



# CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

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| <b>Name(s)</b><br><b>Maia Moran</b>   | <b>Project Number</b><br><b>J1218</b> |
| <b>Project Title</b><br><b>The San Diego River and the Factors Affecting Its Water Quality</b>  |                                       |
| <p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b><br/>The objective is to determine the presence of Escherichia coli and coliform in the San Diego River and the factors that influence the levels of contamination. The factors studied include water temperature, air temperature, precipitation, and rural versus urban settings.</p> <p><b>Methods/Materials</b><br/>Four sites along the San Diego River were selected for water sampling. Water samples were collected at each site on 15 different days between August 2009 and April 2010. Air and water temperatures were measured, and precipitation within the past 48 hours and wind conditions were noted. The Idexx QuantiTray method was used to determine the approximate level of contamination from coliform and E. coli. The results of the bacterial tests were then calculated using the Most Probable Number (MPN) index for comparison.</p> <p><b>Results</b><br/>The results of this study showed that there is a stable presence of E. coli and coliform in the San Diego River. The E. coli results showed evidence of a correlation between the location (rural vs. urban) and the bacterial count. Rain also impacted the E. coli bacterial levels of the water. There was no apparent association between the water or air temperatures and the bacterial counts. Coliform results did not show any association overall with any of the hypothesized factors.</p> <p><b>Conclusions/Discussion</b><br/>The E. coli data supported the hypothesis that the bacterial count would be different based on geographic location, as well as precipitation. However, the data did not support the hypothesis that the bacterial count would fluctuate with the air or water temperatures. Coliform did not appear to be affected by any of the hypothesized factors. In this study, the most rural location, El Capitan Reservoir, reported the lowest bacteria levels overall of the four sites.</p> |                                       |
| <b>Summary Statement</b><br>This project investigates whether there is an association between various environmental factors and the bacterial counts in water samples from the San Diego River.   |                                       |
| <b>Help Received</b><br>Used equipment at Imperial County Public Health Department Laboratory under the supervision of Lab Director Holly Maag; Mother provided transportation to sampling sites and lab.   |                                       |