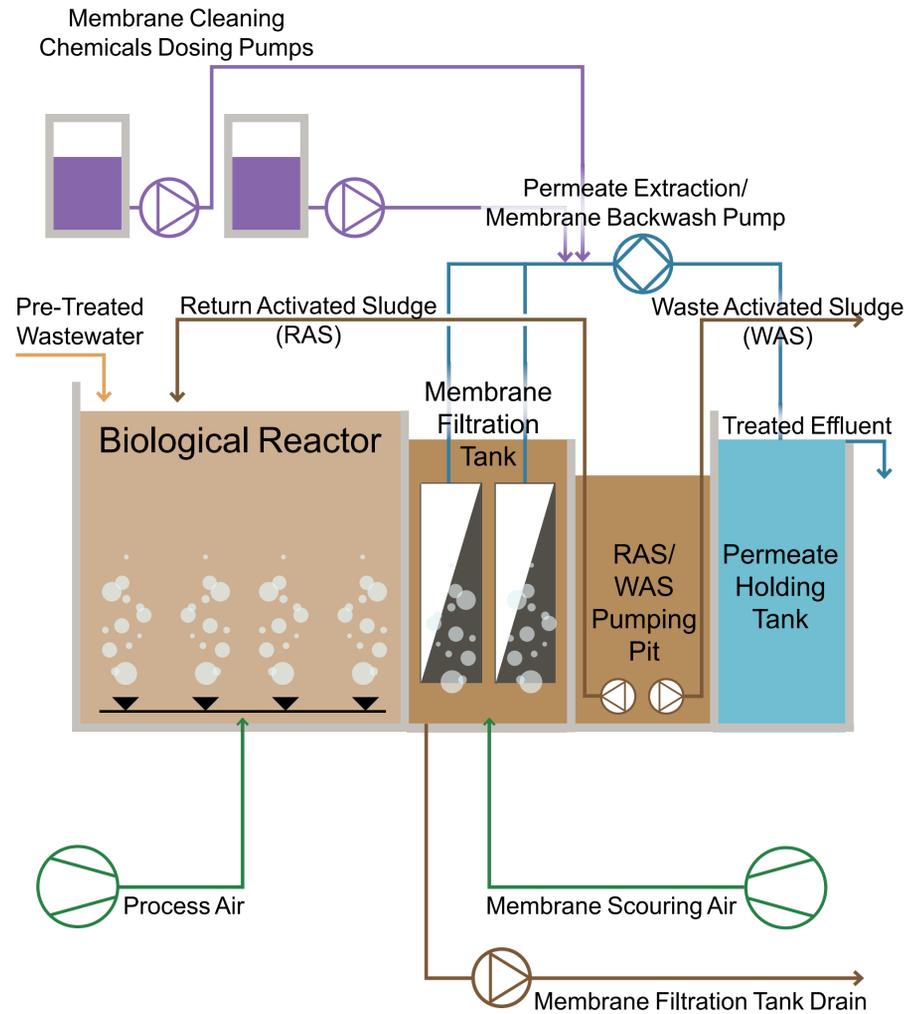


# WHAT IS THE PROPOSED SOLUTION?

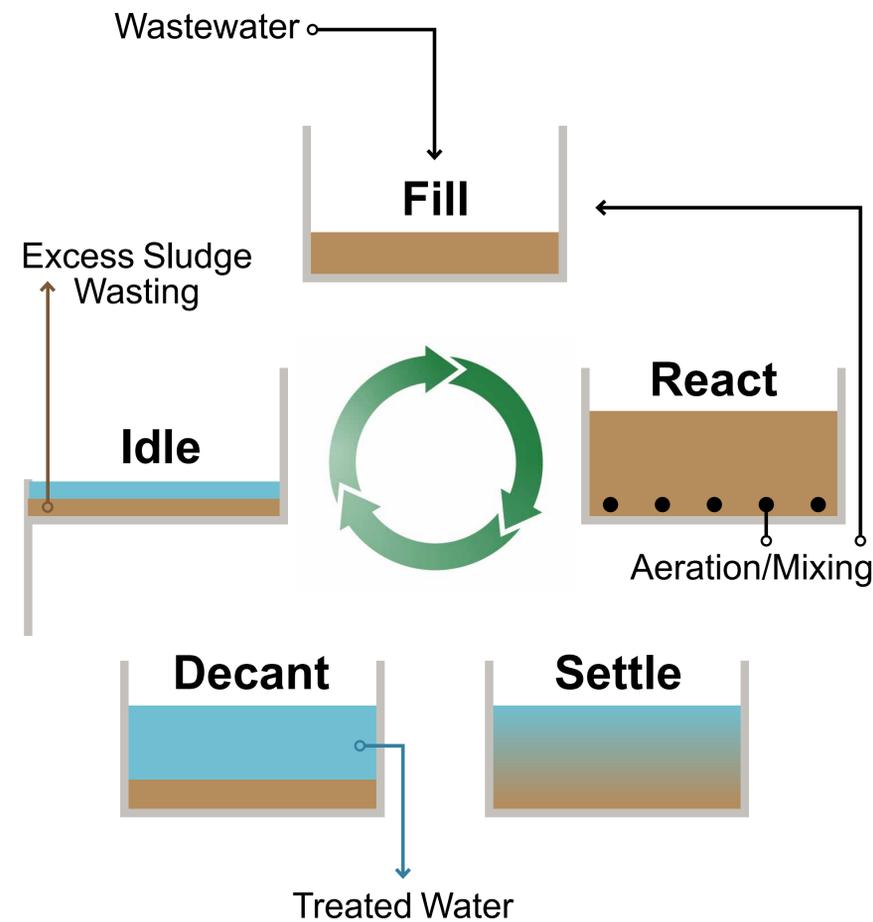
## Multiple Secondary Treatment Technologies were Investigated

### Membrane