CITY OF APPLETON BIOSOLIDS COMPOST

Status Update

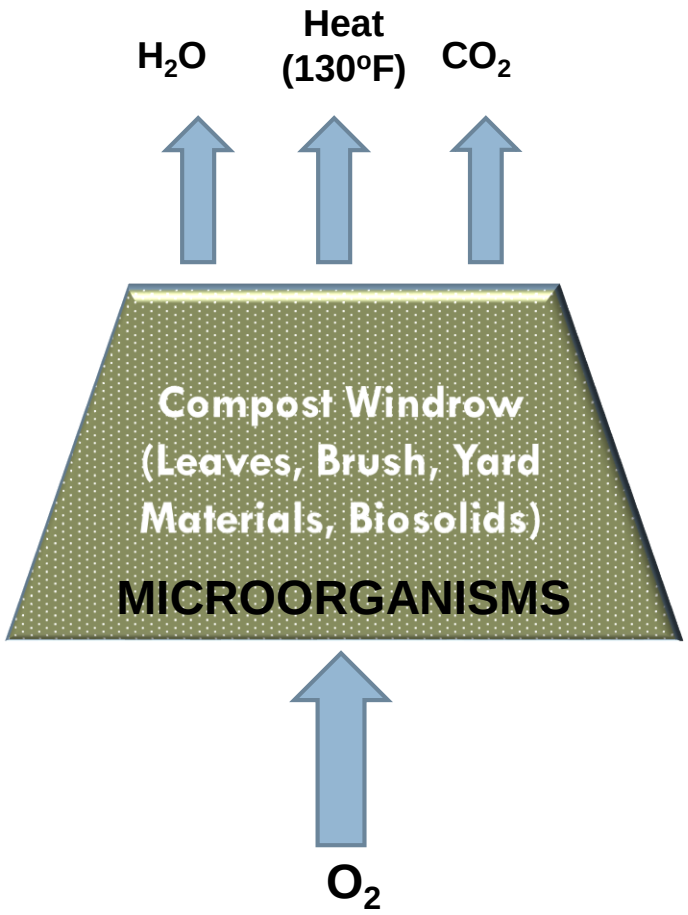
Appleton Utilities Committee

January 2019

Presentation Summary

- What is Composting
- Why We Are Composting
- What Has Been Accomplished
- Lessons Learned
- Current Status
- Future Planning

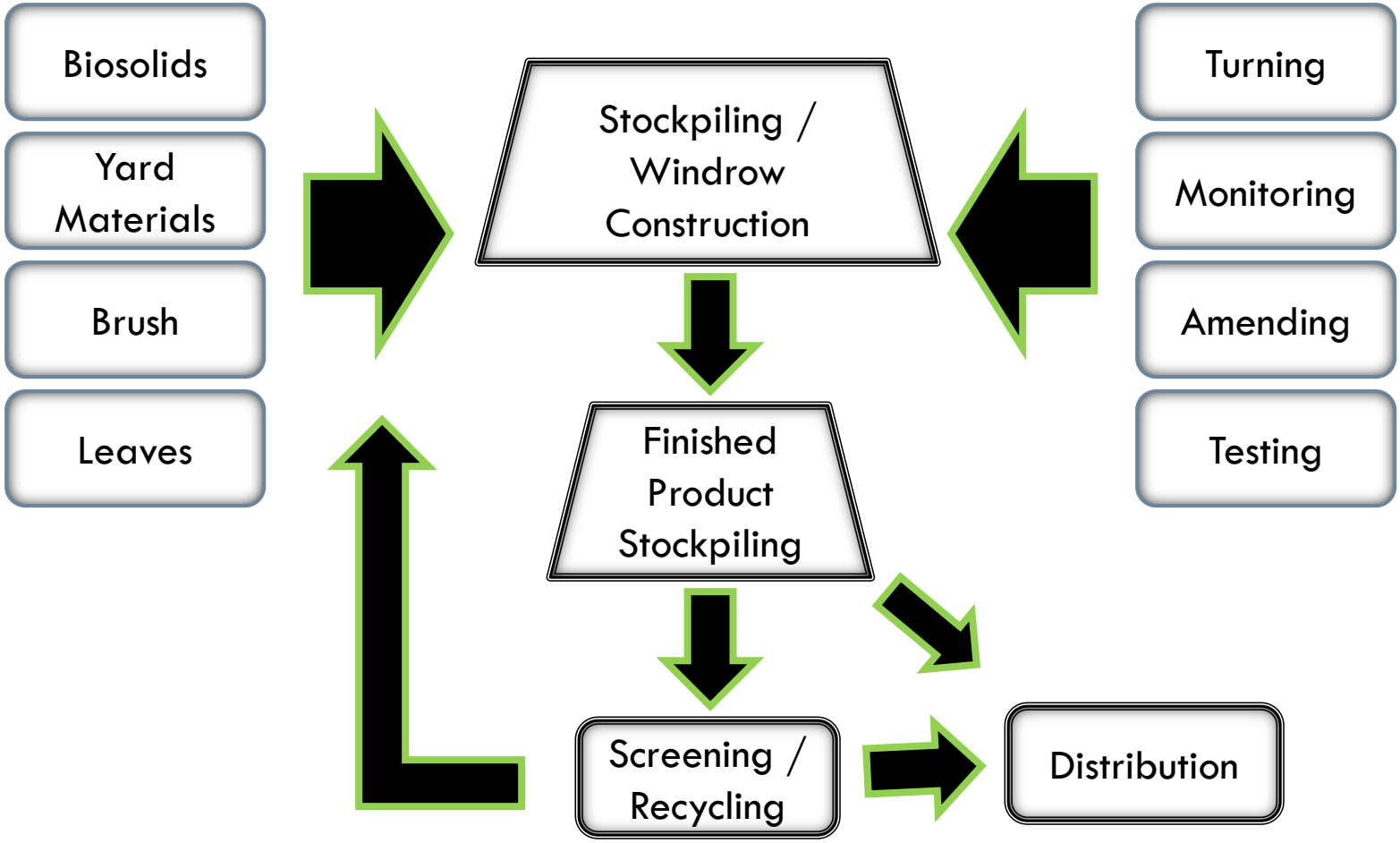
What is Composting?



