

CSO PROGRAM MILESTONE ACHIEVEMENTS

With More to Come

The City of Omaha's regional sewer system serves customers in Douglas and Sarpy Counties. Omaha is one of more than 800 communities nationwide that have combined sewer systems. Some systems, including Omaha's, have combined sewer overflows (CSOs) that must be reduced to improve water quality in local rivers and streams.

In 2007, the City of Omaha and Nebraska Department of Environmental Quality – now the Nebraska Department of Environment and Energy (NDEE) entered into an Administrative Consent Order, which required the City to comply with the Clean Water Act and the EPA's Combined Sewer Overflow Control Policy of 1994. This unfunded, federal mandate means that the City needs to capture, treat or eliminate at least 85% of the average annual volume of combined sewage by 2037.

CSO PROGRAM GOALS

The City created a mission statement and identified three goals to achieve the 85% volume capture requirement. The mission statement for the Program is to “save money for ratepayers and do what is best for the community as we meet the objectives and requirements of the Clean Water Act.” The projects identified to provide CSO control need to achieve the following goals: 1) meet regulatory compliance, 2) be economically affordable to ratepayers, and 3) be acceptable to the community.

PROGRAM IMPLEMENTATION

The plan for controlling CSOs was originally included in the 2009 CSO Long Term Control Plan (LTCP), which was approved by NDEE in 2010. The LTCP was updated in

2014 and 2021. Since 2009, Omaha has made significant progress implementing projects and reducing CSOs. From new construction to improvements at existing facilities, these efforts combine to help achieve and maintain Omaha's long-term clean water goals. Improvements have included:

- Numerous sewer separation projects that consist of the construction of a new storm sewer or sanitary sewer to separate stormwater from sanitary flows, conveying stormwater to waterways and directing sanitary sewage to water resource recovery facilities for treatment.
- Separation of high-strength industrial wastewater in areas of South Omaha that is then conveyed to a dedicated Industrial Lift Station and Force Main for subsequent primary and secondary treatment at the Missouri River Water Resource Recovery Facility (MRWRRF).
- Significant improvements to the MRWRRF, including a new municipal headworks and primary clarifier improvements to treat a wet weather capacity of 150 million gallons per day (MGD). All flows in excess of the 64 MGD secondary treatment capacity are directed to the chlorine contact basin for chlorination and dechlorination, during the recreation season, prior to being discharged out of CSO 102.
- Improvements at Monroe and Burt-Izard Lift Stations, as well as construction of the new Riverview, Leavenworth, and Blake Street Lift Stations maximizes the amount of combined sewage conveyed to the MRWRRF during wet weather events.
- Replacement of large pipes like the South Interceptor Force Main provide greater reliability and maximize flows to the MRWRRF during wet weather events.
- High-rate treatment facilities like the Saddle Creek Retention Treatment Basin capture and treat combined sewage at a rate of up to 160 MGD.
- Community enhancements and green infrastructure



benefit both Omaha neighborhoods and the CSO Program. Fontenelle Park, Adams Park, and Spring Lake Park are examples of how new community amenities can also provide significant stormwater detention and decrease the need for more costly storm sewer system improvements downstream.

SIGNIFICANT CONTROLS ACHIEVED

The CSO Program has been managed by Public Works staff and a consultant Program Management Team (PMT). Collectively, 29 LTCP projects, through 50 individual construction contracts, have been completed since 2009. In addition, 14 LTCP projects are currently in design or construction and another 12 future projects are yet to begin. LTCP projects have been divided into multiple construction contracts, allowing for more local and regional general contractors to participate.

