2. The Explanation is in the Geology

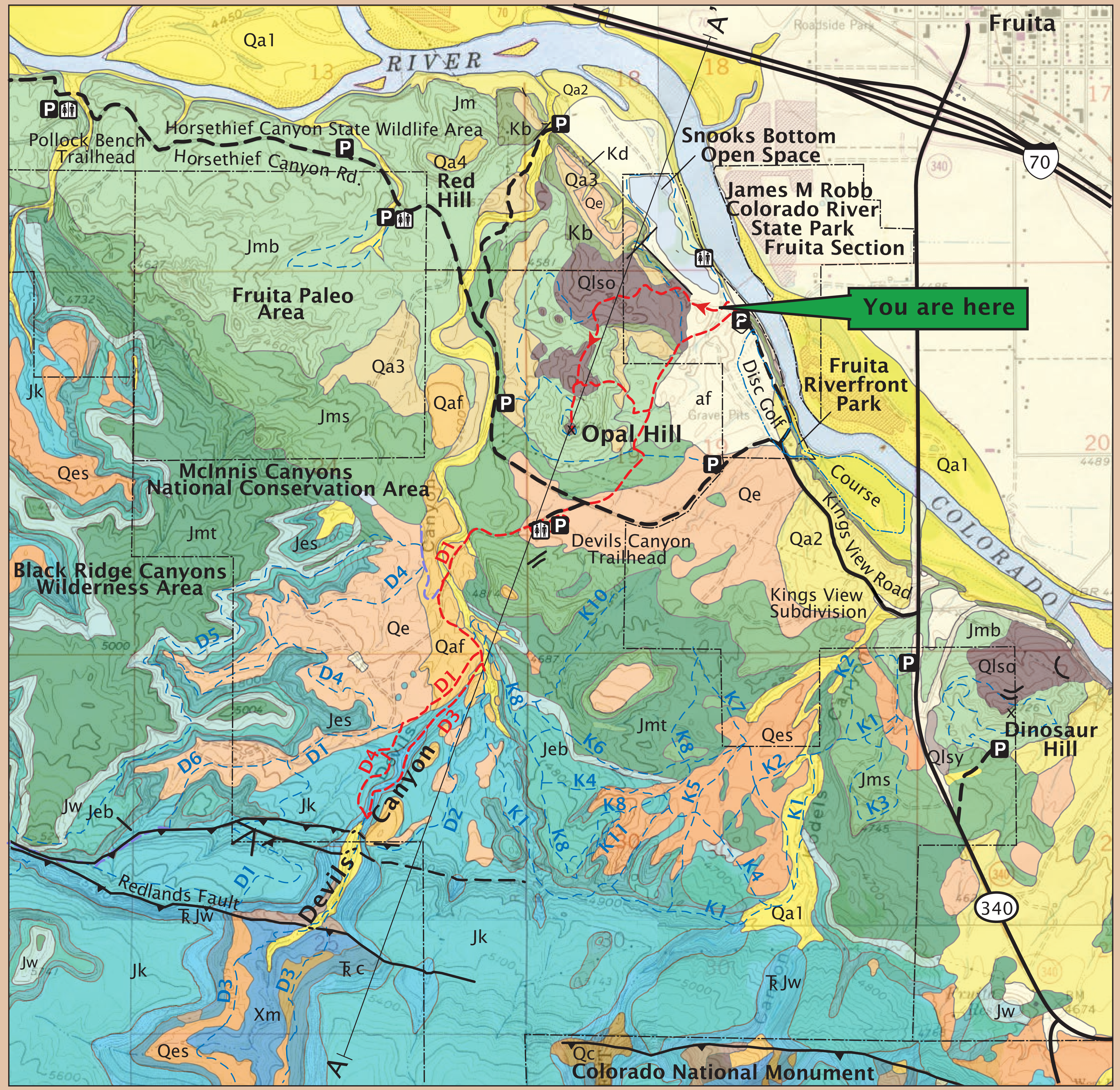
It took earth's moving continents, oceans, rivers, air, weather, and time, about 4.5 billion years, to sculpt this land.

Let's look closer.

This is a geologic map of the Opal Hill - Devils Canyon area. Each color represents a different set of rocks, called a formation. The map shows where each formation is at the surface.

Each formation is a record of its time, and is described by a sign along this trail.

Most of the rocks here formed from sediment so they are called sedimentary rocks. They come in layers. The oldest layer is on the bottom (of course!).



