

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

Newport, RI WPCP Upgrades
Design-Build-Operate Project

NEWEA Annual Conference 2022

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Newport WPCP Upgrades – Project Team

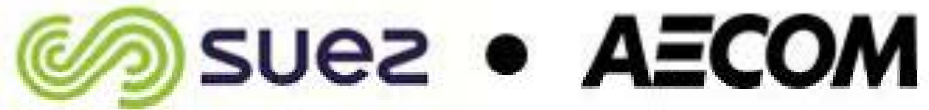


City of Newport, RHODE ISLAND



Design-Build-Operate

NEWPORT WATER SERVICES, LLC



Design-Build

AECOM

— a joint venture —



Nickerson
GENERAL CONTRACTORS

Design-Build Delivery

- Single-point accountability
- Cost certainty
- Schedule advantage
- Competition for innovative ideas

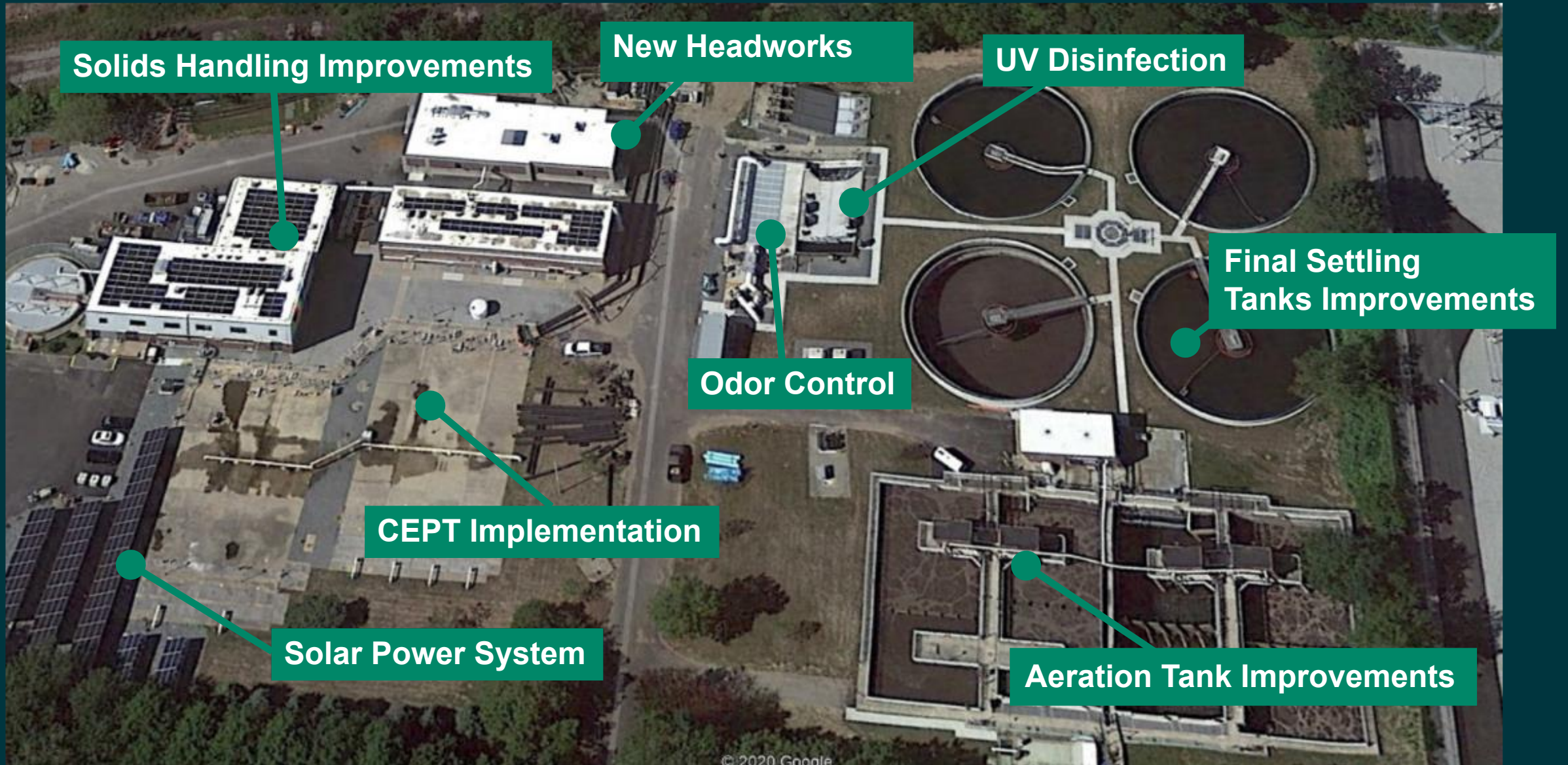
Project Drivers/Goals

- 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

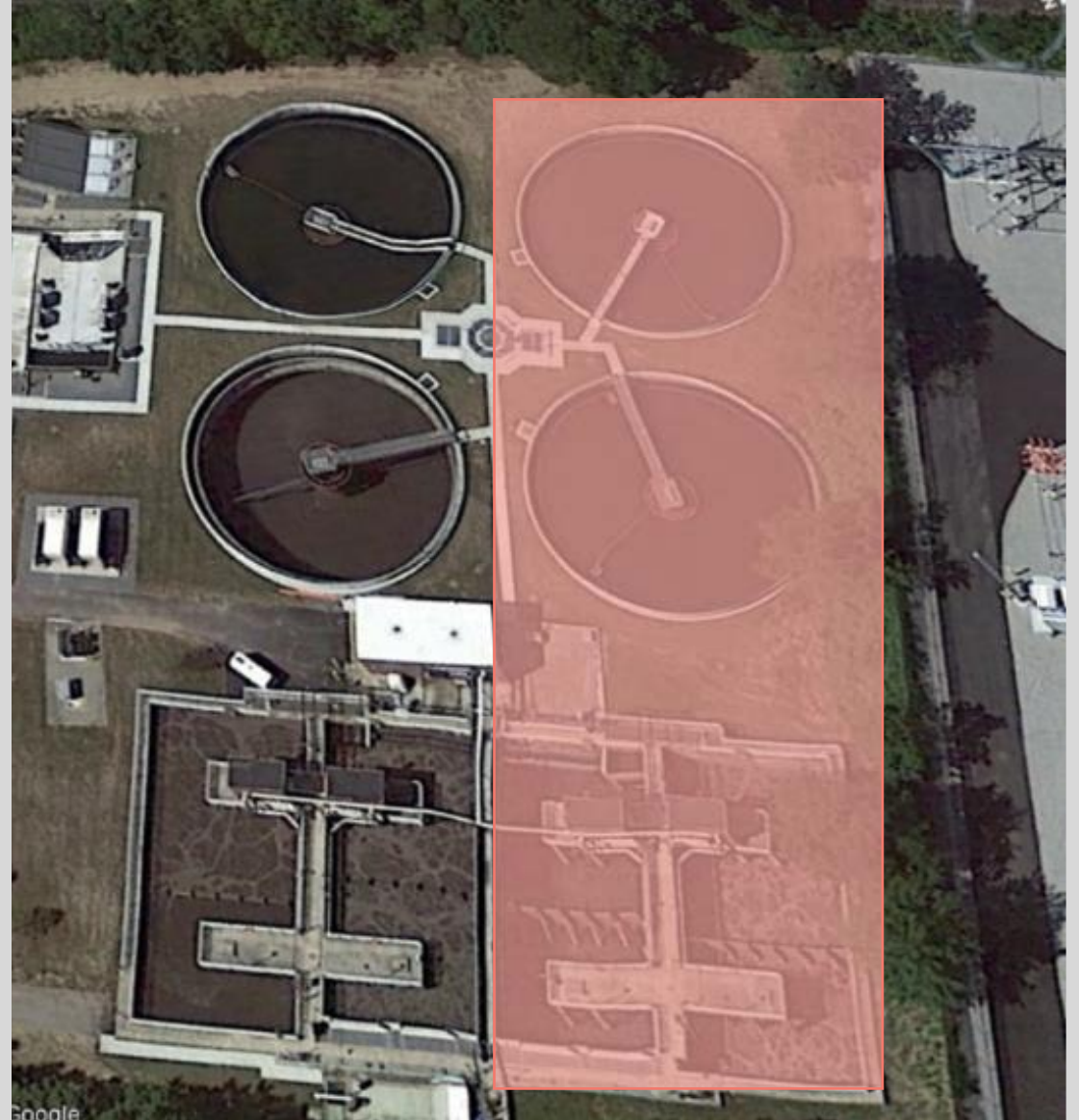
- Rehab/repurposed existing structures
- Improved operational efficiency
- Incorporated energy efficient equipment
- Incorporated green energy source

