

City of MONDOVI, Wisconsin

WWTP Facility Plan Public Information Meeting



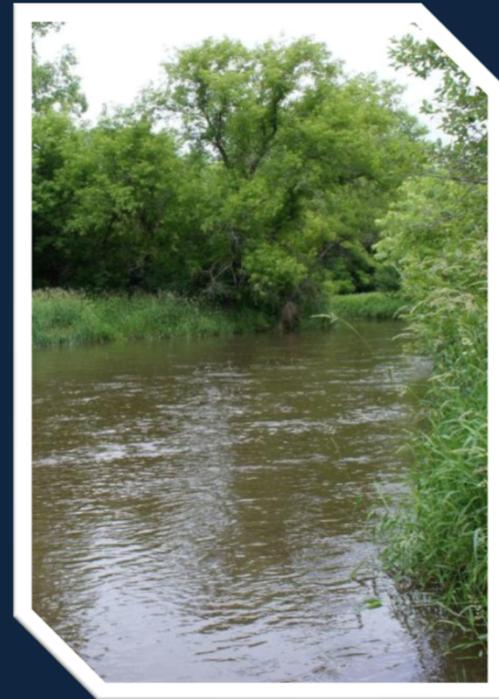
Presented By:
Jon Strand, PE
Alex Jaromin

August 28th, 2018



Tonight's Topics:

- Overview of the Project Planning Area
- WWTP Background Information & Existing Conditions
- Alternatives analysis
 - Wastewater Technologies
 - Cost Comparison & Decision Matrix
- Project Funding Options
- Critical Items Moving Forward





WWTP

Mondovi High School

Valley Golf Club

10

10

37

14

Mondovi

14

14

A

14

Durand Rd

W Main St

E Main St

N Eau Claire St

S Eau Claire St

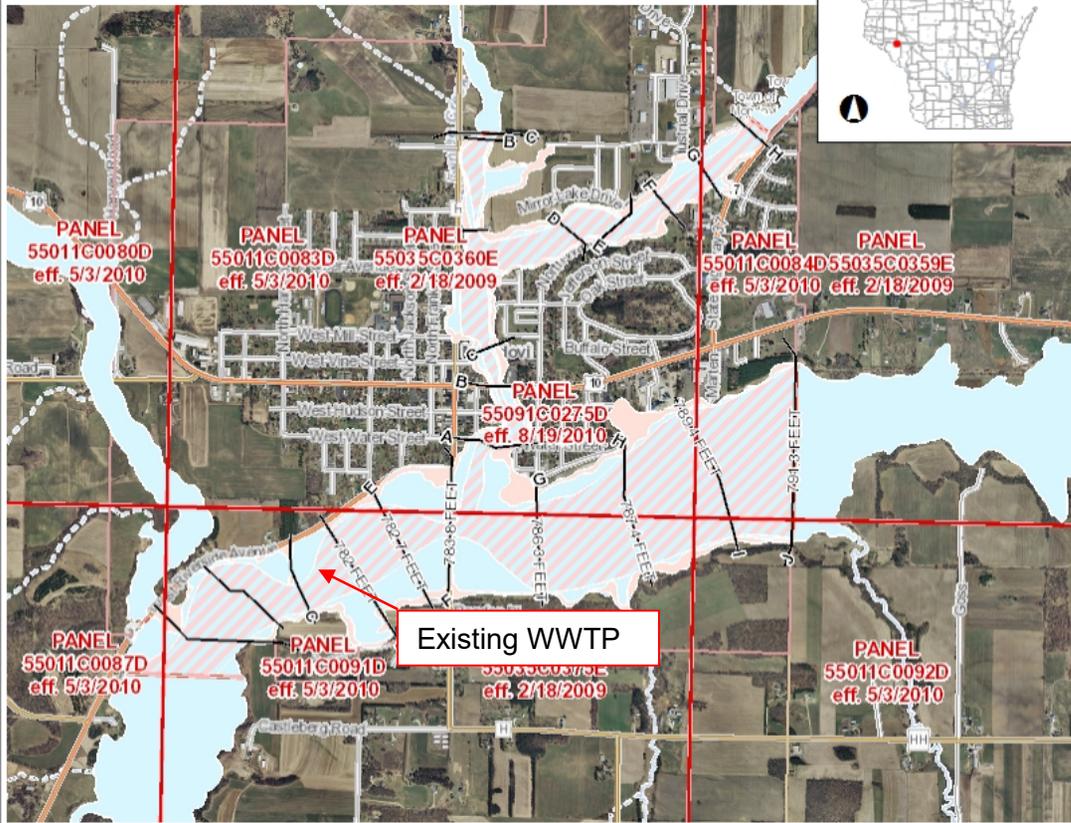
Countryside Pkwy



- Close proximity to Residents
- Located in the 100-year floodplain
- Surrounded by wetlands



