

Memorandum

TO: Sintana Vergara

FROM: Jacob Rivera

SUBJECT: Review of Arcata Waste Water Treatment Plant

DATE: October 4, 2018

Purpose:

The purpose of this memorandum is to review the Arcata Waste Water Treatment Plant (AWWTP) and its upcoming expansion and construction projects.

Discussion:

The AWWTP went into operation in 1986. Although it follows the same overall path in water treatment that most treatment plants follow, the actual processes and techniques utilized are different. In the secondary treatment phase, where the reduction of BOD takes place, the AWWTP uses oxidation ponds and treatment wetlands in place of a standard Activated Sludge system. This allows the plant to reduce its energy consumption as it doesn't have to pump oxygen into the waste. The natural processes of photosynthesis from algae and foliage oxygenate the water allowing the microbes to breakdown the waste. The water then moves through treatment wetlands where dead algae and excess large organic matter is filtered out by the dense root system. These roots also house more microbes that continue to reduce the BOD.

The water then goes through tertiary treatment and disinfection very similar to other plants before it is discharged into the Humboldt Bay.

Since the plant has been relatively the same since its opening in 1986, there are a few upgrades and changes that currently proposed and slated for construction in the coming months.

- 1) An upgrade to the oxidation ponds and marshes to reduce the concentration of Ammonia in order to meet more current EPA standards. They will be implementing systems to convert the Ammonia into Nitrate.
- 2) A redesign of the pre-treatment head works to be three feet higher and redesign the oxidation ditches in order to withstand sea level rise.
 - a. Engineers are currently in the final stages of design.
 - b. This is projected to take 2-3 years of construction.
- 3) Building a new disinfection plant to treat the water with UV instead of Chlorine. This would allow them to prevent contamination from excess Chlorine and any issue national security from holding large amounts of liquefied Chlorine gas.

These projects are estimated to cost well over \$40 million.

Conclusion:

The AWWTP has been able to operate effectively for the community of Arcata and reduce its environmental impact due to its use of natural processes of treatment. Even with it performing well, there are multiple avenues in which it is trying to improve and become more effective and efficient.