The year 2019 was the last time that current wet weather volume capture was required to be formally estimated by the City’s CSO permit. At that time, the Missouri River Watershed was at ~57% and the Papillion Creek Watershed

VOLUME CAPTURE	2002	2019*	2037
Missouri River Watershed	32%	57%	85%
Papillion Creek Watershed	78%	84%	97%

*2019 was the last official estimate of percent capture required by permit.

was at ~84% volume capture. Projects currently underway will increase capture

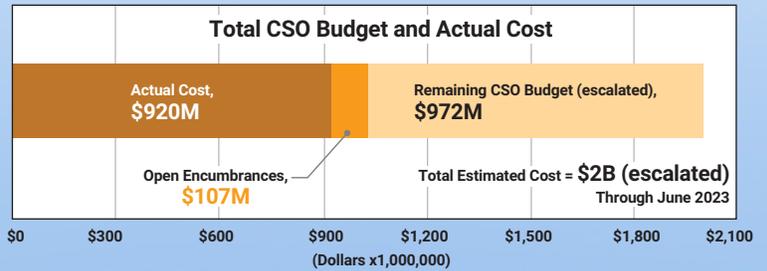
percentages to approximately 71% and 91%, respectively, within the next few years. This includes Saddle Creek Retention Treatment Basin that, once completed in 2023, will increase the capture percentage in the Papillion Creek Watershed beyond the required 85%. It is estimated that volume capture in the Missouri River Watershed has increased to closer to 60% due to projects that have been completed since 2019. LTCP projects that are currently underway or planned will increase volume capture to 85% or above. Refer to page 5, “Goal 1: Regulatory Compliance,” which provides the current status of projects and contracts.

The Program has also focused on engaging small and emerging small businesses (SEBs) in construction contracts and subcontracts. During the past five years (2018–2022), approximately 6% (or \$8M) of total

contracted construction work through the CSO Program has been contracted to SEBs. Adding in the Federal Disadvantaged Business Enterprise categories (DBE), which includes federally funded CSO projects, over 8% of construction subcontracts were awarded to SEBs and DBEs for projects during that same period of time.

IMPLEMENTATION BUDGET VS. ACTUAL

The current estimated total cost of the CSO Program is actually less than what was estimated with the 2009 LTCP when escalation is taken into account. Cost control measures, value engineering, risk mitigation, and other activities have helped control costs. In particular, the Program optimization effort described below reduced estimated Program costs, at the time, by more than \$400M. Controlling overall Program costs has resulted in lower-than-expected customer rate increases and has allowed the City to re-direct funds to other sewer and wastewater infrastructure needs throughout the metro area. The following graphic represents the current budget and actual cost of the Omaha CSO Program and shows over half of the total estimated cost has been either spent or encumbered.



The City developed a ratepayer assistance program at the start of CSO Program implementation to address the known challenges that some ratepayers would have affording higher sewer bills. This assistance program has provided over \$21 million to ratepayers that qualify for the Low Income Heat and Energy Assistance Program (LIHEAP) from their power utility. By coordinating with the existing LIHEAP enrollment process, CSO Program administrative costs have been kept to a minimum.

