



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Grayson C. Rushworth	Project Number J2217
Project Title Algae's Effect on a Water Ecosystem	
Abstract Objectives/Goals My question is to find out how much fertilizer that runs off into a body of water is harmful. My hypothesis is that the more concentrated the fertilizer dilution series, the more algae will form. Methods/Materials I used the following materials: One package of 16 oz. Styrofoam cups, one package of 8 oz. cups, one box of graduated cylinders, one box of Hyponex fertilizer 21-0-0, 16-16 oz. hard plastic cups, thermometer, one bag of Sta-Green fertilizer- Color Bloom 15-30-15, three 4 liter containers of pond water, lake water, and reverse osmosis water, two 4 liter empty containers, one 2 liter empty container, Hydroponic light (T-5), one 4 liter bottle of distilled water, heat mat, and tray. Results The results of my first trial were as follows: nothing happened. At that point, I decided to research my fertilizer further and found out that I needed a fertilizer that was higher in Phosphate than Nitrogen. I then decided to move my cups away from the window and into the center of the room, where it is warmer and used a hydroponic light (T-5) for 8-hours a day along with the natural lighting of the room. In trial 2 algal growth was definitely present. One observation I noticed was that Red Hill Pond produced a brownish-red algae and that Puddingstone Reservoir produced a green algae. For my third trial I also used a heat mat to keep the temperature of the water constant. I found that with the lighting and the heat mat Trial 3 was the most successful. Conclusions/Discussion I think that my project could really help humanity and save a lot of water ecosystems. I feel that public knowledge about how fertilizers harm the ecosystems, by creating algae growth, would help humanity. If a few people at a time, could be more conscience of their water runoff when they use fertilizer, it would help. If the public could be educated that just a tiny amount of fertilizer could create such algal blooms, they would want to help. It all starts with a few people. I also think that if fertilizer companies were more aware of my project, that in trying to go #green#, maybe they could come up with a fertilizer that wouldn't create algal bloom and be ecologically safe.	
Summary Statement My project was about growing algae in different dilution series to see which concentration would grow the most algae thereby being the most toxic to a water ecosystem.	
Help Received My mom- Ms. Wendi Schwab and my teacher - Mrs. Rodriguez. My mom helped collect the water I needed. Mrs. Rodriguez helped guide me in the right way.	