Torrington Water Pollution Control Facility Upgrade

Presented by:

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Presentation Overview

- WPCF history
- Need for current project
- Facilities Plan Recommendations
- Preliminary design costs
- Value engineering
- Changes to recommended plan
- Current opinion of costs
- Schedule
- Impact
- Questions
History of Past Improvements

- Originally Constructed 1939
- Secondary Treatment 1970
  - Sludge Processing
- Upgrade & Expansion 1994
  - Nitrification
  - Improved Disinfection
- Regional Fats, Oil & Grease (FOG) Receiving 2010
Need for Current Project

• WPCA Goals
  ▪ Capacity for projected flows and loads within existing permit
  ▪ Upgrade aging infrastructure
  ▪ More stringent permit limits
    ♦ Nitrogen (Protect Long Island Sound)
    ♦ Phosphorus (Protect Naugatuck River, decrease algae)
    ♦ BOD$_5$/TSS
  ▪ Improve Energy Efficiency/Green Technologies
  ▪ Increased Resiliency for Storm Events
Facilities Plan Recommendations

- Septage Receiving Improvements
- New Electrical Distribution System
- New Odor Control System
- New Admin/ Lab/ Maintenance Garage Space
- New Solids Handling Improvements
- Additional Final Settling Tank
- Sludge Pumping Modifications
- Space Reserved for Future Process Tanks
- Raw Sewage Screening Improvements
- New Tertiary Phosphorus Removal System
- Reuse/Modify Existing Final Settling Tanks
- Storm Resiliency Protection Throughout Facility
- Aeration Tank Modifications
Overall Site Modifications Plan
Recommended Plan

- Upgrade Preliminary Treatment Process
- Provide new Septage Receiving Facility
- Upgrade Primary Treatment Process
- Re-purpose existing tanks for Nitrogen Removal
- Construct Phosphorus Removal Process
- Implement Sludge Dewatering
- New Secondary Clarifier
- Project Cost = $72.26M
What has changed?

- **Flood protection rules**
  - Current structures protected to/ below 100-yr flood elevation
  - New requirements (TR-16, CT DEEP)
  - Protect to 2-feet above /critical facilities to 3-feet above 100-yr flood Elev.

- **Existing Tank Structural Design**
  - Review of existing design details;
  - some tank reuse would not meet code and present operational difficulties meeting NPDES Permit

- **Project timing**
  - Original estimate based on 2014 costs
  - Current estimate escalated to mid 2019

- **Adding UV disinfection to reduce chemicals**
  - Initial higher capital cost; life cycle cost cheaper

- **Other scope items added to project**
  - Amount of hazardous material remediation
  - Hydraulic restrictions
  - Electrical Infrastructure / Construction Sequencing
Project Cost Estimated Total

• Facility Plan Estimate $51,300,000
  ▪ Based on 2012 facilities plan
• Preliminary design estimate $74,631,000
  ▪ Completed January 2016
• Post 30% Value Engineering $69,981,000
  ▪ Completed March 2016
• Post 60% Value Engineering $69,214,000
  ▪ Completed October 2016
• Final Design $72,260,000
  ▪ Completed April 2017

Note:
Some costs (i.e. OH&P, Contingencies, etc) are based on percentage of totals
<table>
<thead>
<tr>
<th>Estimated Construction Costs</th>
<th>Facilities Plan Estimate</th>
<th>Post 30% VE Estimate</th>
<th>Post 60% VE Estimate</th>
<th>90% Cost Estimate</th>
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<tbody>
<tr>
<td>Civil/Site Work</td>
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<td>Sludge Storage Tanks &amp; FOG</td>
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<td>Maintenance Garage / Administration &amp; Lab Building</td>
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<td>PROJECT MULTIPLIER, INFLATION TO MIDPT CONST.</td>
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<td>TECHNICAL SERVICES</td>
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<td>LEGAL / ADMINISTRATIVE / FINANCING</td>
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<td>ENGINEERS ESTIMATE OF PROJECT COSTS</td>
<td>$51,300,000</td>
<td>$69,981,000</td>
<td>$69,214,000</td>
<td>$72,260,000</td>
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</table>
Significant changes

- Primary Clarifiers
  - Flood Protection Walls
- Secondary clarifiers
  - Flood protection of all three clarifiers
- Aeration Tanks 1 & 2
  - Original plan to reuse
  - Limited by current codes
  - Need to increase wall height for flood protection
  - Construct one new larger aeration tank in footprint of existing tanks
Significant changes

- Tertiary Building/Disinfection
  - Structural/flood protection issues with CCT 2
  - Switched to UV disinfection
  - Added UV as part of Tertiary Structure
- New flow splitting structures for hydraulics
- More structural repairs to process tanks
- Hazardous Material Remediation
  - PCB’s, Lead, Asbestos
- Electrical Infrastructure
  - Flood proofing
  - Construction sequencing
Value Engineering

- Eliminated fourth primary clarifier
- Combined Maintenance and Administration
- Eliminated some chemical feed systems
  - Not needed until flows increase
- Eliminated fourth aeration tank
  - May need to purchase nitrogen credits at design flow.
- Post VE Project Cost = $72.26M
## Project Cost

### Estimated Total

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Construction</td>
<td>$59,926,000</td>
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<tr>
<td>Construction Contingency (5%)</td>
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<td>Technical Services</td>
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<tr>
<td>Legal / Administrative / Financing</td>
<td>$1,198,000</td>
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<tr>
<td><strong>Engineers Estimate Of Cost</strong></td>
<td><strong>$72,260,000</strong></td>
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<tr>
<td><strong>Approximate 22% Grant</strong></td>
<td><strong>- $15,897,000</strong></td>
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<tr>
<td>Loan at 2%</td>
<td><strong>$56,363,000</strong></td>
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<tr>
<td>Annual Loan Payment</td>
<td><strong>$3,421,600/yr</strong></td>
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</table>
Anticipated Project Schedule

- Preliminary Design: December 2015
- 30% Value Engineering: January 2016
- 60% Design: September 2016
- Pre-Selection Bids: September 2016
- 60% Value Engineering: December 2016
- Final Design: September 2017
- Public Bid: November 2017
- Award Contract: February 2018
- Construction Begins: April/May 2018
- Project Completion: Spring 2021
Taxpayer and Sewer User Impact

- Project Cost: $72,260,000
- Estimated Impact (Loan): $56,363,000

- Torr Taxpayers = $1,655,300/yr
- Torr Sewer Users = $1,655,300/yr
- IMA’s(2) = $111,000/yr