MEMORANDUM

TO: DR. EILEEN CASHMAN AND KYLE SIPES
FROM: ETHAN RIEBSOME
SUBJECT: REVIEW OF ARCATA WASTEWATER TREATMENT PLANT FIELD TRIP
DATE: SEPTEMBER 30, 2016

Purpose

The purpose of this memorandum is to provide information and a review of the ERE 115 field trip to the Arcata Wastewater Treatment Plant in Arcata, California, on September 30, 2016 at 2:30 p.m. Information about processes, problems, and proposed solutions are included in this memorandum.

Discussion

Attending the field trip, information about the many processes, problems, and proposed solutions of the plant were introduced from our guide who was an operator at the plant. As water enters the plant, it has a BOD5 of 200 mg/L. This number fluctuates as it goes through the processes of the plant.

The route of the field trip followed the typical process wastewater goes through. Beginning at the headworks, there were two pumps of Archimedes screws located. The tour guide stated that this type of pump system does not overload, instead, it only carries what it can. The primary process of the clarifier was seldom discussed, and no new information was gained besides that the BOD5 level of the water leaving this process is between 60 and 100 mg/L. The secondary process takes place at the oxidation ponds. This process seems to work efficiently with gates conducting water flow rate, that is operated by hand. Eventually this water then exits through the gates into the treatment wetlands, which is inefficient, and the chlorination processes, which it goes through multiple times. As the water exits the chlorination chamber and into the marsh, the BOD5 of the water is 30 mg/L.

One problem that was observed is the failure of many treatment wetlands. There is still research as to why this is happening, but previous observations led to the conclusion that the treatment wetlands were not built in a manner in order for the water from the oxidation ponds to spread evenly over the smaller wetlands. This has led to a struggle for the workers of the Arcata Wastewater Treatment Plant to achieve a monthly 30 mg/L due to the restrictions and water quality standards set upon the plant. Thankfully, research on a new design called the Blue Frog, who proposed that the product ends up reducing sludge, has allowed for some time of solution in the plant. There is little data from this plant that supports these claims.

The guide has stated how there is considerable maintenance that was needed on the plant, making it is near impossible to get ahead on the treatment plant, and its much necessary upkeep. According to the guide, this is due to the fact that there are not enough workers, or funds in order to fix these issues in a timely manner. Also, this accumulating need of maintenance is due to the fact that many wastewater treatment plants were built when the government was going through a process of enormous amounts of funds being dispersed which was in the mid to late 20th century.

Conclusions

The field trip to the Arcata Wastewater Treatment Plant Field Trip not only provided great insight to an operating Wastewater Treatment plant, it also brought awareness into the issues at hand with this specific plant; including the natural tertiary process, and the results of an aging plant with minimal funds. It also presented examples of proposed solutions, such as the Blue Frogs, or building an entirely new plant, and how these will solve the issues with the plant.