CASE STUDY: Stoneybrook Sanitation, Inc.  
Lowell, Michigan

Land Application

Regulation vs. Space
Time & Temperature... Weather!

Land Application WAS “FREE”!

Advantages to Building:
- Get off the Land
- Increase Profits
- Improve Customer Service
- Facility is Available 24/7
- Trucking Costs Reduction / Man Power
- Possibly, Solve a Regional Problem
- The Need to Stay in Business

Hauling was:
4¢ & 5¢ per gallon = 10¢ with Hauling Fees
Do Capital Costs Justify The Investment?

<table>
<thead>
<tr>
<th>Gallons / Year</th>
<th>Gallons / Week</th>
<th>Gallons / Day</th>
<th>$1</th>
<th>$2</th>
<th>$3</th>
<th>Biofuel Income</th>
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<td>1,000,000</td>
<td>19,231</td>
<td>3,846</td>
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<td>$150,000.00</td>
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<td>5,000,000</td>
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<td>19,231</td>
<td>$250,000.00</td>
<td>$500,000.00</td>
<td>$750,000.00</td>
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Time for Change:

How Much Did It Cost to Dispose
What is the Potential Income to Process?
4¢ 5¢ 10¢ per gallon

Pre-Treatment Parameters Defined:
- pH
- TSS
- COD / CBOD
- Phosphorus
- Ammonia
- Nitrite
- Nitrate
- Daily Limits
- POTW's Superintendent Welcomed Us!
The Engineering of the Plan... Water Quality...

The Process of the New Addition

The Process of the New Addition

The Process of the New Addition

The Process of the New Addition
The Process of the New Addition...EAST

The Process of the New Addition...NORTH

The Process of the New Addition...WEST

In Memory of Tom Tschanner...

The Master & Angel Behind It ALL!!!

The Process of the New Addition...SOUTH
PHASE 1

- Receiving Area for Trucks
- 500-1000 GPM Flow Capacity
- Degrit
- User Friendly
- Flow Meter

Learn from the Mistakes of Others

PHASE 2

- Holding Tanks
- Sized for 50-100% of daily or weekly flow
- Collection for Wash Down Area
- Equalization & Mixing
- pH Adjustment

Learn from the Mistakes of Others
Equalization & Storage

- Homogenized Loads in Tanks
- Each Batch is Similar
- Homogenized Our Discharge Results
- Minimized Chemical Use...$$$$$

IN: Offload Truck at 500-1000 GPM
OUT: Process Waste 60-100 GPM

Tanks, Storage & Equalization

pH Adjusting Zone

Mixers

PHASE 3

- Sludge Pumping
  - Positive Displacement Pumps with VFD
  - Additional Grinder
- Chemical Conditioning
  - Polymer

Learn from the Mistakes of Others

Chemical Addition & Optimization

Mineral Masters: John MacDonald
Chemical Addition & Optimization

On Demand: POLYMASTER

Mineral Master’s Polymer Mixing

Pumping to Dewatering

Bornemann Pump 50-200 GPM

PHASE 4
• Dewatering Containers

PHASE 5
Direct Discharge to POTW
PHASE 6
Odor Control

Summer, 2013 Effluent Test Results:

<table>
<thead>
<tr>
<th>Date</th>
<th>BOD/5 day</th>
<th>Phosphorus</th>
<th>TSS</th>
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<tbody>
<tr>
<td>June 6, 2013</td>
<td>541</td>
<td>21.60</td>
<td>50.0</td>
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<td>June 13, 2013</td>
<td>495</td>
<td>20.40</td>
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<td>June 20, 2013</td>
<td>398</td>
<td>15.50</td>
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<td>June 27, 2013</td>
<td>1220</td>
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<td>July 12, 2013</td>
<td>247</td>
<td>13.10</td>
<td>34.0</td>
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<td>July 19, 2013</td>
<td>319</td>
<td>25.30</td>
<td>48.7</td>
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<td>July 26, 2013</td>
<td>233</td>
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<td>26.4</td>
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<td>August 5, 2013</td>
<td>240</td>
<td>18.00</td>
<td>57.0</td>
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<td>August 12, 2013</td>
<td>435</td>
<td>15.30</td>
<td>47.3</td>
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<tr>
<td>August 19, 2013</td>
<td>275</td>
<td>23.40</td>
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<td>September 10, 2013</td>
<td>149</td>
<td>12.10</td>
<td>55.0</td>
</tr>
</tbody>
</table>

AVERAGE 394 17.18 57.8

You’re Invited to Visit

Deluxe Accommodations
Main Street Inn

Main Street Inn 2nd Floor; Common Area

Main Street Inn 2nd Floor; Common Area
Private Rooms & Bath

Therese Wheaton
Specializing in Industrial and Municipal Solids-Liquid Separation

QUESTIONS?

Therese Wheaton
Specializing in Industrial and Municipal Solids-Liquid Separation