

TRINITY RIVER AUTHORITY OF TEXAS  
Dallas, TX

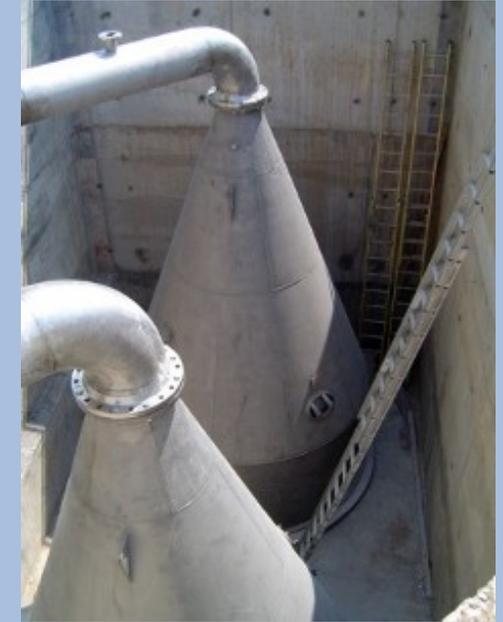
*Central Regional Wastewater System*

Total Treated Flow of 150 MGD

Reference: Betty Jordan, PE  
Alan Plummer Associates, Inc.

*Project Description*

The Trinity River Authority (TRA) of Texas provides water and wastewater treatment, water supply and reservoir systems to a population of over 3.5 million, including the Dallas, Fort Worth area. Since the early 1970's, the Authority has included odor control as one of the top priorities in its master plan, and in 2003, the TRA completed a comprehensive odor abatement evaluation. After evaluation of structural and chemical odor control options, TRA selected the **ECO<sub>2</sub>** SuperOxygenation System as part of their Stage VII Odor Control Improvement Program.



One of the goals of the odor abatement program is to reduce odorous emissions in the primary clarifiers. Structural options including primary clarifier covers and gas scrubbers were very expensive to construct and maintain and were potentially hazardous to employees. A pilot study using dissolved oxygen showed that the highly odorous and hazardous hydrogen sulfide could be effectively removed prior to wastewater reaching the treatment plant headworks.

Two **ECO<sub>2</sub>** SuperOxygenation Cones dissolve a total of 13,800 lbs of pure oxygen into a wastewater sidestream to elevate the D.O. in the 150MGD influent to a minimum of 11 mg/l D.O. at the headworks.

## Primary Clarifier Odor Control



### Trinity River Authority (TRA) of Texas

The Trinity River Authority's Central Regional Wastewater System, located in Dallas, Texas, serves over 3 million people in 20 north Texas cities, including the Dallas / Fort Worth area. TRA's main treatment facility is the Central Regional Wastewater System, which includes a 200 mile collection system. The CRWS is an award-winning treatment facility, known for its innovative programs and operations excellence.

The **ECO<sub>2</sub>** SuperOxygenation System, designed in conjunction with consulting engineers, Alan Plummer Associates is in operation at TRA's Central Regional Wastewater System treatment plant, oxygenating influent into the primary clarifiers in order to oxidize any existing sulfides before they can escape to the atmosphere as H<sub>2</sub>S. The ECO<sub>2</sub> System is meeting all of the performance objectives.



