

NINE SPRINGS WWTP

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



ACTIVATED SLUDGE

Aeration Tanks

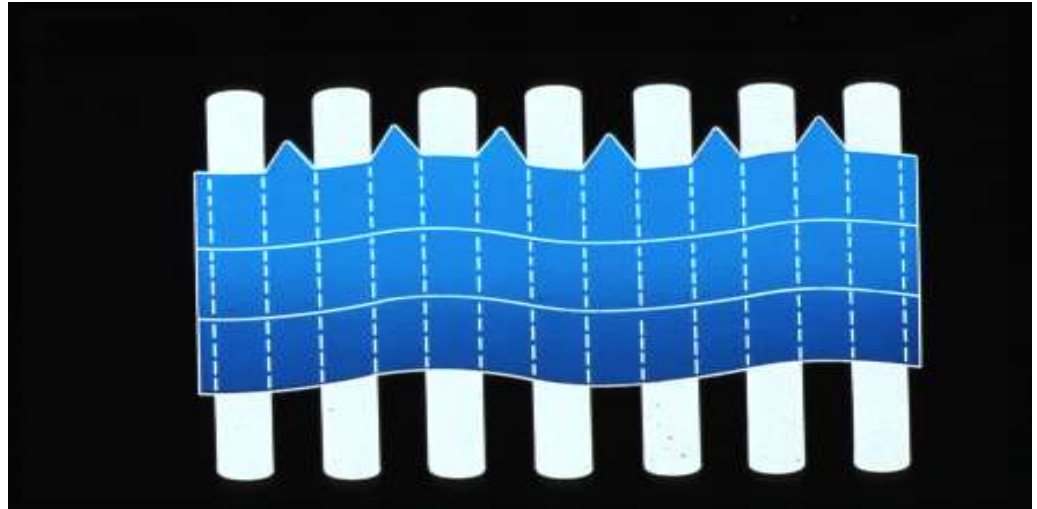
Ammonia removal
and a biological
phosphorus removal
process meet
advanced secondary
standards



ULTRAVIOLET DISINFECTION

UV Lamps

Meet a 400
mpn/100ml
standard From
April - October.



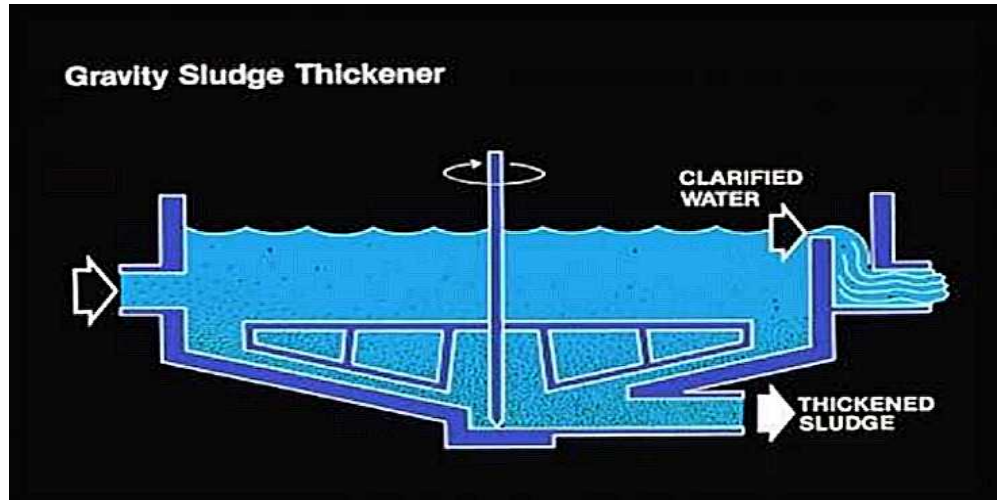
TO BADFISH CREEK & BADGER MILL CREEK

Treated
Wastewater
36 MGD are
returned to
Badfish Creek
and 3.4 MGD
to Badger Mill
Creek



