



**CALIFORNIA STATE SCIENCE FAIR  
2014 PROJECT SUMMARY**

<b>Name(s)</b> Nicole Matthias; Rhiannon Russell	<b>Project Number</b> <b>S0804</b>
<b>Project Title</b> Is the Soil Stable?	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this project is to determine what additives could potentially make saturated soil stronger.</p> <p><b>Methods/Materials</b> We filled PVC pipes with different mixtures of pine needles, leaves, polystyrene, or plain soil. After letting them saturate, we inserted wooden dowels into them, simulated an earthquake, and removed the dowels using a force gauge.</p> <p><b>Results</b> The soil with polystyrene came out to be the strongest while the soil with leaves was the weakest.</p> <p><b>Conclusions/Discussion</b> The polystyrene could have been stronger because it stabilized the soil. Leaves have a waxy surface causing water to easily slide off them, and pine needles did not have enough surface area to keep the soil from liquefying.</p>	
<b>Summary Statement</b> The project is about the stability of different soil types after being saturated and simulated through and earthquake.	
<b>Help Received</b> Mother helped saw PVC pipe and wooden rods as well as drilling holes into PVC pipe	