WPCP Upgrades Overview

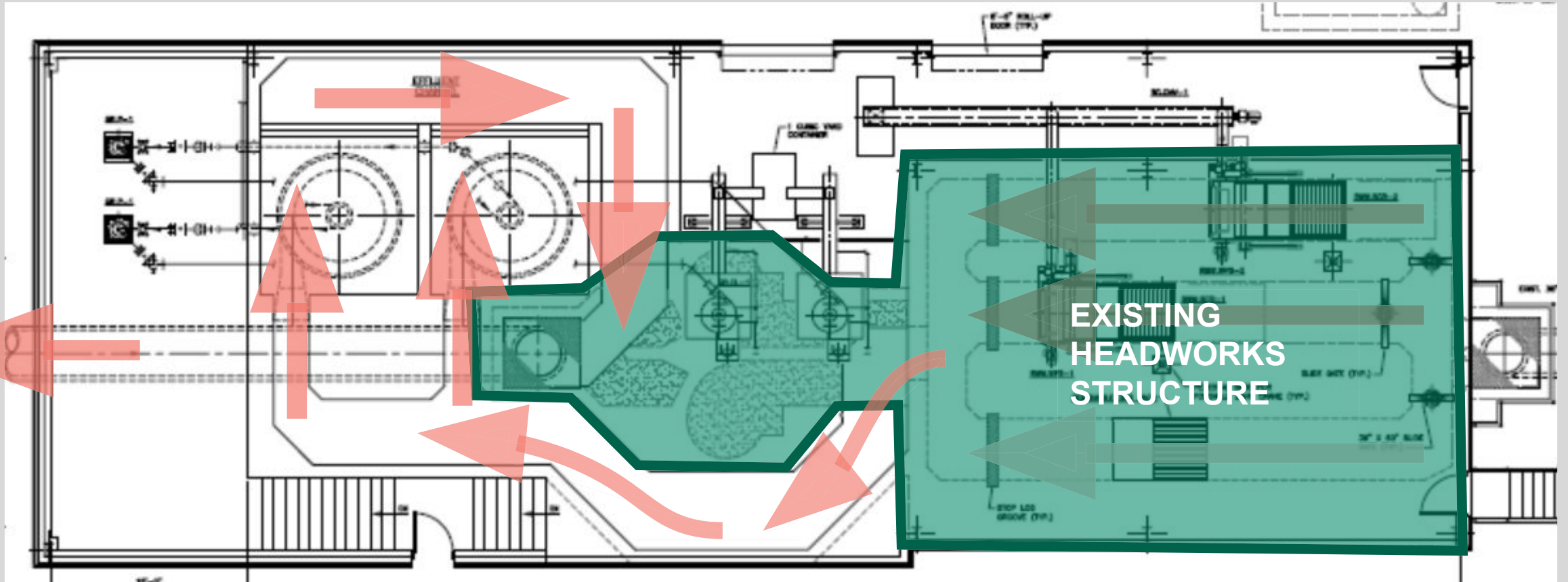


Maintenance of Plant Operations

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



Repurposed Headworks



Headworks Building