Bioreactor (MBR)



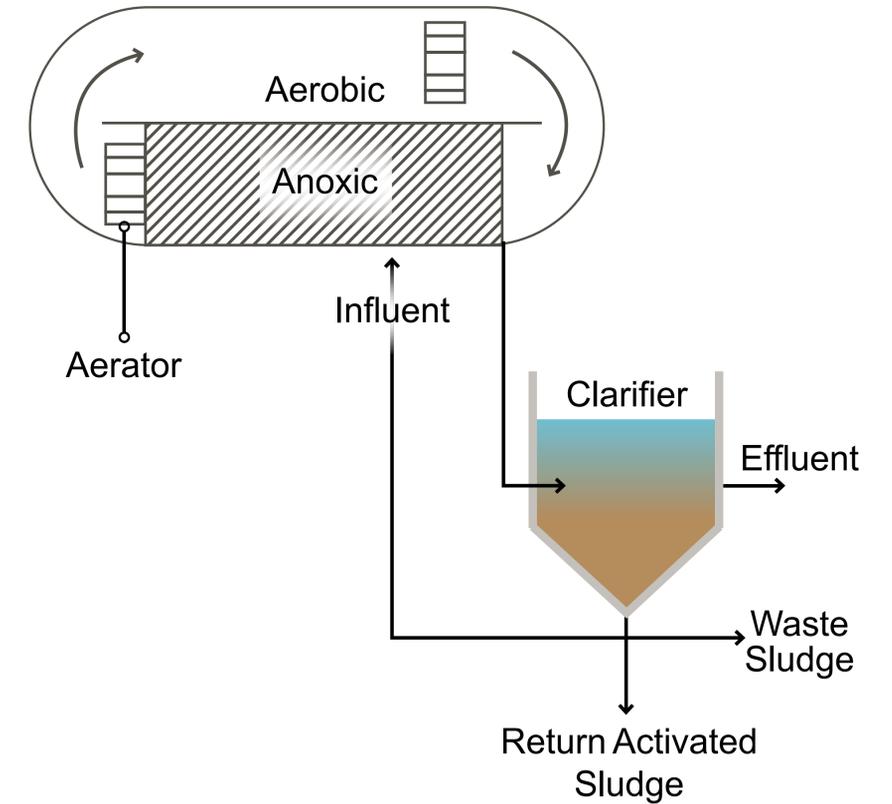
- + Excellent effluent quality & compact footprint
- Highest capital, energy & chemical costs
- Overly complex operations

