

Wastewater Treatment City of Rogers

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Driven to DiscoverSM

Company Overview



Oxidation
Ditch



UV
Disinfection



Solids
Settling



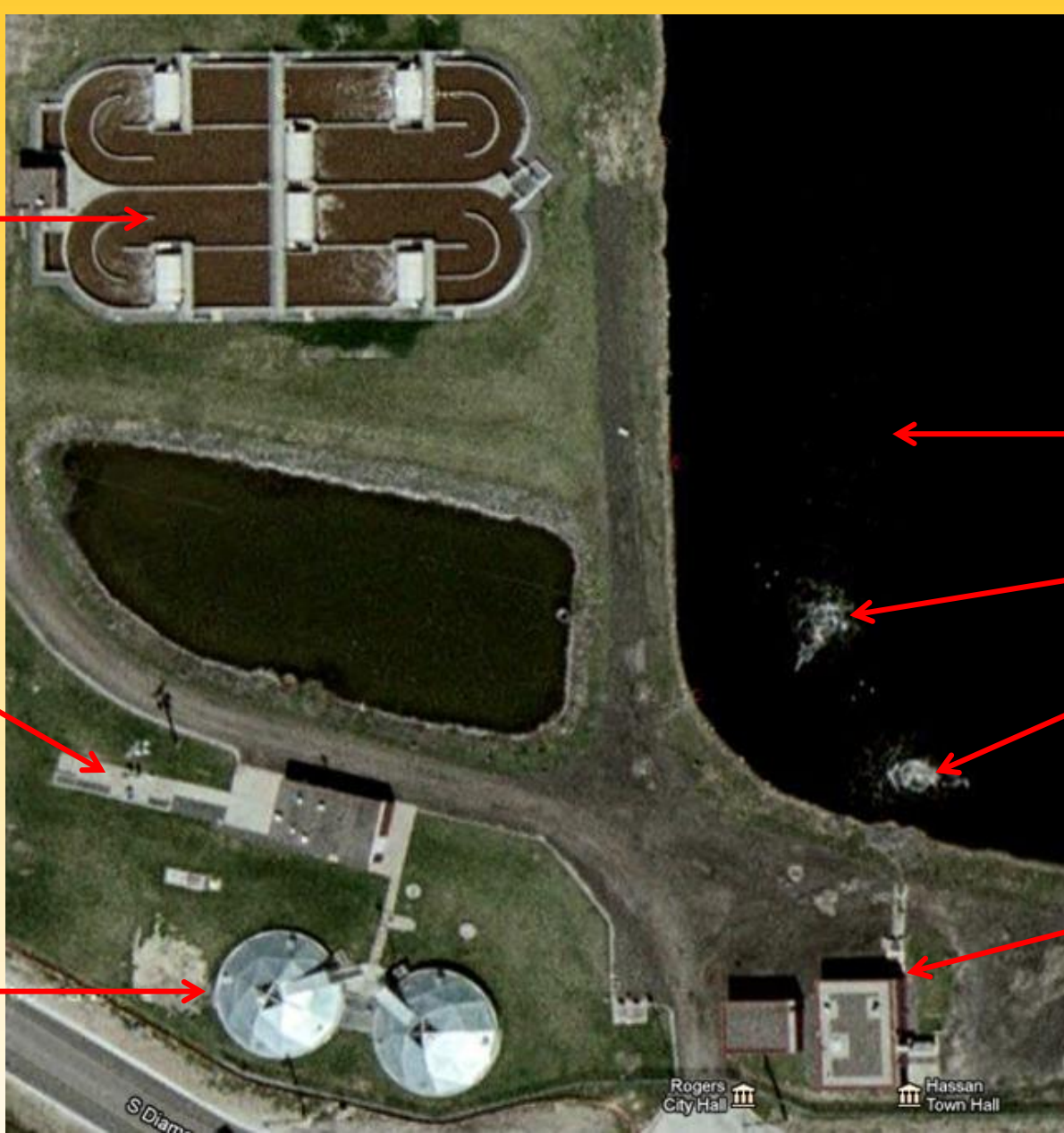
Sludge
Storage
Pond



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

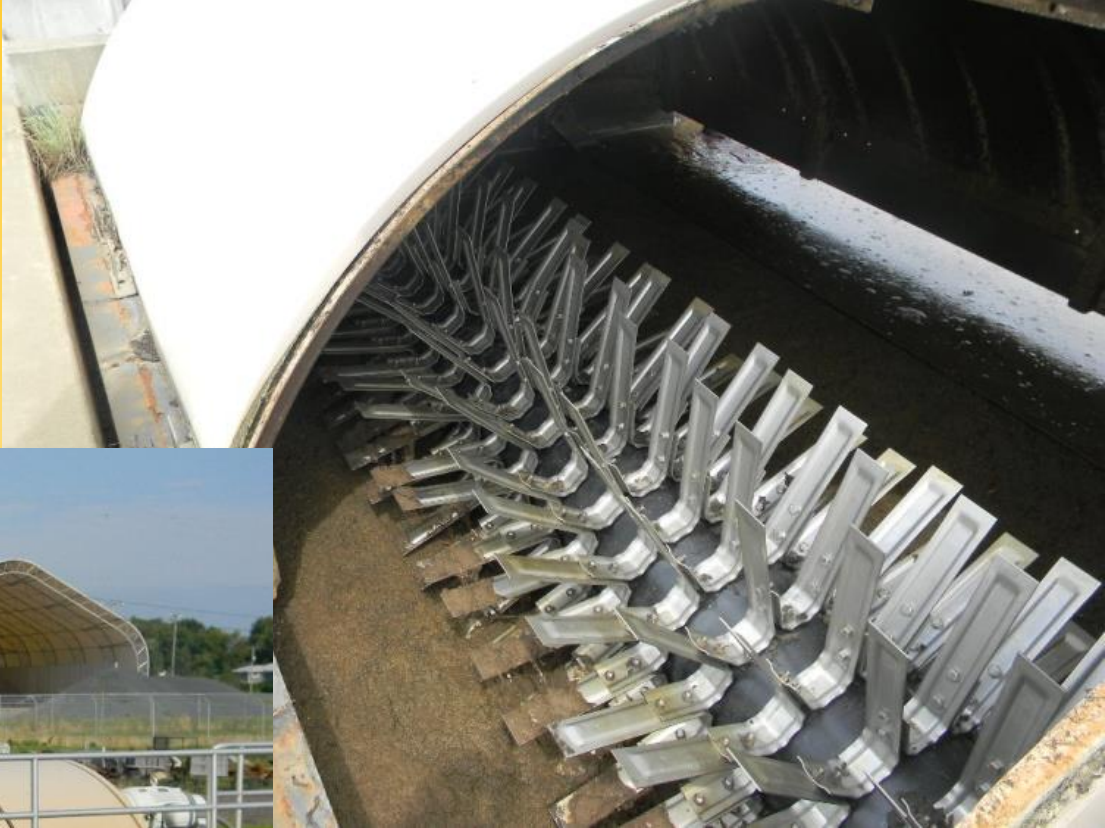
Approach



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 – 5 year payback
 - 240,000 kWh/year
 - \$15,000/year

Additional Ditch Projects

- Supplemental Mixers
 - No Energy Savings
- Biological Nitrogen removal
 - Savings – \$3,400/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

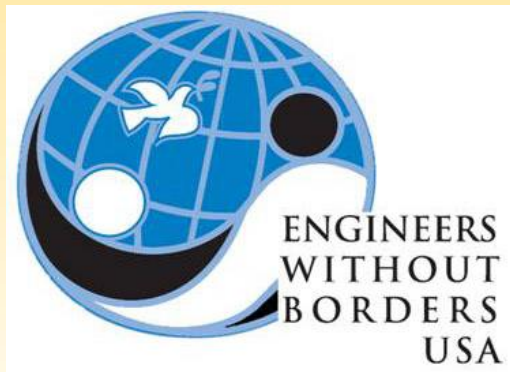
- Problem – High Chemical Use
- Solution – BioP
 - \$750,000 Capital Cost
- Savings – 18.7 year payback
 - 250,000 lbs chemicals
 - \$40,000

Recommended Process Changes

- DO Control with VFDs
- Process Optimization
- Motor Replacement
- High Efficiency Floating Pond Aerator



Intern Benefits



Summary

Waste reduction option	Change Type	Waste Reduced (per year)	Cost	Cost Savings	Payback Period	Status
Process Optimization – No Capital	Procedure	13,000 kWh	NA	\$800	NA	Recommended
Oxidation Ditch Motor Replacement	Equipment	20,000 kWh	\$8,592	\$1,200	7.2	Recommended
Variable Frequency Drives	Equipment	230,000 kWh	\$75,000	\$15,000	5.0	Recommended
Floating Pond Aerator	Equipment	28,000 kWh	\$13,340	\$1,700	7.8	Implementation Scheduled for Sep '11
Biological Phosphorus Removal	Equipment Procedure	250,000 lbs	\$750,000	\$40,000	18.8	Not Recommended

Questions

