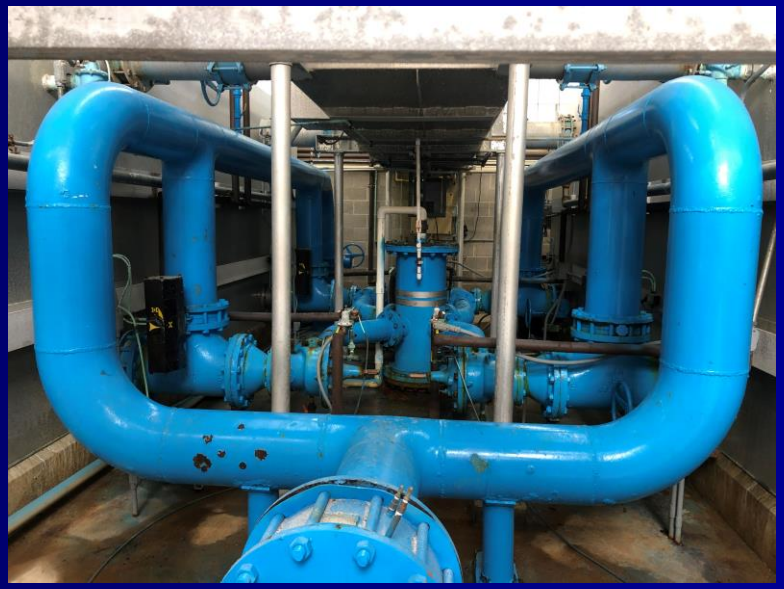
Nonpareil WTP Improvements



City of Sutherlin, Douglas County, Oregon
Project 146.54
City Council Meeting
January 11, 2021

Background

- Water Treatment Plant (WTP) Constructed in 1982
- City of Sutherlin's Primary WTP
- Design WTP Capacity (with Backwash) of 2.3 MGD
- Raw Water Pump Station and WTP Components
  - Raw Water Intake (Calapooya Creek) and Pump Station
  - Clarifier
  - Filters (Multimedia) with Backwash System
  - Clearwell and Treated Water Pumps
  - Sodium Hypochlorite Disinfection System
  - Chemical Feed Systems
  - Instrumentation Systems
  - Electrical Systems
  - Standby Generator
  - Backwash Ponds

WTP Deficiencies

- Raw Water Pumps and Control Panel / Intake Systems
  - Beyond service life
  - No Variable Frequency Drives (VFDs)
  - Inadequately sized compressor
- Raw Water Flow Meter and Static Mixer
  - Beyond service life
- Clarifier
  - Concrete structure not watertight
  - Coating deficiencies
  - Tube settlers beyond service life
  - Maintenance accessibility limitations

WTP Deficiencies

- Multimedia Filters
  - Antiquated piping and actuated valves
  - Inefficient backwash system
  - Backwash pump beyond service life and doesn't include VFD or flow meter
  - No filter-to-waste piping and actuated valves
  - Aluminum filter tank deficiencies
  - Obsolete instrumentation systems
  - Media at end of service life
- Treated Water Pumps
  - Beyond service life
  - No VFDs (cannot sequence with Raw Water Pump Station)

WTP Deficiencies

- Clearwell
  - Coating deficiencies
  - Obsolete liquid level sensor
- Backwash Basins
  - Maintenance intensive sludge removal process
- Chemical Feed Systems
  - Beyond service life
  - Not integrated into plant control system
  - No redundancy
- Potable Water System
  - Beyond service life
  - Labor intensive removal and replacement process (confined space entry requirements)

WTP Deficiencies

- Instrumentation Systems
  - Beyond service life
  - Obsolete technology
  - Not completely integrated into plant control system
- Controls and SCADA
  - Beyond service life
  - Outdated technology
- Standby / Emergency Generator
  - Beyond service life
  - Reliability concerns

WTP Improvements Scope

- Intake Improvements
- Raw Water Pump Station Improvements
- Raw Water Flow Meter and Static Mixer Improvements
- Clarifier Improvements
- Filter Improvements
- New Filter Piping and Electronic Actuated Valves
- New Air Scour System
- New Backwash Pump
- New Treated Water Pumps
- New Backwash Basins
- New Chemical Feed Systems
- New Streaming Current Monitor

WTP Improvements Scope

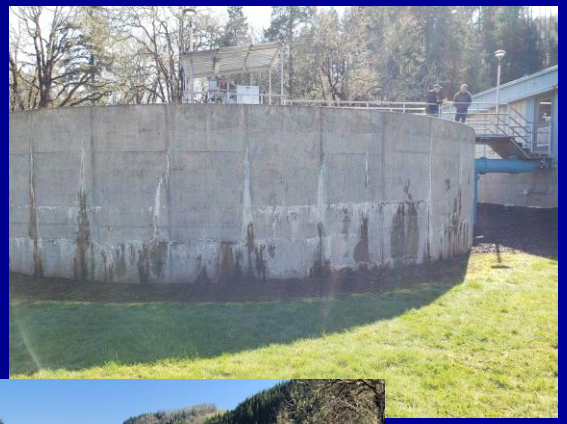
- New Potable Water Pump System
- New Fencing and Gate
- New Yard Piping
- Electrical Improvements
- New Electrical Room and Blower Canopy
- New Standby Generator
- New Radio Telemetry System
- New Motor Control Center (MCC)
- New Plant-Wide WTP Control Panel
- New SCADA System

