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## MEMORANDUM

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**TO:** KRISTEN RADESKY  
**FROM:** SHANNON MCHATTON  
**SUBJECT:** ARCATA WASTEWATER TREATMENT PLANT FIELD TRIP  
**DATE:** 5/9/2013

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### **Purpose**

The purpose of the class trip to Arcata's wastewater treatment plant was to learn more about the way wastewater treatment plants are operated. The tour was given by one of the operators of the plant and the facilities and equipment located on the site were explained. The class was able to explore the Arcata Marsh and Wildlife Sanctuary that used as a way to treat Arcata's wastewater.

### **Discussion**

In the tour to the wastewater treatment plant our class was able to see the ways Arcata's wastewater is treated on site. We got a first-hand look at many of the different operations that treat our water including the primary clarifier, oxidation ponds, and treatment wetlands. We saw raw sewage make its way up the two Archimedes screw pumps (Headworks operation) that separate many solids in the water, and then see the wastewater make its way to the primary clarifier. The volume of wastewater received daily by the plant changes with the seasons. In the summer approximately one million gallons enters the plant, three to four million in the winter months, and around two million in the fall season. Once the waste reaches the primary clarifier even more of the solids are separated from the water by settling down in the bottom of the clarifier, while the floating debris is skimmed off the top of the surface by a slowly rotating mechanical arm. Much of the waste is sludge composed mostly of the solids. The activated sludge is pumped into a digester where it undergoes anaerobic digestion. There are two digesters on site, just in case there is too much sludge to treat in one. Once the sludge undergoes the digestion process it is released into sludge beds, where it can stay for up to a year before it is ready for compost. Meanwhile the wastewater that is now mostly free of solids is pumped into the oxidation ponds where small solids settle to the bottom of the ponds and broken down by bacteria while the water travels through. Finally the water reaches the treatment wetlands where nutrients such as nitrogen and phosphorus are removed. An interesting fact was to learn how greatly the levels of nitrogen have increased over the years due to hydroponic farming. The plant is responsible for meeting water quality standards, meeting a secondary level of 30 BOD. Anything below this is not acceptable. In fact a new oxidation pond was created due to an older one failing to treat the water being pumped through properly. The wastewater was travelling too quickly through the pond, only taking a couple of hours where it should take over 24 hours. Therefore a new pond was created with plants growing in the middle of the pond to help slow down the process to an appropriate amount of time for treatment. The water then goes through chlorination and into enhancement wetlands.

### **Conclusion**

The tour of the wastewater plant was a way to see first-hand wastewater being treated step by step. It furthered my understanding of the treatment of wastewater, the equipment and facilities that are included in that process. I also enjoyed seeing the marshes and the wildlife sanctuary.