MEMORANDUM

TO: INSTRUCTOR RADECSKY
FROM: ADRIENNE AGAWIN
SUBJECT: ARCATA WASTEWATER TREATMENT PLANT (AWTP) FIELD TRIP
DATE: APRIL 26, 2013

PURPOSE

The purpose of this trip was to further understand the way a wastewater treatment plant works and the steps involved in the wastewater treatment train.

DISCUSSION

During this trip we were given a tour of the City of Arcata's Wastewater Treatment Plant and Wildlife Sanctuary. The first step in the treatment train is pretreatment. This is where we began our tour; at the headworks. The city of Arcata's wastewater treatment plant is often praised for its lack of pump systems, it has three in total, and the headworks are where the first pump system is located. The headworks feature two Archimedes screw pumps which bring the influent up to the bar and grit screens to remove large objects and grit.

After pretreatment is primary treatment. The Arcata wastewater treatment plant features a primary clarifier. In the primary clarifier the solids are able to settle to the bottom and the cleaner water flows over the top onto the weirs. The clarifier also features a sweeping arm that collects oil accumulating on the surface. At the plant they also have had to install spikes on the primary clarifier due to a cease and desist demand to stop contaminating the local seagulls by allowing them to feed from the clarifier. After this the sludge is sent to the first anaerobic digester where it is heated. The first digester uses two types of bacteria (acid and methane producing) to decompose more of the solids. Once the first digester gets full the bio-solids are transferred into the second digester, which is not heated, but allows the sludge to settle and thicken even more. Then the sludge is drained into the sludge beds where it is aerated and heated to kill pathogens. The drying period lasts six months to one year and then it is composted. The product of this is class A compost, which the EPA does not require a cradle to grave report; it can be used as soil amendment. The treatment plant has an agreement with Fish &Wildlife for the use of their compost.

The third step is the secondary treatment. The Arcata plant features oxidation ponds that are five to six feet deep. The water then flows through the treatment and enhancement wetlands which can act like tertiary treatment. They feature hard stem bulrush and cattails. These plants take up the nitrogen and phosphorous during the growing season and release them again during the fall. Finally the water can be sent to disinfection. The Arcata treatment plant utilizes chlorine gas. After the water is chlorinated it is sent through the enhancement wetlands a second time, then to dechlorination, and finally discharged to the Humboldt Bay.

CONCLUSION

In conclusion a few of the interesting things I learned were that the AWTP is protected by homeland security because of the voluminous amount of chlorine gas that is onsite, HSU students increase the flow by 20-30% when they return from summer break, and the way that Archimedes screws work.