Mondovi, WI Floodplain Map



- Legend**
- FIRM Panels
 - Cross-Sections
 - Flood Hazard Boundaries
 - Other Boundaries
 - Limit Lines
 - SFHA / Flood Zone Boundary
- Flood Hazard Zones**
- 1% Annual Chance Flood Hazard
 - Regulatory Floodway
 - Special Floodway
 - Area of Undetermined Flood Hazard
 - 0.2% Annual Chance Flood Hazard
 - Future Conditions 1% Annual Chance Flood Hazard
 - Area with Reduced Risk Due to Levee
- County Boundary**
- City, Towns & Villages
 - City
 - Village
 - Civil Town
 - Municipality
 - State Boundaries
 - County Boundaries
- Major Roads**
- Interstate Highway
 - State Highway
 - US Highway
- County and Local Roads**
- County HWY
 - Local Road
- Railroads**
- Railroads
- Tribal Lands**
- Tribal Lands
- Rivers and Streams**
- Rivers and Streams

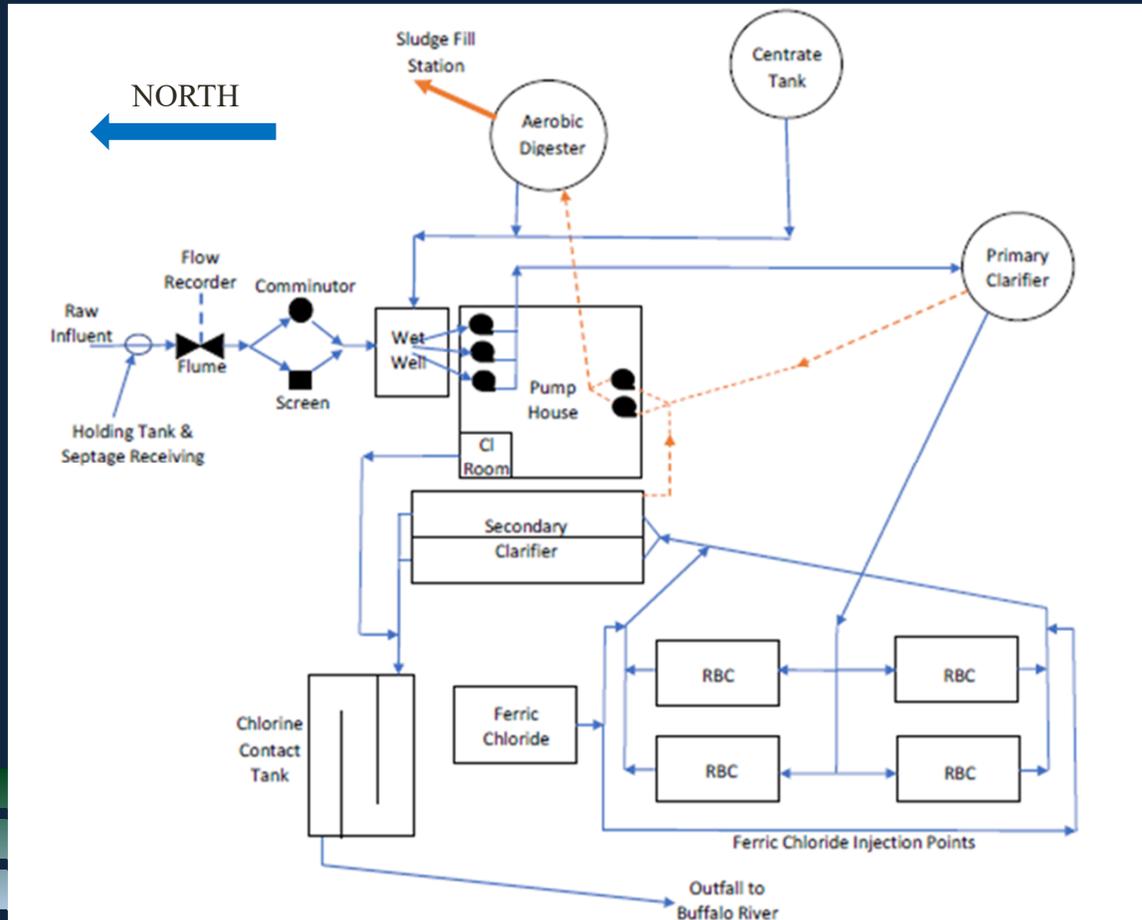


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Notes

Mondovi's Rotating Biological Contactor (RBC) Process



Original Design:

