

## Sediment and Riverbank Cleanup

There are distinct areas in and along the Tittabawassee River that require cleanup called Sediment Management Areas, or SMAs, and Bank Management Areas, or BMAs. EPA has two main cleanup goals for these areas: 1) limit the spread of dioxin-contaminated riverbank soil and sediment to reduce dioxin levels farther downstream; and 2) help keep dioxin from building up in Tittabawassee River fish.

SMA cleanups typically involve digging up contaminated sediment and disposing of it or covering contaminated sediment to keep it safely in place. BMA cleanups usually include technologies that stabilize the bank to stop erosion of contaminated riverbank soil. Bank stabilization always includes planting deep-rooted, erosion-resistant, native vegetation. These plants increase habitat diversity along the river. In some cases, the banks have been partly or completely removed.

The Tittabawassee River segments are shown on the map. Dow has conducted cleanups of SMAs and BMAs in Segments 1 through 5 and 7 from 2012 to 2020. EPA finalized a cleanup plan for Segments 6 & 7 of the Tittabawassee River in 2019 and work is expected to be completed in 2022.

As of the end of 2020, approximately 4.5 miles (~24,000 feet) of banks and 19 SMAs have been cleaned up.

*Almost 300,000 cubic yards of soil and sediment have been removed from the SMAs, BMAs and floodplain and disposed of.*

## Saginaw River and Bay

The project team has begun to focus on the Saginaw River and Bay. In 2018 and 2019 Dow took soil samples from several residential areas in the Saginaw floodplain. Because of these samples, cleanup of residential properties on Middleground Island will move ahead of the rest of the Saginaw River. EPA, working with EGLE, selected a cleanup plan in 2020 with construction expected to start in 2022. Contaminated soil will be dug out and replaced and yards will be restored.

Dow has begun sampling the upper Saginaw River to understand what additional information may be needed. More studies of the upper Saginaw River are likely to take several years before a cleanup plan can be proposed. The studies may look at how to limit dioxins getting into the food chain and whether the sediments are eroding.

## Floodplain Cleanup

In 2015, EPA, working with EGLE, selected a plan to clean up dioxin-contaminated soil in frequently flooded areas along the Tittabawassee River downstream of Dow's plant in Midland. EPA's cleanup plan will ensure that people are safe when they come in contact with Tittabawassee River floodplain soil.

Not every floodplain property will need a cleanup. We are focusing on properties in frequently flooded areas, known as the 8-year floodplain. Contamination is not found evenly throughout the 8-year floodplain. EPA and EGLE developed cleanup numbers to determine where a cleanup is needed. Properties that have dioxin levels lower than the cleanup numbers require no further action under this program. If dioxin levels are higher than the cleanup numbers, Dow will contact the property owner to begin discussions about a cleanup. Soil is removed and replaced, and the vegetation is replanted.

Dow began Tittabawassee River floodplain cleanups in 2015 and has performed floodplain cleanup each year. By the end of 2020 about 105 areas have been cleaned up and hundreds more were assessed and do not need cleanup. The project will likely extend through 2022.

## Future Project Activities

Action is expected to continue in and along the Tittabawassee River through 2022. Construction is also expected to start on Middleground Island in 2022.

Monitoring throughout the site takes place every year. Completed cleanups are inspected and monitored to ensure long-term effectiveness, including after floods. We are also monitoring trends in sediment and fish to see if conditions are improving over time.