### Sequencing Batch Reactor (SBR)



- + Utilizes a single basin for cost effective nutrient removal
- Effluent flow equalization necessary
- Requires more process equipment

### Oxidation Ditch



- + Less equipment to maintain
- + Simple operation for enhanced nutrient removal
- Higher capital costs

# WHAT IS THE PROPOSED SOLUTION?

## Selected Alternative **Oxidation Ditches**, **Secondary Clarifiers**, and **Inclined Ultraviolet (UV)** disinfection

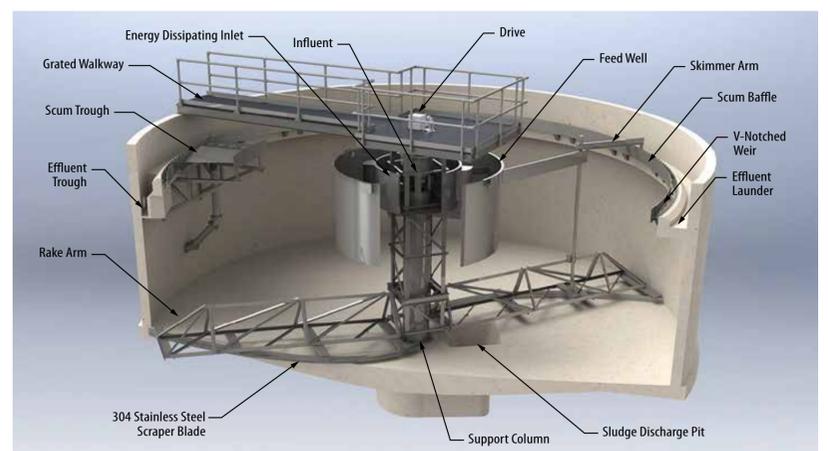
### Oxidation Ditches

Biological treatment process used to reduce BOD, nitrogen and some phosphorus using a combination of aeration and mixing.



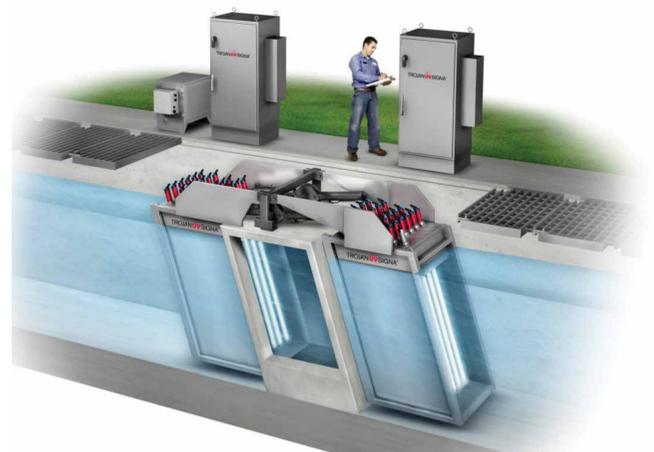
### Secondary Clarifiers

Circular structure that utilizes gravity to separate treated water from biological solids. Effluent from the surface flows to disinfection while settled solids are returned to the oxidation ditch or wasted to the solids handling facilities.



### UV Disinfection

A process similar to the existing disinfection system that uses inclined UV lamps to neutralize microorganisms. Safer and more environmentally friendly than ozone or chlorine.



## Phase 2 Secondary Treatment Upgrade will...



**Improve process redundancy and flexibility:** Two oxidation ditches, each sized for near-term flow, allows for one basin to be removed from service without compromising effluent quality.



**Maintain operational simplicity:** Minimal equipment, instrumentation, and monitoring parameters compared to other technologies.



**Provide for a sustainable solution that allows for phased implementation:** Concrete basins will last for 50+ years. More oxidation ditches and clarifiers can be added, as necessary.

Existing effluent filtration and solids handling will remain in service. **Improvements are expected to these facilities within the next 10 years.**