Cogeneration Building

Flow Rate: 67000 ft³/day

Heated Water for Heat Exchangers

Water from End of Treatment or Water Main
All numbers are predicted values for the year 2025.

Production of Raw Sludges
- Solids from Secondary Treatment: 4% TS
  - 3.5% TSI, 72.2 gpm average annual
  - 4% TSO, 60.6 gpm maximum month
- Solids from Primary Treatment: 4% TS
  - 3.5% TSI, 86.3 gpm maximum month
  - 4% TSO, 75.5 gpm average annual

Pumps
- Pumps 01-02: 10 hp, 1185 rpm, continuous, 25 ST Siemens - motor, Moyno - pump
  - Old, need to be replaced.
- Pumps 03: Same type as current system.
- Pumps from Primary to Holding Tanks: 10 hp, 875 rpm, continuous, 284 T Siemens - motor
  - 6 pumps, 4 running at a time
- Pumps from Secondary to Centrifuge: 5 hp, 180-1800 rpm, TCI Number: 6 pumps, 4 running at a time

Centrifuge Motor
- Power: 200 hp, 1791 rpm, 23EB 5010Y Reliance Brand Duty master large a-c type motor

Ice Pigging
- Ice Pigging Insert Station
  - Ice Pigging Exit Station

Thickening Building
- X Connections: 38
- New X Connections: 11
- Pumps: 11
- New Pumps: 1
- New Centrifuges: 1

Overall
- New T Connections: 20
- New X Connections: 50
- New Pumps: 17
- New Centrifuges: 3
- Heat Exchangers: 7
- Digestion Tanks: 5
- New Holding Tanks: 2
- New Storage Tanks: 2
- New Buildings: 2
- Pigging insert and removing stations: 20

Main/ Mixing Building
- X Connections: 21
- New X Connections: 4
- Pumps: 3
- New Pumps: 3

Currently everything above this line is considered outside of the project's scope.
**Pumps 05-06:**
- **Power:** 16 hp
- **Rotational Speed:** 1115 rpm
- **Type:** Centrifugal
- **Notes:** 1 extra really small, really old pump for emergencies

**Sludge Holding Tanks 1 and 2**
- **Volume:** 150,000 gallons each

**Mechanical Mixing**
- **Material:** Concrete

**Heat Exchanger**
- **Type:** Recovery
- **Heat Source:** Effluent from ATP Reactor

**Digestors**
- **Shape:** Cylindrical
- **Volume:** 60,000 gallons
- **Resonance Time:** 22 hrs
- **TSI:** 4%
- **TSO:** 4%
- **Material:** Concrete, partially lined by coal tar epoxy
- **Mixing Type:** External recirculation loop

**Solids from Secondary Treatment**
- **4% TS**
  - **51.4 gpm - average annual**
  - **60.6 gpm - maximum month**

**Solids from Primary Treatment**
- **4% TS**
  - **63.5 gpm - average annual**
  - **75.5 gpm - maximum month**

**Diameter:** 8 in

**Ice Pigging**
- **Insert Station**
- **Exit Station**

**Digestor Building**
- **New X Connections:** 19
- **New Pumps:** 11

**Number of Pipe Interruptions Between Mixing and Digester**
- **Number of Entrances:** 1
- **Number of Exits:** 0
- **Number of Bends:** 2
- **Number of Xs:** 4
- **Number of Valves:** 12

**Main/ Mixing Building**
- **X Connections:** 21
- **New X Connections:** 4
- **Pumps:** 3
- **New Pumps:** 3

**Pipes**
- **Length:** 660 ft
- **Material:** Stainless Steel
- **Diameter:** 8 in

**Cogeneration Building**
- **Main Building - Mixing Facilities**
  - **X Connections:** 21
  - **New X Connections:** 4
  - **Pumps:** 3
  - **New Pumps:** 3

**Digestion Facility**
- **New X Connections:** 19
- **New Pumps:** 11

**Number of Pipe Interruptions Between Mixing and Digester**
- **Number of Entrances:** 1
- **Number of Exits:** 0
- **Number of Bends:** 2
- **Number of Xs:** 4
- **Number of Valves:** 12

**Heated Water for Heat Exchangers**
- **Drainage to Headworks**

**Digestors**
- **Volume:** 1.5 million gallons
- **Resonance Time:** 15 days
- **TSI:** 4%
- **TSO:** 2.5%
- **Material:** Concrete, partially lined with SSC-SP10 and coal tar epoxy
- **Mixing Type:** Jet mix

**Proposed Replacement for Pumps 05-06**
- **Head Needed:**
- **Flow Needed:**
- **Type:** Positive Displacement
**Dewatering Building**
- New X Connections: 16
- New Pumps: 2

