
INTEROFFICE MEMORANDUM

TO: DR. EILEEN CASHMAN, KYLE SIPES
FROM: BELLE CIOTTI
SUBJECT: ARCATA WASTEWATER TREATMENT PLANT FIELD TRIP
DATE: OCTOBER 7, 2016

PURPOSE

The purpose of this memo is to provide a summary of the ERE 115 lab field trip to Arcata's wastewater treatment plant (AWWTP) on September, 30 2016. A discussion of how the plant is designed and functions as well design advantages and the disadvantages are included.

DISCUSSION

The treatment plant is located on the south-east side of Arcata about a mile from the town center and adjacent to Humboldt Bay. The wastewater plant is typical with respect to pretreatment and primary treatment of wastewater. The pretreatment is the smelly part and the primary treatment is where most of the sludge that the city has to dispose of, or recycle, is created as a byproduct.

When it comes to secondary treatment of wastewater, the city of Arcata is unique in being a pioneer of using a more natural treatment by using wetlands as opposed to secondary clarifiers that result in more sludge buildup. In the treatment wetlands bacteria is helping to digest the sludge in order to get cleaner water. One of the overwhelming aspects to this type of treatment is the amount of space needed to clarify the water, it is almost surreal how much space is needed to clean all the wastewater of Arcata. Other disadvantages include the amount of time it takes to treat the water and the fact that when working with nature processes are less controlled and exact, as opposed to a more traditionally designed and engineered plant. The advantages of using treatment wetlands were evident in the abundance of habitat created and the actual beauty of the plant in the wetlands.

One point made by our very knowledgeable guide, Thea Sevelson, was that the treatment wetlands are not functioning as well as they were when first put into use. This is because sludge is not being efficiently broken down anymore and is accumulating at the bottom of the ponds. The most recent modification to AWWTP is a new technology called a Blue Frog, which is a circulator that makes sludge more soluble in water again. This modification is trying to remediate the problem of sludge buildup in the wetlands.

After secondary treatment the AWWTP uses a typical disinfection process which utilizes a design that creates more surface area to get this job done most efficiently. After this treatment the waste water at the plant heads out to a tertiary treatment that, in Arcata's case, are enhancement wetlands. These wetlands are known locally as the Arcata marsh and have the benefit of providing habitat for animals and recreation for people. This is a major benefit of AWWTP.

The enhancement wetlands and the chlorination process create a loop, after this loop has been completed and the water is dechlorinated, it exits the plant into the bay as treated wastewater. This water is within the legal BOD limits of monthly regulations, if it isn't there is a monetary fine.

CONCLUSION

The field trip provided a better understanding and visualization of how a wastewater treatment plant works and how it is designed. Arcata is lucky to have a natural plant to study, recreate at and to be proud of.