Boom, Liquefaction!

By Schylar Jones
What is Liquefaction?

- **Definition:** “Transformation of water-saturated granular material from the solid state to a liquid state” (Keller and DeVecchio)

- **English translation:** During an earthquake, ground shaking can cause the water particles around the soil to be slippery. Thus the soil loses grip of itself and buildings and cars, etc. up on top of the soil can sink or fall over.

*Photo Credit: (Environment Canterbury, 2011)*

*Photo Credit: (Wikipedia, the free encyclopedia, 2014)*
The most updated Liquefaction map for Salt Lake County is 20 years old!

How are we supposed to know if areas are safe to build or not if our ground tests are as old as this one?

WE NEED TO UPDATE OUR MAPS! The valley has changed immensely in the last 20 years!

In 1990 the SL county population was: **725,956** (U.S. Department of Commerce, 1990)


I’d say the population grew! A total of: **303,699** people. So we need a new map to account for the amount of weight we are now applying to the valley. The ground is not the same as it was then.
The Problem

- How do you know if it was caused by the earth shaking or just the ground settling? Because even the smallest amount of ground shaking can cause Liquefaction to occur.
- The only sure way to know is if the ground shifts like that during an earthquake that we can actually feel.
- There are tons of minor quakes that we don’t even feel, these could be the causes of some of the sinking signs and fences we see all over town.
- So it gets kind of dicey trying to specifically pinpoint which party can be blamed for the crooked signs or cracking concrete.
These are a few pictures from my house.... Liquefaction or not?

This picture is the back side of this fence post

This concrete is only 3 years old!
Try not to notice all the oil my car is leaking.....
How is my handicapped great aunt supposed to know where to park?

How about these?
These pictures were taken right in my neighborhood! Notice the daylight? Look at how big that gap is!
So what now? What have we learned?

- We learned that liquefaction is where the ground basically loses its grip and slips.
- That it gets kind of difficult to determine what is caused by liquefaction.
- The only sure way to know, is if it happens during a large enough earthquake that we can feel.
- Our liquefaction maps are super outdated and need to be remade for current conditions to know if areas are safe to build or not.
Bibliography

- NOTE: if pictures weren’t cited it’s because I took the picture myself