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



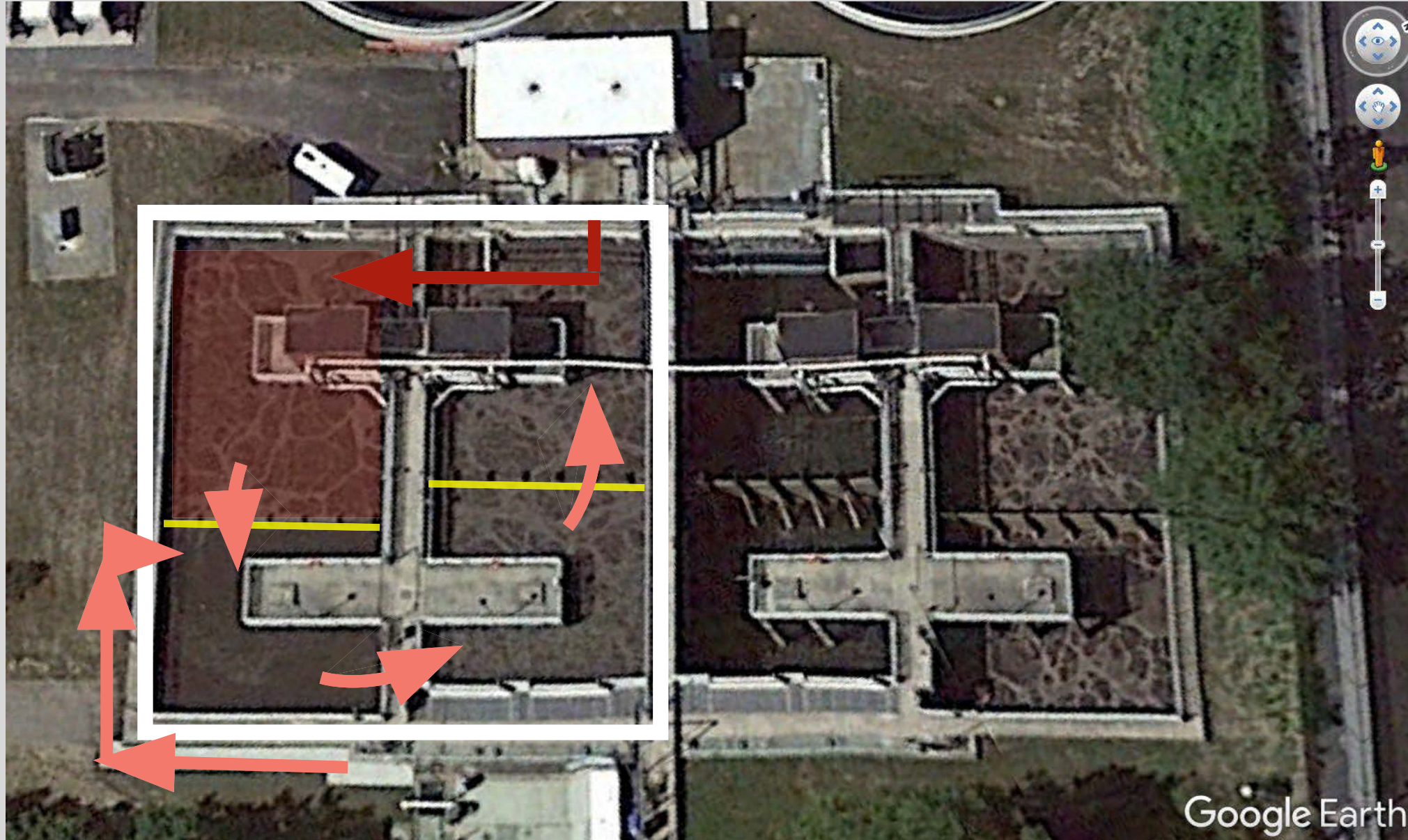
Aeration Tanks

- 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





Biofilter
Odor
Control

UV
