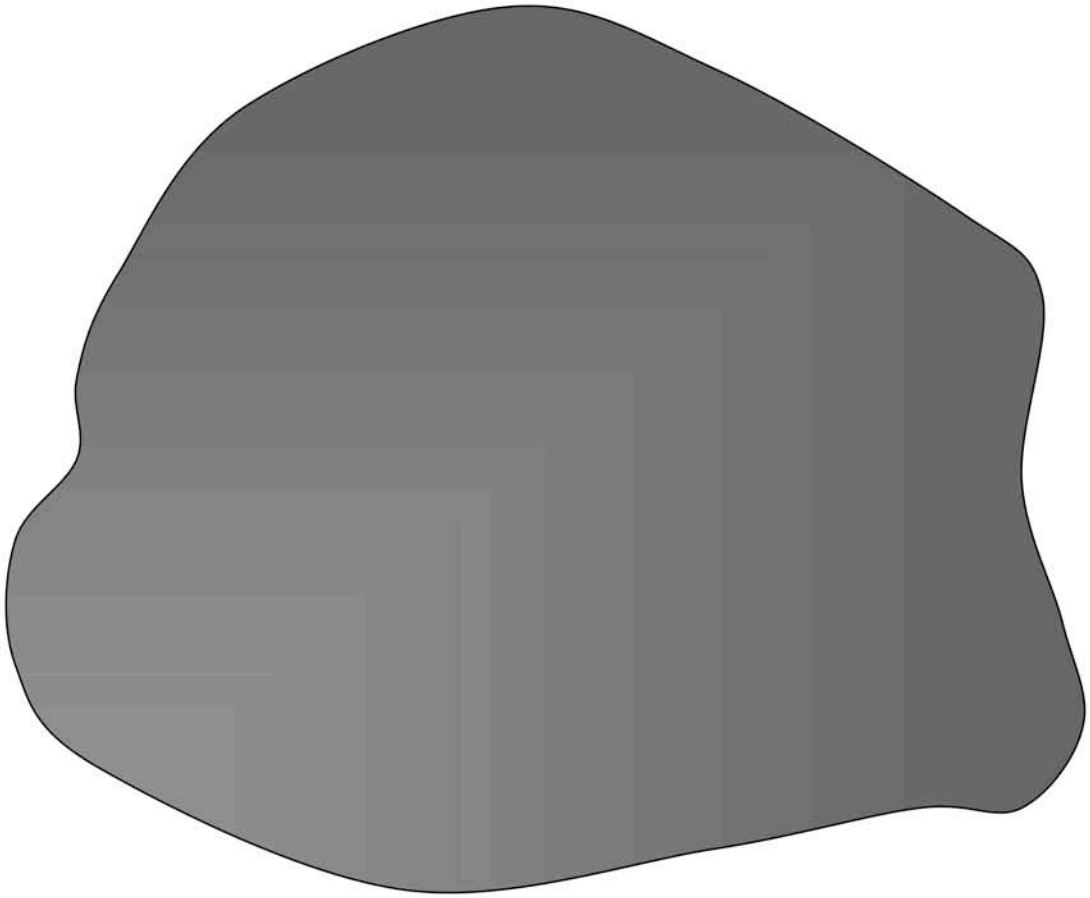
Every Rock Tells a Story...



1850's: Miners found GOLD in rivers.

Today: We can find GOLD in rocks that were deposited by ancient rivers that have dried up.

???: How do we recognize rocks that formed in rivers?

How are these rocks different from one another?

How are they similar?

Images From: *USGS / US House of Representatives*
http://resourcescommittee.house.gov/subcommittees/emr/usgsweb/frames/main.html

