

WET STREAM TREATMENT FACILITIES

Preliminary Treatment Facilities

1. Plant Influent System

Main Trunk Sewer :	33 inch diameter
Wet Well #1 Influent Sewer :	42 inch diameter
Wet Well #1 Influent Sluice Gate :	42 inch diameter
Wet Well #2 Influent Sewer :	33 inch diameter
Wet Well #2 Influent Sluice Gate :	36 inch diameter
Bypass Sewer :	33 inch diameter
Bypass Sluice Gate :	48 inch diameter
Equalization Force Main :	36 inch diameter

2. Grinding and Screening System

Grinder #1

Number of Units :	1
Cutting Chamber :	40 inch
Grinding Size :	1/4 inch
Motor Horsepower :	5 HP

Coarse Screen

Bars :	2-3/8 inch
Spaces :	3-3/8 inch
Channel Width :	48 inch
Channel Depth :	36 inch

Grinder #2

Number of Units :	1
Cutting Chamber :	32 inch
Grinding Size :	1/4 inch
Motor Horsepower :	5 HP

Fine Screen

Bars :	2-3/8 inch
Spaces :	3-3/8 inch
Channel Width :	42 inch
Channel Depth :	36 inch

3. Raw Wastewater Pumping and Metering System

Pump Station #1

Wet Well Capacity : 45,300 gallons @ operating level
Total Pumping Capacity : 4 pumps @ 3100 gpm (50 hp)

Pump Station #2

Wet Well Capacity : 56,000 gallons @ operating level
Total Pumping Capacity : 3 pumps @ 1700 gpm (30hp)
1 pump @ 1000gpm (15hp)

Total Plant Pumping Capacity 25.2 M.G.D.

4. Fine Screening

Number of Units : 1
Screen Width : 4.5 feet
Discharge Height : 10 feet
Mesh Size : 6 mm
Incline Angle : 75 degrees
Channel Width : 4.5 feet
Channel Depth : 5.9 feet

5. Grit Removal System

Number of Units : 1
Length : 60 feet
Width : 7 feet
Water Depth : 9.75 feet
Detention Time : 4.4 minutes

6. Primary Treatment

Number of Clarifiers : 6
Tank Width : 20 feet
Tank Length : 100 feet
Water Depth : 8.25 feet
Detention Time : 2.9 hours
Surface Overflow Rate : 500 gpd/sq.ft.
Weir Overflow Rate : 12,240 gpd/ft.

SECONDARY TREATMENT SYSTEM

1. Aeration System #1

Aerated Influent Channel Width :	3 feet
Number of Basins :	5 (#1-#5)
Basin Width :	25 feet
Basin Length :	110 feet
Water Depth :	12.4 feet
Aeration Basin Volume :	1,275,340 gallons
Diffuser Type :	Fine Bubble (Tube)
Number of Diffusers :	2,080 (2 scfm each)

2. Aeration System #2

Number of Basins :	5 (#6-#10)
Basin Width :	20 feet
Basin Length :	100 feet
Water Depth :	12.4 feet
Aeration Basin Volume :	927,520 gallons
Diffuser Type :	Ultra Fine Bubble(Parkson Panel)
Number of Diffusers :	120 (3ft. x 9ft.)

Aeration Blowers

3. Number of Blowers:	3
Type:	Centrifugal
Size:	2 @ 3,500 scfm (150hp)
Size:	1 @ 3195 to 7100 scfm (200hp)

4. Secondary Settling Tanks

Number of Tanks:	2 (circular)
Tank Diameter:	100 feet
Tank S.W.D:	15 feet
Detention Time:	7.1 hours
Surface Overflow Rate	637 gpd/sq. ft.
Weir Overflow Rate	15,923 gpd/ft.

5. Re-aeration Basin

Number of Tanks:	1
Tank Width:	20 feet
Tank Length:	100 feet
Tank Maximum Water Depth	10 feet

6. Filtration Equalization Basin

Storage Capacity: 100,000 gallons
Pumping Capacity: 3 pumps @ 4,200 gpm (75 hp)

7. Filter Units

Number of Units: 6
Filter Media Consisting of:
 Sand: 10 inches
 Anthracite Coal 20 inches
 Support Gravel: 12 inches

Filter Size: 12 feet by 24 feet
Filtration Rate: 2 gpm/sq. ft.
Backwash Rate: 5,700 gpm/filter
Surface Wash Rate: 250 gpm
Clear Well Capacity: 100,000 gallons

Disinfection System

1. Ultraviolet Treatment

Type: Aquionics
Capacity: 2 units @ 7.5 MGD
Strength 16 High Density bulbs @ 4000 watts

2. Chlorine De-chlorination Contact Tanks

Length: 13 feet
Width: 7 feet
Water Depth: 10 feet
Detention Time: 1 minute

3. Effluent Metering System

Parshall Flume: 1 – (24 inch) throat

SOLIDS STREAM TREATMENT SYSTEM

1. Raw Sludge Pumping

Raw Sludge Pumps: 2 @ 300 gpm each

2. Primary Anaerobic Digesters #1 and #2

Number of Tanks: 2 (fixed, insulated covers)
Diameter: 65 feet
S.W.D: 25 feet
Volume: 621,867 gallons/unit
Detention: 43 days @ feed rate 24,000 gpd
Recirculation Pumps: 2 @ 350 gpm each
Sludge Transfer Pump: 1 @ 270 gpm each

3. Secondary Anaerobic Digesters #3 and #4

Number of Tanks: 2 (flexible membrane gas covers)
Diameter: 45 feet
S.W.D. : 24 feet
Volume: 286,132 gallons/unit
Detention: 22 days @ feed rate 12,500 gpd
Recirculation Pumps: 2 @ 350 gpm (each)
Sludge Transfer Pump: 1 @ 150 gpm

4. Methane Gas System

Number of Storage Units: 2
Gas Storage Volume: 16,800 cu. Ft. (each)
Waste Gas Burner: 6 inch

SLUDGE THICKENING & De-WATERING

1. Sludge Pumps

Waste Activated Sludge Feed Pumps: 2 @ 520 gpm (each)
Thickened Sludge Transfer Pump: 1 @ 100 gpm

2. Gravity Belt Thickener

Gravity Belt: 1 (2.2 Meters, 320 gpm avg. feed)

3. Belt Filter Press

Belt Press: 1 (2.0 Meters, 75 gpm avg. feed)

4. Chemical Feed System

Feed System: Polyblend Day Tank System

SLUDGE HOLDING TANKS

1. Sludge Tanks

Number of Basins: 2
Basin Length: 53.5 feet
Basin Width: 25 feet
Basin Depth: 9.5 feet
Basin Volume: 95,300 gallons (each)
Air Supply: 2 Blowers @ 1.100 scfm/each

SLUDGE DEWATERING

1. Sludge Drying Beds

Number of Beds: 18
Length: 110 feet
Width: 40 feet
Volume at 1 ft. Depth: (660, 000 gallons total)

LAND APPLICATION SITES

100 Acres (36 Usable Acres for Sludge Application)

City Owned Property

450 Acres

Private Farmland

