



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Rosalind N. Cox	Project Number S0804
Project Title A Three Year Study of the Teichert Ponds: Stratification of Pollutants in the Bottom Sediments	
Abstract Objectives/Goals This is my third year studying the Teichert Ponds, the storm water runoff holding ponds for Chico. I tested for the possibility that the pollutants were collecting in the upper strata of the pond sediment due to the fact that there has been more urban runoff containing more pollutants, due to recent development of the surrounding area. Methods/Materials I tested the sediment of the Teichert Ponds. I also tested the water as a baseline. I collected sediment at two sites in the ponds. I developed a core sampling instrument using PVC pipe. I pushed it into the sediment at Sites 1 and 2, collecting core samples of 9 and 19 inches, respectively. I cut the core samples into two inch segments. I considered the deepest two inch segments as the controls as this is the sediment closest to the area beneath the original excavation depth. I ran tests on the water and sediment samples for Chromium, Copper, Dissolved Oxygen, Iron, Nitrate, Phosphate, and Sulfide. Results I found pollutants in the bottom sediments and the water. In the sediments from Site 1, I found Iron in concentrations from 0.5 ppm to 5.0 ppm at depths from 1 inch to 9 inches. In the sediments from Site 2, I found two pollutants, Iron and Sulfide. Iron was found in concentrations of 1.0 ppm to 10.0 ppm at depths from 1 inch to 19 inches. I found Sulfide at concentrations of 0.1 ppm at 1 to 3 inches. In the water, I found Nitrate and Phosphate in the same concentrations of 3 ppm and 0.1 ppm respectively at both sites. Although not a pollutant, I also tested the Dissolved Oxygen, 3 ppm. The pH was 7.5 and the water temperature was 59 degrees Fahrenheit. Conclusions/Discussion If one looks at the Iron concentrations, which increase as the core samples get deeper, seems that there are more pollutants in the deeper sediments. The Iron found in increasing concentrations in deeper strata may be naturally occurring. I did not find other heavy metals in the sediments. The sulfides in the sample may have occurred as a result of bacterial action on the organic matter in the ponds under anaerobic conditions (LaMotte, 2001), which is possibly why I found Sulfides only in the upper layers, the same strata where I found decaying organic matter. Using my testing techniques, I did not find that there was a large accumulation of pollutants in the sediments of the Teichert Ponds. Rather, it seems as if there is significant pollution in the water.	
Summary Statement This study focuses on whether or not the sediment in the upper strata of the Teichert Ponds' bottom contains more pollutants than the lower layers due to the fact that there has been more urban runoff in recent years.	
Help Received My dad drove and accompanied me to the ponds and helped me set up my backboard.	