

# Visual Observation and Monitoring of Landslides

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Peck (1972) “An instrument too often overlooked in our technical world is a human eye connected to the brain of an intelligent human being. It can detect most of what we need to know about subsurface construction. Only when the eye cannot directly obtain the necessary data is there a need to supplement it by more specialized instruments.”

### Words of Wisdom

**Ralph B. Peck**

*Selected by Elmo DiBiagio and Kaare Flaate*



*We'd better listen; he has something to say!*

### RALPH B. PECK



*The observational method in practice*

Many landslide problems in Southwestern Pennsylvania and elsewhere involve re-activation of old, marginally stable landslides.

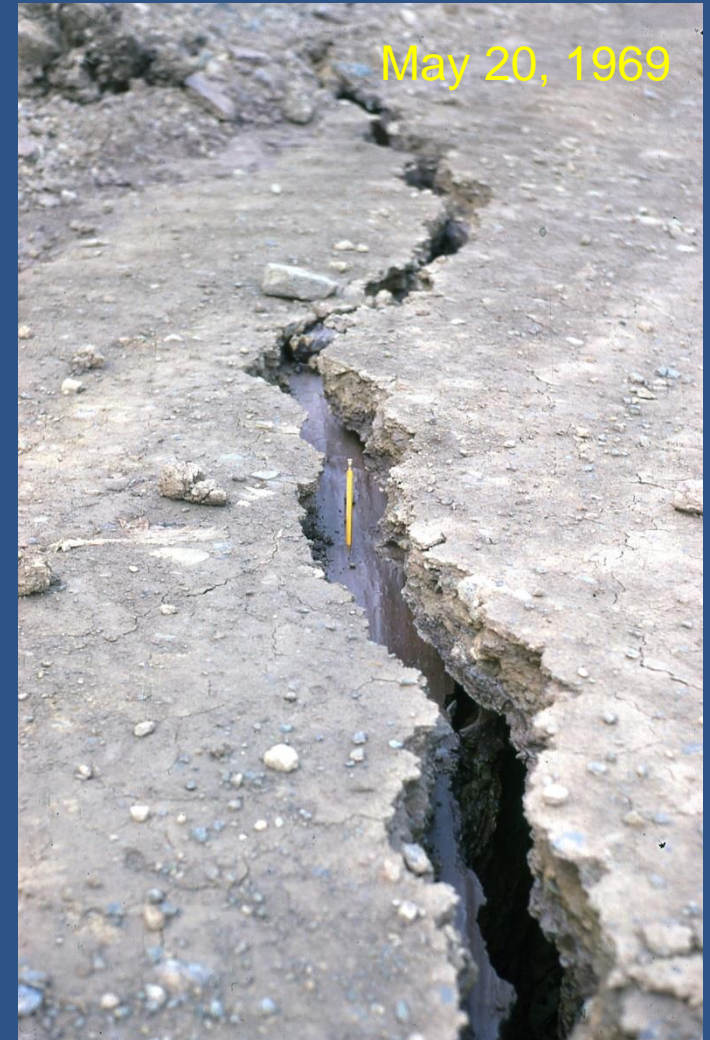
Landslide re-activation, like initiation of new landslides, usually begins slowly and is always accompanied by indicators:

- Ground cracks
- Ground bulges
- Ground depressions
- Loosening
- Spalling
- Raveling
- Water discharge

that can be **Visually Observed and Monitored**



# Cracks - Typical Indicators of Landslide Re-Activation



Visual observation and monitoring is particularly important in the early stages of slide re-activation (or new slide development) in order to

- Characterize type, extent, and velocity of slide movement
- Assess risk to structures, utilities, and people
- Plan slide response, including risk reduction measures