Geologic Map of the Opal Hill - Devils Canyon Area

LEGEND

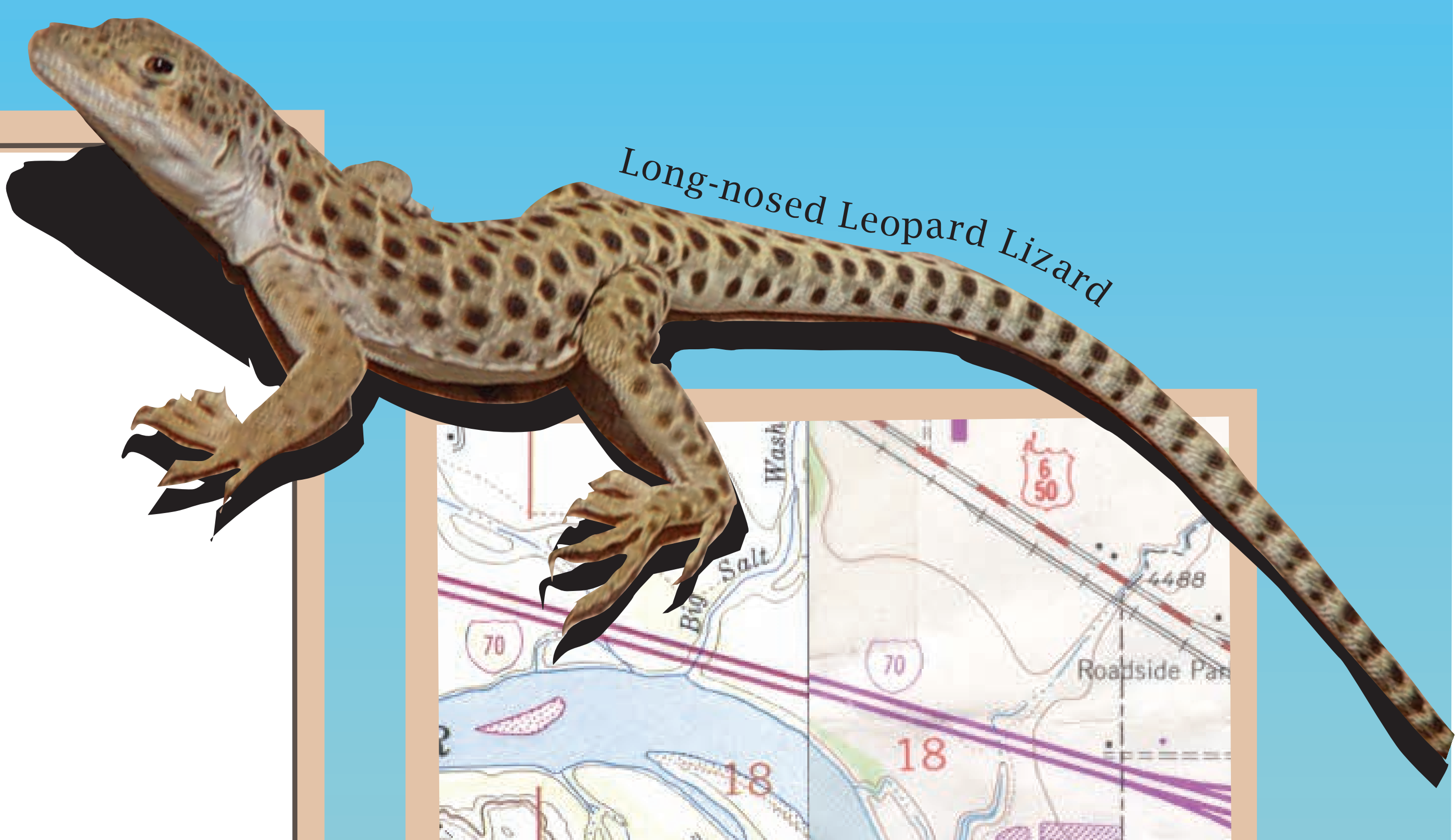
Age in millions of years (my)		
	Recent (Holocene) and Pleistocene	
recent	af	Alluvium altered by civilization, including fill
recent	Qa1	Alluvium in active river and stream channels
	Qa2	Colorado River alluvium of Snooks Bottom level
to 1.8 my	Qa3	Colorado River alluvium of north Opal Hill level
	Qa4	Colorado River alluvium of Red Hill (oldest and highest)
	Qaf	Devils Canyon alluvium above the current cleek level
	Qe	Eolian sand and silt that commonly blankets the uplands
	Qes	Eolian sand with pieces of rocks from up-slope
recent	Qc	Colluvium, gravel, silt, and sand derived from steep slopes
recent	Qr	Rockfall deposits
recent	Qlsy	Younger landslide deposits, mostly active
to 1.8 my	Qlso	Older landslide deposits
76 my	**Cretaceous**	
	Km	Mancos Shale
	Kd	Dakota Formation, sandstone, conglomerate, and minor coal
	Kb	Burro Canyon Formation, conglomerate, pale red and green mudstone
	Upper Jurassic	
145 my	Morrison Formation	
	Jmb	Brushy Basin Member, multicolored mudstone and minor sandstone
	Jms	Salt Wash Member, prominent sandstone and a few mudstone layers
	Jmt	Tidwell Member, multicolored mudstone, sandstone, and limestone
161 my	**Middle Jurassic**	
	Jw	Wanakah Formation, mudstone, gray over red, with minor sandstone
	Entrada Sandstone	
	Jeb	Board Beds unit, tan horizontal sandstones and thin mudstones
	Jes	Slick Rock Member, smooth rounded pale orange-red sandstone
176 my	**Lower Jurassic**	
	Jk	Kayenta Formation,sandstone, tan to orange, forms a resistant cap on cliffs
202 my –	ꞦJw	Wingate Sandstone, cross-bedded, red-orange, forms high cliffs
	Triassic	
225 my	Ꞧc	Chinle Formation, dark red shale, sandstone, conglomerate, and limestone
	Precambrian	
1.4 by >1.74 by	Xm	Metamorphosed sediment and granite, pegmatite veins, and fine-grained granitic and basaltic dikes.

