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## Arcata Wastewater Treatment Plant Lab Memo

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**To:** Doctor Cashman  
**From:** Sarah Parr  
**Subject:** Arcata Wastewater Treatment Plant Lab  
**Date:** 10/7/16

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### **Purpose:**

The purpose of this memo is to explain what we learned at the Arcata Marsh. Engineering 115 took a trip to the wastewater treatment plant on September 30<sup>th</sup> to learn about the process of using marshes as a form of wastewater treatment. Our tour was led by one of the operators at the plant, and she walked us through the different steps of the water treatment process.

### **Discussion:**

We started the tour at the headworks, where all the waste water enters the plant. Before taking the tour of the plant, we learned the capability of the plant. The plant, specifically the Arcameties screw pumps, can pump a total of 5 million gallons per day at full capacity. They have two pumps have a maximum capacity of 2.5 theoretically, but they keep the max at 2.3 million per pump. The incoming amount of water fluctuates with the seasons as well. During the summer, HSU is out and there is no rain fall so the intake dips down to 1.1 million gallons per day. When we were shown the pumps in the headworks, they only had one running at the time. Driving up, the first thing we saw was the digestion co-generation compost area, where the sludge is put in beds to dry and used by the city for compost throughout Arcata. These two parts make up the pre-treatment part of the process. In close proximity to both of these is the primary clarifier, which removes organic material and BOD.

We then moved on to the wetlands area, and caught a glimpse of the oxidation ponds. It was really wonderful to see so much wildlife at the pond, all because of a wastewater treatment plant. We learned about how the wetlands treat the contaminated water, by flowing through the root systems. One section of the wetlands had a new “toy” called the “Blue Frogs.” They are big floating circular machines that stir up any solids that have settled so they can be treated by the wetland environment.

This system is a great way to treat contaminated water and the benefits of the all-natural solution are amazing but there are potential issues with this type of treatment. Because it is a system run by nature, it cannot be controlled so easily. There is the possibility of the system failing or having a small flaw that makes it so they put slightly contaminated water into the Humboldt Bay. Another issue is if they take in too much contaminated water and the system cannot work fast enough. That being said, the benefits outweigh the negatives for this plant.

### **Conclusion:**

This field trip helped link all equations done on paper in the ENGR 115 classroom to real and successfully innovative thing happening in the real world. I liked to see a project done successfully and to completion that helps a relatively big population like the city or Arcata. This kind of in the field research is the kind of motivation to make me want to be an Environmental Resources Engineer.