



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

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**Project Title**  
**Riverside, How Clean Are Your Creeks? Field Analysis of the Impact of Urban Runoff on Water Quality of Sycamore Creek**

**Abstract**

**Objectives/Goals**  
THIS PROJECT WAS CONDUCTED TO DETERMINE THE IMPACT THAT URBANIZATION HAS ON SYCAMORE CANYON CREEK IN THE CITY OF RIVERSIDE. IT WAS PREDICTED THAT THE CONCENTRATIONS OF ALKALINITY, CHLORIDE, DISSOLVED OXYGEN, ELECTRICAL CONDUCTIVITY, HARDNESS, NITRATE, pH, PHOSPHATE, SALINITY, AND TOTAL DISSOLVED SOLIDS (TDS) WOULD INCREASE IN DISTANCE THROUGH THE CITY.

**Methods/Materials**  
IN ORDER TO CONDUCT THIS EXPERIMENT, TITRATION KITS, VACUETTE KITS, AND ELECTRODE METERS WERE USED. THE TITRATION KITS WERE USED TO DETERMINE ALKALINITY, CHLORIDE, AND SALINITY LEVELS. DISSOLVED OXYGEN, HARDNESS, NITRATE, AND PHOSPHATE LEVELS WERE FOUND VIA VACUETTE KITS. FINALLY, CONDUCTIVITY, pH, AND TDS WERE GATHERED BY THE ELECTRODE METERS. FOUR LOCATIONS ALONG SYCAMORE CANYON CREEK WERE USED AS TESTING SITES FROM WHICH WATER SAMPLES WERE COLLECTED. THESE SAMPLES WERE THEN TESTED AT HOME.

**Results**  
FOR MOST OF THE ELEMENTS TESTED, THE TRENDS SHOWED THAT THE LEVELS INCREASED AS THE CREEK PROGRESSED DOWNSTREAM; HOWEVER, THE DATA OF SITE 4, INSIDE RIVERSIDE COMMUNITY COLLEGE, BROKE THE INCREASING TREND. PHOSPHATES, NITRATES, TDS, CONDUCTIVITY, AND ALKALINITY FOLLOWED THIS PATTERN. DISSOLVED OXYGEN, CHLORIDE, PH, AND HARDNESS, DID NOT FOLLOW A UNIQUE DEVELOPMENT AS THE CREEK PROGRESSED THROUGH RIVERSIDE. SALINITY WAS THE ONLY ELEMENT THAT FOLLOWED THE HYPOTHESIS, CONSTANTLY INCREASING FROM SITE TO SITE.

**Conclusions/Discussion**  
BASED ON THE AVERAGE DATA FOR EACH OF THE COMPONENTS, THE HYPOTHESIS WAS DISPROVEN FOR ALL THE ELEMENTS TESTED, EXCEPT SALINITY. FOR THE MAJORITY OF THE WATER COMPONENTS, THERE WAS A LINEAR INCREASE FROM SITE 1 TO SITE 3; NONETHELESS, THE LEVEL SEEMED TO DROP AT SITE 4. RUNOFF FROM DIFFERENT SOURCES MIGHT HAVE DILUTED THE CONCENTRATIONS OF THE ELEMENTS, CAUSING THE DROP AT SITE 4. SOME HUMAN ERRORS MAY HAVE CAUSED FLUCTUATIONS IN THE

**Summary Statement**  
THIS PROJECT WAS DESIGNED TO DETERMINE THE IMPACT OF URBANIZATION ON THE WATER QUALITY OF SYCAMORE CANYON CREEK IN RIVERSIDE.

**Help Received**  
GRANDMOTHER PROOFREAD THE REPORT FOR GRAMMATICAL ERRORS; PARENTS DROVE US TO COLLECT SAMPLES EVERY MONTH; SCIENCE FAIR ADVISOR SUPPLIED THE TEST KITS.