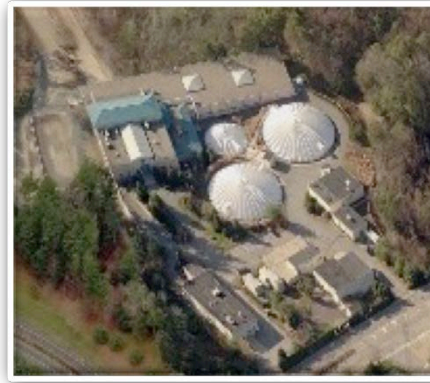
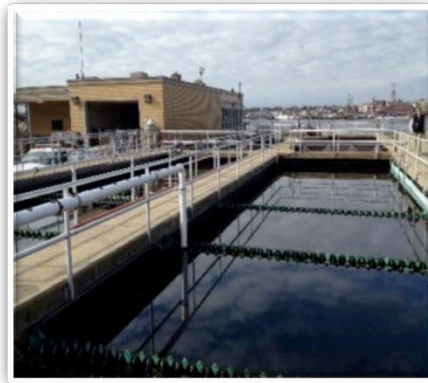


**NEWEA/NYWEA Joint Spring Meeting**  
**Groton, Connecticut**  
*June 7, 2016*

**The City of Groton, CT's Public Awareness Campaign  
Supporting WWTF Improvements**  
*and*  
**The Mashantucket Pequot Tribal Nation's  
WWTF Water Reuse Success Story**