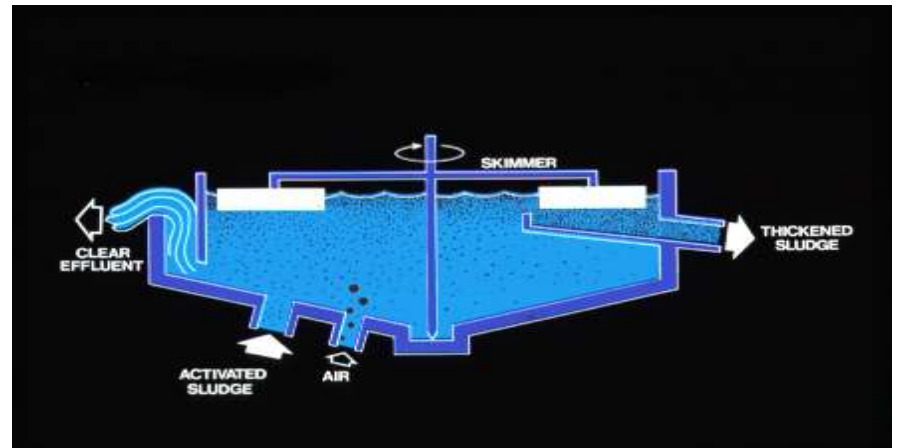
GRAVITY THICKENING OF PRIMARY SETTLED SOLIDS

Gravity
Sludge
Thickeners
for Primary
Sludge



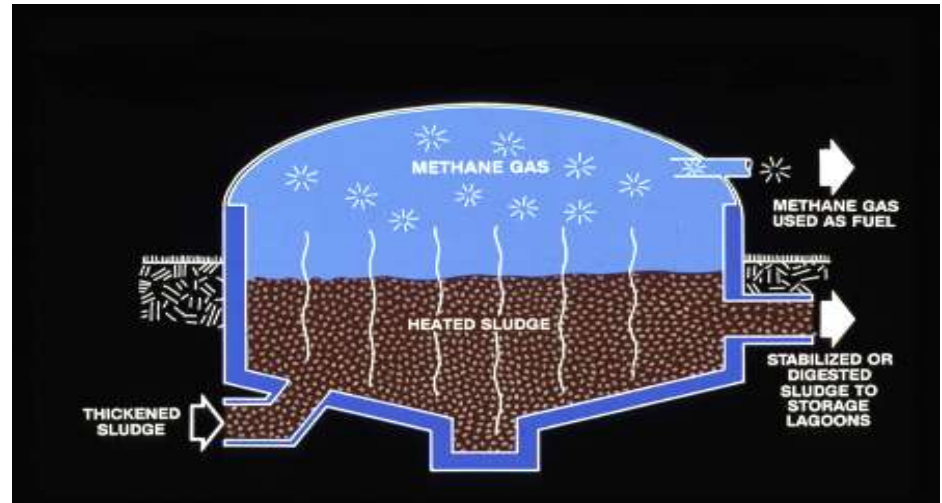
FLOTATION & GBT THICKENING OF BIOLOGICAL SOLIDS

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



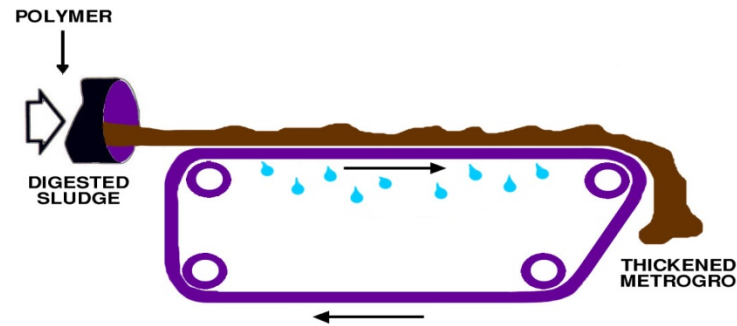
ANAEROBIC DIGESTION

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



STORAGE AND APPLICATION

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 sub-surface 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

