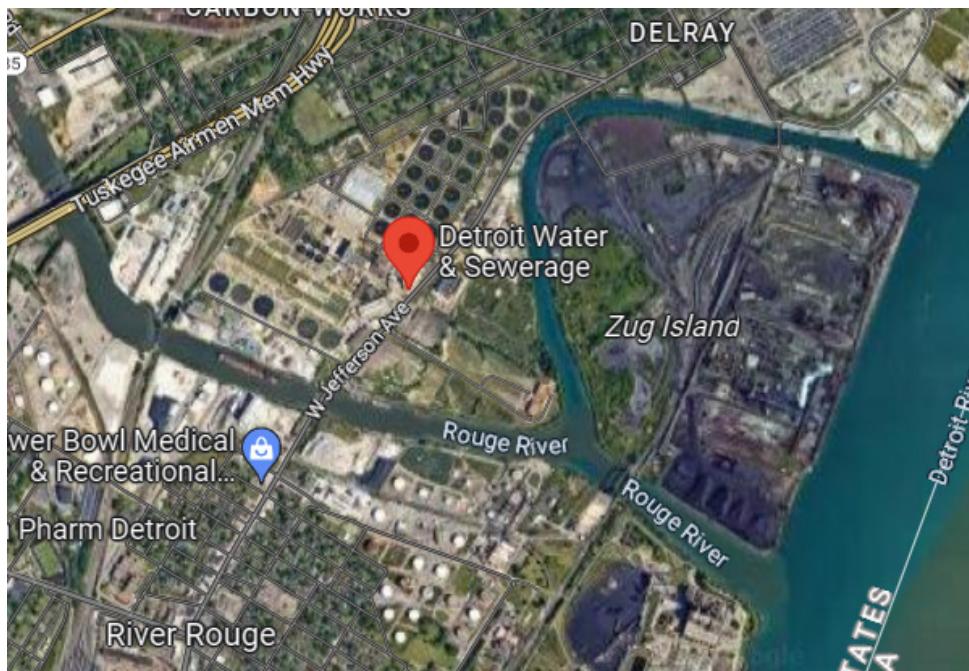


# Sanitary Sewer Overflows (SSOs) and Combined Sewer Overflows (CSOs)

## What are Sanitary Sewer Systems?

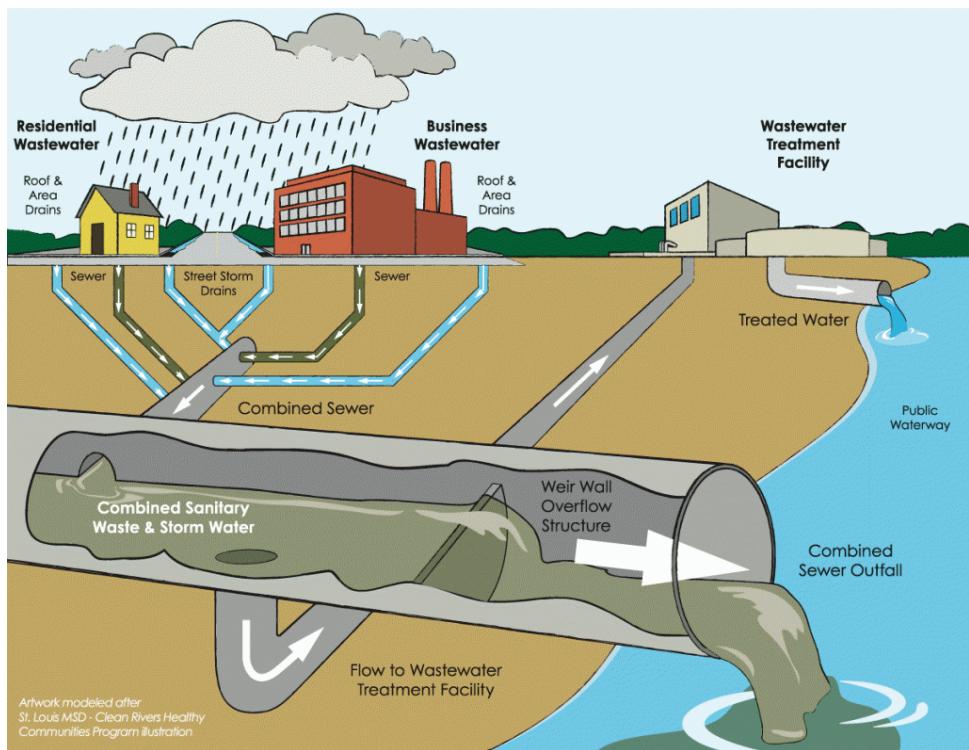
Sanitary sewer systems collect and transport domestic, commercial, and industrial wastewater and limited amounts of stormwater and infiltrated ground water to treatment facilities for appropriate treatment.