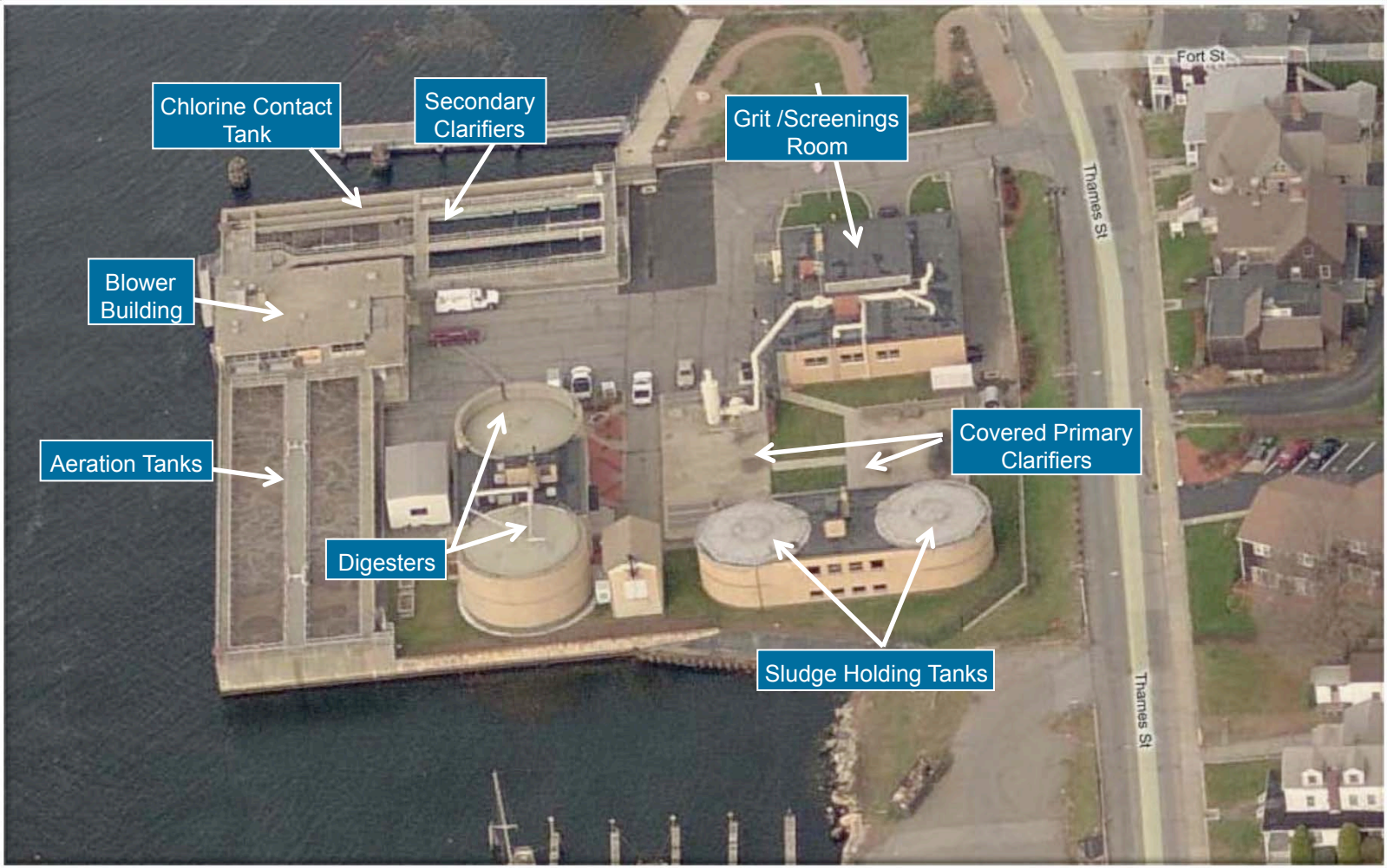


***Presenters***

***Stephen Seigal P.E., BCEE, Tighe & Bond***

***David Drobiak, Mashantucket Pequot Tribal Nation***

# City of Groton WWTF Upgrade Project Background



# City of Groton WWTF Upgrade Project Goals

- **Reduce unexpected repairs and operating budget impacts**
  - **Identify equipment and structures in need of rehab or replacement**
  - **Develop a phased capital improvement plan**
-