The Making Of SEDIMENTARY ROCKS

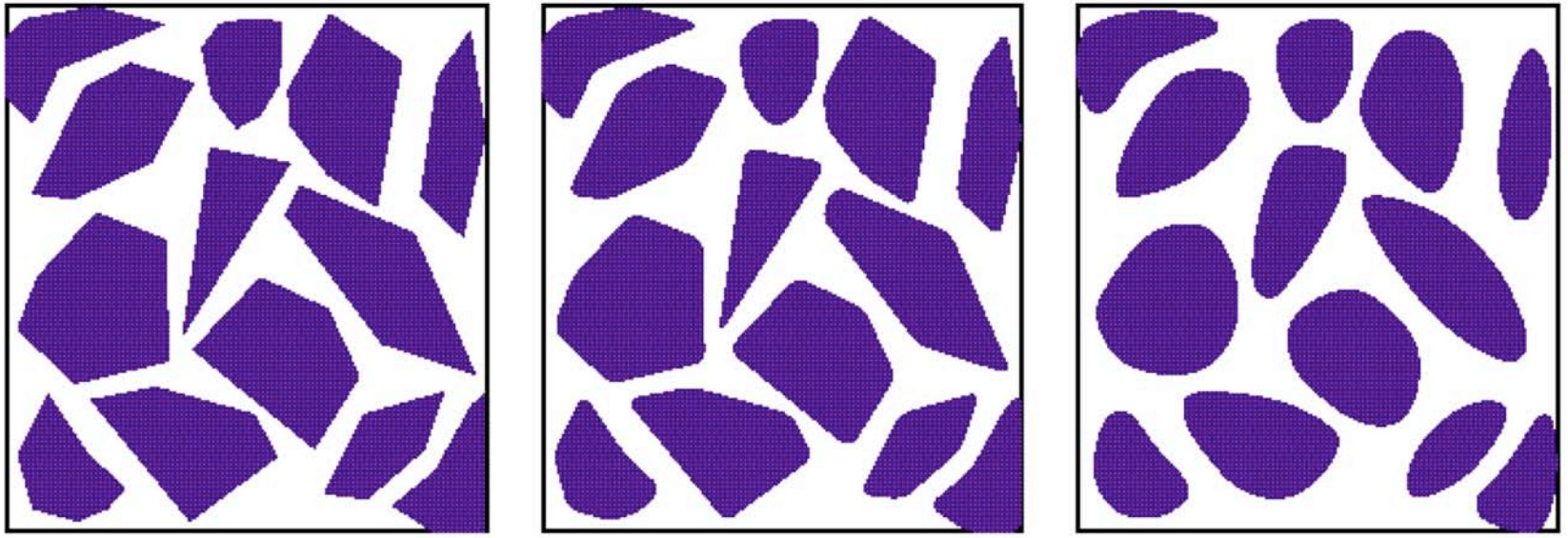
1. WEATHERING / EROSION

2. TRANSPORT

3. DEPOSITION

4. CEMENTATION / LITHIFICATION

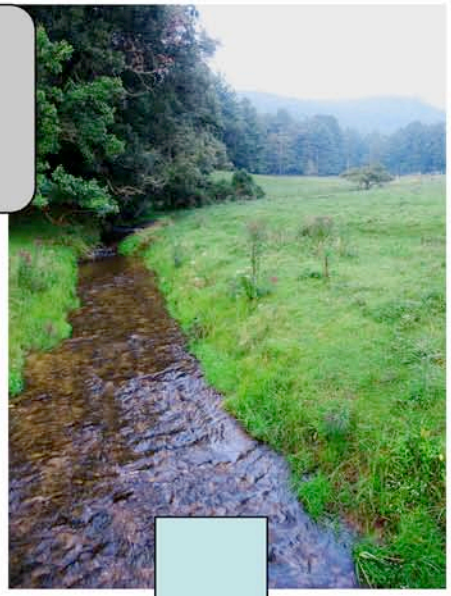
USGS

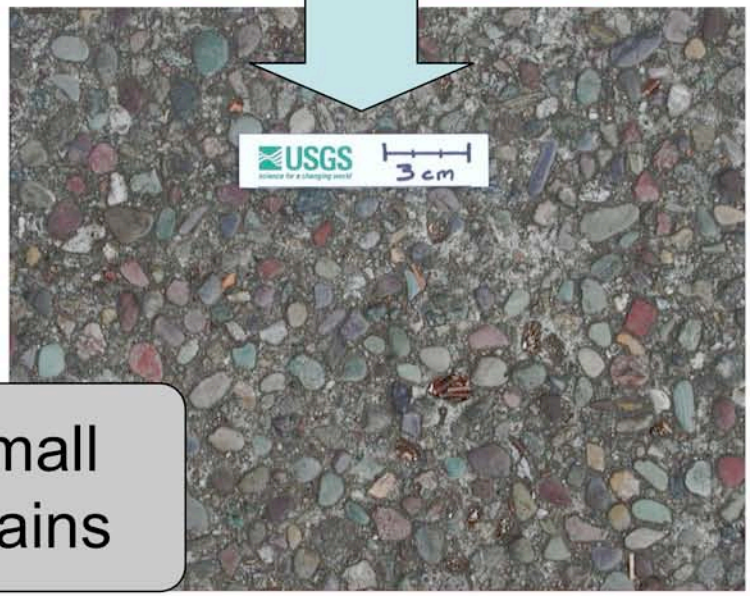


ANGULAR MEDIUM ROUNDED

More Mechanical Weathering

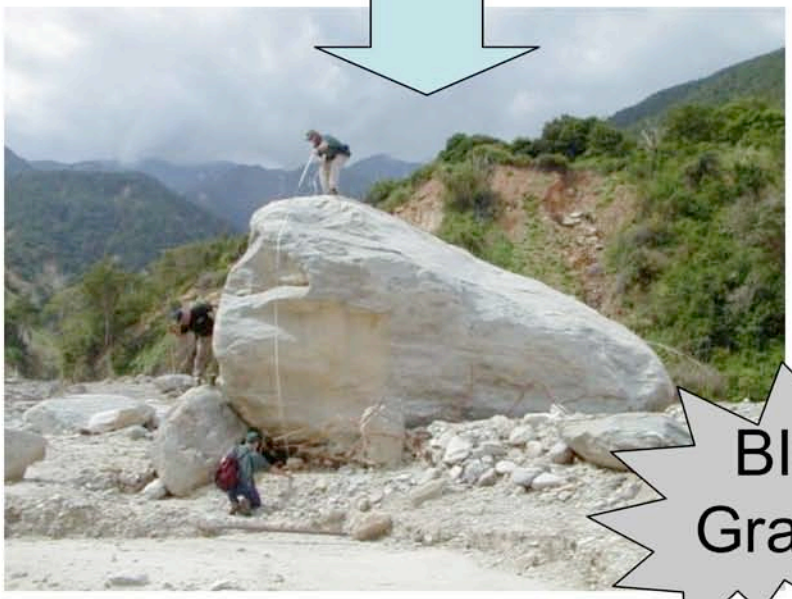
low energy





small grains

High Energy



BIG Grains

Location	
Colors	
.....All the same color?	(underline most common colors above)
Grain Size	
.....Minimum grain size	____ cm
.....Maximum grain size	____ cm
.....Typical grain size	____ cm
.....All the same size?	
Grain shapes	Angular ... Medium Angular ... Medium Rounded … Rounded
Strength	
Other Comments	

