

# Water WoRDs

## *Updates from the Water Resources Division*

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### **Doing Our Part to Support Detroit's Future**

Back in December when we wrote about our [annual combined and sanitary sewer overflow report](#), we promised to come back and talk about Detroit. With 3,400 miles of sewer lines, serving upwards of three million Michiganders in the City of Detroit and 76 suburban communities, the Detroit wastewater treatment plant (WWTP) is a complex facility that the Water Resources Division (WRD) oversees through a National Pollutant Discharge Elimination System (NPDES) permit. We reissued the Detroit Water and Sewerage Department's NPDES permit earlier this month and view it as a positive milestone for both the WRD and the DWSD. The WRD views this as a good news story about Michigan's largest city and one of the largest wastewater treatment systems in the country. Here's why:

#### *Optimizing WWTP Operation*

Permit conditions have been designed to help ensure that the DWSD maintains long-term and sustained compliance with all permit requirements. The permit includes more restrictive effluent limits, important solids handling requirements, and a robust [Asset Management](#) program that assures that WWTP staff will have WWTP equipment available when they need it.

The WRD acknowledges the lengthy history it has had with the DWSD as the parties have worked toward sustained compliance with permit requirements. The DWSD remained under a Federal Consent Judgment for 35 years due to recurring periods of noncompliance, with that case closed by the Court this week. Noncompliance occurring from 2009 and 2011 was resolved through entry of an Administrative Consent Order (ACO) crafted by the WRD to require important solids inventory control provisions that form part of a "Facility Improvement Program" that is included in the new NPDES permit. The DWSD regained compliance in 2012, but has recently had some issues again in early 2013 that the DWSD will need to resolve. Enforceable conditions of the Facility Improvement Program control solids inventories at the WWTP; require construction of new solids dewatering equipment by 2016; require development and implementation of a Long-term Solids Disposal Plan; and require Asset Management as the method to address operation and maintenance issues.

The Detroit WWTP treats approximately 650 million gallons per day (MGD) of wastewater on average making it the largest discharge-by volume- in the state of Michigan. The City of Detroit and some of the surrounding communities have combined sewer systems. As



The City of Detroit, as viewed from the Detroit River.  
Photo credit: US Fish & Wildlife Service.

a result, flows to the WWTP are significantly higher than average daily flows when there are storm events. The sustained peak primary treatment capacity for wet-weather flows is 1,700 MGD and the sustained peak secondary treatment capacity for wet-weather flows is currently 930 MGD (includes 60 MGD for plant recycle water). All dry-weather flows and a significant amount of wet-weather flows receive full secondary treatment at the WWTP.

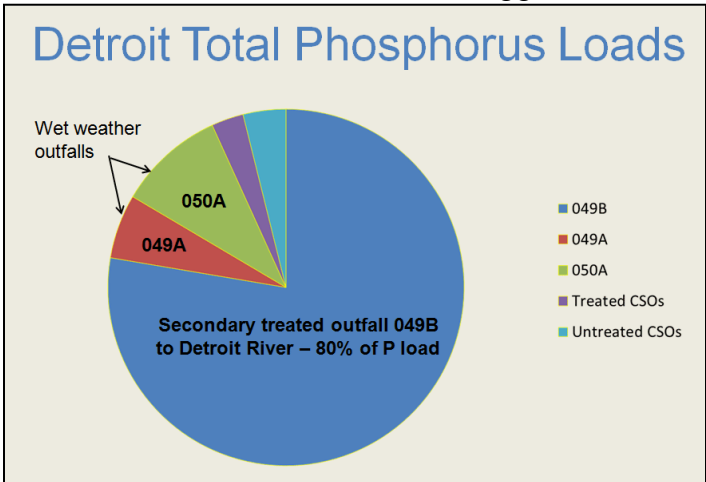
The new permit includes more restrictive effluent limitations on discharges from wet weather outfalls (previous limitations had been in place since the late 1970s) to better ensure proper operation and maintenance at the WWTP. The prior limitations were reported as a rolling average, which resulted in monitoring data lagging behind current performance of the plant. The new limits are reported as a true monthly average to better reflect the performance of the WWTP and allow for timely reactions by both the DWSD and WRD.

Pollutant	Old Limit (30 discharge days)	New Limit (monthly average)
TSS	100 mg/l	70 mg/l
CBOD5	100 mg/l	40 mg/l
Total Phosphorus	2.5 mg/l	1.5 mg/l

*Reductions in Phosphorus Discharges*

The permit includes more restrictive effluent limits for phosphorus intended to help better protect Lake Erie. The WWTP is one of numerous sources of phosphorus to the lake and more stringent limits in this permit further demonstrate Michigan's commitment to eliminating algal blooms in the lake. The WRD believes that a regional focus on phosphorus reductions, combined with aggressive management of Aquatic Invasive Species, is the key to improving the overall health of Lake Erie.