# CIP Needs – Immediate/Short Term

## Issue

**Repair primary clarifier tanks and hatches**



## Estimated Cost

**\$770,000**



# CIP Needs – Immediate/Short Term

## Issue

**Replace primary clarifier equipment**



## Estimated Cost

**\$1,400,000**

# CIP Needs – Immediate/Short Term

## Issue

**Repair concrete at  
primary pump wet  
well and flow  
distribution  
structures**



## Estimated Cost

**\$408,000**



# CIP Needs – Immediate/Short Term

## Issue

**Replace final clarifier equipment**



## Estimated Cost

**\$497,000**

# CIP Needs – Immediate/Short Term

## Issue

**Replace boiler and heat exchanger**



## Estimated Cost

**\$560,000**



# CIP Needs – Immediate/Short Term

## Issue

**Replace electrical service/transformers, motor control centers, feeders, and lighting**



## Estimated Cost

**\$1,102,000**

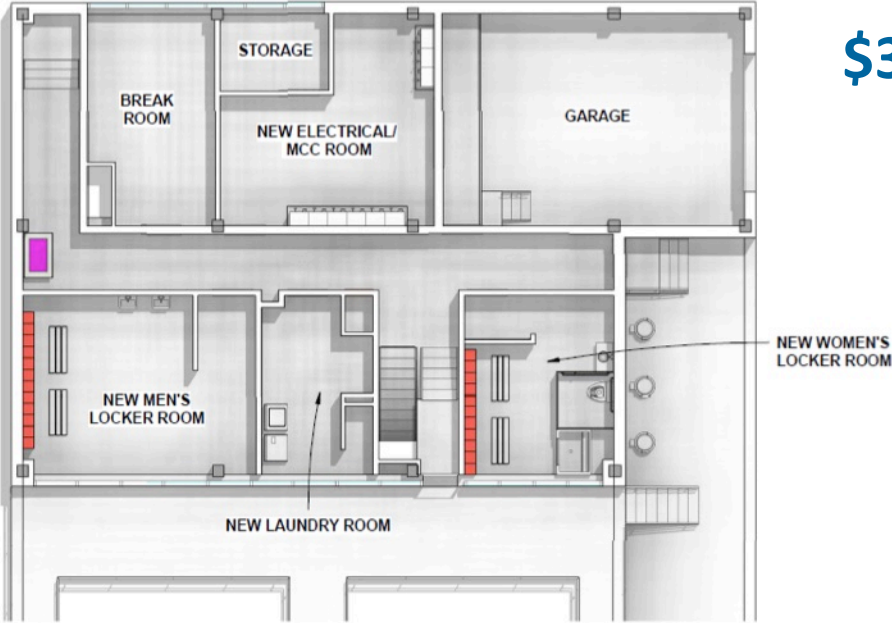
# CIP Needs – Immediate/Short Term

Issue

**Renovate Blower Building and Relocate Laboratory**

Estimated Cost

**\$380,000**



**Blower Building**

# Project Cost Summary

<b>Work performed by General Contractor</b>	<b>\$ 4.5 Million</b>
<b>Work performed by City, Engineering, and Contingency</b>	<b>\$1.6 Million</b>
<b><i>TOTAL ESTIMATED PROJECT COST</i></b>	<b><i>\$6.1 Million</i></b>

---

# Groton's Public Education Campaign

- **Multiple Step Program**

- *Educate City Leaders about Need for Project*

## Walking in Their Shoes

By Ted J. Rulseh | In My Words | February 2012

Comment

View in E-Zine

Order Reprints

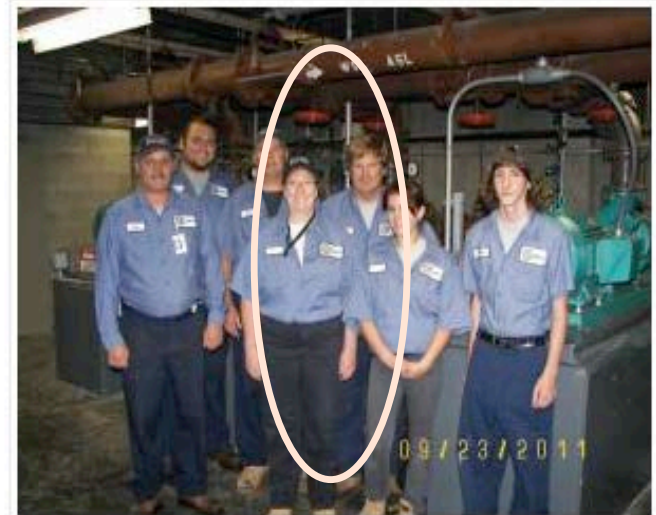
Share

### The mayor of a Connecticut city uses job shadowing to gain an appreciation for the work wastewater operators do daily

"I wish they could spend a day walking in my shoes."

How many wastewater treatment operators have entertained that thought in connection with the public officials in their communities? A goodly number, no doubt.

Marian Galbraith, mayor of Groton, Conn., granted that wish for the team at the city's Pollution Abatement Facility — only they didn't have to ask. Galbraith, elected to her first term in May 2011, used job shadowing as a way to get more familiar with the work of all city departments and their employees.



*The Groton Pollution Abatement Facility team includes, from left, Steve Scarpa, senior operator; Josh Rezendes, senior operator and past intern; Jim Bowdy, lab technician; Marian Galbraith, mayor of Groton; Kevin Cini, chief plant operator; Kelsey Reeves, Grasso Technical High School intern; Eric Melason, operator helper and past intern.*

# Educate City Leaders about the Project



# Groton's Public Education Campaign

## ■ Multiple Step Program

- *Educate City Leaders about Need for Project*
- *Educate the Public*

# Educate the Public

- City's Website
- Facebook

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**Government Community Groton**  
January 19, 2015 · 🌐