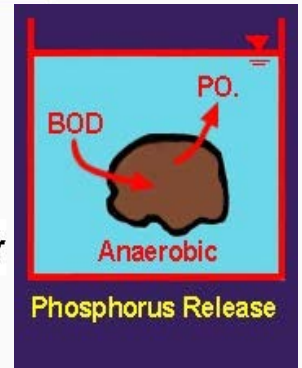
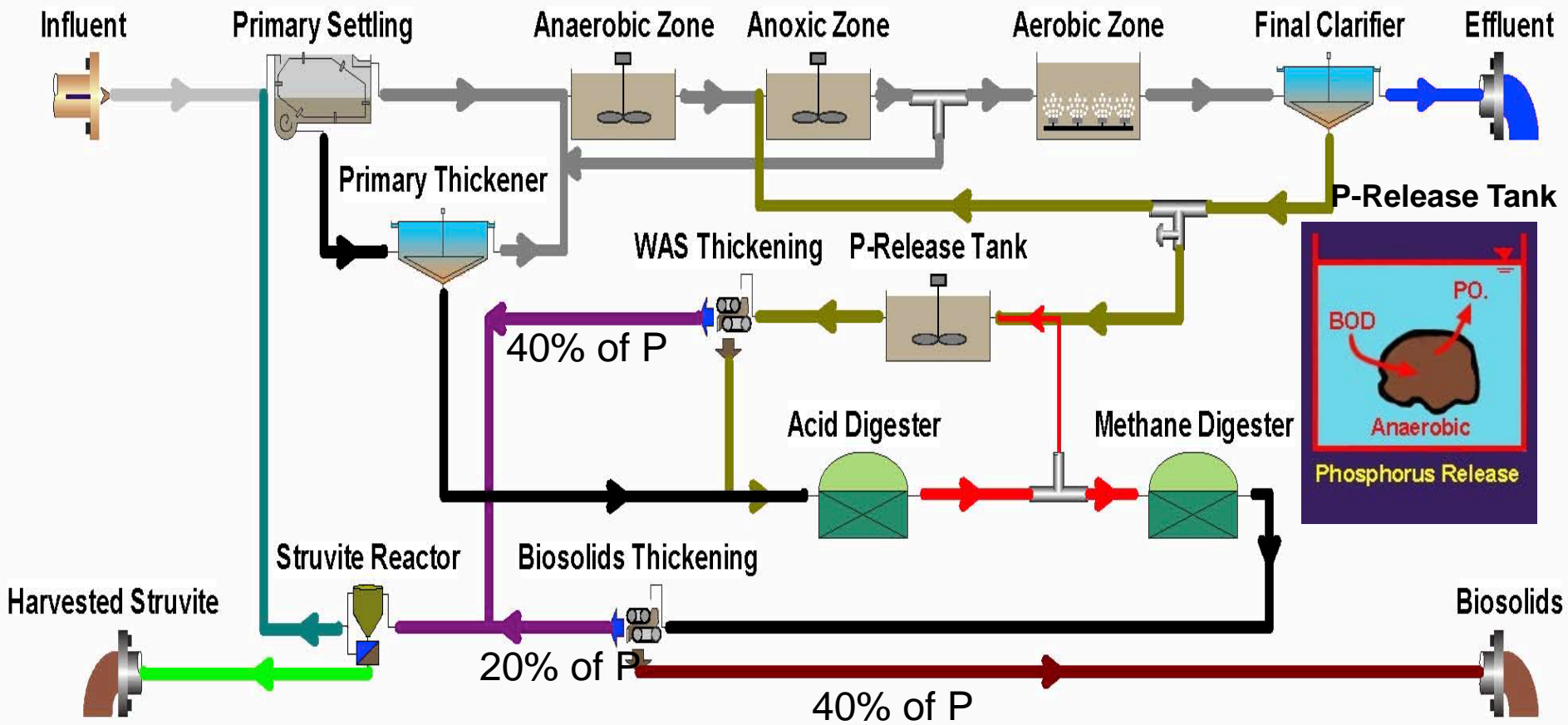
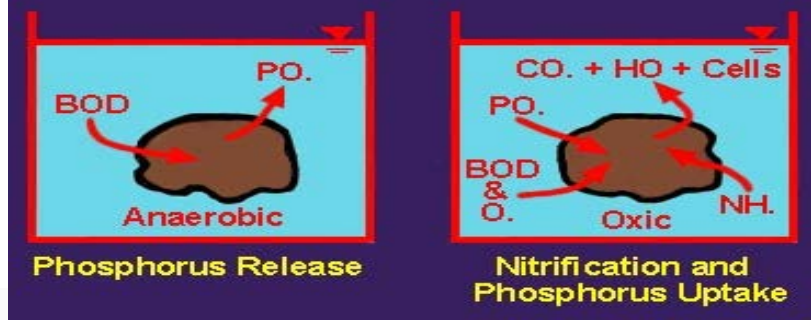