Before

Subsurface exploration

Instrumentation

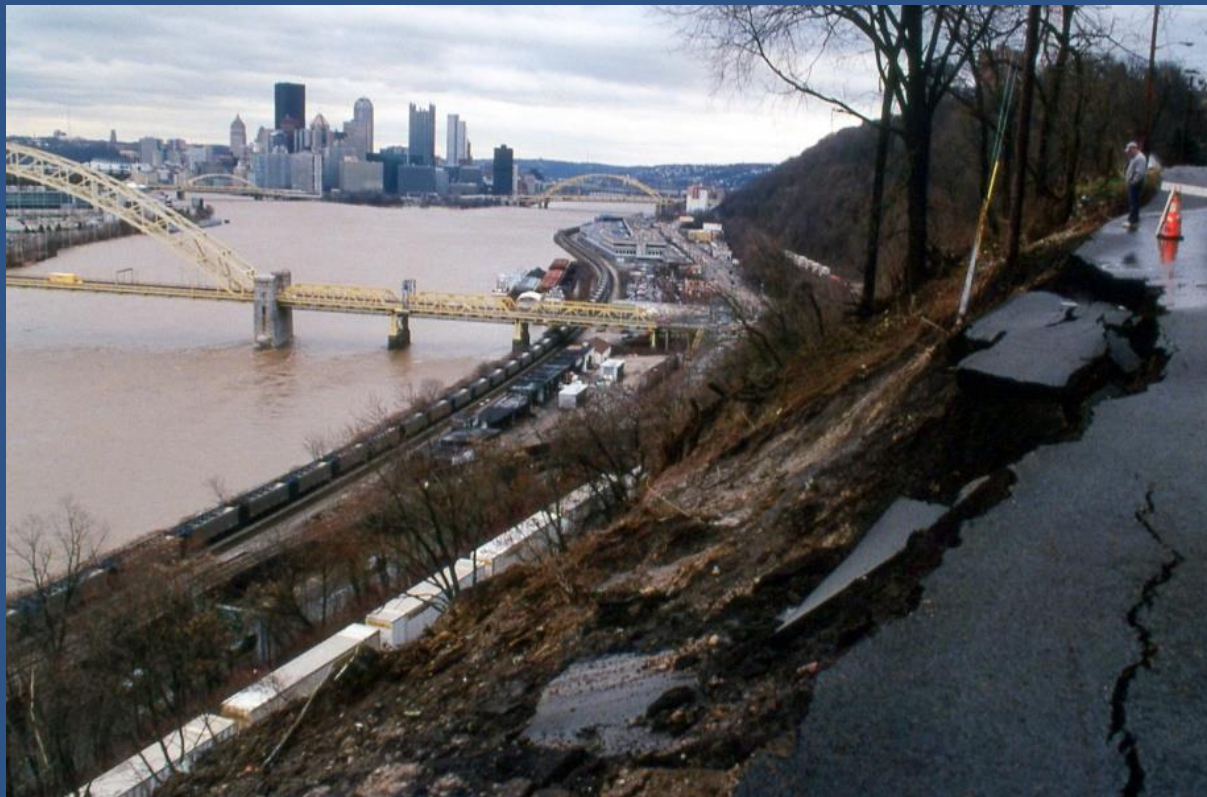


# Sometimes Visual Observation and Monitoring will allow you to live with a Landslide





# Let's look at a more significant Landslide





# Observe and Monitor Water Flow Paths





# Observe and Monitor Scarp Heights





# Observe and Monitor