



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Jonathan M. Williams	Project Number S1619
Project Title Effect of Water Sources on Sprout Time and Early Growth Rate of Seeds	
Objectives/Goals Abstract 1. Problem Statement: Does the source of water from which a plant seed is watered affect its rate of germination and early growth rate? 2. Hypothesis: I believe that sweet pea seeds will sprout faster and grow taller when watered with water from the head waters of the Colorado River Aqueduct at the Colorado River. I also believe that the sprouting time and growth rate of the same type of sweet pea seeds will diminish when the water source is further from the headwaters of the Colorado River Aqueduct and is closer to large metropolitan areas.	
Methods/Materials Methods: 1. Presoak seeds in their respective water groups; 2. Plant 4 seeds in each peat pot (24 seeds per group x 6 groups); 3. Grow light to be turned on at 7 a.m. and turned off at 6 p.m.; 4. Take Measurements of each plant, once a day at 5 p.m.; 5. water each "peat" pot with 20mL of its respective water at 5 p.m.; 6. Record data and average each groups daily growth using Microsoft Excel; 7. Repeat 1-6 for a second test. Materials: 84 6 centimeter "peat" pots; 6 graduated cylinders; 288 sweet pea seeds; 8 liters: { distilled water, chlorinated water, Palm Springs tap water, Colorado river water (from beginning of Colorado River Aqueduct), Riverside tap water, Santa Ana tap water }; 2 white racks; 2 tin baking pans; 6 , one liter water containers.	
Results In the first test, the groups watered with the distilled water, Colorado River Aqueduct water, Palm Srings CItY, and Riverside water grew the best, with Santa Ana water and Chlorinated water behind the rest. In the second test, no similar patterns were found, except for the fact that the group watered with the Chlorinated water once again finished last.	
Conclusions/Discussion 1. Due to the consistent fact that the "Chlorinated Water" group showed the worst results in both tests, it is clear that chlorine is a harmful element to plants. 2. Due to the inconsistencies between the two tests, it is difficult to say whether or not my hypothesis is correct. 3. I believe that this topic poses an interesting question regarding the contaminants found in many tap waters. I think there should be further research on the topic.	
Summary Statement My project is about testing whether or not I will see differences in plant growth with plants watered with water from different sources.	
Help Received Father provided transportation and funded the project.	