**Ice Pigging**
- Insert Station
- Exit Station

**Biosolids Storage Facility**
- X Connections: 18
- New X Connections: 8
- New Tanks: 2

**Capacity:** 256 gpm
**Inlet:** 86.3 gpm
**TSI:** 2.5%
**TSO:** 4%

**Materials:**
- Concrete
- Stainless Steel

**Pumps:**
- PUMP 21
- PUMP 22
- PUMP 23
- PUMP 24
- PUMP 25

**Pipes:**
- Diameter: 8 in
- Length: 370 ft

**Location Details:**
- Supernate to Head / to chlorination?

**Additional Details:**
- Tank 1-2: Volume: 1.9 million gallons
- Tank 3: Volume: 2.2 million gallons
- Biosolids Storage Tanks Recirculation Mixing
- Flow capacity: 3200 gallons per minute
- Pump speed: 1170 rpm
- Motor power: 75 hp
- Number of Pipe Interruptions Between Mixing and Digester:
  - Number of Entrances: 0
  - Number of Exits: 1
  - Number of Bends: 2
  - Number of Xs: 9
  - Number of Valves: 22

 CURRENTLY EVERYTHING BELOW THIS LINE IS CONSIDERED OUTSIDE OF THE PROJECT’S SCOPE
Solids from Secondary Treatment
0.7% TS
346.1 gpm - maximum month
293.6 gpm - average annual

Solids from Primary Treatment
3.5% TS
86.3 gpm - maximum month
72.2 gpm - average annual

All numbers are predicted values for the year 2025

Overall
- New T Connections: 20
- New X Connections: 50
- New Pumps: 17
- Centrifuges: 3
- Heat Exchangers: 7
- Digestion Tanks: 5
- New Holding Tanks: 2
- New Storage Tanks: 2
- New Buildings: 2
- Pigging insert and removing stations: 20

CURRENTLY EVERYTHING ABOVE THIS LINE IS CONSIDERED OUTSIDE OF THE PROJECT'S SCOPE
Thickening Building
X Connections: 38
New X Connection: 11
Pumps: 3
New Pumps: 1
Centrifuges: 3
New Centrifuges: 1

Supernate back to Headworks
341.7 gpm

346.1 gpm - maximum month
293.6 gpm - average annual

Solids from Secondary Treatment
0.7% TS
86.3 gpm - maximum month
72.2 gpm - average annual

Pipes:
Length: 630 ft
Material: Stainless Steel
Diameter: 6 inch

Pumps 01-02
Power: 10 hp
Rotational Speed: 1185 rpm
Type: Continuous
Frame: 25 ST
Moyno - pump
Notes: Very old, will need to be replaced

Pumps 03
Use same type of pump as current system

Pumps 04
Revaluate pump needed when pump is needed
Main/ Mixing Building:
X Connections: 21
New X Connections: 4
Pumps: 3
New Pumps: 3

Sludge Holding Tanks 1 and 2
Volume: 150,000 gallons each
Mechanical Mixing
Material: Concrete

Sludge Holding Tanks 3 and 4
Volume: 150,000 gallons each
Material: Concrete
Lining: Coal Tar Epoxy

Number of Pipe Interruptions Between Mixing and Digester:
Number of Entrances: 1
Number of Exits: 1
Number of Bends: 2
Number of Xs: 9
Number of Valves: 22

Pumps 05-06:
Power: 16 hp
Rotational Speed: 1115 rpm
Type: Centrifugal
Notes: 1 extra really small, really old pump for emergencies

Proposed Replacement for Pumps 05-06:
Head Needed:
Flow Needed:
Type: Positive Displacement
CEN05-6
Capacity: 256 gpm
Inlet: 86.3 gpm
TSI: 2.5%
TSO: 4%

Dewatering Building
New X Connections: 16
New Pumps: 2

Ice Pigging Insert Station

Pipes:
Material: Stainless Steel
Diameter: 8 in
Length: 370 ft

Ice Pigging Exit Station

Number of Pipe Interruptions Between Mixing and Digester:
Number of Entrances: 0
Number of Exits: 1
Number of Bends: 2
Number of Xs: 9
Number of Valves: 22

Supernate back to Head / to chlorination?

Storage Facility
Connections: 18
New X Connections: 8
Biosolids Storage Facility
X Connections: 18
New X Connections: 8
New Tanks: 2

Biosolids Storage Tanks Recirculation Mixing
Flow capacity: 3200 gallons per minute
Pump speed: 1170 rpm
Motor power: 75 hp

- Tanks 1-2:
  - Volume: 1.9 million gallons
  - Material: Concrete
- Tank 3:
  - Volume: 2.2 million gallons
  - Material: Concrete
- Tank 4-5:
  - Volume: 3 million gallons
  - Material: Concrete
  - Mixing: Jet Pumping

Currently everything below this line is considered outside of the project's scope.