Microbiological stabilization of organic material and further pathogen destruction resulting in..

..a uniform mixture of humified organic material, mineral matter and microorganisms, with reduced mass and moisture content

Windrow Processing Overview



Composting Factors

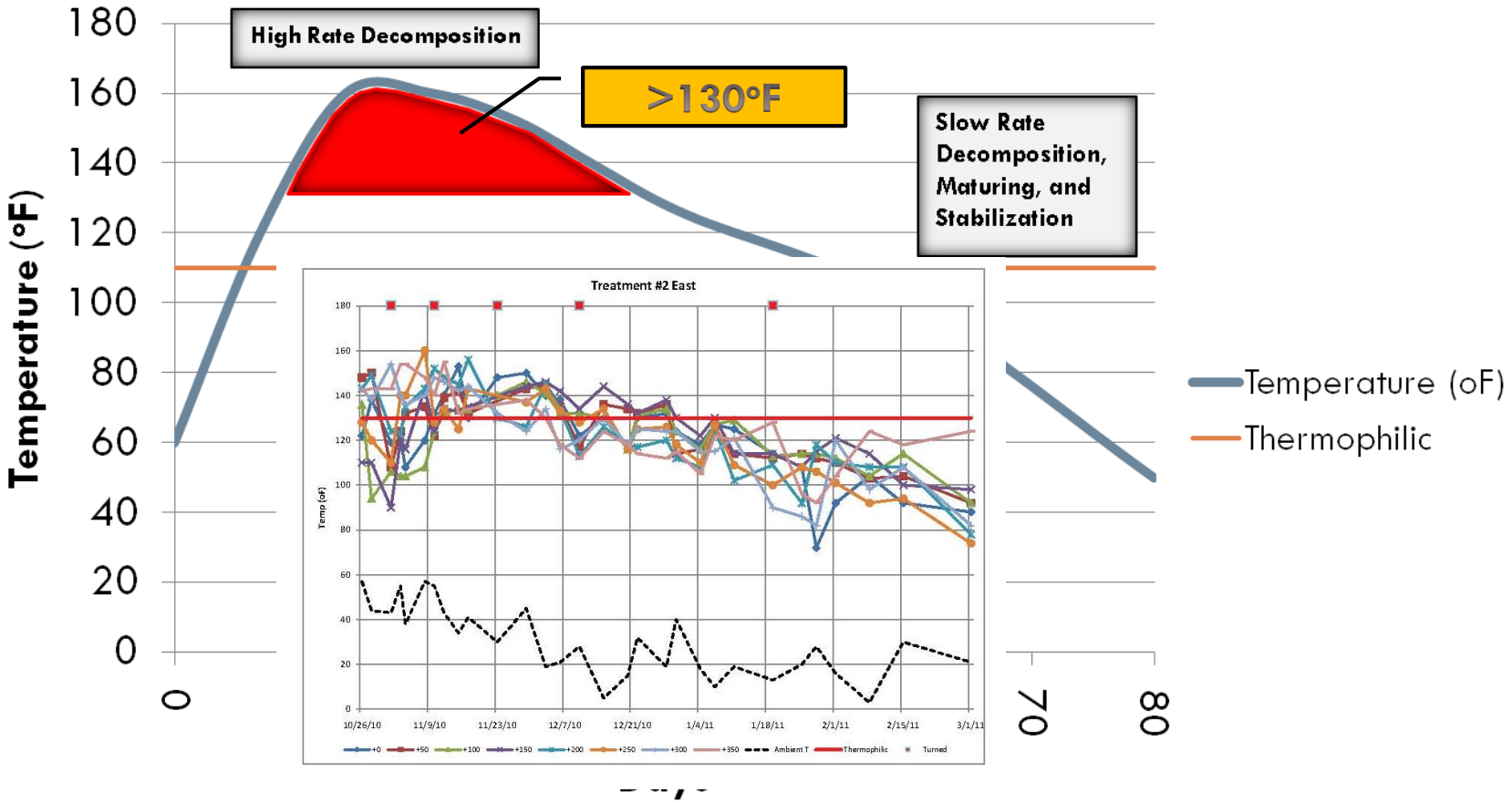
- Biosolids and Amendment Characteristics
  - % Moisture, Carbon:Nitrogen, Particle Size/Structure, Porosity, Biodegradability, Energy Content (Volatile Solids from Carbon)
- Initial Mix Ratios
- Aeration Rates or Turning Intervals
- Detention Time