USGS science for a changing world

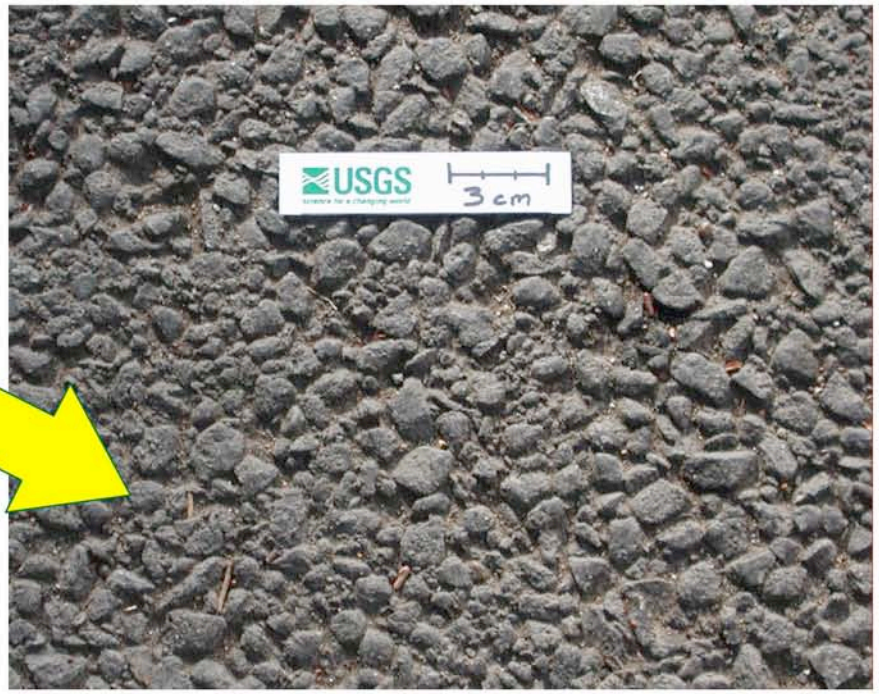
Example Schoolyard Rock

If you saw a rock like this in nature…

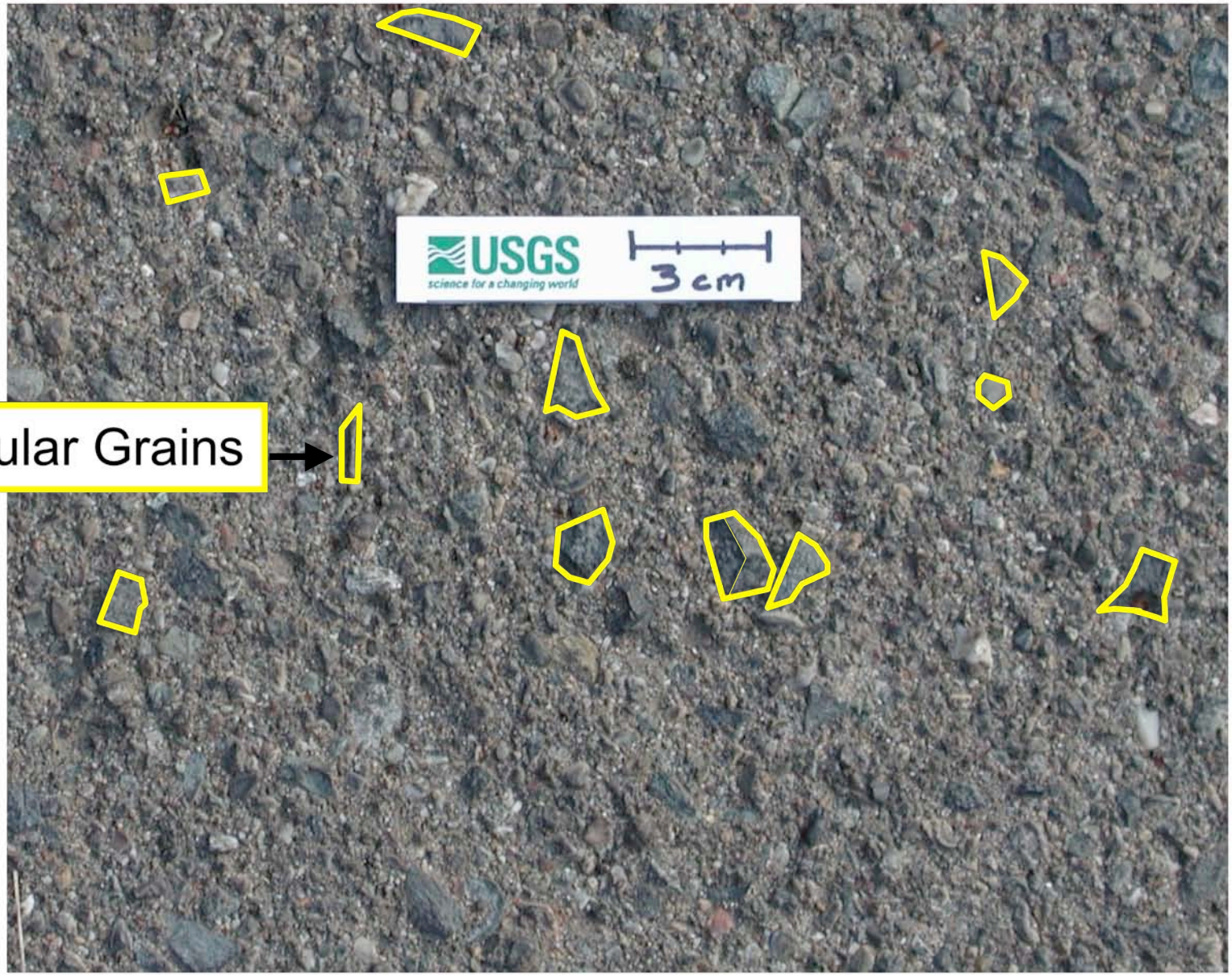
…what could you deduce about where it formed?

