

MAKING POLLUTION PROGRESS

CSO trial tackles urban river water quality in China

By Marcia Sherony

A combined sewer overflow (CSO) trial is underway in eastern China to support a Chinese government initiative to encourage water innovation and improve urban inland river water quality.

The National Water Pollution Control and Treatment Science and Technology Project, known as “water special,” is one of 16 major science and technology initiatives identified to make substantial progress in China over the next 15 years.

As part of the national water project, a Storm King advanced hydrodynamic vortex separation system was manufactured and supplied by Hydro Intl. for a trial on the XiErChi River, an inland river in Chaohu City in



Installation of the separation system is part of a Chinese government initiative to encourage water innovation and improve inland water quality.

the province of Anhui, about 250 miles west of Shanghai.

Research engineers from the Shanghai Urban Construction Design & Research Institute were looking for a primary treatment solution that could reduce biological oxygen demand (BOD), as well as prevent grit, sediment and trash from entering the waterway during peak storm events.

“The trial site was identified to assess the Storm King’s suitability with a view to recommending it as a CSO solution that could help solve wider water quality challenges in Anhui and potentially throughout China,” said Charlie Zhong, China business manager for Hydro Intl.

The technology currently is operating in installations worldwide. Two of the world’s largest Storm King separators are in Boonville, Ind., each handling 42 million gal per day (mgd) of combined storm water and wastewater flows and providing primary treatment equivalency. In Belgium, 33 units



With a peak flow rate of 6.8 mgd, the system stops floatables, grit and sediment carried in the sewer network from entering the waterway during storms.

provide distributed storm water treatment as part of a modernized combined sewer network in the city of Namur.

Chao Lake

The CSO project supports the ongoing water quality improvements at Chao



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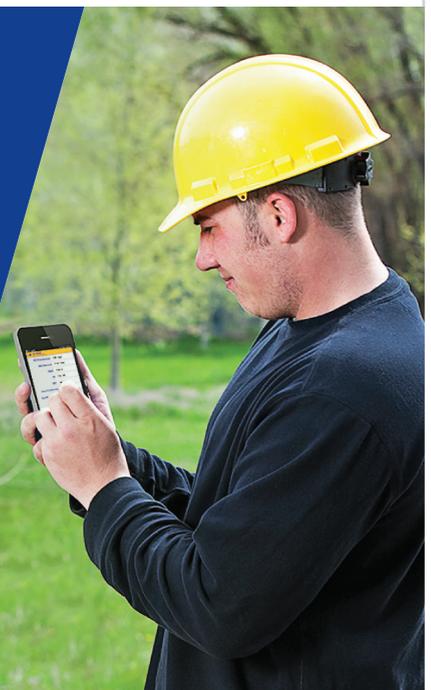
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Lake, one of China's five largest freshwater lakes and a popular tourist destination. Anhui province is a demonstration area selected for the water projects, which cover improvements to river basin water pollution control, lake eutrophication control and water environment ecological restoration.

Although in past decades high levels of surface runoff and agricultural organic pollution caused eutrophication and silting in Chao Lake, recent treatment work has significantly improved its water quality.

Trial Results

The trial was designed and installed in a close partnership between Hydro Intl. and Shanghai research engineers.

Manufactured and installed in 2015, the system now is preventing sediment re-suspended in sewer water during storm events from being discharged into the XiErChi River. With a design average flow rate of 4.5 mgd and a peak

flow rate of 6.8 mgd, it stops floatables, grit and sediment carried in the sewer network from entering the waterway during storms.

The installation is designed to high performance levels, removing 95% of 200- μ grit and sediment, with average 50% total suspended solids removal and average 30% BOD removal. The retained effluent is diverted back through the sewer network to a nearby wastewater treatment plant for processing.

The technology met the project requirement for a system that needed no power and had minimal maintenance requirements. The self-cleansing screen captures all floatables and neutrally buoyant material down to 6 mm. Its patented automatic siphon system provides an effective backwash mechanism that prevents the screen from blinding.

China already has made significant progress in improving water quality, and

a key aim is to encourage greater public awareness and engagement. As part of the project, the research team understood that the Chaohu City community should be aware of the CSO installation as it began. This system has been constructed in a raised position so it can be viewed in a public area to encourage community awareness of water quality improvements.

According to Zhong, the system offers broad treatment and separation capabilities with low capital and operating costs. It is ideal for satellite treatment at overflow sites because it is able to screen and remove solids and floatables; remove sediment and settleable solids; and reduce BOD and chemical oxygen demand. The system is activated automatically by rising flow during heavy rainfall. **SWS**

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