



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

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<b>Project Title</b> Water Wizardry	
<b>Abstract</b> <b>Objectives/Goals</b> If you apply two thermal desalination methods to a sample of water each from a creek, lagoon, sound, ocean, and river, which method produces the most mineral-free water? <b>Methods/Materials</b> Large samples of water from Beith Creek, Big Lagoon, Puget Sound, Clam Beach (Pacific Ocean), and Mad River were collected. I used thermal desalination methods of distillation and freezing, and then tested the results for salinity, carbonate hardness (KH), general hardness (GH), and acidity (pH). <b>Results</b> <ul style="list-style-type: none"><li>· When I tested the salinity of my processed water, the distillation method produced the most drinkable water for 3 out of 5 samples.</li><li>· When I tested the acidity, again distillation was most effective. It improved the samples 5 out of 5 times, making every sample acidic, 6.0, if it wasn't already. Freezing only made 2 out of 5 samples acidic.</li><li>· When I tested for the carbonate hardness, the distillation method was at least as effective or more so than the freezing method. Distillation was more effective for 2 out of 5 samples, and as effective as freezing for 2 out of the 5 samples. Freezing was more effective than distilling for only one.</li><li>· When I tested for the general hardness, distillation worked best overall. 2 out of 5 times it was more effective than freezing, twice it tied with freezing, and for 1 sample out of 5 freezing was more effective.</li></ul> <b>Conclusions/Discussion</b> The distillation method overall was the most effective method of purifying water.	
<b>Summary Statement</b> Using two desalination methods, distillation and freezing, which method will produce the most mineral-free water when applied to water from five different water sources?	
<b>Help Received</b> Mother helped me get my materials and provided transportation; my school loaned me a graduated cylinder.	