**MEETING ALERT:**  
CITY OF GROTON- MAYOR AND COUNCIL - TUESDAY, JANUARY 20, 2015 - MUNICIPAL BUILDING - COUNCIL CHAMBERS - 7:30 PM  
Agenda to Include:  
R-15-1-5 RESOLUTION THAT THE MAYOR AND COUNCIL AUTHORIZE AND RATIFY A CONTRACT WITH TIGHE AND BOND, 446 MAIN STREET, WORCESTER, MASSACHUSETTS, FOR THE DESIGN PHASE ENGINEERING SERVICES FOR THE WASTEWATER TREATMENT PLANT IMPROVEMENTS FOR A TOTAL AMOUNT OF \$319,250.00 (THREE HUNDRED NINETEEN THOUSAND TWO HUNDRED FIFTY DOLLARS AND NO CENTS) AND THAT MAYOR MARIAN GALBRAITH BE AUTHORIZED TO EXECUTE THE AGREEMENT



# Educate the Public

- City's Website
- Facebook
- **Newspapers**

# Educate the Public



## **Groton City wants public backing for \$6.1 million in sewage plant repairs**

Published September 20, 2013 12:01AM

**By Deborah Straszheim (mailto:d.straszheim@theday.com) Day Staff Writer**

**Groton** - Groton City will ask taxpayers next month to support a \$6.1 million investment to repair its sewage treatment plant.

The City Council approved the bond authorization Monday, and it will go before a special freeman's meeting for a vote at 7 p.m. on Oct. 21 in the Municipal Building.

Mayor Marian Galbraith said the project is needed to rehabilitate the system. She said maintenance workers have been innovative in keeping the plant running, but "you can't rebuild corroded cement."

The Pollution Abatement Facility at 311 Thames St. was built in 1955, added to in 1972 and upgraded in 2000. It serves the City of Groton and a small portion of Groton Town near Riverview Avenue.

# Educate the Public

- City's Website
  - Facebook
  - Newspapers
  - **Facility Tours**
-



The City of Groton's Pollution Abatement Facility will be open Saturday, October 19, for tours. The first tour will begin at 8:30 am and the last at 11:30 am.

The tours are designed to inform the City's voters of the rehabilitation needs of the facility which will be addressed by the proposed bond authorization.

Voters will have the opportunity to vote on the bond authorization at a Freeman's Meeting scheduled for 7:00 on October 21. The Pollution Abatement Facility is located at 311 Thames Street.

# Five-Year Capital Improvement Plan for CITY OF GROTON Pollution Abatement Facility



**Project Goal:** Address capital needs to allow the PAF to continue to operate reliably and cost-effectively and maintain compliance with its NPDES permit and other regulatory requirements



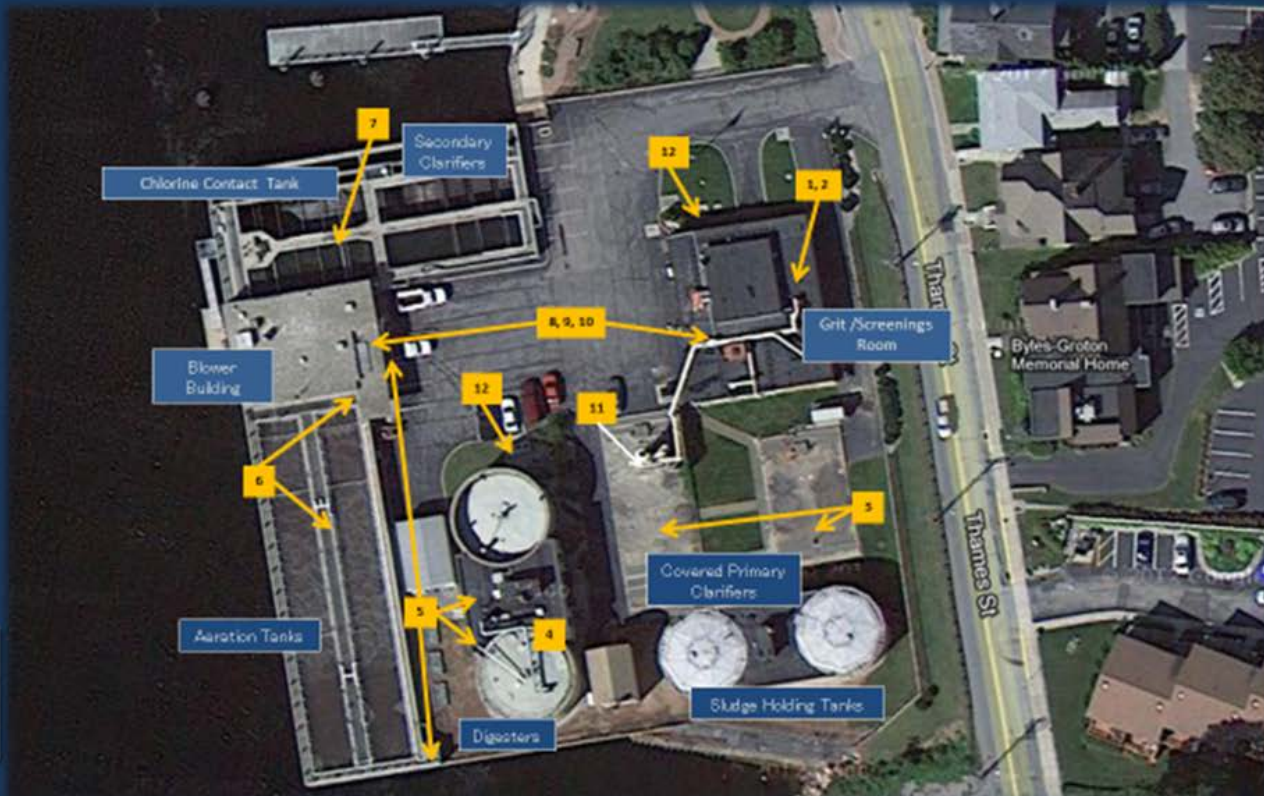
7. Replace worn secondary clarifier equipment



