RECLAIMED WATER USE IN AGRICULTURE

Jacqueline Frawley, Paige Sedgwick, Toni Trinh

BACKGROUND

- Reclaim water is water that has been used and has gone through some level of treatment at a WWTP. It has higher levels of contaminants than potable water.

- Pasco WWTP releases secondary treated and UV disinfected wastewater into Columbia River
- Pasco WWTP has NPDES permit (National Pollutant Discharge Elimination System) with limits for BOD, TSS, fecal coliform bacteria, and pH.
- NPDES permit matches EPA recommended limits for reclaimed water use in restricted access irrigation

LOCAL BOUNTI

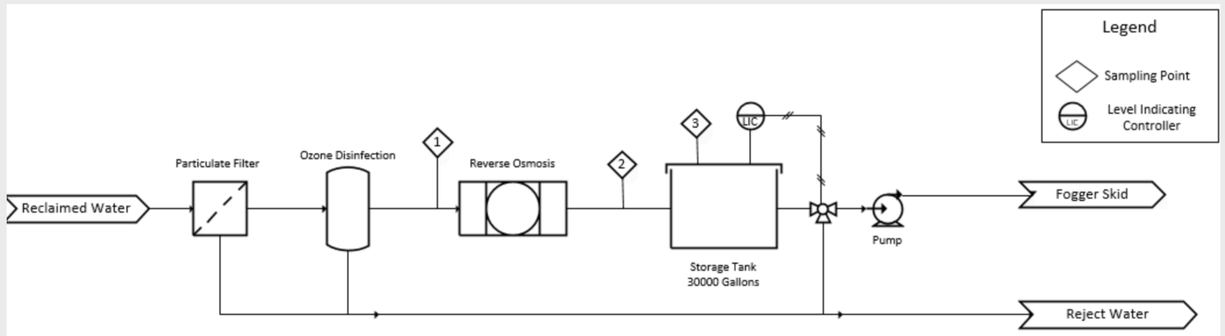
- Their processes use 90% less water than traditional land agriculture.
- 80% less food miles
- 3-5 times longer shelf life than traditional produce

Oregon State University

FINAL DESIGN

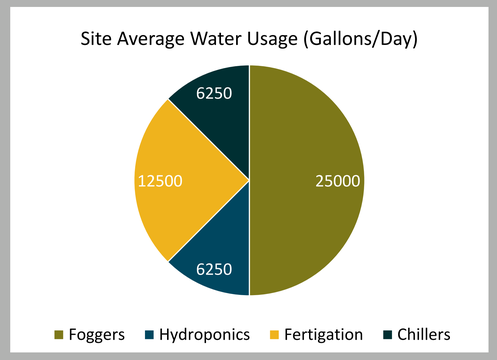
Proposed pipeline to pump reclaimed water from the local Wastewater Treatment facility to a holding tank.

The reclaimed water passes through various filters and the reverse osmosis system to ensure the water is clean and is within the water specifications. The water is then sent to a storage tank before it gets pumped to the fogger system.



- A pH and chlorine analyzer can automatically monitor water quality and alert operators when levels are out of spec.
- A hardness monitor will be used with an alarm will sound when the concentration becomes too high.
- Polyamide Thin Film Reverse Osmosis (RO) membranes will be used for their high rejection of pharmaceuticals most frequently found in reclaim water
- A 30,000 gallon storage tank will contain the treated water from the reverse osmosis system. The tank will be drained and cleaned every month.

FOGGER SYSTEM



Foggers spray water into the air to cool the climate by evaporative cooling. The temperature of the greenhouse is at the wet bulb temperature, and the system has the highest demand in the summer months. Changing the water source will save up to 25000 gallons of fresh water per day.

Parameter	Fogger Requirements	Pasco WWTP Effluent
Hardness	< 50 ppm $CaCO_3$	66.21 ppm $CaCO_3$
pH	6-7.2	6-9.0
Bacteria	none present	UV disinfected

Testing protocols are designed for hardness and pH levels due to deviations from fogger specifications. Chlorine levels will also be monitored to minimize bacterial growth and corrosion.

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