In evaluating how the DWSD could aid efforts to restore Lake Erie- and recognizing the potential expense- the WRD analyzed the WWTP's phosphorus loads across all outfalls. Roughly 80 percent of the phosphorus load is contributed by one outfall known as 049B. In Michigan, all WWTPs that discharge to the Great Lakes or affect the Great Lakes, must meet a 1 milligram per liter (mg/L) limit on effluent discharged. Under the new permit (starting in 2015); effluent discharged from Outfall 049B must meet a phosphorus limit of 0.6 mg/L during the critical warm weather months of the year (April-September) when nuisance plants and algae are most likely to develop in receiving waters. Also, the DWSD must achieve 0.7 mg/L as a monthly average phosphorus limit during the entire year at Outfall 049B. In addition, phosphorus limits have also been immediately reduced for the wet weather outfalls 049A and 050A as described above under "Optimizing WWTP Operation."



*Adaptive Management for Combined Sewer Overflow (CSO) Control*

The permit recognizes the significant achievements of the Detroit CSO control program over the last 20 years, sets forth schedules for completion of the core CSO control program, expands the use of Green Infrastructure, and moves forward with the remainder of the control program to meet water quality standards while taking into account the financial capability of City of Detroit residents.

Since the City of Detroit's Long-Term CSO Control Program was first embodied in the NPDES permit issued in 1997, well over \$1.2 billion has been spent on the control of CSO discharges from Detroit outfalls. In 2009, a process was started to revise the control program due to the City's deteriorating financial condition. This resulted in the submittal of a Financial Capability Assessment and subsequent updates that demonstrated that continued implementation of the control program posed a high financial burden on City of Detroit residents. Working closely with the United States Environmental Protection Agency, the WRD has included provisions in the new NPDES permit that require revision of the DWSD Control Program using innovative (and potentially, more affordable) methods to meet Michigan's requirement that all CSOs be corrected to provide adequate treatment to meet all Water Quality Standards at times of discharge.

The core CSO correction program is required to be complete in 2019, when a second outfall to the Rouge River (known as RRO2) is constructed to provide disinfection and dechlorination of all excess wet weather flow brought to the WWTP. This means that the City will be providing satisfactory treatment of about 95 percent of the annual wet weather volume generated in Detroit, a huge accomplishment. Another way of showing what has been accomplished is looking at the reduction in untreated CSO discharges due to CSO corrections to date. In 1993, prior to CSO control, roughly 20-25 billion gallons per year (BGY) of untreated CSO was discharged from the City's CSO outfalls. As of 2019, it is estimated that this will be reduced to 1-3 BGY. It is this achievement that affords the WRD the opportunity to provide a more flexible, adaptive approach to completing correction of the remainder of the untreated CSO outfalls; one that fully considers residents' financial capability.



Humbug Marsh, lower Detroit River, in 2011.  
Photo credit: US Fish & Wildlife Service.

The new permit also establishes more detailed Green Infrastructure requirements to minimize wet weather discharges into the collection system. Specifically, a goal has been established to remove 2.8 million gallons of storm water from reaching the combined sewer system (for 2 year-24-hour storm events) by June 30, 2017.

The WRD believes this two-prong approach of completing certain aspects of the CSO Control Program (the "core CSO program"), and then utilizing more adaptive management strategies for the remaining untreated outfalls will result in a solution for the City of Detroit that not only protects water quality, but potentially makes the City a "green city".

### *Community Involvement*

The WRD recognizes the concerns of the DWSD's neighbors, other Detroiters, and various stakeholder organizations regarding WWTP operations. We want to be transparent in our dealings with the DWSD and make sure that interested persons have easy access to information about the WWTP. That's why we've developed a [new webpage dedicated to providing up-to-date information on all things DWSD](#). We look forward to feedback on the webpage content and other conversations that will strengthen partnerships with the community.



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## What do you do in the WRD?

### Meet Matt Staron and Jodi Peace

Matt is one of the WRD's environmental engineers and has been with the DEQ for 13 years, working in solid waste, surface water assessment, and now permitting programs. In joining the WRD Permits Section, Matt was tasked with evaluating the reissuance of the DWSD permit and in doing so, got to know the facility and its diverse stakeholders. Matt enjoys the complexities of his job as the WRD develops effective permits that not only protect water quality, but also enhance Michigan's economic recovery.



Matt participated in the intense National Coastal Assessment in 2010 and his colleagues appreciate his cheerful attitude as we work through difficult projects.

Jodi is a Senior Environmental Quality Analyst in the WRD's Southeast Michigan District Office (currently located in Warren) where she has worked in NPDES compliance programs since 1992. In addition to serving as the district's IPP coordinator, she has been the DWSD's NPDES compliance inspector for the past ten years and represents the WRD on two workgroups under the DWSD's Wholesale Customer Outreach Program. Jodi finds working with the DWSD challenging and rewarding. "It's a continuous learning process." When she is not at work protecting our precious water resources, Jodi enjoys gardening, knitting, sewing and hanging with her dogs.



Jodi Peace