treatment goals?

Through decades of development, land use changes and industrial use, the habitat along and in the Sheboygan River has become polluted and degraded. Fish and other wildlife are contaminated from pollutants in the habitat, and the habitat does not provide the food and cover they need.

Healing Sheboygan River habitat **restores, enhances, and connects wetlands and floodplain forest for Great Lakes fish and wildlife.**



This especially benefits birds that stop here for food and rest during migration, birds that nest here, reptiles and amphibians, and the fish we enjoy, such as bass and northern pike.

## In what ways has Sheboygan River habitat been injured?

### Industrial waste released along the river is toxic and persists:

Before laws prohibited dumping waste into waterways, the river and portions of its banks and floodplain were polluted with compounds called PCBs and PAHs – compounds now known to cause cancer and deformities in people, fish and wildlife.

### Forests and wetlands have been cut, drained, and converted to other uses:

Prior to European settlement, the Sheboygan River area was covered with forests and wetlands that provided rich wildlife habitat and protected soil and water resources.

### Flooding is more extreme when land is converted to agricultural and urban uses:

When rain falls or snow melts, farm fields and

urban areas do not absorb and hold water like forests and wetlands do. The river floods more frequently and dramatically than it used to, eroding river banks and islands.

### Agricultural and urban areas are sources of water pollution:

When rain falls or snow melts, the runoff carries soil, fertilizers, pesticides, heavy metals and other chemicals from lawns, fields, rooftops and pavement into the river and its tributary streams.

### Beneficial native plants have been replaced by troublesome non-native plants:

Non-native invasive species have escaped from gardens and landscaping beds. They crowd out native plants and do not provide the full scope of food and cover needed by wildlife.



## What did scientists prescribe?

- ✓ Remove sediment contaminated with PCBs.
- ✓ Connect existing habitat areas with native plantings and in-stream structures.
- ✓ Stabilize eroded shorelands to decrease erosion and restore more natural contours.
- ✓ Identify and map all invasive plants and control or eradicate pioneer colonies of some species (Phragmites, reed canary grass, garlic mustard, honeysuckle, buckthorn, Dame's rocket, teasel, purple loosestrife and Japanese knotweed), especially at project sites.



- ✓ Plant native species of trees, shrubs, grasses, sedges, and wildflowers to increase diversity and habitat value.
- ✓ Restore historic wetlands.
- ✓ Install nest boxes and platforms to enhance habitat for birds and bats.
- ✓ Place boulders and rocks in targeted areas of the river for hiding and resting cover for fish.

# Shoreline & wetland restoration sites

## Taylor Drive Wetland

### Special features for people and wildlife:

Decreased the pond footprint and replaced with restored deep and shallow marsh habitat to increase habitat value for native wildlife, increase value of stormwater mitigation

functions, and to discourage invasive fish species and undesirable bird species. Constructed hibernaculum and enhanced connectivity for reptiles and amphibians to adjacent habitat.

**Plant communities restored or enhanced:** Deep and shallow marsh, floodplain forest, wet meadow and shrub carr wetlands, upland forest, tall grass prairie and short grass prairie. Planted 1000 Shrubs, 213 trees and 11,792 herbaceous plants, totaling 69 native species.

**Impact:** 8.74 acres and 2,500 linear feet of shoreline.

Before restoration During restoration



## Esslingen Park

**Special features for people and wildlife:** Enhanced trails and gravel bars along the river to provide more convenient access for canoe/kayak launching and fishing. Boulders were placed in the river to enhance hiding and resting cover for fish.

### Plant communities restored or enhanced:

Floodplain forest, shallow marsh, wet meadow, shrub carr wetlands, upland forest, tall grass prairie, short grass prairie. Planted 466 Shrubs, 109 trees and 775 herbaceous plants, totaling 34 native species.

**Impact:** 2.76 acres and 2,675 linear feet of shoreline.

Before restoration During restoration



## Wildwood Islands

**Special features for people and wildlife:** Removed PCB contaminated soils, installed logs and root wads to allow for sediment deposition and island growth, created a back-water area for fish spawning habitat. Installed fabric-encapsulated soil on the main island, and 600 linear feet of crib wall (along a severely eroding bank). Installed nine heron nesting platforms.

**Plant communities restored or enhanced:** Floodplain forest, shallow marsh, wet meadow, shrub carr wetlands, upland forest, tall grass prairie, short grass prairie. Planted 1,030 shrubs, 22 trees, 14,825 herbaceous plants and 1,800 live stakes, totaling 66 native species.

**Impact:** 9.67 acres and 5,750 linear feet of shoreline.

Before restoration During restoration



## Kiwanis Park

### Special features for people and wildlife:

Gravel bar and fishing platforms built for improved fishing access along the riverbanks.

Access to the riverbank funneled to certain points to allow the native plantings to become established and provide habitat and stability to the restored shoreline.

**Plant communities restored or enhanced:** Floodplain forest, shallow marsh, wet meadow, shrub carr wetlands, upland forest, tall grass prairie, and short grass prairie. Planted 593 shrubs, 94 trees and 5,470 herbaceous plants, totaling 101 native species.

**Impact:** 4.81 acres and 3,950 linear feet of shoreline.

Before restoration During restoration



## Taylor Drive/Indiana Avenue Wayside

### Special features for people and wildlife:

Improved access to river by restoration of the historic floodplain and reconfiguring the traffic patterns from parking lot to river bank by installing boulders to prevent vehicle traffic and associated damage along riparian wetlands. Removed contaminated sediment. Reconfigured and stabilized the tributary stream mouth.

**Plant communities restored or enhanced:** Floodplain forest, shallow marsh, wet meadow and shrub carr wetlands. Planted 22 shrubs, 21 trees, 4,614 herbaceous plants and 115 live stakes, totaling 92 native species.

**Impact:** 8.09 acres and 3,465 linear feet of shoreline.

Before restoration During restoration