January 2019 Utilities Committee Compost

Biosolids Composting Requirements

- Biosolids regulated under Wisconsin Administrative Codes NR 204.
  - Windrow composting to generate a Class A biosolids must do the following:
    - Maintain >130°F for 15 days.
    - Minimum of 5 turnings required.
    - Fecal coliform <1,000 MPN/g TS

Compost Temperature Cycle

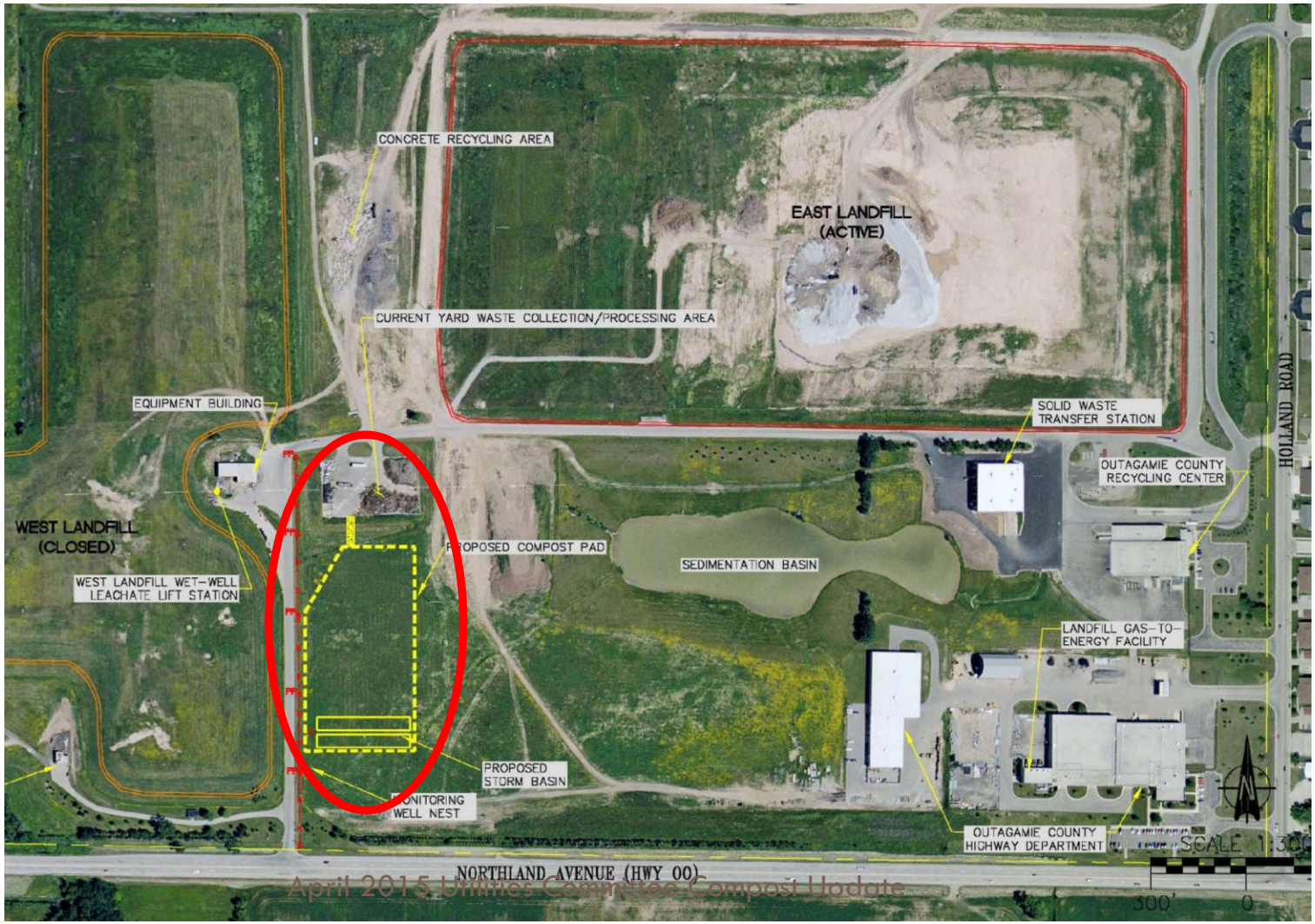


Biosolids Compost "Advisory Group"

- The City of Appleton Wastewater Treatment Plant (AWWTP)
- Appleton Department of Public Works (ADPW)
- Outagamie County Department of Solid Waste (OCDSW)

Mission: "Seek long-term, cost-effective, and environmentally sound alternatives for management of organic waste streams."

Compost Pilot Location



Why Are We Doing It?

- DNR mandated 180-day sludge storage requirement.
  - The AWWTP has historically not met this NR 204 requirement.
- Increasing and more stringent regulations.
  - Land based phosphorus standards.
  - TMDL
- Competing land uses.
  - Urban and rural sprawl
  - Expanding large dairy operations (CAFOs)
- Diversify options for environmentally responsible beneficial use.

Why Are We Doing It?

- Other options exist for the AWWTP:
  1. Agricultural land application
     - Upside: Cost effective when land is close and available.
     - Downside: Weather conditions, various regulations, and farming practices dictate when and how much; unpredictable; contract costs for transportation, land application, and tillage closely associated with fuel costs (i.e. fuel surcharges).
  2. Landfilling
     - Upside: Reliable.
     - Downside: Limited quantities accepted, costly tipping fees, contract costs for transportation closely associated with fuel costs (i.e. fuel surcharges).

Compost Uses

- Agriculture
- Commercial Landscapers
- Municipal - Parks, Engineering
- Sports Turf
- Restoration/Reclamation
- Soil Blenders/Conditioners
- Retail, Specialty Blenders (Lawn & Garden)


OCTOBER