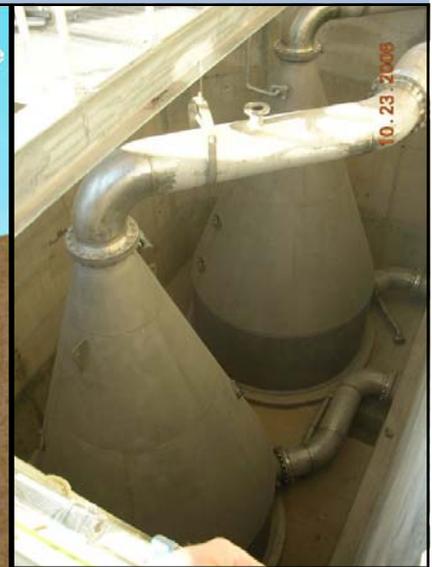
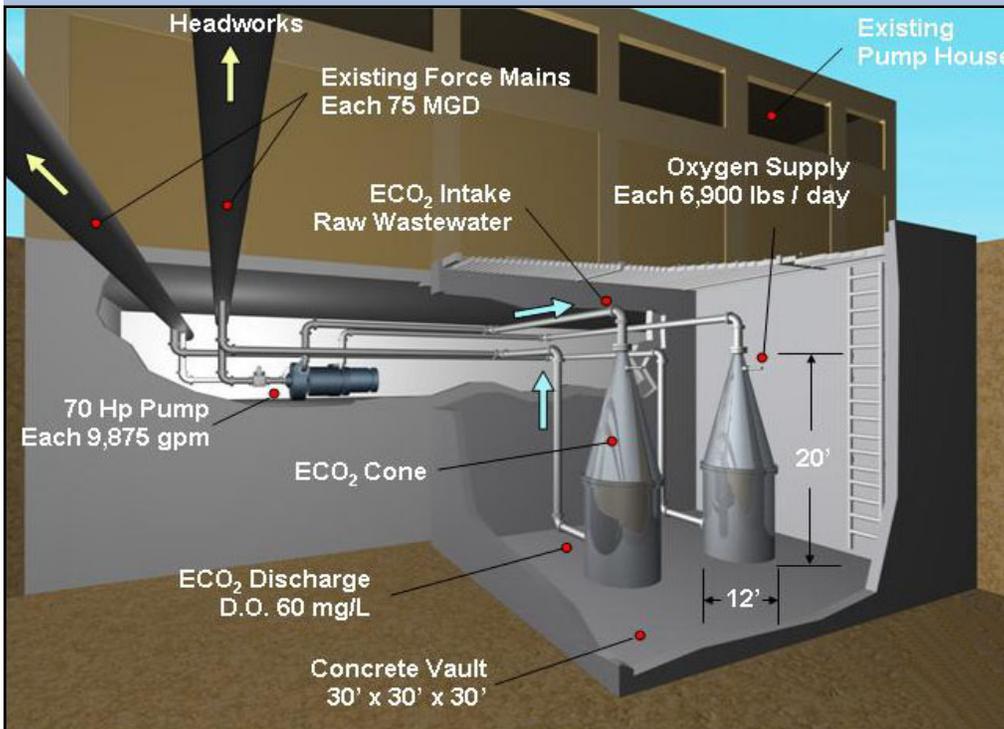
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## ECO<sub>2</sub> SuperOxygenation System at TRA's Influent Pump Station



Two 12 ft. dia. ECO<sub>2</sub> Cones have been installed in a 30 ft. deep vault adjacent to the TRA influent pump station.

Schematic of the ECO<sub>2</sub> SuperOxygenation System at the TRA Influent Pump Station

### Project Objectives

Traditionally, ECO<sub>2</sub> SuperOxygenation Systems have been used to prevent anaerobic conditions in force mains, preventing sulfide formation. The TRA Installation is different as it adds dissolved oxygen to water from the collection system, that is already contaminated with dissolved sulfides (3-6mg/L). The added D.O. oxidizes the existing sulfides within a few minutes before they can escape as H<sub>2</sub>S in the influent channels.

Project objectives for the installation at TRA included:

- ◆ Dissolve >90% of supplied oxygen into wastewater
- ◆ Provide a minimum DO of 60 mg/l at discharge point of SuperOxygenation system
- ◆ Provide a final minimum DO of 11 mg/l in the stream at the entrance to the treatment plant

### Project Results

The ECO<sub>2</sub> SuperOxygenation System has been in operation since 2006 and meets all of the design criteria.

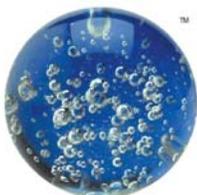
### TECHNICAL SPECIFICATIONS

#### Influent Lines (2 each)

Flow—average	75	MGD
Length of force main	1,250	ft.
Diameter of force main	72	in.
Pressure at system connection	19	psig
Retention time at average flow	11	min.

#### ECO<sub>2</sub> System Design (2 each)

Cone diameter	12	ft.
Cone height	20	ft.
Oxygen dissolution rate	6,900	lb./day
Sidestream flow	9,875	gpm
Sidestream D.O.	60	mg/l



The ECO<sub>2</sub> SuperOxygenation Technology is an innovative, economical and environmentally friendly odor control solution for municipal wastewater systems including Force Mains, Headworks and Primary Clarifiers. The ECO<sub>2</sub> System dissolves oxygen into wastewater at an oxygen transfer rate of well over 90%. Dissolved oxygen readily reacts with existing sulfides and prevents anaerobic conditions and the formation of sulfides in wastewater. Eliminating hydrogen sulfide (H<sub>2</sub>S) not only prevents odor, but also costly corrosion of pipes and treatment plant equipment.

**ECO<sub>2</sub>**

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