1. Project Background
   a. A significant amount of organic materials are generated annually in Brown County
      i. Dairy Farms
      ii. Meatpackers
      iii. Rendering facilities
      iv. Municipal wastewater treatment plants
      v. Paper/mill residuals
   b. The cost of managing these materials has been increasing

2. Environmental Innovation

3. Technology Review
   a. There have been significant environmental impacts associated with improper management
      i. Surface water quality (nutrients)
      ii. Ground water quality (pathogens, nitrogen, etc.)
      iii. Air quality / odor
   b. Several new technologies or strategies are being considered or implemented in Brown County

Since 1 cow produces as much waste as 18 people, a single CAFO has as much pollution potential from untreated waste as the cities of:

De Pere or Mequon
Sun Prairie or Wisconsin Rapids
Several previous studies have been completed on the management of these materials.

1. FRVOR in the late 1990s
   a. City of Appleton WWTP
2. Brown County Composting Initiative in the 2003-04
   a. Green Bay WWTP and Brown County Land Conservation

Previous studies did not result in any significant long-term successes

1. Economic and environmental situation has changed
   a. Land availability and transportation costs
   b. Fertilizer value
   c. Environmental scrutiny
2. Low value end products in previous studies presented economic challenges

Environmental Innovation

1. Waste as a Catalyst for New Industry
   a. Brown County can be known for Environmental Innovation
   b. Back to the roots of ECO-U
2. Economic Impact to the County
   a. Cost Avoidance
   b. Profit Potential
3. Environmental Impact
   a. Reduce land application
   b. Better management of "resources"

Brown County Waste Transformation Initiative Team

1. Brown County
2. GBMSD
3. JBS Packerland
4. American Foods Group
5. AgVentures
6. Daanen and Janssen
7. Sanimax
8. UW-Green Bay
9. FEECO and ENCAP

About FEECO

- Founded in 1951
- Fertilizer Engineering and Equipment Company
- "Freedom from Hunger creates Hunger from Freedom"
- 2007 Goal – To Become the Leading Worldwide experts in assisting corporations in exploring alternate uses of wastes.
Lab Customers

- Clorox
- DuPont
- Duracell
- Folgers
- General Electric
- Georgia Pacific
- Honeywell
- Kimberly-Clark
- Kohler Company
- Mobil Chemical
- Nestle
- Premium Standard Farms
- Ray-O-Vac
- Smithfield
- United Steel Mills

About ENCAP

- Established by FEECO in 1999
- Utilizes locally available process residuals from the paper industry
- Develops and markets Advanced Technologies for:
  - Erosion control,
  - Fertilizer and manure runoff control,
  - Seed establishment, and
  - Other environmental management challenges
- Technologies useful in landscape, agricultural, and forest fire restoration markets, and biofuel markets

Family of Advanced Technologies

ENCAP Customers

Retail
- Mass Merchants
  - Wal-Mart, K-Mart, Meijer, etc.
- Home Centers
  - Lowes, Home Depot, Menards, etc.
- Garden Centers
  - Steins, Southern States, Agway, etc.
- Hardware Coops
  - Ace, Do-It-Best, True-Serve
- Others
  - Sam’s, Aldi, PETSmart, Rite-Aid, Farm Stores, etc.

ENCAP Customers

Professional/Commercial
- Landscape
- Golf
- Construction
- Government
  - DOT
  - Municipalities
- Right-of-Way

ENCAP Customers

Waste Transformation Technology™

- Market-Driven Products Creating Income
- Landfill, Compost & Other Disposal Options
- Traditional Conversion/Beneficial Reuse Options (Intrinsic Value-Based)
Waste Transformation Plan for BCWTI

Follow the same steps that resulted in the successful development of ENCAP

Key issues
1. Obtaining funding for initial development efforts
2. Developing products that are in demand in the marketplace
3. Securing an adequate supply of materials that are available on a consistent basis
Material Characterization
a. Material Inventory
b. On-Site Acquisition
c. Spectrum Analysis
d. Variability Review
e. Waste Stream Review

Opportunity Review
a. Definition of Customer Problem/Opportunity
b. Evaluate for Processability
c. Understand Handling Characteristics
d. Technology Option Analysis

Bench Scale Testing
a. Physical Batch Conversion
b. Manipulation of Individual Wastes
c. Create Formulas/Combinations

Initial Product Development
a. Idea Generation
b. Product Definition
c. Conceptual Product Design

Market Analysis
a. Internal Market Assessment
b. External Market Demand Review
c. Secondary Market Research

Decision Point #1
6 Conceptual Plant Design
   a. Through-put Estimates
   b. Process Flow Diagram
   c. Establish Capital Budget
   Decision Point #2

7 Business Model
   a. Evaluate Options
      1. Ownership
      2. Operation
      3. Licensing
      4. Sales and Distribution
   Decision Point #3

8 Strategic Marketing Plan
   a. Solution Modeling
   b. Product Positioning
   c. Pricing/Promotion
   d. Distribution/Fulfillment
   e. Create Tactical Marketing Plan
   Decision Point #4

9 Pilot Plant Test
   a. Simulate Manufacturing Conditions
   b. Large Scale Test
   c. Continuous Run Review
   d. Establish Capabilities and Constraints
   e. Produce Marketable Product for Sale/Use
   Decision Point #5

10 Final Product Development
   a. Detail Product Design
   b. Product Engineering
   c. Primary Market Research
   d. Proof of Concept

11 Product/Market Commitment
   a. Customer Acquisition
   b. Identify Internal and External Customers
   c. Identify Public/Private Customers
   Decision Point #6
Final Plant/Facility Design
a. Develop Final Model
b. Create Final Plant/Equipment Design
c. Develop Facility Design Specification/Budget
d. Establish Operating Budget

Final Business Plan
a. Capital Investment
b. Operating Expenses
c. Marketing Plan
d. Management Plan

Plan Execution
a. Obtain Financing
b. Site Selection
c. Facility Construction
d. Equipment Build-out, Install, Start-up...
e. Etc.....

Transforming a Problem into an Opportunity!

Next Steps
- Secure funding: 9/2008
- Steps 1-5: 3/2009
- Step 6: 6/2009
- Steps 7-14: 2009 - 2010
- Operational plant: 2011

Conclusions
1. The BCWTI is following a model that was used successfully for the start-up of ENCAP
2. Numerous partners have already committed to the initial phase of the project
3. Economic and environmental issues are becoming more significant
4. Finding high value markets will be critical to the success of the project
Questions?

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Thank you!