Ground Crack Widths





# Observe and Monitor Slab Joints



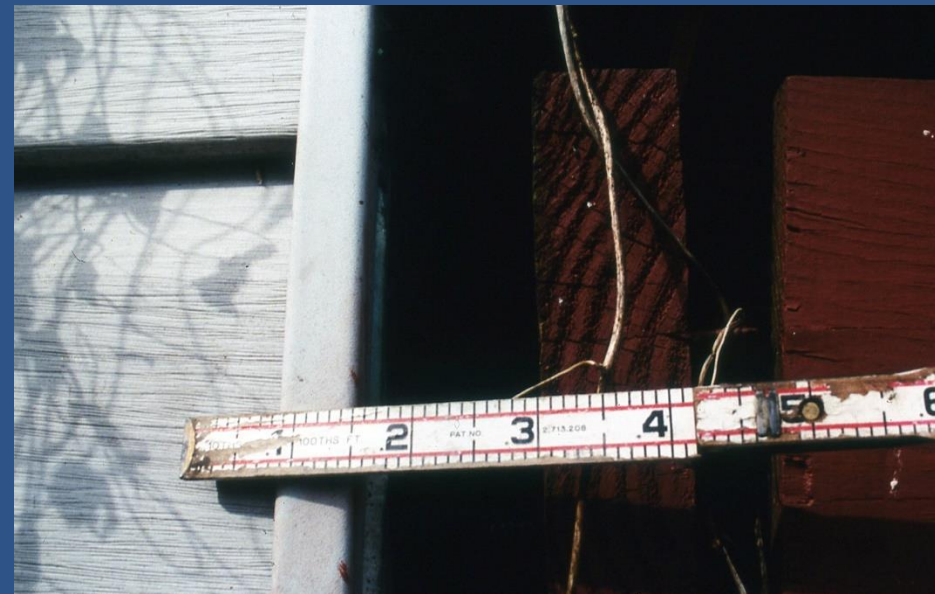


# Observe and Monitor Asphalt Cracks





# Observe and Monitor Structure Cracks



# Check Other Structures for Cracks



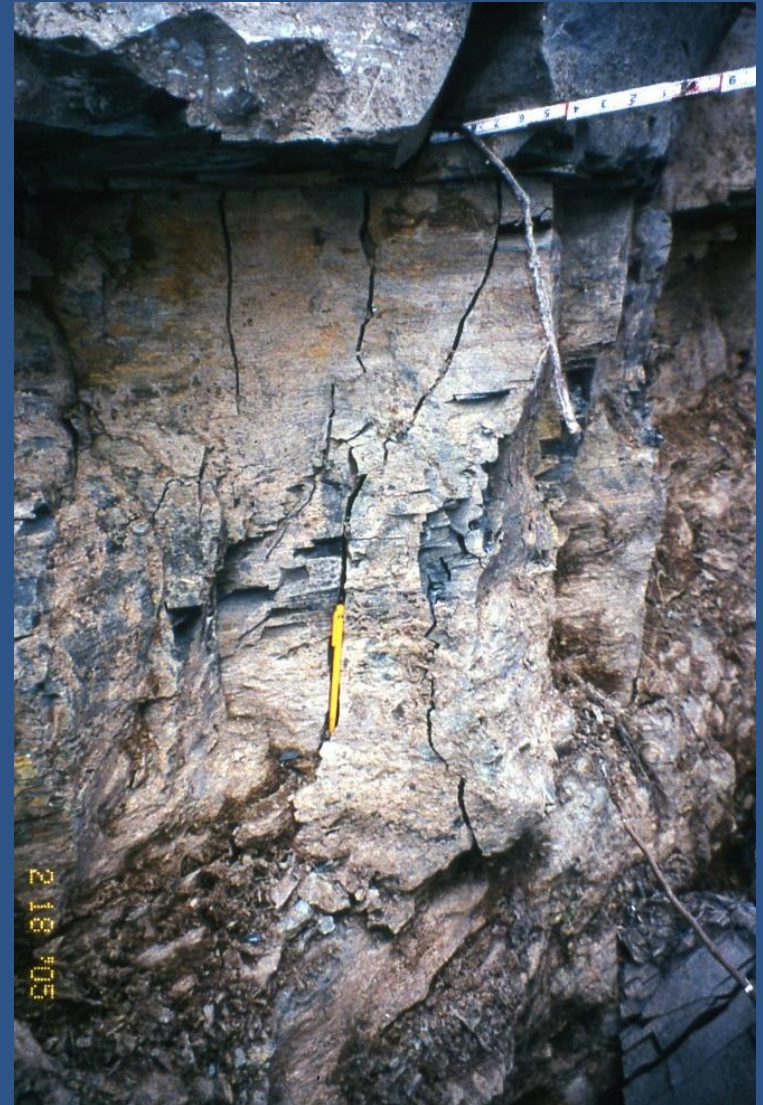


# Visual Monitoring provides basis for deciding when to evacuate people