Map via Google



## What are Combined Sewer Systems?

A combined sewer system (CSS) collects rainwater runoff, domestic sewage, and industrial wastewater into one pipe. Combined sewer overflows (CSOs) happen when too much rain overwhelms the system and is diverted to the river. CSOs contain untreated or partially treated human and industrial waste, toxic materials, and debris as well as stormwater.



## ***What is the problem with SSOs and CSOs?***

Combined sewer overflows (CSOs) are one of the biggest threats to the health of the river. Aging infrastructure allows for discharges of raw sewage which have a major impact on human and animal health.

Occasionally sanitary sewers will release raw sewage. These types of releases are called sanitary sewer overflows (SSOs). SSOs can contaminate our waters, causing serious water quality problems, and back up into homes, causing property damage and threatening public health. Possible causes of SSOs can be blockages, line breaks, power failures, and sewer defects (EPA).

Under normal conditions, a CSO transports all of the wastewater it collects to a sewage treatment plant and then discharges the treatment byproduct to a water body. The volume of wastewater can sometimes exceed the capacity of the CSS or treatment plant (e.g., during heavy rainfall events or snowmelt). When this occurs, untreated stormwater and wastewater discharge directly to nearby streams, rivers, and other water bodies (EPA).



*Volunteer standing next to a combined sewer overflow outfall*

change.” The problem is that the remaining uncontrolled CSOs are in older urban areas that do not have access to the same resources. This includes the city of Detroit, which is home to the largest and oldest infrastructure in southeast Michigan, yet has lost most of its tax base as two-thirds of residents have left the city. Detroit has 40 uncontrolled sewer overflows into the Detroit and Rouge Rivers. In historically under-resourced and under-represented communities, the population’s basic needs are not prioritized. Leaders need to advocate for this.

The American Rescue Plan of 2021 and the 2022 Bipartisan Infrastructure Law both provide federal funding for sewer infrastructure, but the community must have the staff and experience to take advantage of these programs and design proper solutions. The communities must also understand the priority of sewer infrastructure, as well as the connection with basement backups and personal health. Friends of the Rouge can help provide the support to advocate for these projects and funding, and connect stakeholders with partners that can help offer solutions.

In addition to gray infrastructure projects that separate sewers or provide overflow basins, sewer overflows can be reduced by minimizing rainwater runoff. If less water goes into the system, the scope of projects can be smaller and therefore less costly. Municipalities, residents, and businesses can install rain gardens and bioswales to hold rainwater on site and let it slowly filter back into the ground instead of running off into storm drains. FOTR has programs that teach residents how to install rain gardens and work with communities, residents and

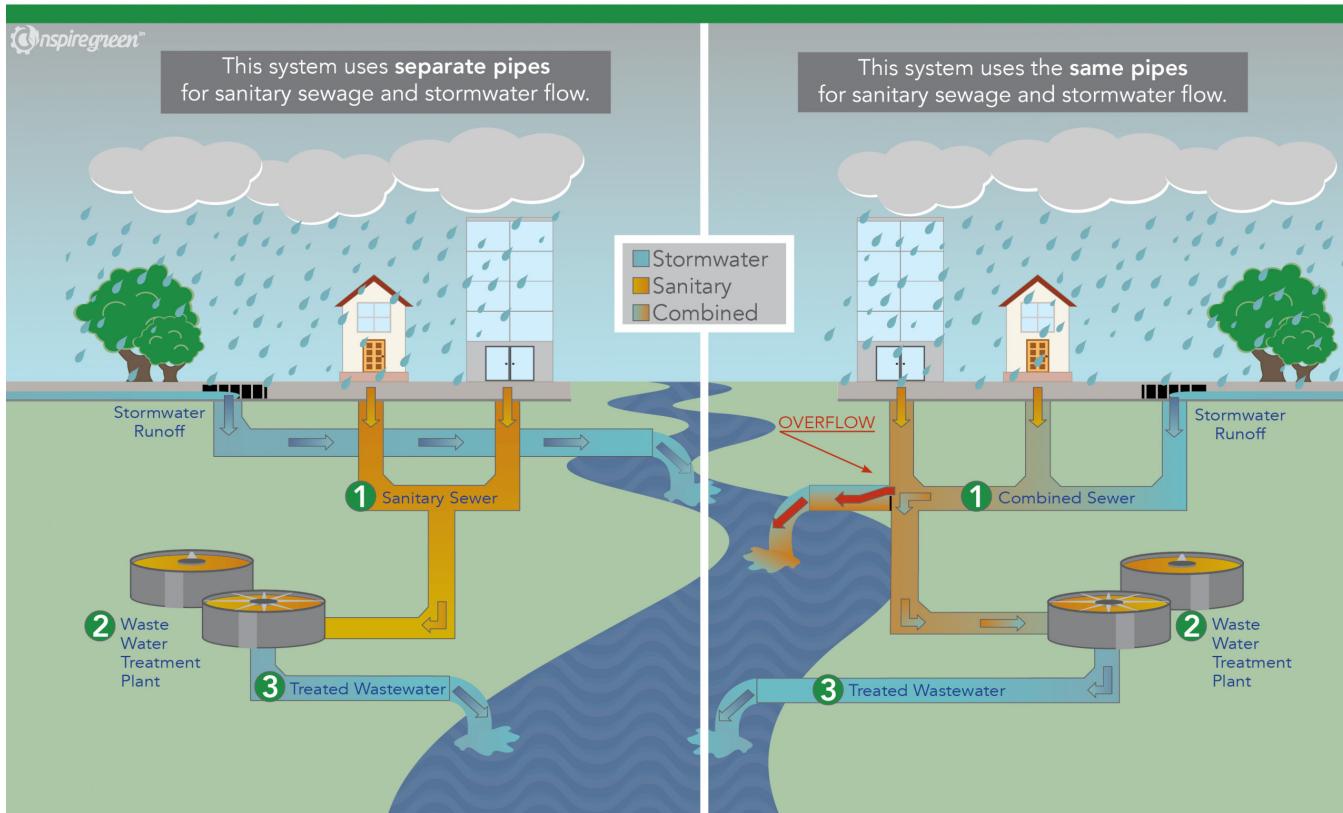
## ***How does Friends of the Rouge help?***