- Avg Annual Design Flow = 0.385 MGD
- COD = 865 lb/day

Existing

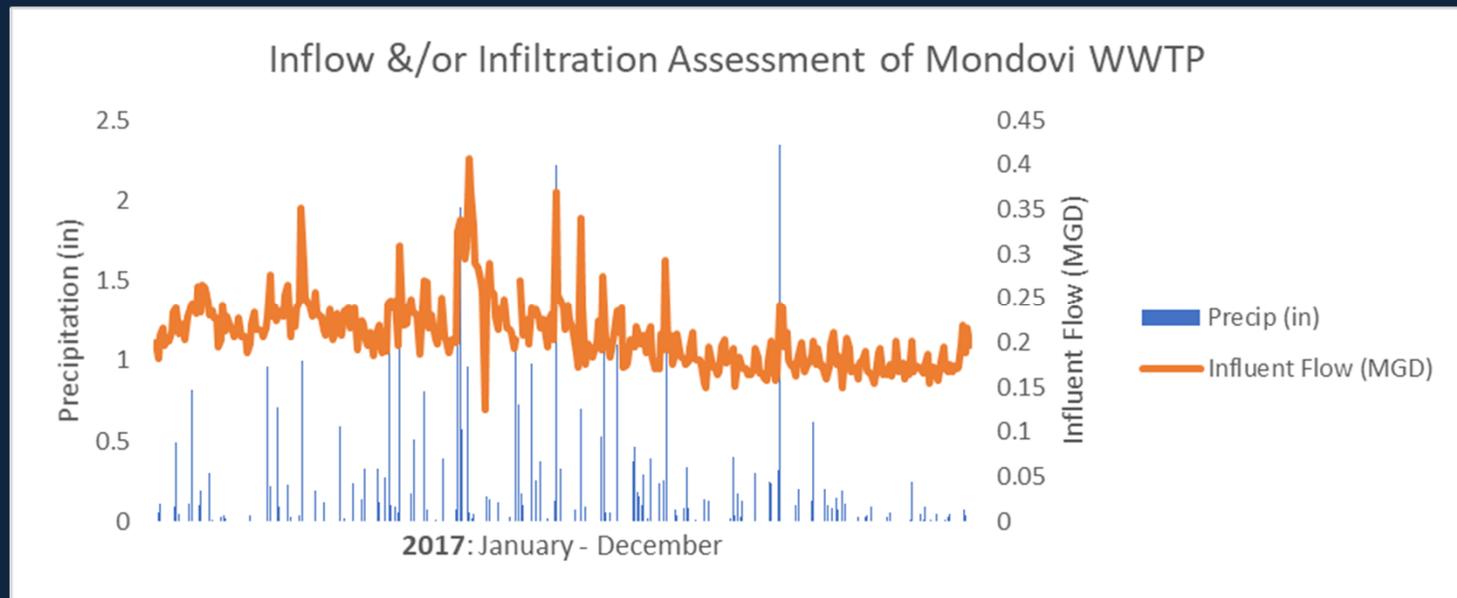
Parameter	Flows & Loadings
Avg Annual Flow for 2017	0.209 MGD
Peak Flow for 2017	0.407 MGD
Average BOD	453 lbs/day
Average TSS	401 lbs/day
Average Total-P	No Data
Average TKN	No Data
Average NH-3	No Data

Projected Future

Parameter	Flows & Loadings
Annual Avg Design Flow	0.300 MGD
Peak Flow	0.584 MGD
Average BOD	1104 lbs/day
Average TSS	1281 lbs/day
Average Total-P	58 lbs/day
Average TKN	163 lbs/day
Average NH-3	104 lbs/day

Inflow and/or Infiltration

- ❑ Collection System Focus
- ❑ Average flow of 209,000 GPD
- ❑ Peak flow of 407,000 GPD after rain event
- ❑ Extra cost to treat “clear water” paid for by all rate payers