Interpretation:

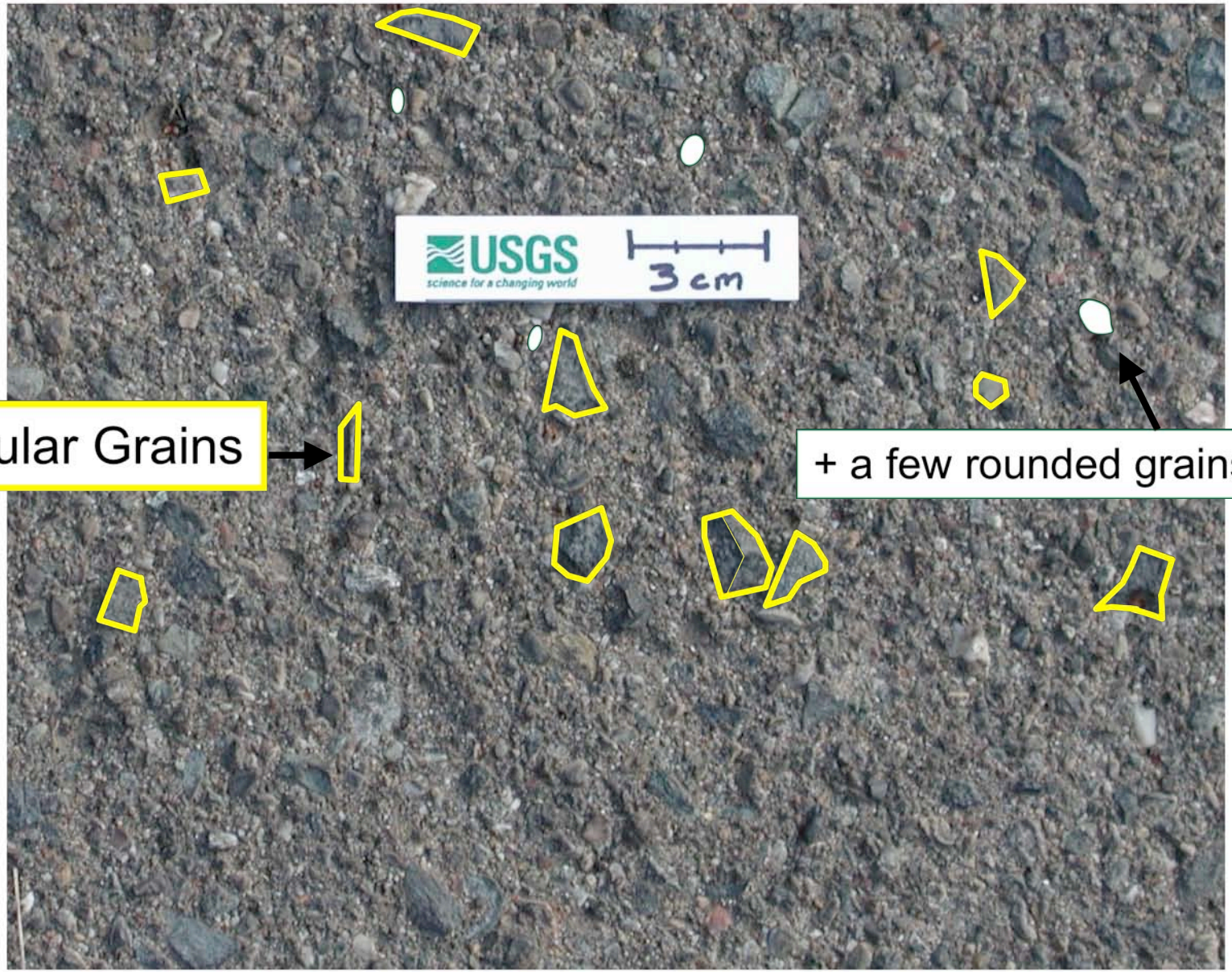
Natural tar seeps produce rocks with **all black** grains *held together by tar*. Beaches produce grains that are *all the same size*. Tar occurs near some California beaches.



