



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Sabrina M. Lui</b>	<b>Project Number</b> <b>J1212</b>
<b>Project Title</b> <b>Palo Alto Baylands Water Analysis</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> This project's general purpose is to make those who are ignorant on our failing environment aware of it so that we can take action. I evaluated the safety of a local animal preserve and determined the causes of its perils.</p> <p><b>Methods/Materials</b> In order to attain this information, I measured the water quality at different times (after rain, during holidays, etc.) and different locations (a richly populated duck pond, the effluent from a neighboring water treatment plant, etc.) I ordered a test kit online, which measured pH, ammonia, nitrate, and dissolved oxygen by color-reactant chemical tablets. I then began to measure on 10/4/08 in three different locations: a duck pond, a marsh, and the nearby Regional Water Quality Control Plant's (RWQCP) effluent, which pumps into the Baylands. I collected 108 samples over five months, ending on 3/11/09. Additionally, I researched all the parameters thoroughly in order to interpret results.</p> <p><b>Results</b> The most crucial findings of my project were that the pH of the Baylands becomes dangerously alkaline (about 9-10) during rain, because the treatment effluent accidentally turns severely diluted, and that nitrate and ammonia, two hazardous chemicals which provoke illnesses and fatality in fish, increased approximately 90% in the duck pond during the Christmas-New Year season and in the middles of autumn and spring. This, I found (after consulting the RWQCP lab chemists), was because of an increased amount of people feeding ducks at this time. Ammonia and nitrate entered the pond by way of left-over human food decaying and excreted feed.</p> <p><b>Conclusions/Discussion</b> As the most significant points I found in my research, people feeding the ducks should not be condoned, and the treatment plant, with whom I will work further, should take more precautions when pumping effluent into the Baylands. We can take the first step to a friendlier environment by not putting human food into natural aquatic habitats. As a follow-up, I plan to work (hopefully with the Palo Alto Pollution Prevention) on signs and other community outreach tools to notify duck-pond visitors of the dangers of feeding ducks.</p>	
<b>Summary Statement</b> This project's purpose is to evaluate the safety of the Palo Alto Baylands Preserve for animals and determine the causes of its perils.	
<b>Help Received</b> Mother drove me to collection sites; measured samples from Regional Water Quality Control Plant's effluent (which a lab chemist collected for me).	