Expansion of City of Los Angeles’ Terminal Island
Advanced Water Purification Facility: Completing the First Design/Build Potable Water Reuse Facility

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The City of Los Angeles, Department of Public Works, Bureau of Sanitation (LASAN) owns and operates the Terminal Island Water Reclamation Plant (TIWRP) and the Advanced Water Purification Facility (AWPF). TIWRP is located in the City of San Pedro, California on Terminal Island in the Port of Los Angeles. The treatment plant has been in operation since 1935. In 2001, LASAN constructed the TIWRP AWPF, as well as a pipeline distribution network, to route up to 6 mgd of recycled water to the Dominguez Gap Barrier (DGB) for groundwater replenishment. TIWRP AWPF Phase 1 key processes included membrane filtration (MF), reverse osmosis (RO), chlorination, and lime stabilization, as shown in black on Figure 1.

The AWPF Ultimate Expansion design/build construction project (Phase 2) increases the advanced recycled water treatment capacity from 6 mgd to 12 mgd of product water. In addition to producing water for the Dominguez Gap Barrier, AWPF product water will be distributed to Machado Lake to improve and rehabilitate the long-term health of the lake, the San Pedro area for irrigation, the Harbor Generating Station, and to other industrial users. As shown in red on Figure 1, Phase 2 includes additional MF, RO, and advanced oxidation process (AOP) systems and upgrades to existing pumping stations and systems, chemical addition system, auxiliary systems and utilities.

This article presents three important components of the project: Design/Build Challenges, System Monitoring and Reporting, and the use of a Novel Advanced Oxidation System. Design/Build: Design/Build projects have historically been implemented for two main reasons, increased speed of implementation and reduced overall cost to the Owner. Recognizing that advanced purification for potable water reuse requires complex engineered systems that are tightly coupled, process design must be robust and monitoring must be precise. Both of these...
Long Beach to Welcome the 11th Annual International Water Association Conference

The International Water Association (IWA) conference on Water Reclamation and Water Reuse will hold its conference in Long Beach, July 23-27. This is the first time ever this conference has been held in North America. The WaterReuse Association worked very hard to win the bid to have the conference come to the United States and then to Long Beach. National has also done an excellent job of spearheading the conference organizing efforts with Water Environment & Reuse Foundation and the National Water Research Institute.

This event will provide an opportunity to share knowledge regarding water reuse practices in different countries in order to build trust and further grow water reuse projects. The focus will be to bring together water managers, industry leaders, and cutting edge researchers to learn what’s working, what’s not and what’s next in water reuse policy and regulations, technology, operations, financing and public perception.

For more information on the conference and to register please visit https://watereuse.org/news-events/conferences/iwa-international-conference-on-water-reclamation-and-reuse

Expansion of the City of Los Angeles’ Terminal Island Advanced Water Purification Facility (cont.)

constraints increase the timeline and cost of the project, running counter to the Design/Build benefits. However, there is a clear path to success for potable water reuse design/build, one that requires tight process and equipment specifications, a clear understanding of health regulations, and a committed effort and focus to potable water quality. In addition to existing site space constraints and the congested underground utilities, the design/build team overcame challenges with existing AWPF cross-connections, the installation of off-spec bypass lines, and other issues that complicated construction but results in greater water quality confidence.

Monitoring and Operations: The design team has also given careful consideration to the inclusion of proper system monitoring instrumentation that the requirements set forth in the TIWRP AWPF Engineering Report and Operations and Optimization Plan (OOP). In order to reconcile the multitude of regulatory documents governing the design and operation of the TIWRP AWPF, the Engineer of Record worked closely with LASAN to carefully study the Waste Discharge and Water Recycling Requirements (WDRs/WRRs) and the CCR to ensure that the final constructed facility will be in full compliance.

Novel UV AOP: Adding to the complexity of this project was the incorporation of the first UV/Hypochlorite system for disinfection and advanced oxidation, the first of its kind anywhere. Pilot scale testing demonstrated that UV/Hypochlorite was lower in cost and had greater performance for disinfection and chemical pollutant destruction compared to UV/H2O2 (the standard UV AOP), and has the added benefit of being safer to handle. This novel process relies upon an integrated control system of flow, UV intensity, UV transmittance, sodium hypochlorite dose, sodium hypochlorite residual, and pH; clearly more intricate compared to a conventional UV AOP with H2O2, which operates based upon UV reactor power setting and H2O2 dose only. The result of this added control complexity is improved treatment performance and far greater precision in system control.
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DO apply water conservatively, utilizing current technology, such as centralized irrigation controllers, rain sensors, master valves and flow sensors.

DON'T allow recycled water to leave the use site.

GOT NEWS?
We're always looking for interesting stories and informational articles to keep our members up to speed on all that's happening in water reuse and reclamation. If you would like to contribute an article or have other ideas about this newsletter, please email Debbie Burris (dburris@ddbe.com) or Lisa Knox (lknox@dudek.com)

WateReuse Association www.watereuse.org/sections/california/orange-county

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