Inflow and/or Infiltration Issues

- Need to video a portion of the City each year
- Enforcement needed for sump pumps running into wastewater system
- Slip-lining of failing sanitary sewer segments
- Sealing manhole covers



Existing Conditions at the WWTP





Septage Receiving

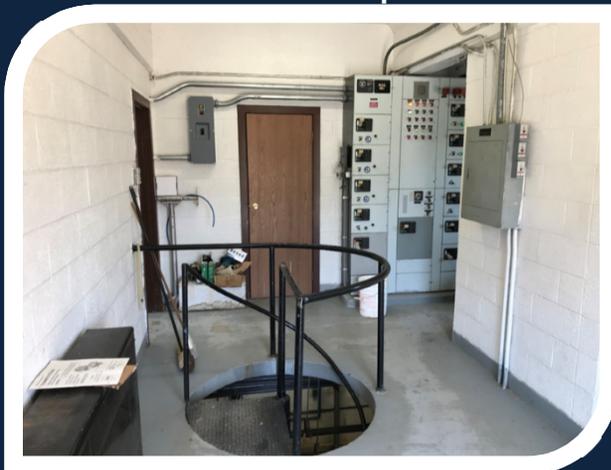
Stairs to Wet Well



Control Building

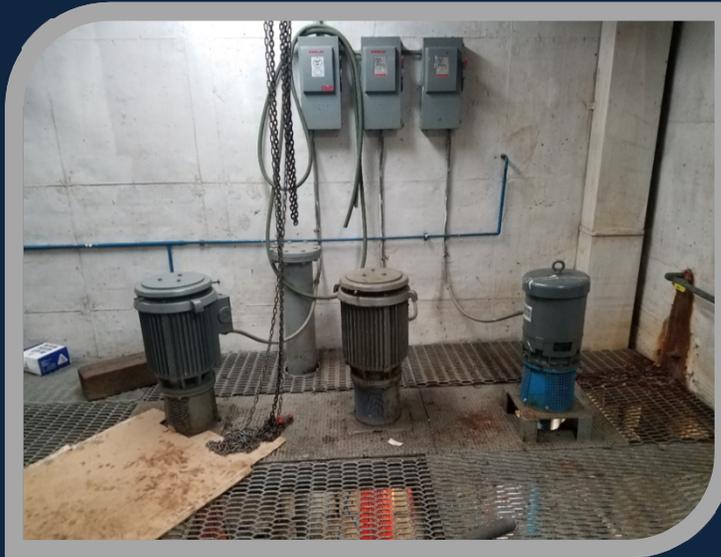


Stairs to Pump Room



Laboratory





Lift Station Pumps

Sludge Pumps





Primary Clarifier





RBC Units

Effluent from RBC's



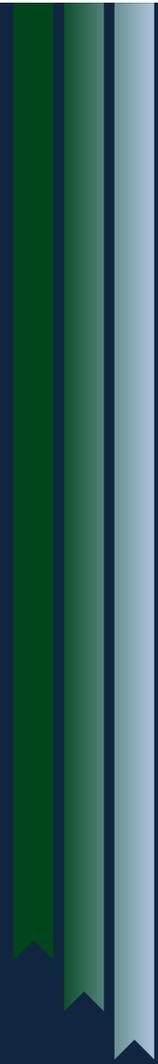


Secondary Clarifiers

Out of Service Tank



Aerobic Digester & Centrate Tank

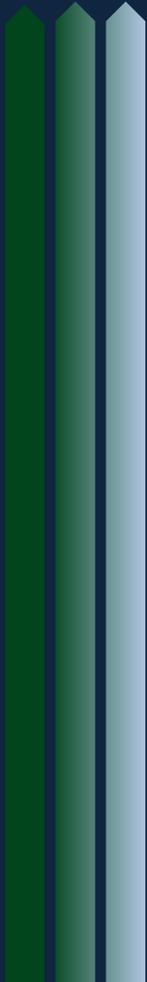




Chemical
Building
(Ferric Chloride)