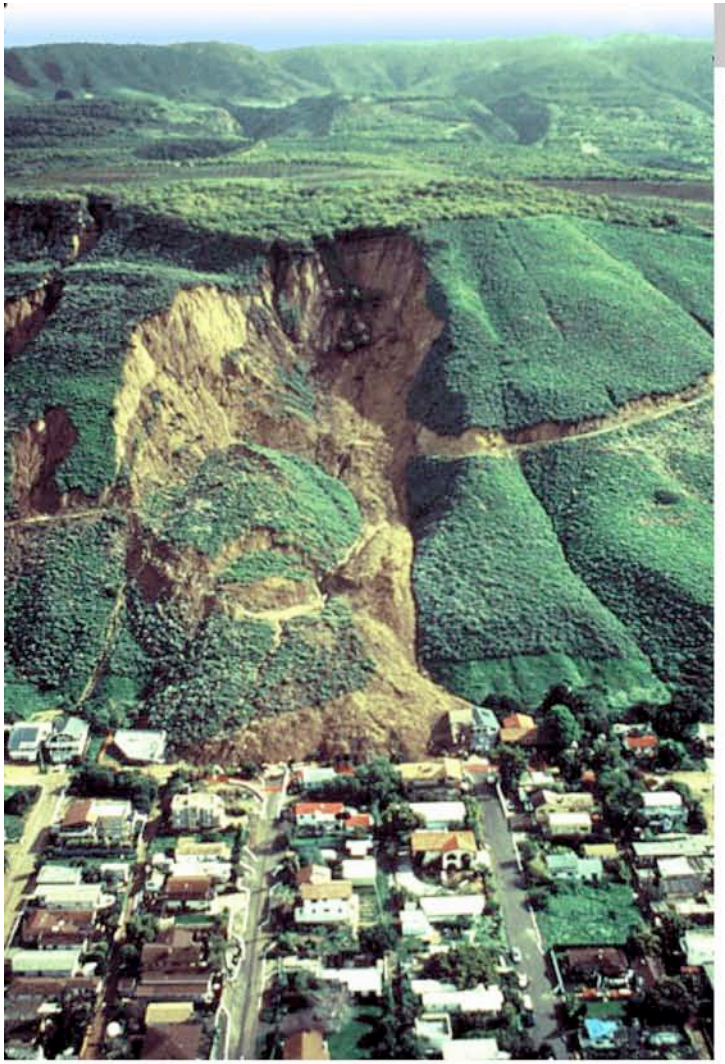
Example Schoolyard Rock



Example Schoolyard Rock



Example Schoolyard Rock



La Conchita Landslide, 1995.
Photograph by R.L. Schuster, U.S. Geological Survey
http://landslides.usgs.gov/html_files/landslides/slides/landslideimages.htm

