

Michigan Water Environment Association

Biosolids Committee

Biosolids and Money Going Green

Saving Green

YCUA WWTP Expansion Biosolids Management Evaluation

YCUA Wastewater Treatment Plant (WWTP)
28.9 MGD Tertiary WWTP began operation
in February 1982.

YCUA Wastewater Treatment Plant
Expansion and Improvement Project 1999.
Increase capacity by 17 MGD to 45.9 MGD

Committee Agenda

- Objectives
- Evaluation Process
- Summary of Evaluation
- Recommendations
- Discussion

Objectives

- YCUA Board Directive to Evaluate all Feasible Alternatives
 - Develop Conceptual Designs and Representative Costs for Comparison
 - Examine Selection Criteria
 - Develop Recommendation for YCUA Board

Evaluation Process

- “Team Approach”
- 4 Meetings with Expansion Committee Team
 - 20 Members from YCUA (Maintenance, Operation, Administration, Lab) and WTUA
- Two Staff Information Sessions (over 50 participants total)

Evaluation Process

- Independent Marketing Analysis for Biosolid Products (R. Alexander & Assoc.)
- Field Trips
 - Leamington, ONT for N-Viro and Drying
 - Windsor, ONT for Pelletization
 - Warren, OH for RDP Process
 - Cincinnati, OH for Fluidized Bed Incineration

Technologies

Disposal

- Upgrade Current Incineration Process (and Landfill Ash)
- Landfill Dewatered Solids

