Sustainability Through Innovative Reuse in a Design-Build WW Treatment Plant Upgrade

Newport, RI  WPCP Upgrades Design-Build-Operate Project

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Design-Build Delivery

- Single-point accountability
- Cost certainty
- Schedule advantage
- Competition for innovative ideas
Project Drivers/Goals

- Resolve consent order/reduce CSO activations
- Increase peak treatment capacity to 30 mgd
- More reliably handle wet weather peaks
- Improve operational efficiencies
- Incorporate sustainability/green energy
Sustainability and Green Energy

• Rehab/repurposed existing structures
• Improved operational efficiency
• Incorporated energy efficient equipment
• Incorporated green energy source
WPCP Upgrades Overview

- Solids Handling Improvements
- New Headworks
- UV Disinfection
- Final Settling Tanks Improvements
- Odor Control
- CEPT Implementation
- Solar Power System
- Aeration Tank Improvements
Maintenance of Plant Operations

- Maintained full plant operation
- Close coordination with operations
- Developed sequencing and phasing plans
- Implemented temporary treatment measures
Headworks Building

- Architectural precast building panels
- Set on existing and new structure
- Protection of equipment
- Improved odor control
Aeration Tanks

- Four individual treatment trains
- Traditional complete mix activated sludge
- Small aeration volume
- Bulking sludge problems
Repurposed Aeration Tanks

- New Two-Train Contact Stabilization Process
- New FRP Baffles
- Reroute RAS Piping
- Reroute AT Influent
- New High Efficiency Turbo Blowers
- Eliminate use of chemicals
- UV system
  - Two channels
  - 5 banks per channel
  - 40 mJ/cm²
- BIOREM biofilter
  - 16,000 cfm
  - Improved odor control
Green Energy - Solar Power System
RI Infrastructure Bank – Efficient Buildings Fund

- Engineered with three applications
- 790 solar panels
- 290 kW (328,000 kWh/yr)
- Offset over 10% of plant electrical usage
Project Success!

- Successfully processes 30 mgd
- Significantly reduced CSO activation
- Incorporated sustainable design/construction
- Incorporated green energy
Award Winning Recognition

- New England Water Environment Association (NEWEA) Excellence Award 2019
  *Most Improved Large Wastewater Facility*

- Design-Build Institute of America (DBIA) NE Region Gold Award 2020

- Rhode Island Clean Water Association (RICWA) Gold Award 2020
  *Consecutive Annual Permit Compliance*
Questions?
Thank you.