The City of Wooster, Ohio
Water Resource Recovery Facility

Presented by:

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Agenda

- The City’s Challenges
- Process Alternatives Considered
- Evaluation of Options
- quasar Construction
- Reality
- Benefits to the City
- Benefits to quasar
- Innovative R&D
What Were the City’s Challenges?

Regulatory Issues:
Ohio EPA Compliance
Sewer Hook-up Restrictions

Process Issues:
Solids Handling Issue
Anaerobic Digesters
Cogeneration Utilization

Disposal Issues:
Reduce Liquid Hauling
Reduce Solids Hauling
Process Alternatives Considered

Existing Digester Improvements

Overall Solids Management

Third Party Biosolids Management

Class “A” Biosolids Conversion
Process Alternatives

Improve Existing Anaerobic Digesters

1. Solids Handling
2. Optional Dewatering

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Total Construction Cost</th>
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</thead>
<tbody>
<tr>
<td>Improves sludge processing capacity</td>
<td>High capital cost</td>
<td>w/o dewatering = $5.1M</td>
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<tr>
<td>Potential for increased gas production</td>
<td>More labor costs for O&amp;M</td>
<td>with dewatering = $7.3M</td>
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<tr>
<td>Reduced hauling costs</td>
<td>Land application</td>
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Process Alternatives

Third Party Biosolids Management

1. Privatize portion of the plant

2. Third Party Biosolids Management Improvements:

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<td>Low capital cost to the City</td>
<td>Joint use of WRRF site</td>
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<td>O&amp;M of solids processing by others</td>
<td>Potential odor complaints</td>
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<tr>
<td>Increased gas production &amp; cogen</td>
<td>Fees may exceed current hauling</td>
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Total Construction Cost

$1.4M
Evaluation of Options

- Internal Evaluation of Options
- RFP Issued
- Selection
quasar Construction

Scope of Work:
- Retrofit 3 Digesters
- Construct New Tank, Building, & Receiving
- Install 1100 kW Generator

Challenges:
- Old Facility
- Existing Footprint
- Continuous Operation
Reality

Privatize Portion of the Plant
Wooster Water Resource Recovery

Welcome to the Future...
Benefits to the City

- Regulatory Compliance
- Increase Plant Capacity
- Minimal Capital Outlay
- Renewable Energy

- Accelerated Construction Schedule
- 20 Year Performance Guarantee
- Economic Development
- Collaborative Partnership
How Quickly did the City benefit?

Monthly Bill

Quasar begins Cogeneration testing in December 2013
Do you really see the savings?

August 2013 Invoice

August 2014 Invoice
What are the other benefits?

Annual NPDES Violations

- CBOD
- NH3
- SS
Benefits to quasar

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<tr>
<td>Long Term Biosolids Contract</td>
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<td>Long Term Power Purchase</td>
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<td>Proof of P3 Concept</td>
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<tr>
<td>Technology Showcase</td>
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<tr>
<td>Innovative R&amp;D Facility</td>
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<td>Proximity to OSU</td>
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Next Steps

- Interconnection between WRFF and Water Treatment Plant to take advantage of excess power generation and utilize 2.2 MW backup generator

- Future CNG Fueling Station

- Conversion of Utility vehicle fleet and eventually all City vehicles
Innovative R&D

- Front-end Solids and Material Handling
- Innovative Digester Technology
- Innovative Back-end technology
  - Nutrient Recovery
  - Material Reduction
Questions & Contact Information

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