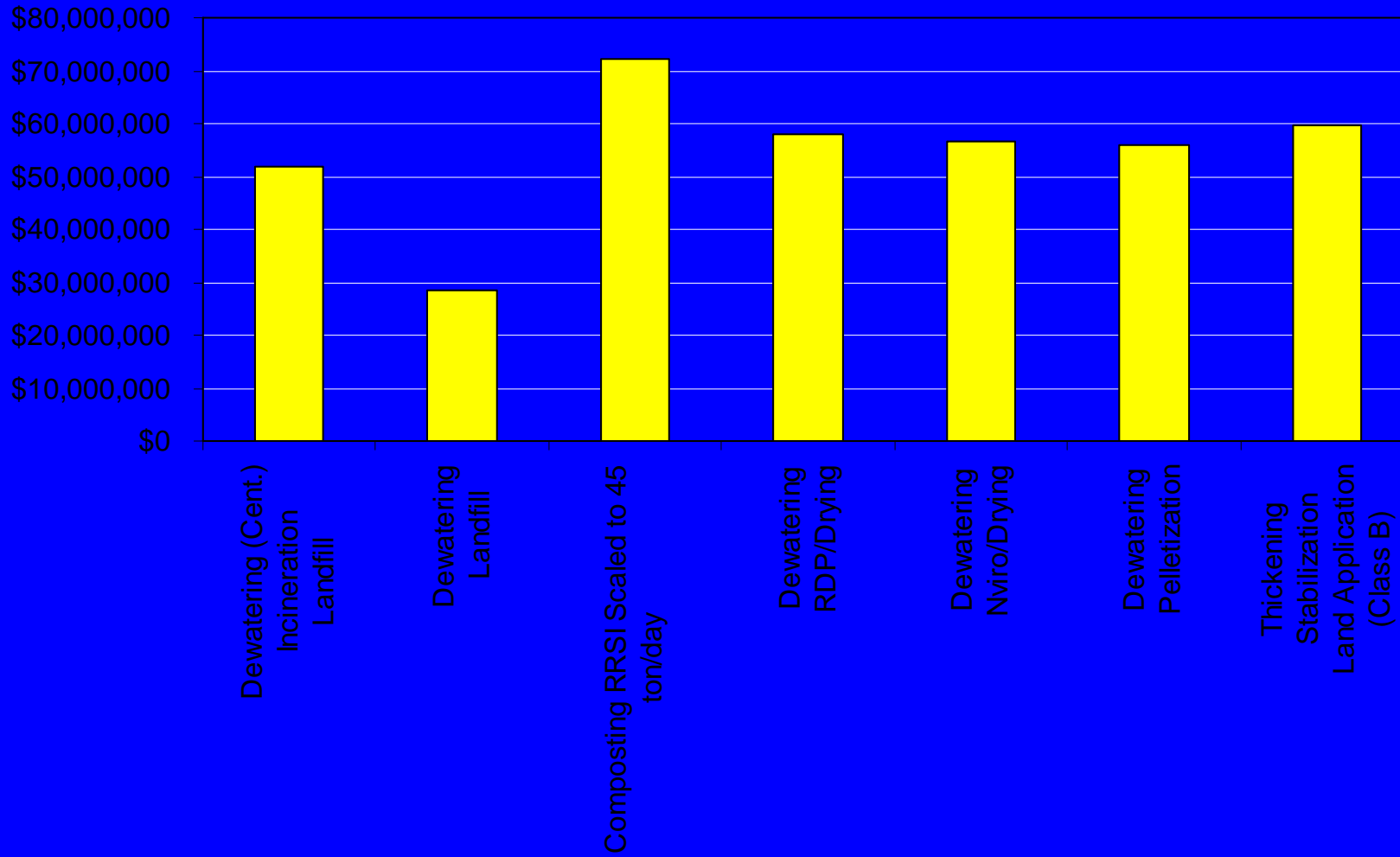
Reuse

- Compost
- Pelletize
- Alkaline Stabilize and /Dry
- Liquid Land Apply

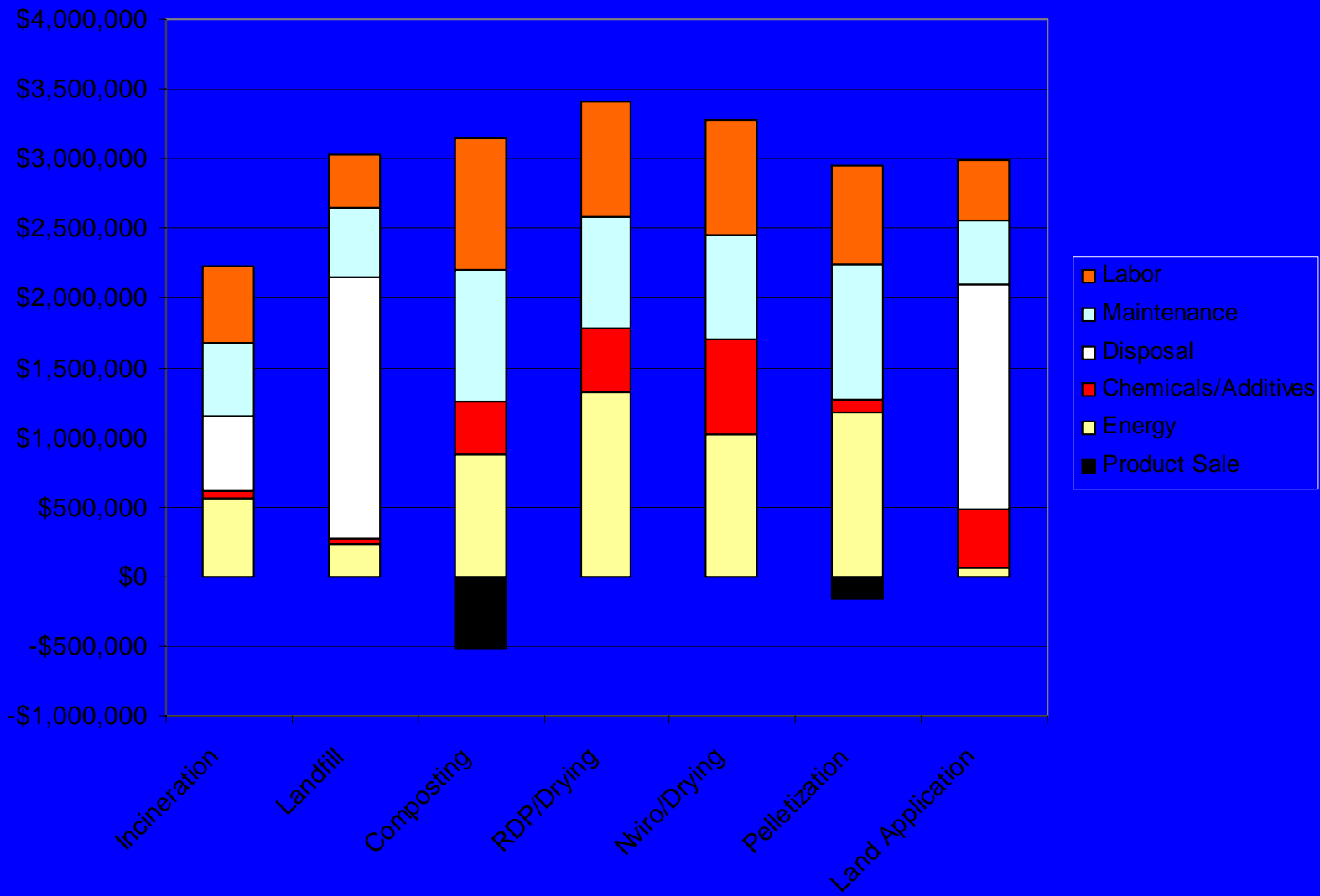
Evaluation Criteria

- Costs
- Quality/Reliability
- Expandability
- Ease of Operation & Maintenance
- Odor Potential
- Environmental Benefits
- Future Regulations
- Health & Safety
- Reuse Market/ Disposal Potential Stability

Capital Costs



Annual Operating and Maintenance Costs



Committee Assessment

<u>Criteria for Comparison</u>	<u>Incinerate</u>	TTMPS RANKINGS					<u>Pelletize</u>	<u>Land Apply</u>
		<u>Landfil</u>	<u>Compos</u>	<u>RDP/</u>	<u>N-Viro/</u>			
		<u>l</u>	<u>t</u>	<u>Dry</u>	<u>Dry</u>			
Cost	61	77	51	52	32	70	21	
Quality/Reliability	42	53	16	23	36	44	37	
Expandability	52	46	23	36	35	51	28	
Ease of O&M	43	51	22	47	34	48	31	
Environmental Benefits	49.5	63.5	26	36.5	32	53	33.5	
Efficient land use	103	71	27	76	61	93	45	
Potential for odor	31	50	34	41	35	41	48	
Future Regulations	41	48	27	47	35	45	46	
Health and Safety	44	48	47	36	34	33	39	
TOTAL	466.5	507.5	273	394.5	334	478	328.5	

Conclusion of Options

- Best Disposal Alternative: Upgrading the current process to a Fluidized Bed Incinerator
 - Consensus 1st Choice of Project Team
- Best Reuse Alternative: Pelletization

Cost Considerations

- Disposal alternatives cost less
- Incineration least sensitive to risk of future cost escalations

