Memorandum

TO: EILEEN CASHMAN, MARGARET LANG

FROM: MADISON WHITLOW-HEWETT

SUBJECT: REVIEW OF THE ARCATA WASTEWATER TREATMENT PLANT FIELD TRIP

DATE: OCTOBER 6, 2016

Purpose:

The purpose of this memorandum is to provide a review of the Arcata Wastewater Treatment Plant field trip taken on September 30, 2016 at 9 a.m. in Arcata, CA. Future modifications to the plant, functionality of particular areas of the plant, and water quality standards are included.

Discussion:

A handout was provided that included points of discussion/specific questions and a figure of a typical 'treatment train' the wastewater plant utilizes. Our tour was guided by one of the treatment plant's operators, they focused the discussion primarily on how the plant should be operating, and upgrades to the system that will hopefully be funded within the next year.

The tour started at the headworks by observing how the archimedes screw pumps deliver effluent through the bar screens that filter out large waste products before entering the grit chamber. Per day the plant receives around 1.1 million gallons of effluent, each screw pump is designed to accommodate a 2.3 million gallon capacity flow.

A large portion of the discussion focused on the anaerobic digester at the treatment plant and the biological processes resulting from mesophilic acid and methane forming bacteria that digest the sludge pumped into their ecosystem from the grit chamber and primary clarifier.

We walked a short distance to the treatment wetlands, and were able to see first hand where the water from the primary clarifier flows to. Since the wetlands were created so many years ago, a big issue that the treatment plant is currently dealing with is the overgrowth buoyancy allowing bacteria to flow beneath unfiltered. To prevent the bacteria from filtering through into the other ponds the ecosystems of the wetlands need to be rebuilt, the plant engineers are working on regrowth tactics that will hopefully result in not having to completely rip up the established marsh growth.

Our guide stated that when the wastewater first enters the headworks it has a BOD of ~250 mg/L and a TSS of ~300 mg/L, however once the water flows through primary treatment those original BOD and TSS values decrease by as much as 60%. BOD and TSS values measured at the output point of the plant are around 30 mg/L for both BOD and TSS, both values are within the legal range of 60-30 mg/L for BOD and 30 mg/L TSS.

Conclusion:

Although the plant is currently operating within legal limits, for the treatment plant to continue meeting these limits of water quality, there will have to be upgrades to the system, Ecosystems will have to be rebuilt, and the transition from chlorine disinfection to UV may provide the future success of the Arcata Wastewater Treatment Plant.