8. Replace worn electrical service/transformers, equipment, and lighting



9. Repair masonry, concrete cracks, glass frame, entry door, and HVAC



11. Replace worn odor control system fans and control panel



12. Replace worn underground fuel storage tanks and piping



# Educate the Public

- City's Website
  - Facebook
  - Newspapers
  - Facility Tours
  - **Video**
-



# The Mashantucket Pequot Reclaimed Water Process; The Pro & Cons

David Drobiak, Superintendent, MPTN WWTP  
102 Trolley Line Boulevard  
Mashantucket, CT 06338



# Reclaimed Water History

- \* 1993- Mashantucket Pequot Tribal Nation (MPTN) buys Lake of Isles (LOI) property
- \* 1998- Major expansion at Wastewater Treatment Plant
- \* 2000- MPTN builds two 18 hole championship golf courses using reclaimed water irrigation

# Reclaimed Water History

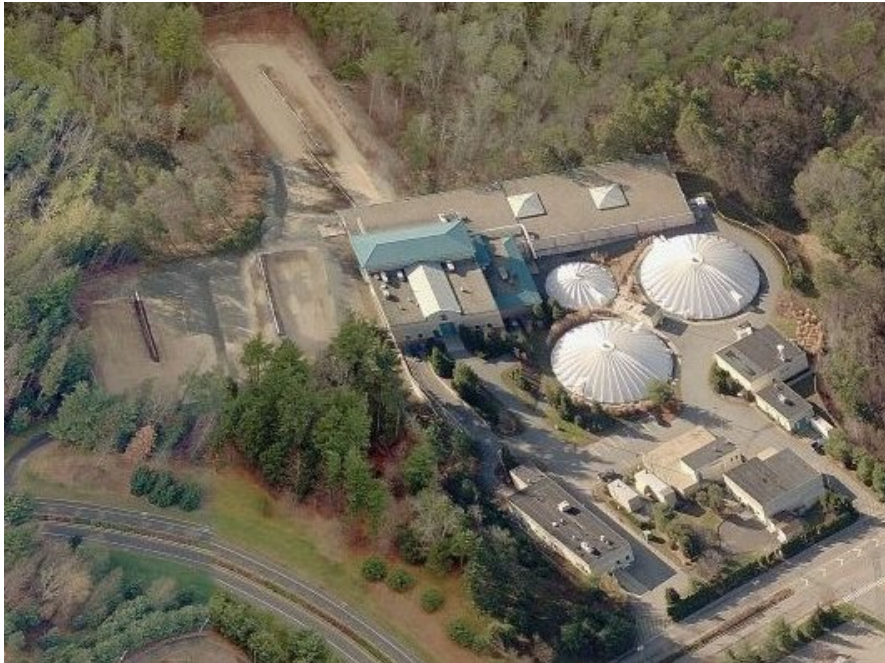
## 2003 System Upgrade

- \* Modifications to the existing WWTF included:
  - \* add SBR tank (SBR 4)
  - \* retractable diffusers to SBR 3&4
  - \* UV disinfection system upgrade
  - \* centrifuge for solids handling

# System Operation

- \* The LOI Golf Course uses an 800,000 gallon reclaimed water storage tank
- \* Watering occurs between the hours of 9PM-3AM
- \* Variable speed pumps fill the storage tank on a continuous basis

# MPTN WWTP Process



- \* The MPTN WWTP Process includes:
  - \* Influent Screening
  - \* Sequencing Batch Reactors
  - \* Post Equalization Tanks

# MPTN WWTP Process



# MPTN WWTP Process

- \* Post Effluent Filtration



- \* Each filter has an average capacity of 1.5 mgd
- \* Media is a 10 micron nylon pile cloth

# MPTN WWTP Process

## \* UV Disinfection



- \* Trojan UV 3000 Plus with 3 banks of 80 bulbs each
- \* Provides  $\geq 100 \text{ mw/cm}^2$  < 70% transmittance at a peak capacity of 5.7 mgd

# MPTN WWTP Process

- \* Final Effluent Storage Disinfected or Disposal to:
  - \* Rapid Infiltration Beds
