Forty-two million gallons of wastewater are processed at the Nine Springs Wastewater Treatment Plant.
ACTIVATED SLUDGE

Aeration Tanks
Ammonia removal and a biological phosphorus removal process meet advanced secondary standards
ULTRAVIOLET DISINFECTION

UV Lamps
Meet a 400 mpn/100ml standard From April - October.
TO BADFISH CREEK & BADGER MILL CREEK

Treated Wastewater

36 MGD are returned to Badfish Creek and 3.4 MGD to Badger Mill Creek
GRAVITY THICKENING OF PRIMARY SETTLED SOLIDS

Gravity Sludge Thickeners for Primary Sludge
FLOTATION & GBT THICKENING OF BIOLOGICAL SOLIDS

Air Flotation Thickening and Gravity Belt Thickening are utilized for waste activated sludge
ANAEROBIC DIGESTION

A multi-stage digestion process is utilized for the stabilization of sludge. Digester gas is used in 3 Waukesha engines and in 9 heating boilers.
THICKENING OF DIGESTED SOLIDS

80% of the digested sludge is thickened on a gravity belt thickener
Metrogro Storage Tanks

The plant produces 90,000 gallons of 6% Metrogro. Three 6.4 million gallon storage tanks hold the biosolid material until it can be hauled to area farmlands for subsurface injection.
11th Addition Added Biosolids Flexibility

• 80% of the biosolids will continue to go to Class B land application
• 10% will become Class A by time/temperature batching for a landscaper give-away type program
• 10% is being bagged as struvite in specialty fertilizer to provide high P content
Struvite Harvesting
40% of P

20% of P

P-Release Tank

40% of P
Digestion System

Digesters 1, 2, & 3 are batched by a time/temperature relationship to produce a Class A product for about 20% of the digested sludge. During the winter, this will be centrifuged to produce a dry Class A product.
New WAS Thickeners – Thickened 6% WAS to Acid Phase, Filtrate to Ostara
Steam Injection Heating of WAS
Steam Boilers
De-aeration & Chemicals for Scale Prevention
Thick WAS @ 125 deg + Cold Primary To Acid Digester: 1.2 day DT, pH = 5.2, 5,600 mg/l of VFA’s
**Digestion System**

Digesters 1, 2, & 3 are batched by a time/temperature relationship to produce a Class A product for about 20% of the digested sludge. During the winter this will be centrifuged to produce a dry Class A product.
Tube & Shell Heat Exchangers
Pre-Heat for Class A Batching
Batching for Class A
134 deg F for 14 Hours
Orange-HW
Pink-Effluent for Cooling
Cooling Heat Exchangers Build up Struvite – Acid Cleaning Needed Every Few Weeks
Cooling of thermophilic sludge reduces the polymer demand for the centrifuge and the odors in the biosolids.
Options for Reuse

• Mix with sand and sawdust to make a give-away product
  – Involves a lot of area, time, and manpower
• Mix with leaves for a combined compost product
• Look for a give-away “as is” where it will be picked up at the plant
• Must consider a re-growth issue
  – After centrifuge, fecal coli regrow and die off after about 2 weeks
QUESTIONS?