



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Travis C. Mitchell	Project Number J0710
Project Title Landslides	
Abstract Objectives/Goals The objective of my experiment was to determine which type of soil (sand, clay or sandy clay mixture) takes the least amount of water to landslide. I believe that sand would take the least amount of water to become unstable because it has less strength than clay or clayey soils. Methods/Materials Materials: Stream table, sprinkling can, graduated cylinder, tare pan, water, soil, paper towels, scale, 30/60/90 triangle Method: 1. Measure 1360.8 grams (3.0 lbs) of soil being studied 2. Add the measured soil to the 74-1/2 inch stream table. Add the soil to the middle third of the stream table (between 24 and 48 inches) 3. Tilt the stream table to an angle of 30 degrees from horizontal 4. Add water from a sprinkling can, 200ml at a time, at a constant rate, until the soil mass moves. Record amount of water added. 5. Wipe the stream table dry and repeat steps 1-4 two more times. 6. Repeat steps 1-5 with different soil. Results My results show that the sand took 1st place at an average of 600 ml of water to become unstable (landslide). Next was the mixture of sand and clay in 2nd place, averaging 1,000 ml to become unstable. And in last place was the clay. It took an average of 11,133 ml to become unstable. Conclusions/Discussion The results of my experiment confirmed that sand takes the least amount of water to cause a landslide. This outcome agrees with my hypothesis. The clay adds strength to the soil so the more clay that was in the soil, the more water it took to move it. This is because the clay does not absorb water as much as sand does. I was surprised at how much more water was needed to make the clay move. The sandy clay sample required about 40% more water than the sand to slide. However the clay sample with no sand required over 10 times more water to move than the clay sample containing sand!	
Summary Statement My project is about different types of soil and how water makes them unstable and prone to landsliding	
Help Received My mom is a geotechnical engineer and let me use her her lab and provided me with the soil.	