## Learn more about the cleanup:

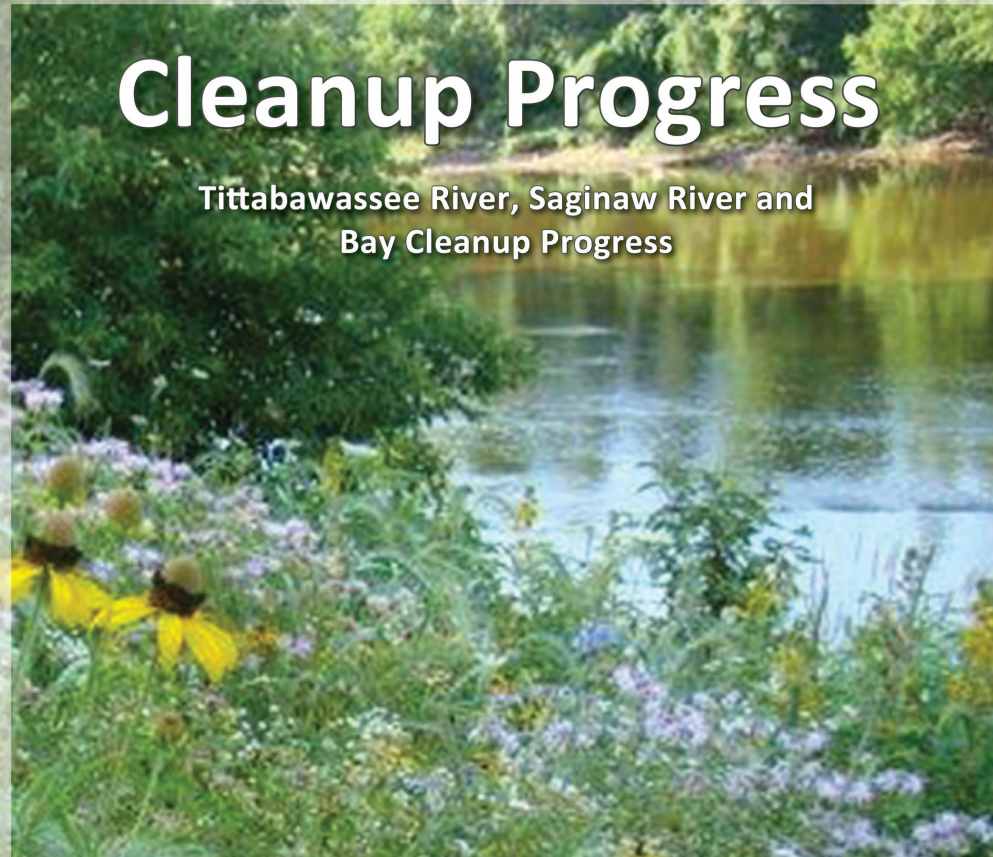
[www.epa.gov/superfund/tittabawassee-river](http://www.epa.gov/superfund/tittabawassee-river)

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# Cleanup Progress

## Tittabawassee River, Saginaw River and Bay Cleanup Progress



Spring 2021

This photo shows deep-rooted native vegetation stabilizing a riverbank.

## Overview

Cleanups have been underway for several years to manage contaminants in the Tittabawassee River, Saginaw River & Bay site. These actions are being implemented by the Dow Chemical Co. with oversight by U.S. Environmental Protection Agency and Michigan Department of Environment, Great Lakes, and Energy.

Some early actions were conducted before 2010. In 2010, EPA and EGLE divided the 24-mile lower Tittabawassee River into seven segments ranging from 3 to 4 miles each. River work is being done segment-by-segment from upstream to downstream. As discussed on the back page, cleanup work targets specific sediment deposits and riverbank areas in each segment. Evaluations and cleanup of properties in the adjacent Tittabawassee floodplain started in 2015 and is an ongoing, multi-year project.

This brochure provides information about the cleanup progress achieved. The map on the inside shows the lower Tittabawassee River and a small part of the upper Saginaw River. Not every cleanup action is depicted. The pictures highlight some typical projects.





**SMA 1-5 -  
Sediment capping**



**SMA 2-3 -  
Sediment removal**



**BMA 4-5 -  
Bank stabilization**



**Riverside Boulevard -  
Soil removal and  
replacement**



**BMA 2-3 -  
Bank stabilization and  
canopy management**



**SMA 2-5 -  
Armor stone  
placement at the  
perimeter of a CCS cap**



**BMA 4-6 -  
Bank stabilization**



**SMA 7-3 -  
Armor stone placement**



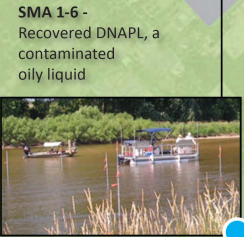
**SMA 3-2 -  
CCS capping (Cellular  
Containment System)**



**Floodplain -  
Soil removal  
and replacement**



**Wickes Park -  
Sediment dredging**



**SMA 1-6 -  
Recovered DNAPL, a  
contaminated oily liquid**



**Floodplain -  
Soil removal  
and replacement**



**Floodplain -  
Soil removal  
and replacement**



**Floodplain -  
Soil removal  
and replacement**



**SMA 5-2 -  
CCS capping (Cellular  
Containment System)**

SCALE:  
0 1/4 1/2 1 Mile 2 Miles

[www.epa.gov/superfund/tittabawassee-river](http://www.epa.gov/superfund/tittabawassee-river)