System

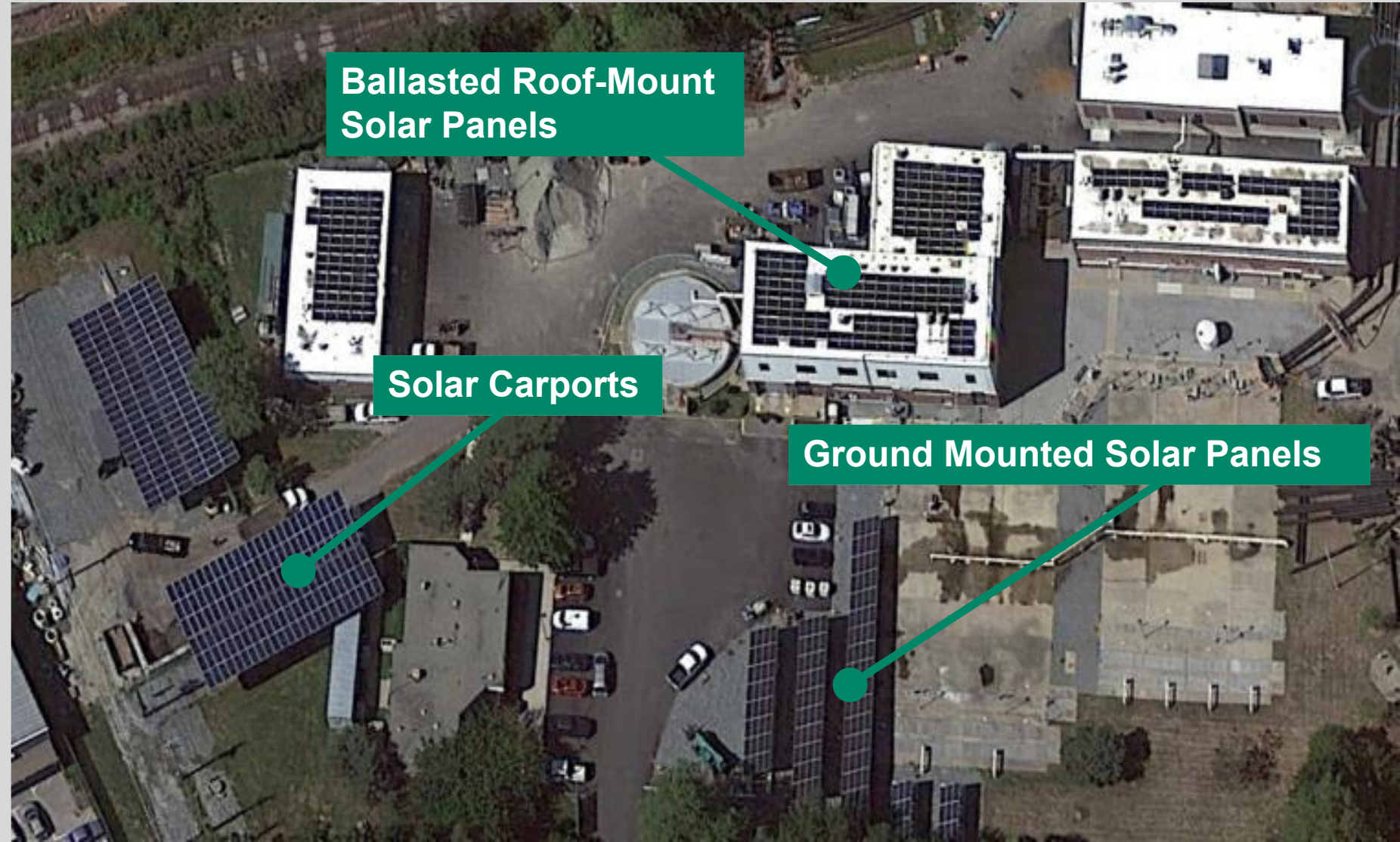
- Eliminate use of chemicals
- UV system
 - Two channels
 - 5 banks per channel
 - 40 mJ/cm²
- BIOREM biofilter
 - 16,000 cfm
 - Improved odor control