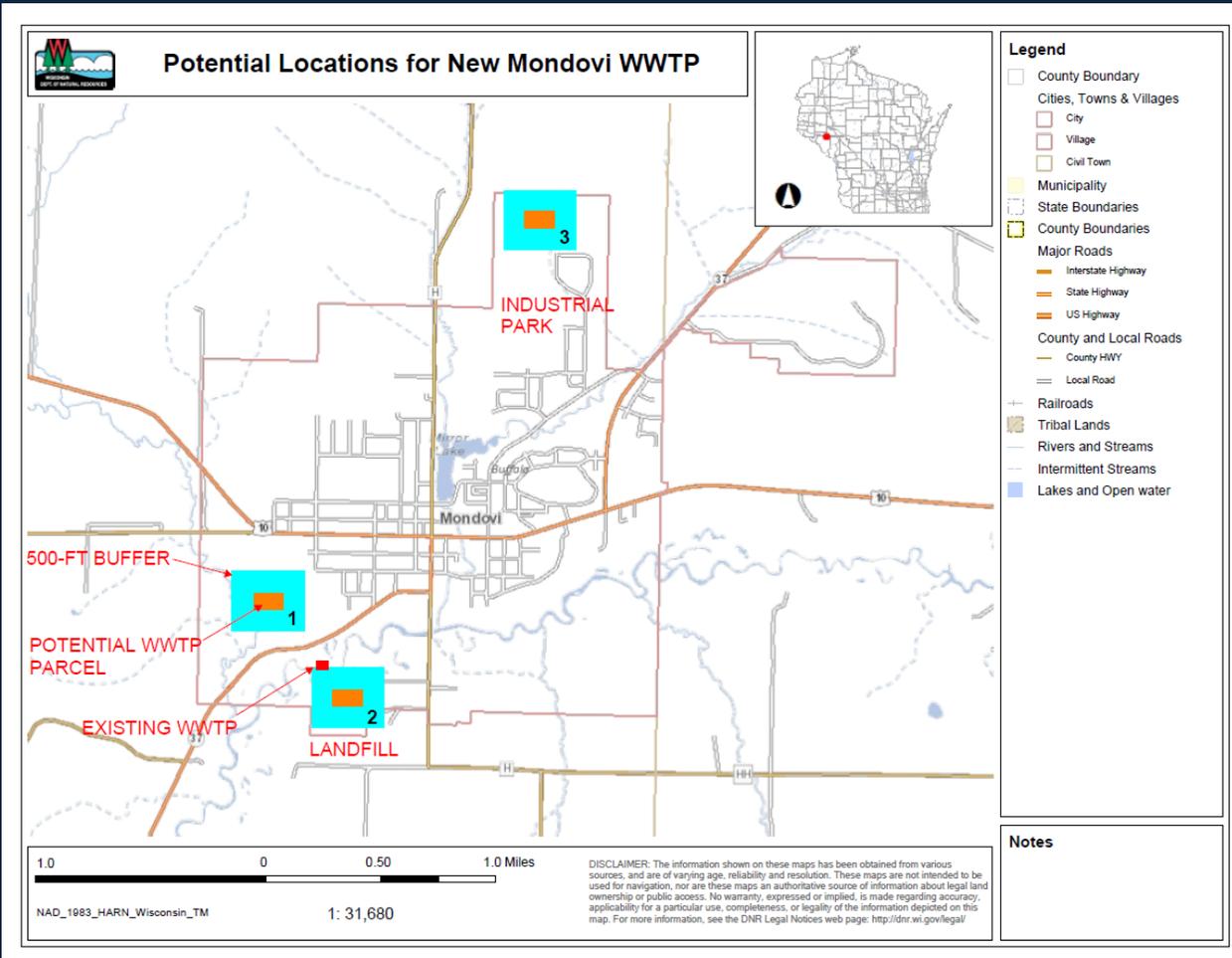
Chlorine Contact Tank



Key Points in the Development of Facility Plan

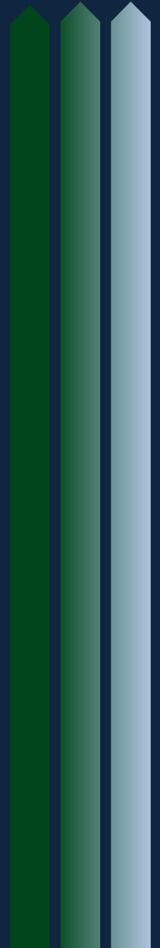
- Growth for new industries
- New treatment regulations
- Handling Bio-Solids
- Septage receiving
- Relocation as it relates to future growth of the City

Location Alternatives



Alternative Analysis

- 1.) Do Nothing Scenario (Not Pursued)
- 2.) Existing WWTP Upgrades (Not Feasible)
- 3.) New Oxidization Ditch WWTP at New Location
- 4.) New SBR WWTP at New Location