Friends of the Rouge has a [map](#) on our website showing all of the controlled and uncontrolled combined sewer overflows in the Rouge River Watershed. Mitigating combined sewer systems by separating them into sanitary and stormwater networks or building basins to screen, disinfect and hold the overflows to be released after a storm is extremely costly.

The Clean Water Act requires communities to stop discharging sewage into rivers. Rouge communities with the resources and personnel to obtain funding have addressed most cases, leaving approximately 3.6% remaining ([see map](#)). According to a [Combined Sewer Overflow Informational Study](#) commissioned by the Erb Family Foundation, “this will require an estimated capital investment of \$2.29 billion, not considering long-term operation and maintenance costs and the impacts of climate

## MS4 MUNICIPAL SEPARATE STORM SEWER SYSTEM

## CSS COMBINED SEWER SYSTEM



institutions to install rain gardens when funding can be found. Planting trees, replacing turf grass with native plants, disconnecting downspouts and using pervious pavement are additional measures that can help. FOTR has several programs to plant trees and also works in partnership with the Alliance of Rouge Communities to increase the tree canopy.

### *What can you do to reduce and mitigate the effects of sanitary and combined sewer overflows?*

Although the Clean Water Act requires communities to stop discharging sewage into our waterways, it continues to occur in Metro Detroit. In the Rouge River watershed, sewer overflows are mainly happening in low income communities of color that disproportionately bear the cost of aging infrastructure. With a projected \$2.29 million cost, municipalities throughout the region must work together to solve this problem.

The Detroit Water and Sewerage Department (DWSD) is currently working to minimize flow into the combined system through separation and green infrastructure projects, but will not control all CSOs until 2037. DWSD will be updating its plan to identify priority outfalls and control measures in 2023. Redford Township, Dearborn, Dearborn Heights, and Inkster are also working to control their CSOs. The Bipartisan Infrastructure Law and the American Rescue Plan have dollars available for projects to control CSOs, but economically distressed communities need help in navigating their access to these funds and designing and implementing solutions.

In 2016 a regional authority was created and leases operation of DWSD treatment plants, major water transmission mains, sewage interceptors and related facilities for \$50 million annually. Called the Great Lakes Water Authority, the lease funds are designated for capital improvement for the City of Detroit retail water system and to repair Detroit's aging water infrastructure.

Removing stormwater from the system through green stormwater infrastructure (GSI) can reduce untreated discharge events depending on the extent of its deployment, location, and capacity. The Erb-commissioned study found that GSI located in upstream areas are more effective than those at the downstream end of the “sewershed.” As water travels downstream, flows from upstream areas increase such that downstream areas are beyond their capacity from local and upstream flows. Therefore, green infrastructure projects in the “headwaters” of the Rouge are more effective than downstream. These headwater areas include the townships of Superior, Salem, Canton, Northville, Plymouth, West Bloomfield and Bloomfield, as well as the cities of Troy and Novi. These communities also contain some of the area’s last remaining undeveloped land. Developing this land will increase the capacity needed for downstream stormwater storage, so stormwater mitigation of any development is critical. Setting aside undeveloped land for watershed protection will also help minimize flooding and overflows.

The region must work together to address CSOs with creativity and cooperation so that the funds and expertise can be leveraged to address this huge problem. Friends of the Rouge can help provide the support to advocate for these projects and funding, and connect stakeholders with partners that can help offer solutions.