Green Energy - Solar Power System

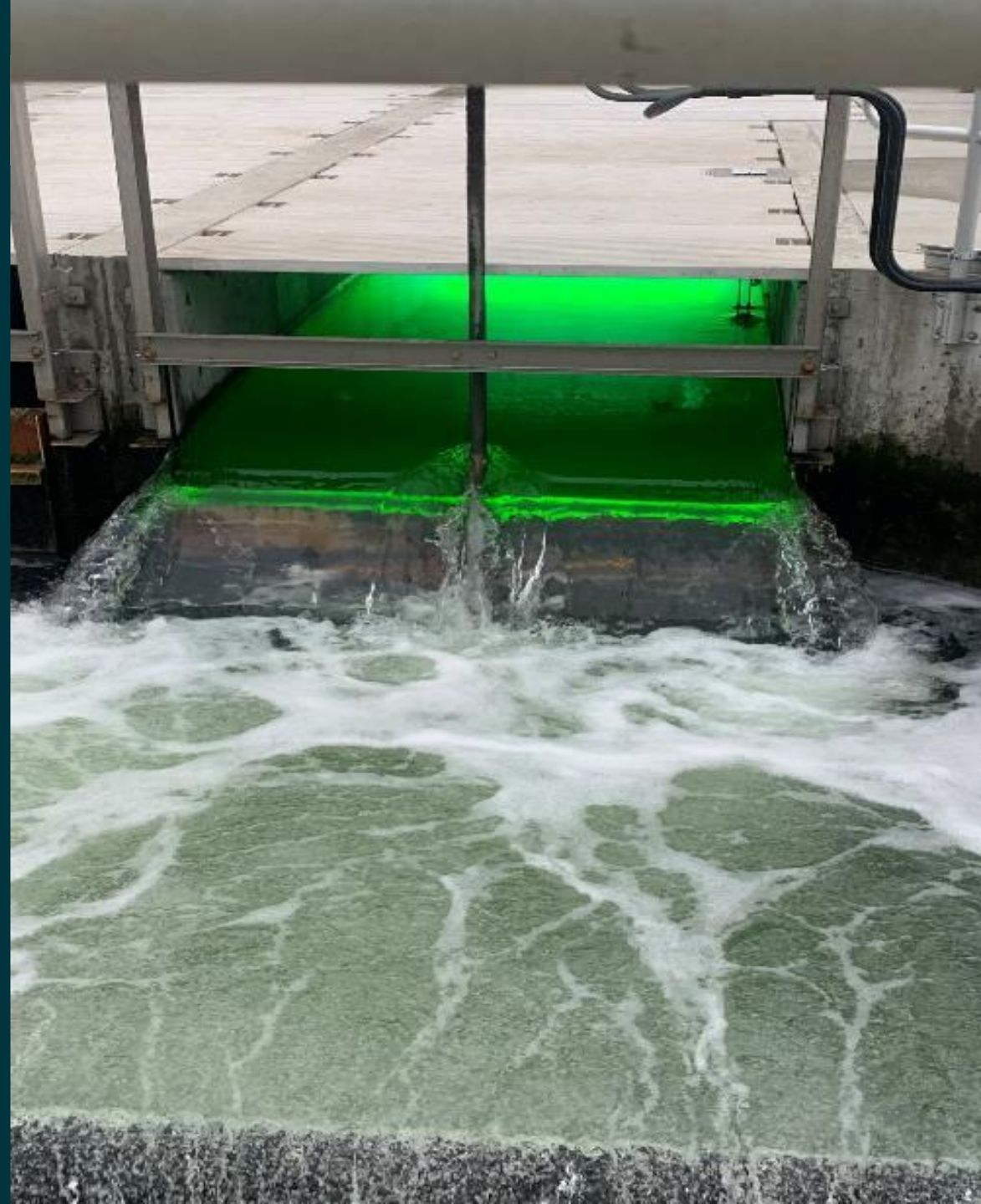
RI Infrastructure Bank – Efficient Buildings Fund