Alternative 3 & 4 Include:

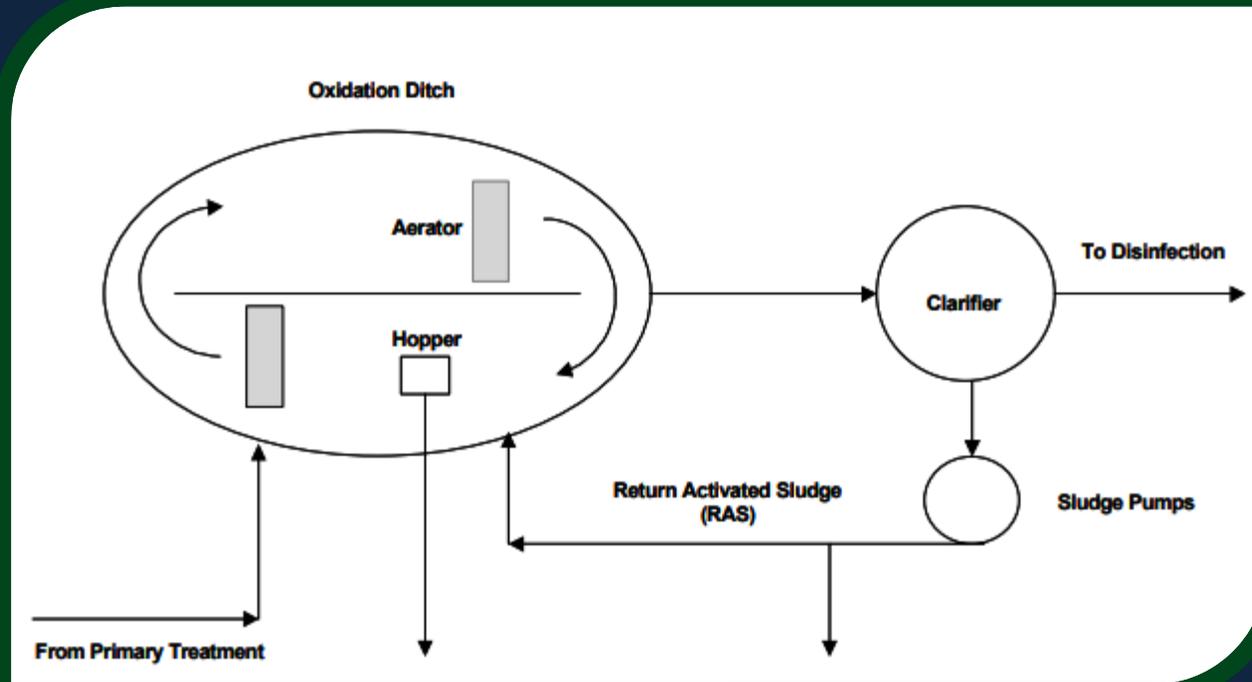
- Fine Screen & Grit Removal (Headworks)
- Controls linked to SCADA
- Energy Saving Initiatives
 - Solar Power
 - Variable Frequency Drives (VFD)
 - LED Lighting
- UV Disinfection
- New Bio-Solids Handling Process
- Tertiary Treatment for Phosphorus Removal



Oxidization Ditch Process

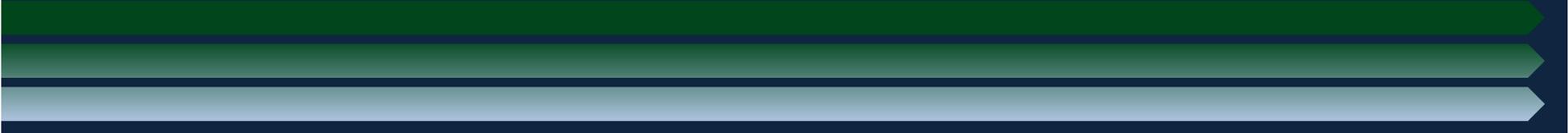
- Modified Activated Sludge Treatment Process
(Suspended Growth Biological Treatment)
 - Flow in ditch is aerated and mixed with sludge return from a secondary clarifier
 - “Mixed Liquor”
 - Ease of operation for the WWTP Operator
 - Can handle variable flows and loadings (Slug Loads)
 - Large footprint
- 
- The bottom of the slide features four horizontal bars of varying shades of green and blue, all pointing to the right. The top bar is a dark forest green, followed by a medium green, a light green, and finally a light blue bar at the bottom.

