Wastewater Treatment
City of Rogers

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Company Overview
Oxidation Ditch

Influent and Filtering Sludge Storage Pond

Solids Settling

UV Disinfection

Floating Aerators

Influent and Filtering
Goals & Motivations for Change

- Energy reduction and cost savings
- New technology for energy efficiency
- Identical process since 1996
- $60,000/yr. on energy
- $50,000/yr. on chemicals
Approach
Determining Inefficient Processes

- 50-60% of energy use from oxidation ditches
- Electrical controls
- Motor efficiency
  - NEMA Premium
Oxidation Ditches

- Problem – Over aeration
- Solution – VFDs and DO control
  - $94,000 Capital Cost
  - $75,000 with Xcel Energy rebates
- Savings – 3 year 9 month payback
  - 230,000 kWh/year
  - $15,000/year
Additional Ditch Projects

• Supplemental Mixers
  – No Energy Savings

• Biological Nitrogen removal
  – Savings – $3,500/yr.
  – Capital Cost $53,000
Floating Pond Aerator

- Problem – Dying Inefficient Equipment
- Solution – NEMA Super Premium
  - $14,900 Capital Cost
  - $13,340 with Xcel Energy rebates
- Savings – 8 year payback
  - 28,000 kWh/year
  - $1,700/year
Phosphorus Removal

• Problem – High Chemical Use
• Solution – BioP
  – $750,000 Capital Cost
• Savings – 18.7 year payback
  – 250,000 lbs. chemicals
  – $40,000
Recommended Process Changes

- DO Control with VFDs
- Process Optimization
- Motor Replacement
- High Efficiency Floating Pond Aerator
Personal Benefits
## Summary

<table>
<thead>
<tr>
<th>Waste reduction option</th>
<th>Change Type</th>
<th>Waste Reduced (per year)</th>
<th>Cost</th>
<th>Cost Savings</th>
<th>Payback Period</th>
<th>Status</th>
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<tbody>
<tr>
<td>Process Optimization – No Capital</td>
<td>Procedure</td>
<td>13,000 kWh</td>
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<td>$800</td>
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<td>Floating Pond Aerator</td>
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<td>$1,700</td>
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<td>Implementation</td>
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<td>Biological Phosphorus Removal</td>
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<td>Not Recommended</td>
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