



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Alexandra L. Heiskell</b>	<b>Project Number</b> <b>J0914</b>
<b>Project Title</b> <b>Water Pollution Outbreak?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My objective was to find out about Nonpoint Source Pollution and test storm water in the City of Carmel, California. After meeting with the City DPW I selected 4 sites to test at. My goal was to find out whether people in my watershed are causing pollution to enter Monterey Bay. <b>Methods/Materials</b> I tested storm drain water using a water and air thermometer, chemical test strips, pH test strips, and a turbidity tube. After meeting with Dr. Holly Price and Bridget Hoover of the Monterey Bay National Marine Sanctuary, I followed their suggestion to use test strips instead of liquid reagents since they need to be captured so they don't cause pollution. I tested nitrates, nitrites, hardness, alkalinity, pH, and turbidity. I used the Sanctuary's test equipment. <b>Results</b> In my testing I found some minor variation in my data. I lost one test site due to reconstruction by the City. I wasn't able to take readings for most of December due to the extremely large storms which shut down access to the beach where three of my sites were. Rainfall data for Carmel is plotted on my display board which came from the Monterey Herald. Air temperature varied due to the time of day. Water temperature showed about a 10 degree C variation. There was no reading for nitrates or nitrites which shows no sign of animal waste. Alkalinity readings were consistent only at site 2. All my pH readings were between 7 and 8. My total hardness(GH) ranged between 150 to 300 ppm showing a lot of minerals and suspended solids in the water keeping the pH above 7. <b>Conclusions/Discussion</b> I did not see a significant pollution problem but testing using reagents in the field or taking samples to a lab would be required to verify that. In my watershed only 5% of the storm water enters the ocean thru their pipelines, but 95% comes from the Carmel River. Testing at several sites at the river along with the sites in Carmel would give better data to base a pollution decision. I found that the best way to prevent pollution is public education so people stop doing the activities that directly or indirectly pollute our rivers and bay. If I continued this project I would get a LaMotte Storm Drain test kit and test my three sites and add sites above the lagoon on the Carmel River. I would also volunteer to take samples at first flush in my watershed. This data could then be compared with what I found in the field.	
<b>Summary Statement</b> Exploring nonpoint source pollution coming from the City of Carmel into Carmel Bay	
<b>Help Received</b> My mother drove me to the test sites and helped me record the data. Jim Cullen, Carmel DPW gave me information on the storm drain system. Dr. Holly Price and Bridget Hoover of the Monterey Bay National Marine Sanctuary gave me advice and lent me test equipment.	