- 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

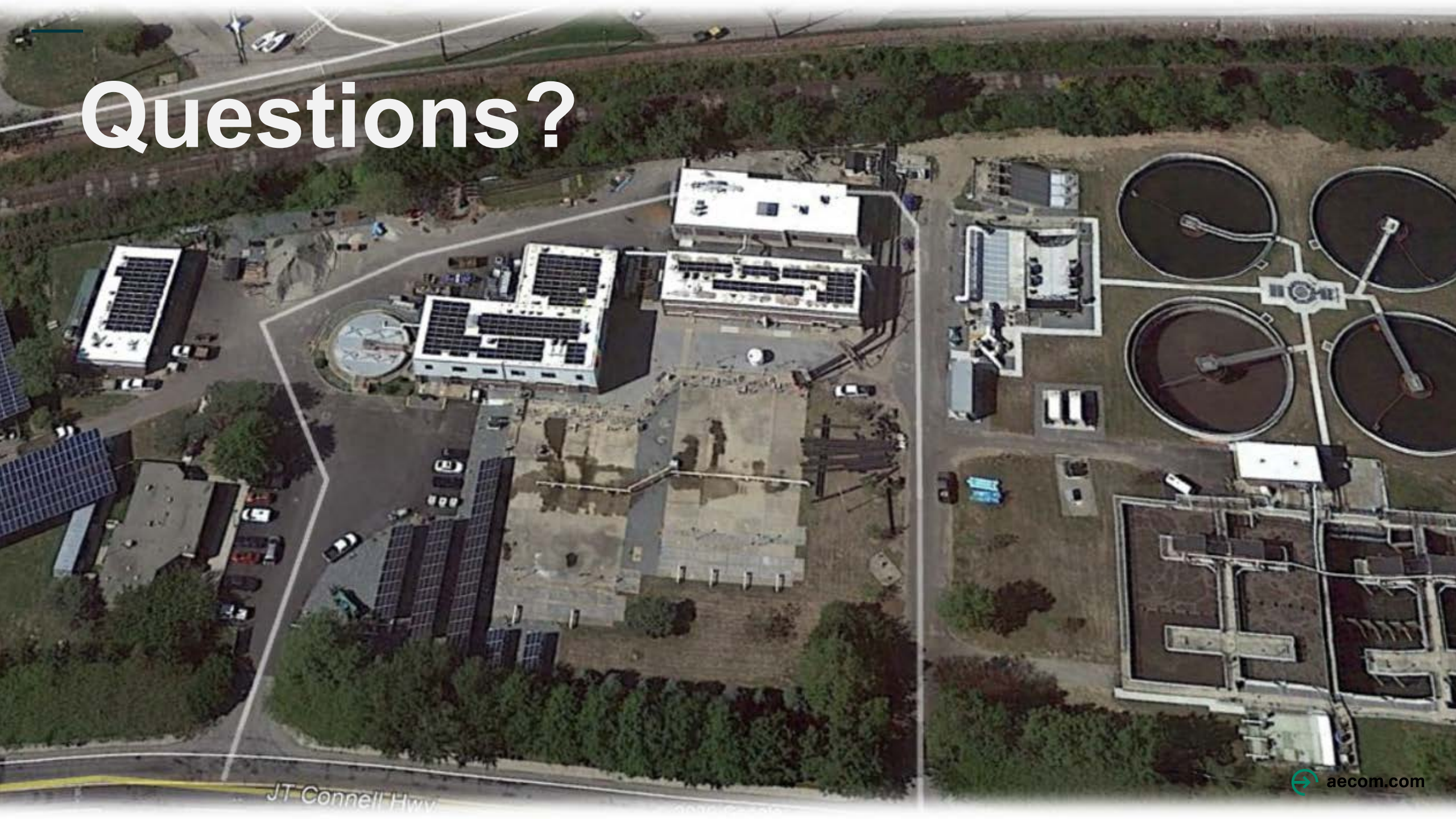


Award Winning Recognition

- 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.