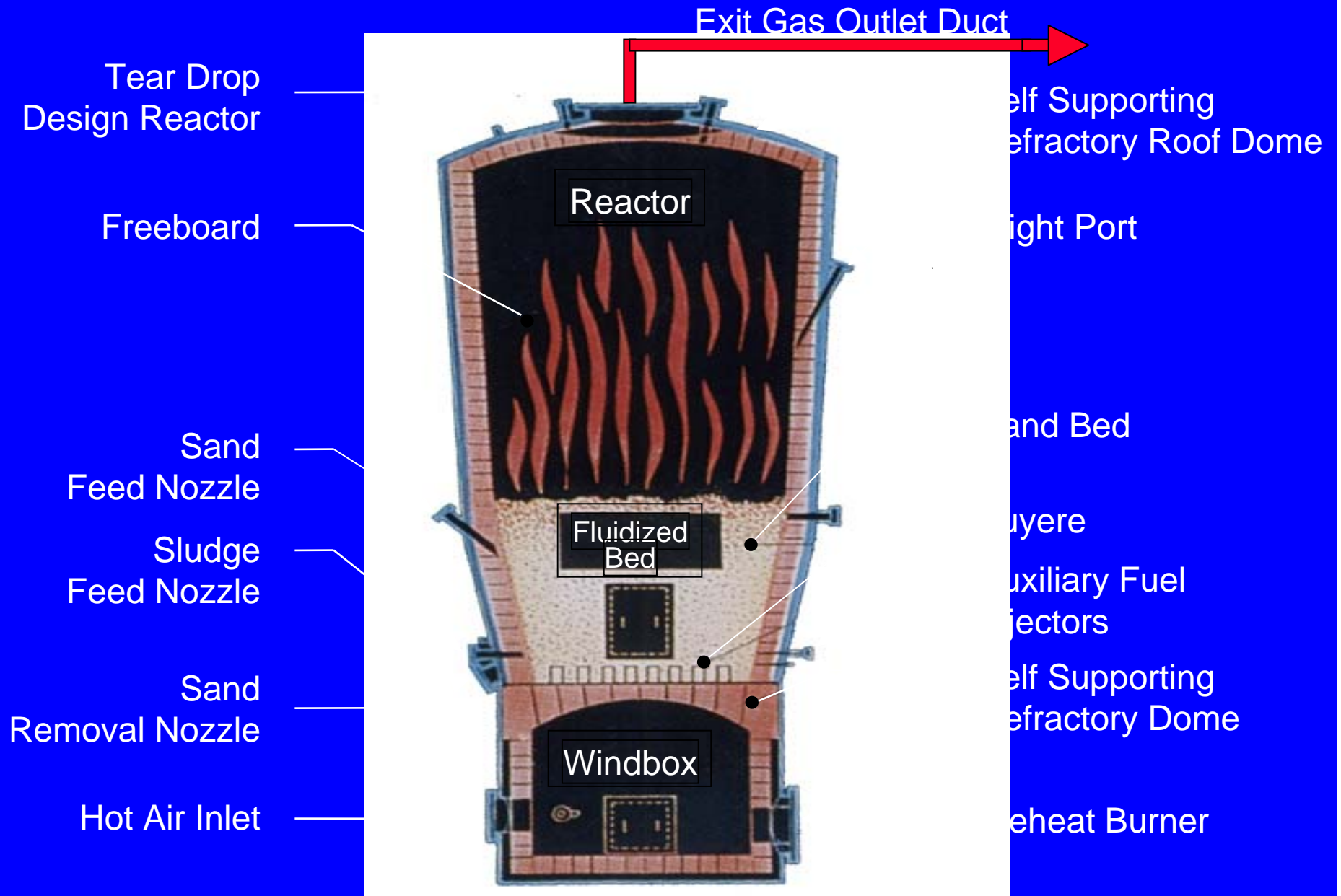
Environmental Impacts

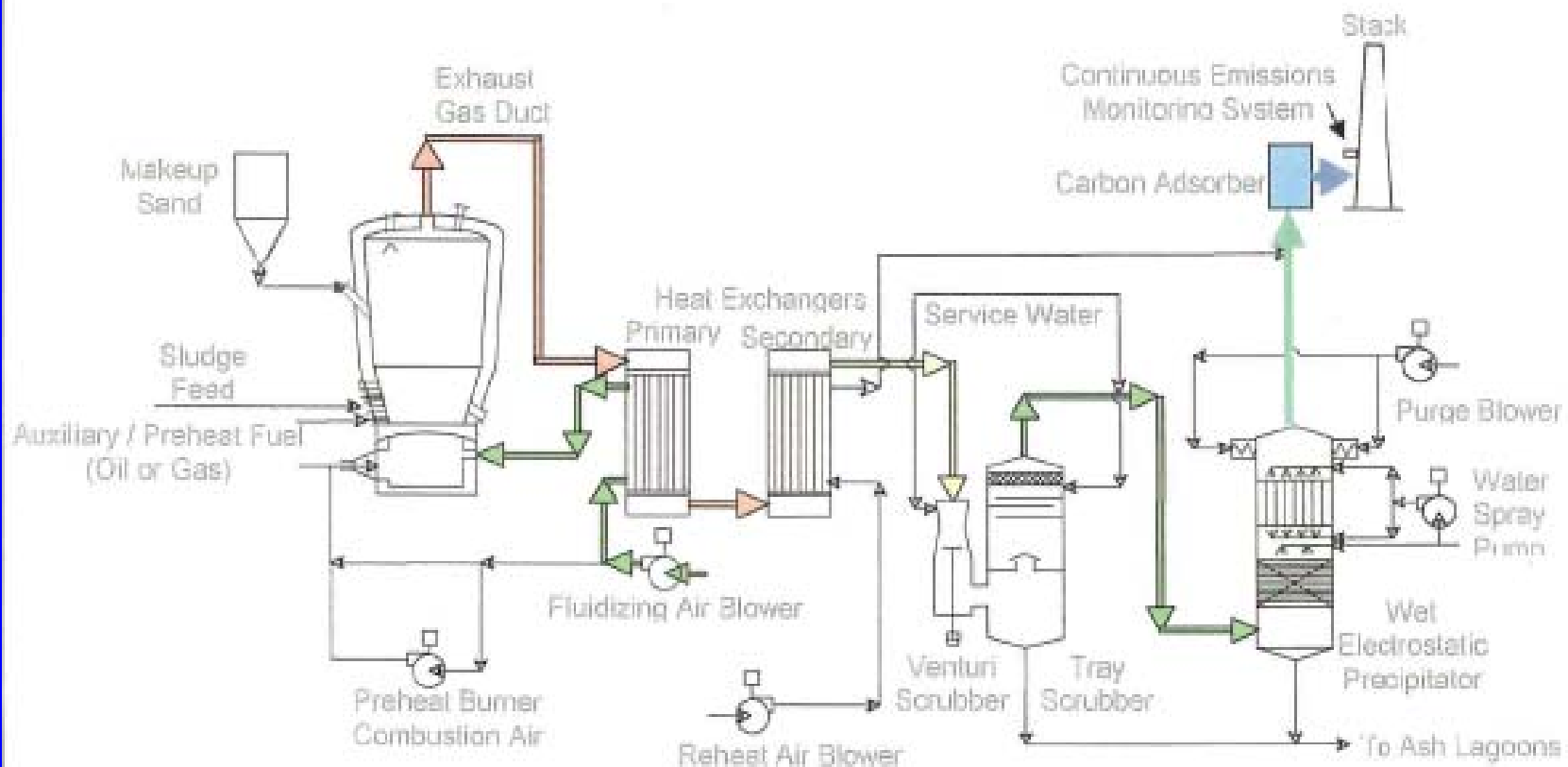
- Fluidized Bed Incineration significantly improves air quality over present technology
- Meets all Federal and State Requirements for Emissions
- Least amount of truck traffic due to highest amount of volume reduction

Advantages over Multiple Hearth

- Operate at Lower Temperatures
- Perform More Efficient Combustion
- Have Lower Air Usage
- 90% less emission of all regulated pollutants, except sulfur dioxide.
- Require Less Fuel (at 25% Cake Solids)
- Need Less Maintenance (no hot moving parts)

FB Reactor





Tetra Tech MPS



**YCUA Wastewater Treatment Plant
Fluidized Bed Reactor
Generic Process Flow Diagram**

Project Number:
0240.120.30

Figure

5

of 5

Scale: None

Date: 11/28/01

Designed: Nov

Checked: PER/KPO

Operating Conditions

- 7,000 dry tons of Sewage Solids
- 1050 cubic feet natural gas per dry ton

Economic Benefit

- Cool down slower
- One less full time Operator to operate Solids Processing Facility
- 30% less incinerator ash
- Primary and Secondary Heat Exchangers

Cincinnati, OH
Incinerator Stack



Summary

For the investment YCUA realized:

- 90% less of all regulated emissions except sulfur dioxide
- Decrease in Operators to operate Solids Processing Facility
- 30% less incinerator ash
- Marginal decrease in energy usage