

Background & Historical Context

- Portland, OR is one of two U.S. cities not filtering surface-sourced drinking water
- New drinking water filtration facility under construction



While the facility is under construction:

- No discharge point for construction test water
- Clean and recycle construction test water

Influent Design Criteria:

- Flow rate: 1.0 MGD
- pH up to 13
- Total Suspended Solids (TSS) of 30 mg/L

Objectives

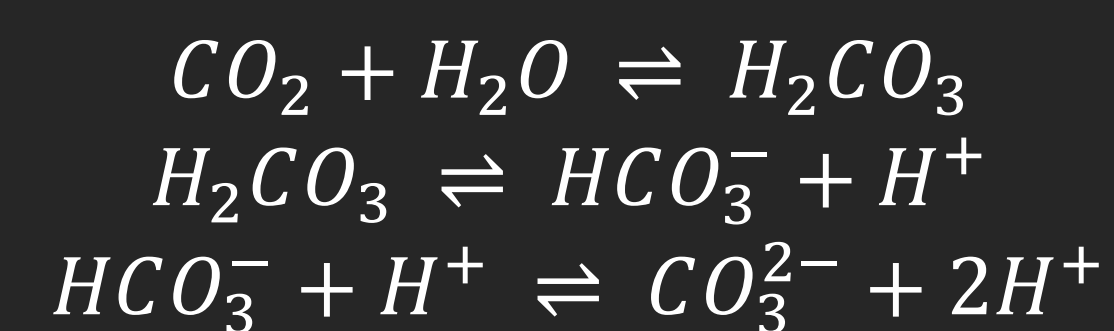
- Maximize test water reuse
- Design temporary test water active treatment system (ATS)
- Provide Piping and Instrumentation Diagrams (P&IDs) for each system section