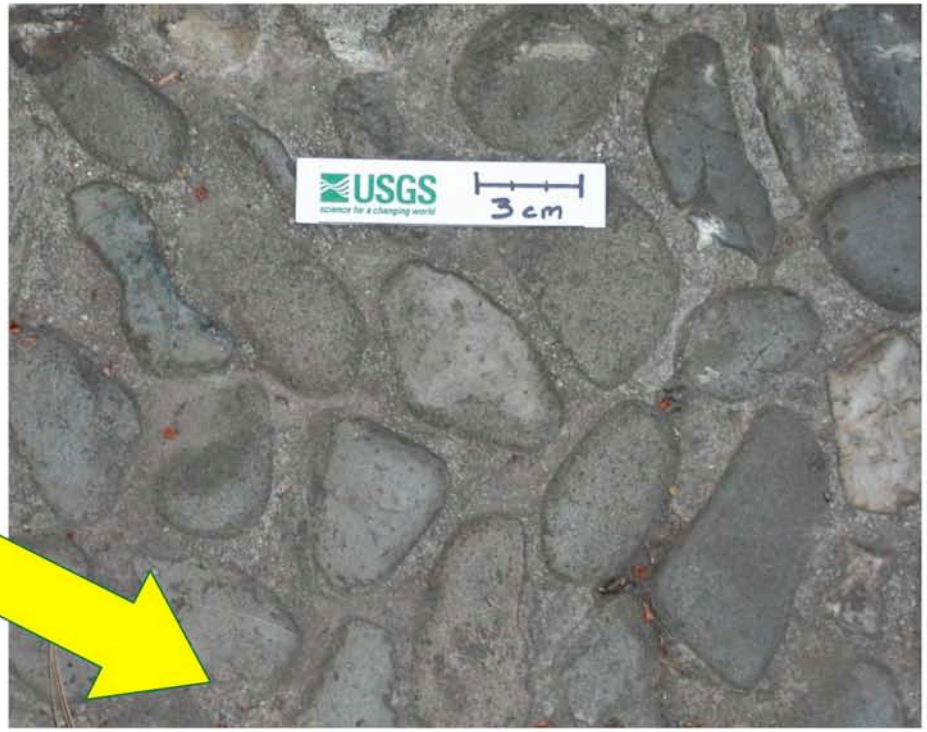
Interpretation:

Landslides produce **angular** fragments spanning a *wide range of grain sizes*. Landslides are quick events that break the rocks apart but are not steady or long enough to round the grains

Another example rock

Interpretation:

A **fast moving stream or river** is the only thing capable of moving **large** grains like these. The grains are rounded because they sat in the river for a while.



Another example rock

Interpretation:

Beaches produce **small**, **rounded** grains. They are rounded because repeated wave action slowly wears the pieces down. They are small because waves are not strong enough to move large boulders.

