



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Anthony A. Stenzel	Project Number J1726
Project Title The Effect of Run-off Water on Aquatic Invertebrates: The Effect of Sodium Phosphate on the Heart Rate of Daphnia magna	
Abstract Objectives/Goals My objective was to learn if phosphates in the run-off waters that drain into the Madrona Marsh have any effect on the heart rate of the aquatic invertebrates inhabiting the vernal pools, specifically Daphnia Magna. Methods/Materials I introduced Daphnia Magna to Sodium Triphosphate diluted to the appropriate levels by distilled water using a volumetric flask. I used a compound light microscope to observe the heart beats of daphnia at 100x. First I prepared my solutions at 1.0mg/L, 5.0mg/L, 10.0mg/L, 20.0mg/L and 50mg/L. I also had a control that was plain distilled water. Next, I placed my subject daphnia into a test tube filled with the test solution and let the subject adjust for 5 minutes. Then I put the subject on a slide with cover slip and let it adjust 5 more minutes. Then I put the slide under the microscope and counted its heart beats per minute and recorded the results. A different specimen was used each time. Results The results showed that as the concentration increased, so did the heart rate of the subject increase. Now that I know that there is a strong correlation between phosphates and the heart rates of daphnia, I am currently running a follow-on project dialing in the concentrations to more closely match those observed through my 12 month water chemistry study. Early results show that at even small amounts 0.5 mg/L, there continues to be a positive correlation between the presence of phosphates and increased heart rates in daphnia. Conclusions/Discussion My study confirmed my hypothesis. What this means to me is that in order to responsibly introduce an endangered species that is sensitive to phosphate levels into the vernal pools of Madrona Marsh, phosphate levels need to be monitored and controlled.	
Summary Statement The positive correlation between dissolved phosphates in the marsh and the heart rate of Daphnia Magna	
Help Received My parents gave me advice. I received encouragement and advice from the the staff at Madrona Marsh.	