

# Low Risk, High Reward for CSO Problem

Louisville needed a cost-effective, low-maintenance solution to its CSO problems.

**I**n 1994 the EPA issued the Combined Sewer Overflow (CSO) Control Policy. Within the CSO policy was a prescription for cleaning up America's surface waters, the nine minimum controls (NMC), which are familiar to any public works director. The establishment of those nine regulations put municipalities on notice that the EPA would be monitoring CSOs to make sure cities were making a serious effort to eliminate the debris and contaminants that were polluting America's waterways.

Over the past decade cities have been working to comply with the nine minimum controls. For river towns like Louisville, KY, the task is daunting. Like many cities with old sewers, Louisville was literally dotted with CSO points. In major rainfall events these overflow points would allow combined sanitary sewer and storm flows to bypass the treatment facility and go directly to nearby waterways, in this case Beargrass Creek and the Ohio River. Compliance with the NMC meant fixing some 115 CSO points. Obviously, any public works project multiplied by 115 presents the potential for an enormous expenditure of public revenue.

"Our objective was to find a way for the Louisville Metropolitan Sewer District to comply with the nine minimum controls of the EPA's Clean Water Act," explained Mike Harris, P.E., of Jacobi, Toombs and Lanz, (Louisville), the civil engineering firm hired to consult on the project. "We wanted to find a low-maintenance, low-cost screening system that we could retrofit into the existing CSOs. With 115 sites to retrofit, you are



*Because of its bolt-on installation, the Cyclone is easily installed, most often in a diversion chamber. Little engineering or construction are required to retrofit the device to an existing combined sewer.*

*The compact technology was designed to be installed at a CSO point, usually in a diversion chamber. The device is self-cleaning, requires no power, and effectively removes debris 6 mm and larger. Stainless steel construction and sealed bearings give it a design life of 20 years.*

potentially talking about a lot of money.”

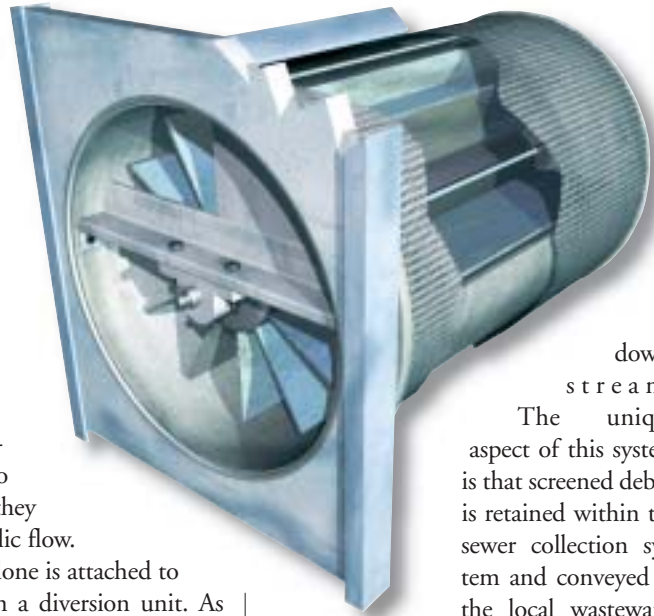
Fortunately for the Louisville MSD, Harris and his engineering firm had significant experience with CDS Technologies, Inc. ([www.cdstech.com](http://www.cdstech.com)), a developer and supplier of several CSO treatment devices. When Jacobi, Toombs and Lanz contacted CDS Technologies, the company responded with a new solution for Louisville’s problem, a technology never before used in the United States.

The COPA Cyclone is compact cylindrical device measuring 700 mm long by 500 mm in diameter. It was designed as an affordable retrofit solution to CSO pollution. European cities had been using this new screening system on small CSOs for five years with great success. CDS, COPA’s parent company, is now making the technology available in America.

The equipment is designed to provide effective screening for small combined sewer overflows, 1.18 mgd or less. The

units were designed to be installed in existing structures with little engineering or construction. They require virtually no maintenance and zero external power as they operate by hydraulic flow.

Typically a Cyclone is attached to an existing wall in a diversion unit. As CSO flow rises in the diversion unit, it enters the Cyclone through a stainless steel screen drum with 6 mm openings that traps most debris on the drum wall. The water passes through the screen and over an interior weir where it propels a paddlewheel within the device. The paddlewheel causes the drum to turn, creating a mechanical cleaning action across the external screen. The combined sewer overflow, now free of all but the smallest gross solids, is allowed to continue on



downstream.

The unique aspect of this system is that screened debris is retained within the sewer collection system and conveyed to the local wastewater treatment facility for proper processing. Not only are there no power requirements for the unit, there are no solids management requirements for the screenings.

What makes the Cyclone attractive to the Louisville MSD is its cost, about \$10,000 per unit. With installation, the cost of application is usually less than \$20,000 per CSO point.

“The great thing about the Cyclone is that it is a low-risk project. In public works, \$10,000 is not a lot of money,” Harris noted. “A Cyclone is so affordable that a municipality can install a unit or two and test them to see if they like the technology. If they don’t like it for some reason, they haven’t wasted a lot of money.”

Harris said installation of the equipment has been a breeze; they simply bolt into place in most cases. Once installed, they require little or no maintenance. The units are self-cleaning, made of stainless steel with sealed shaft bearings, and have a 20-year design life. Cyclones are best for low-flow, high frequency discharges. They have a capacity of 1.5 cfs.

“CDS was very helpful to us,” said Harris. “They actually shipped one of the units to us before we committed to buy it. We let everyone at the Louisville MSD examine it, particularly the maintenance people. The show-and-tell was an important part of the process. The MSD folks saw the benefits of the technology and got behind it.”



*The perforated drum has 6-mm diameter openings, which remove all but the smallest gross solids from combined wastewater.*