# Integrated WATER Services, Inc.

## Value Engineering Enables Innovative Zero Discharge Ag Project

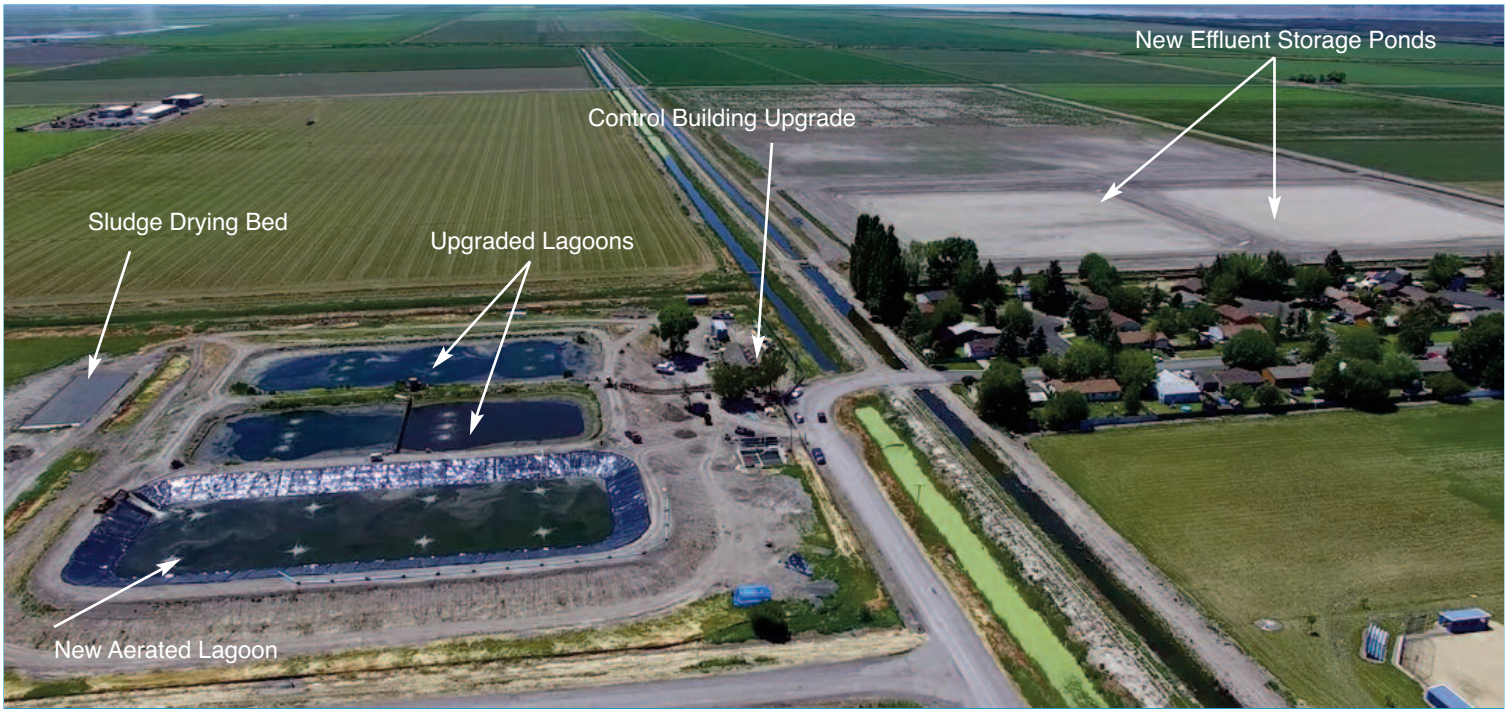
Integrated Water Services, Inc. (IWS) recently completed the construction of the regions first "Zero Discharge" agricultural re-use project for the City of Tulelake, CA located five miles south of the Oregon border. A key element of the project was the $1.4 mm in savings that were achieved through value engineering, post bid, which brought the constructed cost in line with the city's budget. The newly upgraded lagoon treatment system will store 30 million gallons of water that will be used during the growing season to irrigate adjacent farm land.

IWS participated in a public bid for the City of Tule Lake Wastewater Treatment Plant Improvements Project in June of 2015 and was the low bidder at a total project cost of approximately $6mm. Although the bid exceeded the budget by $1.4mm, the Owner was under regulatory and funding deadlines to complete the work. The City of Tule Lake, the engineer (Adkins Consulting Engineering, LLP – www.adkinsengineering.com), and IWS worked as a team to value engineer the project to meet the project budget while at the same time meeting the regulatory requirements for this Title

*Brett Nystrom (Public Works Director) in New Control Room*

22 water re-use project that was being funded by the Clean Water State Revolving Fund (CWSRF). Project elements included all civil, mechanical, electrical, controls, concrete, and start-up operations.

The City was upgrading its lagoon treatment system and was constructing storage ponds so that it could generate and store Title 22 quality water that could be used to irrigate local farm land during the growing season. Treatment plant




*Aerial View of Project Site*

*Constructing Effluent Storage Ponds*

*Completing Lagoon Earth Work*

work included improvements to the existing headworks and influent pump station, earth work associated with construction of one new treatment lagoon (2.1 million gallons) and re-grading of one existing treatment lagoon (1 acre surface area), lining and aeration of lagoons, lagoon piping and control structures, biosolid drying beds, access roads, and other related improvements.

The effluent reuse system included a new effluent pump station, 1,350 linear feet of new 6 inch pressure sewer line, earth work associated with two storage ponds (15 million gallons per pond), new storage pond irrigation pump station, supplemental irrigation water pump station, control structures and pond piping, 2,720 linear feet of irrigation mainline, agricultural irrigation system, access roads, and related improvements. The total cut and fill earth work on the project exceeded 100,000 yd3.

This innovative "Zero Discharge" project will reuse 100% of the Title 22 treated effluent generated during the year to irrigate and grow fodder crops like grass or alfalfa that can be used to feed animals not producing milk for human consumption.

The Value Engineering process included: 1) Modifications to the construction approach which eliminated the need for a canal crossing and the related infrastructure; 2) Modifying the liner specification for the lagoon and storage ponds; 3) Utilizing a" Method" versus "Performance" Based Specification for the civil work; 4) Reducing the size of the sludge drying bed; 5) Utilize Owner provided generator; and 6) labor savings through collaboration with the Owner's operations staff during plant transitions.

Brett Nystrom, Tulelake Public Works Director, worked

*Setting Manhole in Shored Excavation*

*New Aeration Pond*

closely with IWS during the value engineering process and construction phase of the project. "This project wouldn't have happened without IWS taking a leadership role in the Value Engineering process to bring the constructed cost down to meet our budget. IWS execution of the construction work was first rate, they were very professional and easy to work with. I would rate them a 10 out of 10 as a general contractor."

**For More Information Contact**

***West Coast Regions*** Peter C. Balas (pcbalas@integratedwaterservices.com) Tel: 925-895-3895

Jay Alman (jalman@integratedwaterservices.com) Tel: 707-291-5283

***Mountain West/Texas Regions*** Jeff Thomas (jthomas@integratedwaterservices.com) Tel:720-221-4366