Another example rock

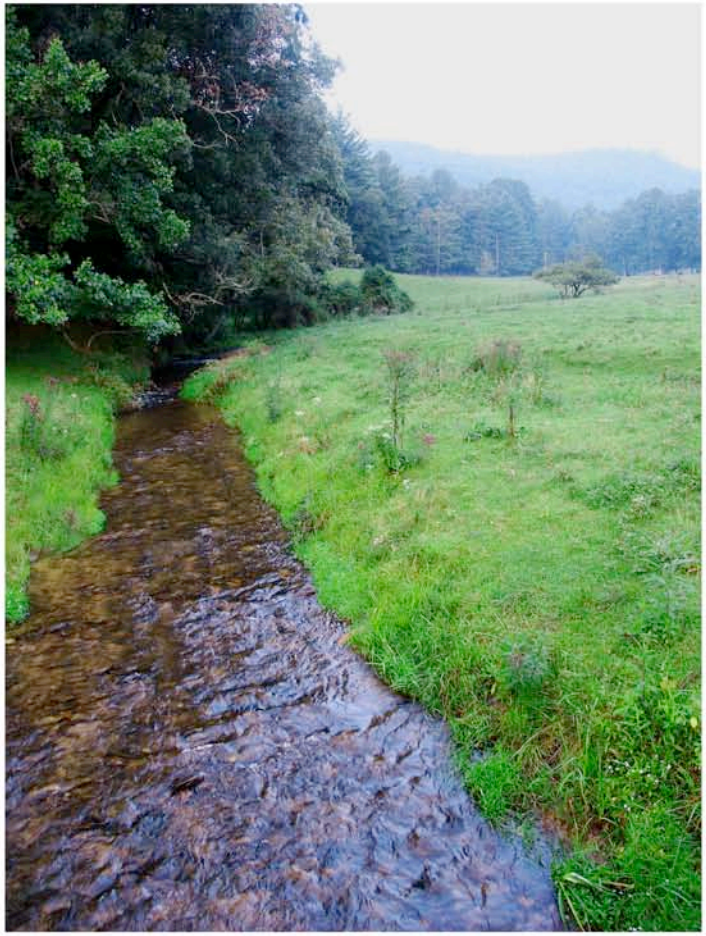


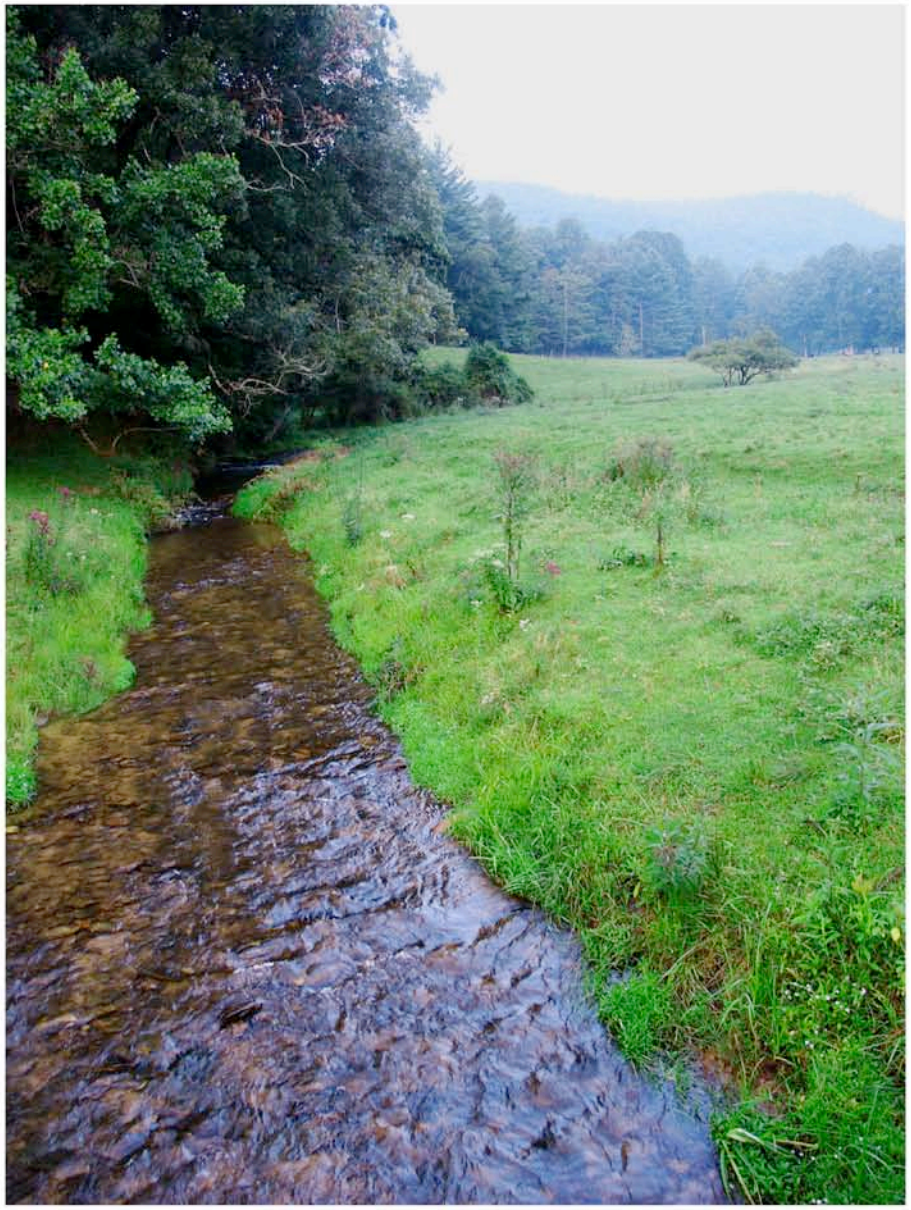
Image Used by Permission from *Black Dove Stock Photography*.
http://www.deviantart.com/deviation/15053728/

Interpretation:

How fast would water have to flow to push a **1 cm** pebble? It couldn't be too slow, but wouldn't have to be too fast either. A **small creek** would fit the bill. The **round** grains again indicate that it sat in the bed for a very long time.

Another example rock

High Energy Stream



Low Energy Stream

Pit is about 200 feet deep!

Image From: *County of Marin*.
http://www.co.marin.ca.us/depts/GJ/main/cvgrjr/2000gj/ssrq/SRRQREPT.pdf

Crushed Rock Quarry