Treatment Processes

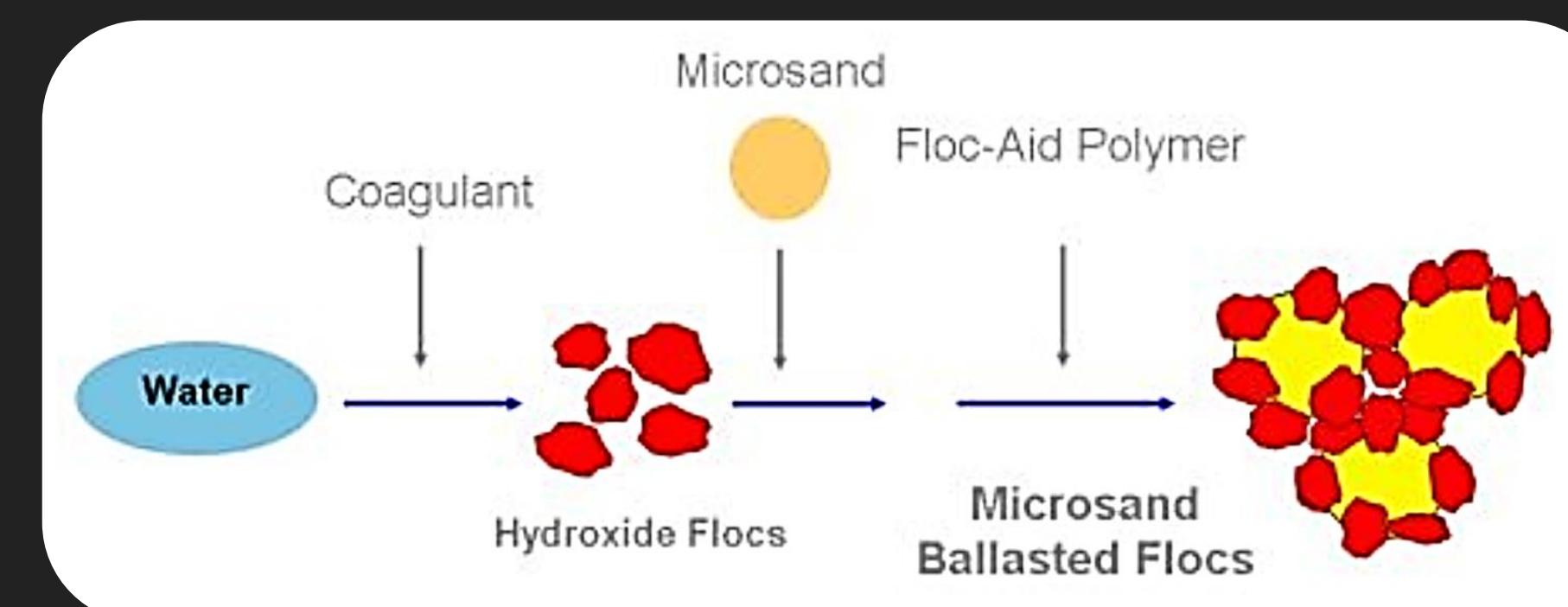
pH Neutralization

- 8'6" wide, 46'8" long, 10'0" tall CSTR Reactor
- 9" diameter circular fine-bubble diffusers
- Carbon dioxide (CO₂) gas acidification:



Solids Removal

- Actiflo® Package Flocculation & Sedimentation system
- Reduce Total Suspended Solids (TSS) to 5 mg/L
- Waste flowrate of 70 GPM, Concentration: ~250mg/L



Disinfection

Leaving the buffer system, two 6" diameter in-line mixers will be used in separate 6" diameter pipes to dose the water with Sodium Hypochlorite (NaOCl).



Hydraulics

Influent pump:

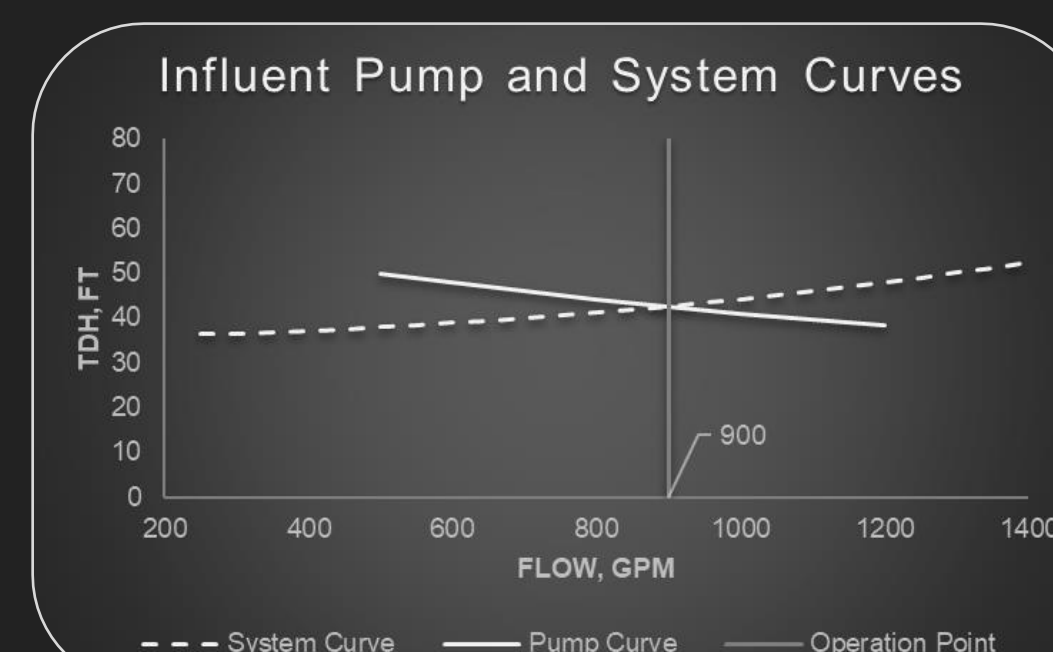
- 900 GPM, submersible, single stage

Booster pump:

- 700 GPM, VFD Motor

Buffering tank:

- 8'6" W, 46'8" L, 10'0" T
- Transition from gravity to pipe flow
- Augment with Check Valve



Process Flow Schematic

