



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

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Project Title Filtration Station	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this investigation was to learn which filtration material: marsh plants, oyster mushroom spores, ceramic balls, charcoal, or gravel and drainage rocks, purified greywater so its pH and other nutrient levels were optimum to irrigate plants. The hypothesis was that the marsh plants would filter the greywater to the most desirable nutrient levels.</p> <p>Methods/Materials Sand, pH Testing Kit, soil testing kit, washing machine, detergent, ceramic balls, crushed charcoal, marsh plants, landscaping fabric, 5 1-gallon pots, 1 5-gallon bucket, 5 1-gallon buckets, pH litmus strips, ruler, scissors, 2 medium sized bowls, drill, oyster mushroom growing kit, kitchen knife</p> <p>The filters were set up by lining the pots with landscaping fabric and filling with 1 inch of sand and a different material in each pot. Greywater was gathered from a wash cycle containing one ounce of detergent and color brightner. One gallon of the gathered water was run through each filter.</p> <p>Results The data collected showed that marsh plants filtered water had almost perfect levels in every nutrient including the pH of both the water and the soil where it had closest to 7, a desirable neutral pH. The ceramic ball filtered water, while lacking in nitrogen, had good pH levels. The charcoal did well in every nutrient except pH which was at a level of 8. The gravel and drainage rock filtered water had the worst phosphorous at 0. The oyster mushroom filtered water had a low pH of 6.</p> <p>Conclusions/Discussion The results of this experiment support the hypothesis. The marsh plants filtered the greywater the best, having the most desirable nutrient levels, when compared to ceramic balls, charcoal, gravel and drainage rocks, and oyster mushroom spores. This information could help people save water and money by using water they would normally dispose of to water plants instead. It supplies households with the most effective method to reclaim and filter their greywater.</p>	
Summary Statement Filtration Station explores which method of filtering greywater: marsh plants, ceramic balls, charcoal, oyster mushroom spores, or gravel, is most effective at purifying the water back to adequate levels for using to safely water plants.	
Help Received	