from houses and turn off utilities





# When the rock in the old slide scarp begins to spall ...

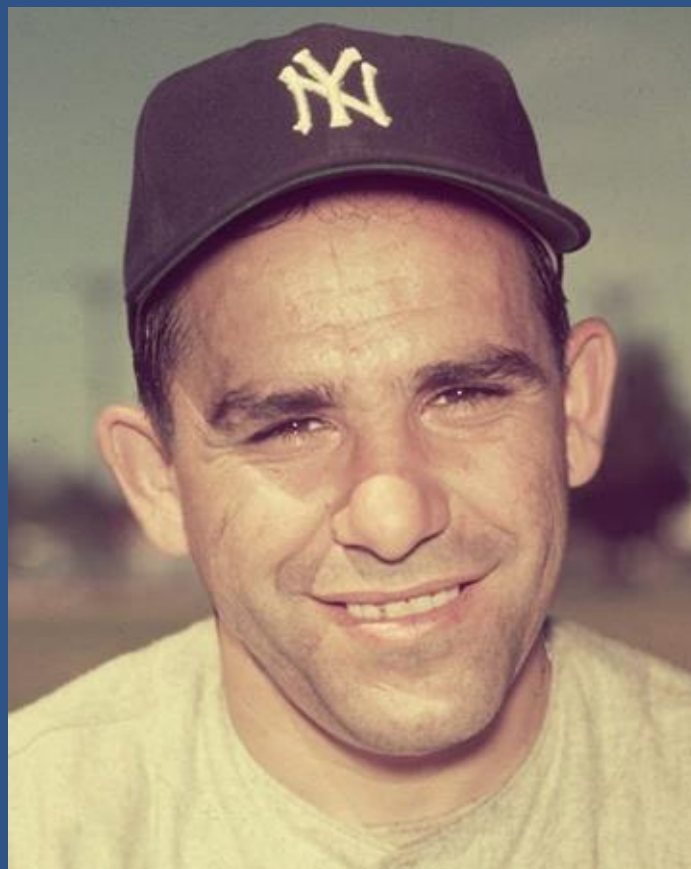




... it is time to evacuate the houses  
and turn off the utilities



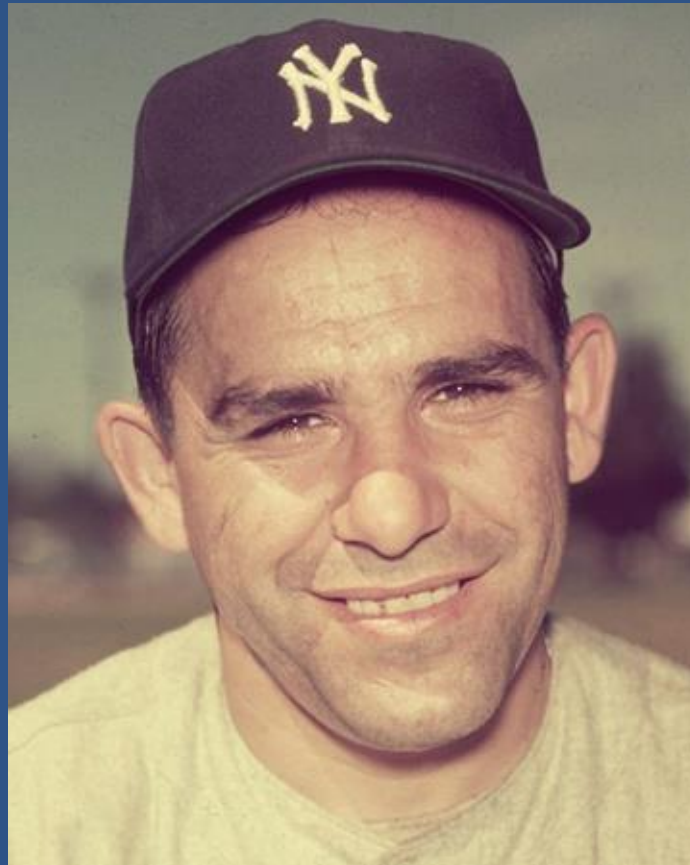
# Yogi Berra





# Yogi Berra

“You can observe a lot by just watching.”





Questions?