Biosolids Composting
Taking Root in Florida

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St. Augustine, FL
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The State of Biosolids in Florida

- Landfilled, 35%
- Land applied, 32%
- Class AA - Compost, 7%
- Class AA - Alkaline treated, 10%
- Class AA - Heat dried pellets, 14%
- Class AA - Other, 2%
Biosolids Management Options

**COST**
- Higher $/Ton: Heat Dried Pellets
- Lower $/Ton: Landfill

**NUTRIENT STABILITY**
- Run-Off: Alkaline Treatment
- Retention: Compost

**MARKET DIVERSITY**
- Fewer Markets: Alkaline Treatment
- More Markets: Compost

**SOIL HEALTH / ECOLOGY**
- Less: Alkaline Treatment
- More: Compost
Modified Static Aerobic Pile (MSAP) Method

Operational Simplicity

Cost Efficiency

Odor Control

Product Quality
Composting From the Outside In

Temperature (°F)

Days Composting

Temperature at 36" Depth
Temperature at 12" Depth
Pathogen Reduction Threshold
Compost Helps Control Plant Diseases

- Studies show compost’s disease-suppressing properties for Florida crops
- Beneficial microbes in compost:
  - Outcompete harmful microbes
  - Produce antibiotic compounds
  - Parasitize and predate harmful microbes
  - Activate disease-resistance genes in plants
- MSAP compost has a several-fold higher population of beneficial microbes compared to other compost
Two Biosolids Composting Case Studies

- ECUA
- Hillsborough County
## Overview

<table>
<thead>
<tr>
<th></th>
<th>Hillsborough County</th>
<th>Emerald Coast Utilities Authority (ECUA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project type</strong></td>
<td>Pilot</td>
<td>Full-scale operation</td>
</tr>
<tr>
<td><strong>Previous disposal method</strong></td>
<td>Land application &amp; Landfill</td>
<td>Heat drying &amp; Land application</td>
</tr>
<tr>
<td><strong>Site size</strong></td>
<td>3.48 acres</td>
<td>24.5 acres</td>
</tr>
<tr>
<td><strong>Timeframe</strong></td>
<td>Mar. ‘15 – Aug. ‘15</td>
<td>Nov. ‘15 - Ongoing</td>
</tr>
<tr>
<td><strong>Biosolids capacity (wet tons/day)</strong></td>
<td>53</td>
<td>80</td>
</tr>
<tr>
<td><strong>Estimated compost production (cubic yards/day)</strong></td>
<td>101</td>
<td>128</td>
</tr>
<tr>
<td><strong>Estimated operating costs (per wet ton of biosolids)</strong></td>
<td>$20-$25</td>
<td>$23-$28</td>
</tr>
</tbody>
</table>
Hillsborough County
Hillsborough - Site Plan
## Hillsborough – Financial Analysis

<table>
<thead>
<tr>
<th>Item</th>
<th>Full Scale – Equipment Lease</th>
<th>Full Scale – Equipment Purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital Cost</strong></td>
<td></td>
<td></td>
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<tr>
<td>Site Development</td>
<td>$232,540</td>
<td>$232,540</td>
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<tr>
<td>Equipment</td>
<td>$0</td>
<td>$900,000</td>
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<tr>
<td><strong>Total Capital Cost</strong></td>
<td>$232,540</td>
<td>$1,132,540</td>
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<tr>
<td><strong>Annual Capital Cost</strong></td>
<td>$44,360</td>
<td>$155,322</td>
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<tr>
<td><strong>Operating Cost</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor</td>
<td>$123,200</td>
<td>$123,200</td>
</tr>
<tr>
<td>Equipment O&amp;M</td>
<td>$163,168</td>
<td>$231,832</td>
</tr>
<tr>
<td>Equipment Lease</td>
<td>$201,500</td>
<td>$0</td>
</tr>
<tr>
<td>Other Costs</td>
<td>$63,150</td>
<td>$63,150</td>
</tr>
<tr>
<td><strong>Total Operating Cost</strong></td>
<td>$551,018</td>
<td>$418,182</td>
</tr>
<tr>
<td><strong>Revenue</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biosolids Tip Fee</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Finished Compost Sales</td>
<td>$121,176</td>
<td>$121,176</td>
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<tr>
<td><strong>Total Revenue</strong></td>
<td>$121,176</td>
<td>$121,176</td>
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<tr>
<td><strong>Net Annual Cost</strong></td>
<td>$474,201</td>
<td>$452,327</td>
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<tr>
<td><strong>Net Cost Per Wet Ton Biosolids</strong></td>
<td>$25.49</td>
<td>$24.32</td>
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</tbody>
</table>
Hillsborough – Results

- High quality compost produced
- Very low odor generation
- Compost distributed to nearby sod farm
- Strong interest from other markets
ECUA’s Biosolids Compost Facility
ECUA - Site Plan

A) Grinding Area
B) Active Compost Area
C) Curing and Compost Storage Area
D) Stormwater Facility
E) Lift Station
F) Perimeter Berm
G) Entrance Road
ECUA - Results

Composting saves nearly $75,000 per month!
ECUA - Results

• Composting facility solves 2 problems: yard waste disposal and biosolids treatment.
• Generates more revenue than heat drying
• Lessons learned
  • Remote thermometers
  • Cover to keep finished compost dry
• ECUA expanding to compost all biosolids
ECUA
Facility & Product Marketing
Keeping It Clean!

Have you heard?
Brown is the new Green

Leaf the Plastic Behind - Brown Bag It Instead!
ecuapl.gov
Branding the Product

Emerald Coast Bloom
The Most in Bio-Compost
End-User Targets

• Target Audience
• Target Database
• Tracking Mechanism
• Reporting Mechanism
• Follow-up Protocol

<table>
<thead>
<tr>
<th>Target</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>20</td>
</tr>
<tr>
<td>Bulk materials</td>
<td>3</td>
</tr>
<tr>
<td>Gardens</td>
<td>7</td>
</tr>
<tr>
<td>Mannco</td>
<td>1</td>
</tr>
<tr>
<td>Golf</td>
<td>36</td>
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<tr>
<td>Green lodging</td>
<td>12</td>
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<tr>
<td>Landscape contractors</td>
<td>14</td>
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<tr>
<td>Lawn maintenance</td>
<td>15</td>
</tr>
<tr>
<td>Institutional (FDOT and KPB)</td>
<td>2</td>
</tr>
<tr>
<td>Nurseries</td>
<td>87</td>
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<tr>
<td>Retail</td>
<td>34</td>
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<tr>
<td>Recreational</td>
<td>4</td>
</tr>
<tr>
<td>Sod farms</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>240</td>
</tr>
</tbody>
</table>
End-User Target Marketing
Creating Facility & Product Awareness

- Website
- News Articles
- Field Day
  - Direct Mail
- Brochure
  - Direct Mail
- Recycling Coordinator
- Public Information Officer
- State and National Awards

http://www.livegreenecua.com/composting.php
Sales/Distribution Results To Date

Total Cubic Yards: 830
Next Steps

• Hillsborough county
  • Permitting and constructing a full-scale facility

• ECUA
  • Expanding the facility to double capacity and compost all of its biosolids
  • Continuing sales and distribution
  • Securing a large bulk buyer
  • Maintaining local education and outreach
  • Procure and utilize a ¼ inch screen
Thank you!

Contact Information

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