  - \* Reclaimed Water Storage Tank
- \* Waste Activated Sludge Holding Tanks
- \* Sludge Handling Facility
- \* Ultimate Disposal - Incineration





# Discharge Permit Highlights

- \* Reuse is permitted from April 1 through October 30
- \* No spray application of Reclaimed water during rainfall, after leaf fall, or excessive windy periods
- \* Syringing of greens with hand held hose when no one other than maintenance personnel are within 50 ft

# Discharge Permit Highlights

## \* Permit Limits:

- \* BOD – 10 mg/l
- \* TSS – 5 mg/l
- \* Total Nitrogen – 10 mg/l
- \* Total Phosphorus – 1 mg/l
- \* Turbidity – <2.0 NTU
- \* Max Daily Flow – 1,200,000 gpd
- \* Chlorine Residual – 0.2 – 1.5 mg/l
- \* Fecal Coliforms – Not to exceed 2.2 col/100mL
- \* UV Dosage – Need to maintain at least 100mWsec/cm<sup>2</sup>

# Discharge Permit Highlights

5 parameters that require ceasing reclaimed water:

- \* The UV dose is not met
- \* Turbidity exceeds 2 NTU
- \* Chlorine residual limit is not met
- \* Fecal coliform exceeds 2.2 col/100mL
- \* Total phosphorus exceeds 1.0 mg/l

# Reclaimed Water System Pros & Cons

- \* Pros—

- \* It's benefits to the environment are substantial
- \* It extends the life expectancy of the rapid infiltration beds
- \* The cost savings is substantial. Potable water versus reclaimed water is 6 times the cost

# System Performance Pros & Cons

- \* Cons –

- \* The stringent discharge permit necessitates:

- \* Constant monitoring

- \* Daily adjustments

- \* Repairs

- \* Replacement of Equipment

- \* Maintenance

- \* Troubleshooting

# Summary

- \* For the past 6 years the system has largely operated as intended
- \* Supplied over 160 million gallons of reclaimed water to Lake of Isles, with over 300 million gallons since 2006

# QUESTIONS????



Thank you to:  
Michael Boland – MPTN, Director of  
Natural Resources  
Jennifer Porter – MPTN, Admin  
Assistant II for Utilities & Wastewater