



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Ryann O. Flach	Project Number J1109
Project Title The Effectiveness of Hydrophobic Soil in Increasing Water Capacity in Reservoirs	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my science project is to determine if there is a beneficial way to use hydrophobic soil to increase water storage. This is important because farmers need water for irrigation and farming while the environment continues to experience drought conditions, declining supply of ground water and lack of good ways to store water.</p> <p>Methods/Materials I produced hydrophobic soil through a long, intensely hot burn process using soil collected from high elevation. In the lab test, I used hydrophobic and non-hydrophobic soils to perform soil measurement tests with 2" and 4" levels of soil for each type. I poured 125 ml. water into soil-filled test tubes and used a timer to record water level measurement as the water percolated through the soil and into the measuring cups below. I did 10 trials for each soil level and type. In the field test, I made 2 shallow holes in the ground and layered one with hydrophobic soil. I filled both with water and recorded percolation times.</p> <p>Results In both the lab and field testing, results showed that water percolation occurs faster in non-hydrophobic soil than it does in hydrophobic soil - water runs through non-hydrophobic at a faster rate. In the 2" soil test, avg ml. of water collected for non-hydrophobic soil was 86.9 ml vs. 69.1 for hydrophobic soil at 2 minutes. In the 4" soil test, avg ml. of water collected for non-hydrophobic soil was 77.9 ml. vs. 35.8 ml. for hydrophobic soil at 5 minutes. In the field test, at 30 minutes, there was little water remaining in the non-hydrophobic soil hole and the hydrophobic layered hole was still holding water.</p> <p>Conclusions/Discussion After completing my investigation, my results showed evidence that there could potentially be a beneficial way of using hydrophobic soil to layer reservoirs and pond basins to prevent percolation and increase water storage. I think its important to find ways to increase water for farming and irrigation purposes so we work together to keep livestock and grow crops that feed the world.</p>	
Summary Statement The purpose of my science project is to determine if there is a beneficial way to use hydrophobic soil to increase water storage.	
Help Received Mr. Carl Gong was a resource for the project idea and direction. My dad served as the parent supervisor for the controlled burn.	