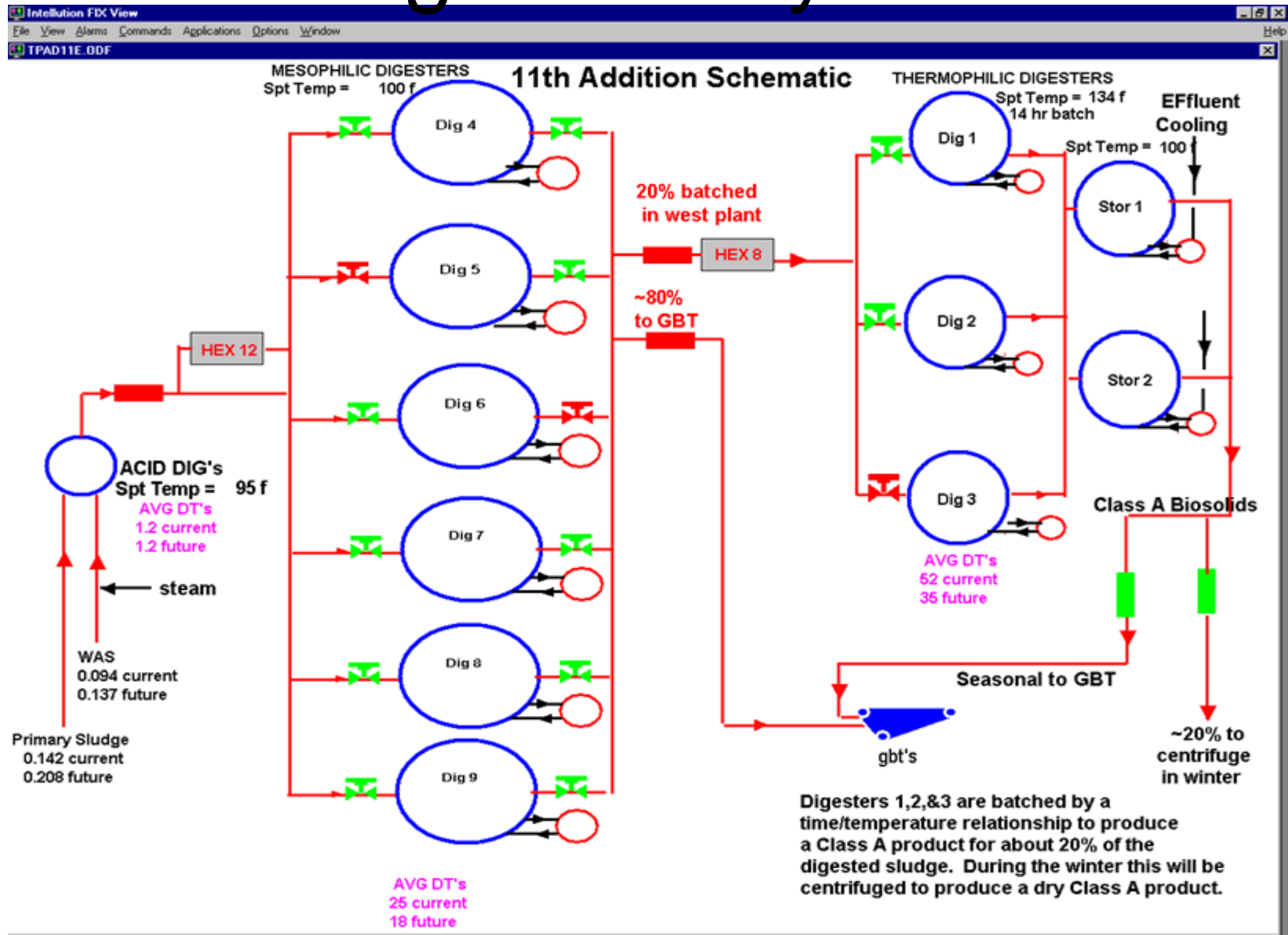


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Digestion System



New WAS Thickeners – Thickened 6% WAS to Acid Phase, Filtrate to Ostara



Steam Injection Heating of WAS



Steam Boilers



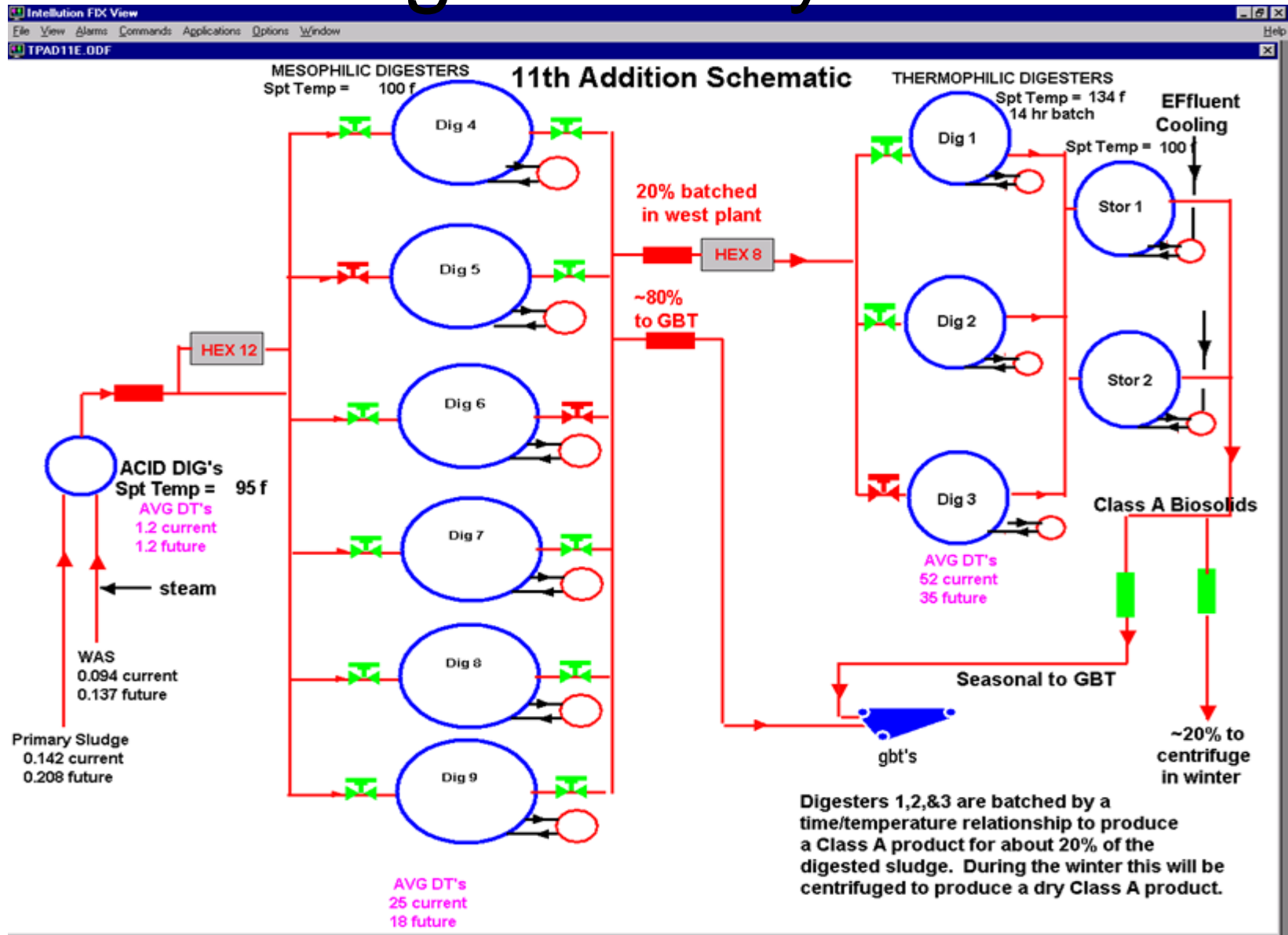
De-aeration & Chemicals for Scale Prevention



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



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





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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



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QUESTIONS?