Oxidization Ditch Process



Source: Parsons Engineering, Inc 2000.

SBR (Sequencing Batch Reactor) Process

- Special form of activated sludge treatment
 - Treatment process takes place in single/dual reactor tank and clarifiers are not required
 - Small footprint
 - Higher operating costs
 - Operating complexities (Control Based)
- 

Cost Comparison

<u>Alternative</u>	<u>WWTP Capital Cost</u>	<u>Total Present Worth</u>
Oxidization Ditch WWTP	\$12,500,000	\$19,200,000
SBR WWTP	\$12,800,000	\$21,500,000



Capital Cost Breakdown

<u>Item</u>	<u>Oxidization Ditch WWTP</u>	<u>SBR WWTP</u>
WWTP Equipment	\$8,500,000	\$8,800,000
Tertiary Equipment	\$343,000	\$343,000
Lift Station/Forcemain & Outfall	\$1,600,000	\$1,600,000
Collection System Upgrades	\$2,000,000	\$2,000,000

Bio-Solids Handling Comparison

Item	Reed Beds		Trucking to WCWBF	
Discount Rate	4.375%		4.375%	
Design Period (yrs)	20		20	
Capital Cost	\$347,000.00	\$347,000.00	-	-
O&M Present Worth	\$6,000.00	\$78,899.90	\$75,000.00	\$986,248.74
Salvage Value Present Worth		(\$72,000.00)	-	-
Total Present Worth:		\$353,899.90		\$986,248.74

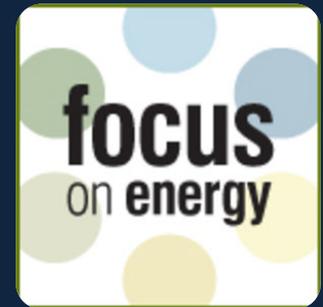


Decision Matrix

Mondovi WWTP Alternatives			
1 = Not Desirable 2 = Neutral 3 = Desirable			
	Upgraded Existing WWTP	Oxidization Ditch Treatment	SBR Treatment
Capital Cost	1	2	2
Present Worth Value	1	3	2
Environmental Concerns	1	3	3
Social Concerns (Impact on Public)	1	2	2
Total	4	10	9

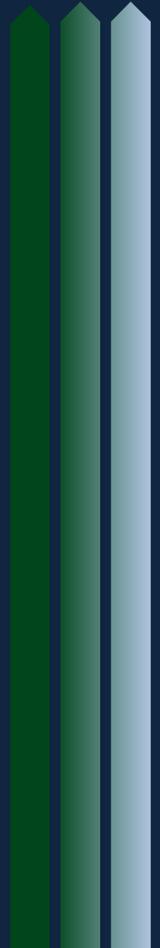
Project Funding Options

- Rural Development
 - Considers Total Project Cost, MHI & Sewer Rates
- CDBG
 - MHI & Project Need are Key
- Wisconsin DNR Clean Water Fund
 - Population, MHI & Project Need
- State Trust Fund
- TIF Funding
- Focus on Energy/Third Party Funding



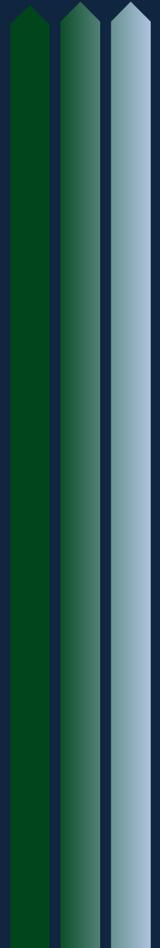
Mondovi Sewer Rates

- Sewer Base Charge:
 - \$33.10
- Sewer Usage Fee:
 - \$8.00 / 1000 gallons
- Holding Tank/Grease/Septage Waste:
 - \$33.00 / 1000 gallons



Additional Funding Steps

- Application
- Environmental Report
- Public Hearing





Critical Items Moving Forward

- Public Hearing to Present Facility Plan Draft
- Send Facility Plan Draft to WDNR for Approval
- Application for Funding Options
 - Preliminary Engineering Report (Facility Plan)
 - Environmental Report
- Alternative & Site Selection
- Development of Plans & Specifications
- Address Infiltration and/or Inflow Issues in the Collection System



Questions?

