



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Rose Leopold; Ella Madsen	Project Number J0809
Project Title Will Wetlands Work? Will Building a Wetland in the Soquel Creek/Capitola Beach Reduce E. coli and Coliform Levels?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of our project is to determine whether building a subsurface constructed flow wetland in the Soquel Creek/Capitola Beach will reduce the e.coli and total coliform levels that flow into the ocean. Our hypothesis is that the e.coli and total coliform levels will decrease because certain plants and gravel will filter out the bacteria.</p> <p>Methods/Materials First we built a 60 inch x 8 inch x 9 inch wetland out of redwood, black plastic lining, River Pea Pebbles, common bulrush plants, monkey flowers, and horsetail plants. We built an incubator out of a Styrofoam cooler, a light bulb, a cord, and a thermometer. For each sample we tested five gallons of Soquel Creek water (strictly to the state water quality laws) using many materials such as: sterile Whirl-Packs, pipettes, sterilized jars, distilled water, re-agent sets, sterile Quanti-Trays, an iron, a black/UV light, and bio-hazard bags. We used this process to test six samples (IN and OUT) of the Soquel Creek water thoroughly before and two days after it entered our wetland.</p> <p>Results For five out of six tests the e.coli levels decreased. The percent of the five tests that decreased ranged from 13% to 91%. The total coliform bacteria decreased four out of six times. The percent of the four that decreased ranged from 49% to 93%. The two tests that increased for total coliform went up possibly because the gravel was not pre-washed. Overall, the e.coli bacteria decreased by an average of 48% and the total coliform levels decreased by an average of 12.4%.</p> <p>Conclusions/Discussion After concluding our tests, we discovered that building a subsurface constructed flow wetland in the Soquel Creek/Capitola Beach would most likely decrease e.coli and total coliform levels flowing into the ocean. We proved our hypothesis correct in saying that the bacteria levels will reduce.</p>	
Summary Statement The purpose of our project was to determine whether a subsurface constructed flow wetland would decrease e.coli and total coliform levels in the Soquel Creek.	
Help Received Surfrider Foundation donated supplies and taught how to test water; Parents drove us to the Soquel Creek/Capitola Beach and gave general support; City Councilman explained wetland proposal; Adult Friend taught about wetlands	