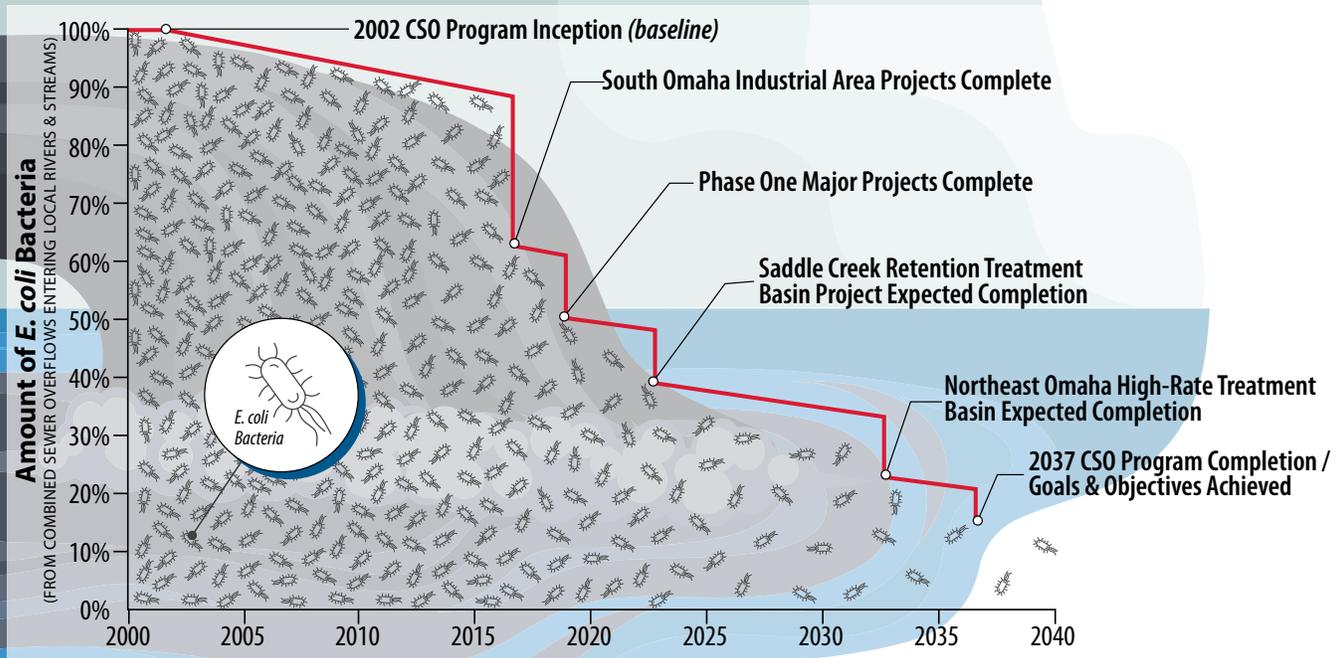
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The Missouri River Water Resource Recovery Facility is located on the west bank of the Missouri River, just south of the South Omaha Veterans Bridge.

E.coli Reductions Over Time

Combined Sewer Overflows (CSOs) are detrimental to receiving bodies of water due to the presence of *E.coli* and other pollutants. This type of wastewater should be directed to a treatment facility. Traditionally, during heavy rainfall events, Omaha's combined system allow both stormwater and untreated sanitary wastewater to be released into streams and rivers. This results in bacterial contaminants (like *E.coli*) deteriorating water quality. By reducing combined sewer overflows, CSO Program efforts continue to significantly reduce our contribution of *E.coli* and other pollutants to our rivers and streams.



This figure is a graphical representation of estimated reductions of *E.coli* loading to local rivers and streams from CSOs over time as a result of CSO Program controls.

(Continued from page 3)

PROGRAM OPTIMIZATION

NDEE has required an update to the LTCP every five years to ensure Omaha's CSO Program's goals, objectives and projects are efficient and cost effective. As part of the last LTCP Update, an extensive optimization effort employed sophisticated technologies and hydraulic modeling to determine the best mixture of projects to achieve 85% volume capture in the Missouri River Watershed. The results of this evaluation were documented in the 2021 LTCP Update and resulted in replacing a planned deep tunnel system with a high-rate wet weather treatment facility and a storage facility that could be implemented at a significantly lower projected cost.

CSO PROGRAM GOING FORWARD

In 2023, management of the CSO Program is fully transitioning to City of Omaha Public Works staff. This includes leading and managing consultants providing design services, contractors providing construction services, and providing overall CSO Program management efforts. So, rather than having a consultant PMT going forward, the City will obtain any needed consultant

assistance through separate contracts. While continuing to advance the CSO Program, Omaha Public Works is shifting to an overall wastewater utility focus, including sewer and water resource recovery facility improvement projects.

The City is in the process of contracting engineering teams for design of the Northeast Omaha High-Rate Treatment Basin and associated projects, which includes five LTCP projects. A future Leavenworth Storage Tank will be designed at a later date. Remaining projects in the Program include sewer separation in the Papillion Creek Watershed that are currently in design or construction, and a few other minor projects in the Missouri River Watershed.

The City of Omaha continues to work with NDEE to achieve CSO Program requirements and is on-track for completion by 2037 as required by the City's Consent Order. This continues to be a team effort between City of Omaha Public Works staff, consultant engineers, contractors, and support from the Omaha Mayor and City Council.