This supplement to the Blue Lake Fact Sheet provides more technical detail about the plant’s solids handling system than is provided in the general fact sheet.

WASTEWATER SOLIDS TREATMENT GOES GREEN!

Biosolids converted to fertilizer pellets
Blended primary and secondary biosolids are thickened, dewatered and dried in a rotary drum dryer to produce fertilizer pellets which are applied to cropland as slow release, organic fertilizer.

The product meets EPA’s “Exceptional Quality” requirements for low levels of heavy metals and contaminants.

Capacity increase
MCES Facility Planning in 2005 determined that the dryer was approaching its capacity. Addition of the anaerobic digestion process would reduce the mass and volume of solids by about 30%, thereby increasing the capacity and extending the life of the dryer equipment.

What is anaerobic digestion?

Thickened Biosolids → Digesters → Biogas → Dry & pelletize → Land Apply Pellets

The biosolids are decomposed in three 1.4 million gallon concrete tanks by microorganisms (naturally contained in the waste) in the absence of oxygen. The organic material in the waste is converted to water, residual solids and biogas composed of carbon dioxide and methane.

Green energy features

- The biogas produced by the digesters at about 60% methane replaces 90% of the 9 million BTU/HR. of purchased natural gas to fuel the pelletizer, saving about $500,000 annually.
- When the dryer is offline, biogas fuels hot water boilers that heat the 20,000 sf digester control building, with estimated savings of 1.2 billion BTU annually.
- During dryer operation, hot water used to scrub odors from dryer exhaust is used to preheat the sludge.
- When the dryer is offline, hot water from the boilers is used to preheat the sludge.

FACTS – BLUE LAKE WASTEWATER TREATMENT PLANT (WWTP)

- Location: Shakopee, Minn.
- Capacity: 38 million gallons per day (mgd)
- Average daily flow: 28 million gallons per day (mgd)
Population served: 285,000 people in 27 communities
Service Area: Lake Minnetonka area, Shakopee, Prior Lake and Chaska
Biosolids pellet production: About 30 dry tons per day (dtpd) before digester startup
About 17 dtpd after digester startup

FACTS – ANAEROBIC DIGESTION PROCESS

- Process tanks: 3 tanks with fixed steel covers
- Storage tank: 1 tank with membrane cover for gas storage
- Tank Size: 90-feet diameter, 35-feet deep cast in place concrete
- Volume: 1.4 million gallons
- Process: 2 stage mesophillic digestion, 98 F, 26 days retention
- Gas production: About 26,000 scf/hour
  57-61% methane
  12 million BTU

FACTS – CONSTRUCTION

- Construction Period: Sept. 2009 – April 2012 (32 months)
- Project Cost: $27.8 million
- Financing: Minnesota State Revolving Loan, $25.8 million
  American Recovery “Green” Infrastructure, $2 million