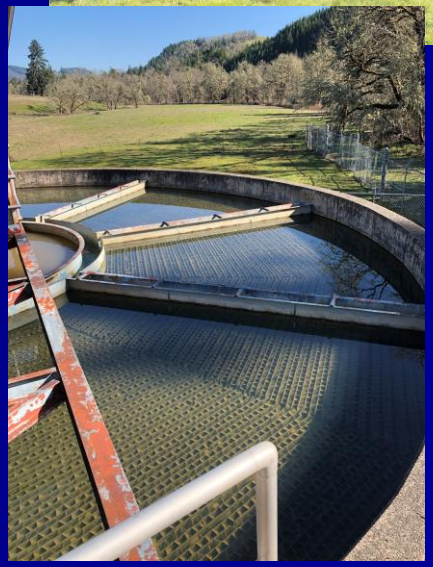
Raw Water Pump Station and Intake Improvements

- New Intake Compressor and Actuated Valve
- Raw Water Pump Station
  - New pumps and control panel
  - New piping and valves
  - New canopy
  - New radio telemetry system
  - New pressure transmitter
  - Electrical improvements
  - New fence and gate

Clarifier Improvements

- Clarifier
  - New tube settlers
  - Access walkway extension
  - Metal repairs
  - Lead paint removal and disposal
  - New coatings
  - Concrete tank pressure grouting
  - Launder improvements
  - New clarifier wasting valve (actuated) and flow meter





Raw Water Vault Improvements

- New Flow Meter
- New Static Mixer
- New Spare Chemical Feed Lines

Filter Improvements

- Filter Improvements
  - Aluminum filter tank repairs (outlets)
  - New underdrains
  - New media
  - New piping and appurtenances
  - New electronically actuated valves
  - New filter-to-waste piping and valves
  - New ultra-sonic level transducers
  - New air scour system (1 duty, 1 standby blower)
  - New backwash pump with VFD, pressure transmitter and flow meter
  - Demolition of existing surface wash system
  - Demolition of existing piping includes lead paint removal and disposal

Treated Water Pumps and Clearwell Improvements

- Treated Water Pumps and Clearwell
  - New treated water pumps (2 duty, 1 standby) with VFDs and pressure transmitter
  - New liquid level transducers (includes redundant unit)
  - New piping and valves
  - New treated water flow meter and access hatch
  - New coatings
  - New clear well piping
  - New clear well ladder

Potable Water Pump Improvements

- New Potable Water Pump
  - New pump
  - New redundant pump
  - New piping and valves
  - New backflow preventor
- New Pressure Tank
  - New pressure tank
  - New pressure switch
  - New piping and valves

Chemical Feed and Instrumentation Improvements

- Chemical Feed Systems
  - New duplex primary coagulant pump system
  - New duplex filter aid pump system
  - Integrated into plant wide control panel
  - New piping and appurtenances
  - Electrical improvements
- New Turbidimeters
  - Sample pumps and solenoid valves
  - Filter No. 1 – Filter No. 4 analyzers
  - Combined analyzer
- New Streaming Current Monitor

Backwash Basin Improvements

- New Backwash Basins
  - Two 150,000 gal basins
  - Concrete structure with handrails
  - Decant piping
  - Effluent piping and manholes

Controls, SCADA and Standby Power Improvements

- New Standby Generator
  - New 275 kW emergency generator
  - New automatic transfer switch
- New Electrical Room
  - New electrical room and canopy for air scour blowers
  - New MCC and plant-wide WTP control panel with touch screen HMI
  - New SCADA system
  - New desktop computer with cellular tablets
  - New reservoir telemetry control panel
  - New radio telemetry system for Raw Water Pump Station integration

WTP Site Improvements

- New Fencing and Gate
- New Yard Piping
- New Sidewalk
- New Gravel Surfacing

Construction Cost Estimate

- Volatile Market Conditions
  - Supply chain disruptions driving cost increases for materials (lumber, PVC, steel)
- Construction Cost Estimate
  - $3,200,000 to $3,900,000

Schedule

- Oregon Health Authority (OHA) Approval
  - December 2020
- Bid Process
  - January / February 2021
- Construction Schedule
  - Notice to proceed ~ March 2021
  - 18 month construction period
- WTP Shut-Down Periods
  - April 1, 2021 to June 30, 2021
  - March 1, 2022 to June 30, 2022
- Commission WTP by June 30, 2022

Questions and Comments