NOVEMBER
DECEMBER
JANUARY

2010-2011

- Trial #1 and Trial #2 completed (approx 6,500 yds each).
- "Best mix and best method" established
- All treatments tested for STA parameters; considered high quality "finished".
- Greenhouse study verified weed seed destruction and positive impact on plant growth.
- Registered with the US Compost Council.
- Compost distribution plan approved by DNR.

2012-2013

- Optimum Compost Blend Identified thus Transitioned from "Trial" Processing
- Economic Feasibility Report Completed
- UW Oshkosh Research Study
- Facility Operations and Marketing Audit
- Completed Various Demonstration Projects
- Extended Intergovernmental MOU with County(2013-2016)
- Staff Transition 2013

2014-2015

- Approximately 30,000 CY Composted Since 2010
- "New" Outagamie County Department of Solid Waste Director
- Resume Compost Processing in Spring 2015
- WPDES Permit Expires September 30, 2015. New Permit will include Compost Operation (**1st Biosolids Compost Facility in Wisconsin!**)
- Actively Engage Potential Large Scale Compost Users: Landscapers, Contractors, & Highway Dept

Lessons Learned

People Matter

- Outagamie County Partner – MOU
- Compost Contractor
- UC and Common Council Support

Too Big Too Small

- Resource Prioritization
- Product Storage/Availability
- Program Costs

Defining Program Costs

Land Application	Contractor Cost ($/WT)
Biosolids Land Application <40 Miles	$13
Biosolids Land Application >40 Miles	$18

Composting	Contractor Cost ($/WT)
Compost Turning, Biosolids Hauling, Brush, Pad Maintenance and Biosolids	$30

Landfilling	Contractor Cost ($/WT)
Disposal and Transportation to the Outagamie County Landfill	$45

Future Planning: 2015-2020

- WPDES Permitting/MOU with OC
- Develop Larger Volume Users
- Develop Product Accessibility
- Program and Capital Planning
- Appropriations (Windrow Turner, Staff, etc.)

January 2019 Utilities Committee Compost Update

Questions and Discussion