



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Rachel E. Eglash	Project Number J0910
Project Title Effect of Rainfall on Dissolved Oxygen in the Palo Alto Flood Control Basin	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals A large number of fish died suddenly in the Palo Alto Flood Control Basin in Fall 2002. My objective was to determine if this fish die-off was caused by low dissolved oxygen (DO) levels triggered by the first heavy rainfall of the season.</p> <p>Methods/Materials During Fall 2004, I made field measurements of the DO concentration in creeks and the Flood Basin. I used a Dissolved Oxygen Meter to make measurements. Then, using website data, I analyzed the historic rainfall patterns for the beginning of the rainy seasons in 2002-2004. Finally, I collected water from the Flood Basin and measured the effect of introducing decomposing plant matter on DO. I measured baseline DO in four aquariums, added decomposing leaves to two of them, and continued to measure DO.</p> <p>Results In my field measurements of DO, the flood basin readings were always lower than the creek readings. When I studied rainfall data from 2004 I noticed that the DO always went up after a rainfall, then it came down, and then it stabilized. In 2002 there was a huge rainfall followed by no rain for several days, unlike 2003 and 2004 when there were more frequent lighter rainfalls. In my aquarium readings, when I added the leaves to two aquariums the DO went down a lot and after a few days the aquariums started to stabilize.</p> <p>Conclusions/Discussion In my field measurements, organic matter and pollutants were flushed down to the Flood Basin where they decomposed and created low DO. The DO went up right after a rainfall because fresh water, which was high in DO, was flushed into the Flood Basin. Then the DO went down because of decomposition of organic matter and pollutants. In 2002, the first heavy rain flushed a lot of organic matter and pollutants into the creek creating low DO. Then with no rain for several days the DO stayed low, killing many fish. In my aquarium readings I learned that decomposing organic matter can cause low DO.</p>	
Summary Statement Organic matter and pollutants being flushed down into the Flood Basin can cause low DO, which in the case of a heavy rainfall followed by no rain can cause a fish die-off.	
Help Received Karin North and Stephanie Hughes at The City of Palo Alto Environmental Compliance Group told me about the fish die-off in Fall 2002 and showed me how to use a Dissolved Oxygen Meter. My parents drove me around to creeks and the Flood Basin to make DO readings.	