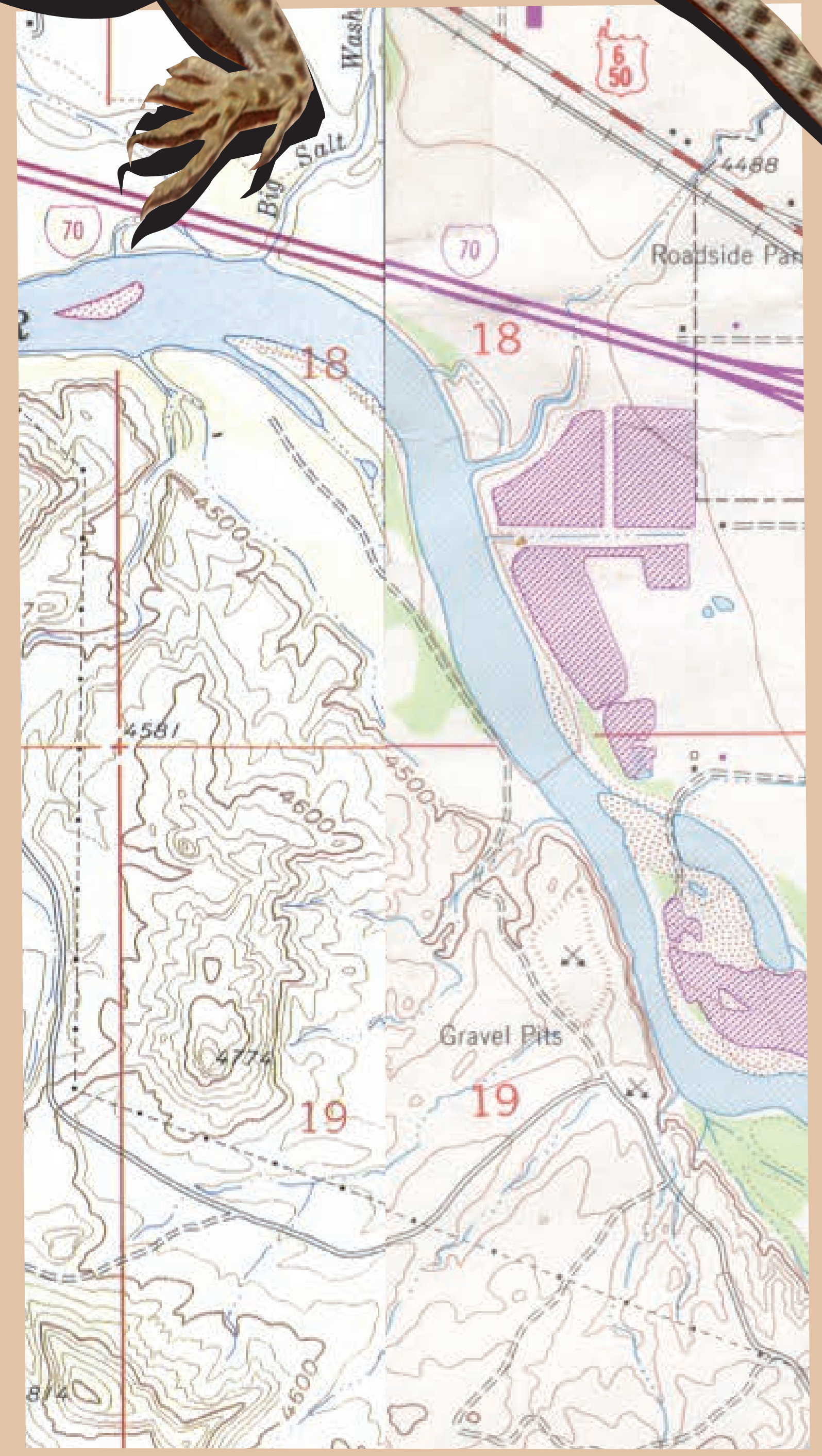
Symbols

Fault, dotted where buried — arrrows show relative motion
Thrust or reverse fault, teeth on upper side
Geology Teacher's Trail
Other trails

N
Magnetic North
10˚47' declination

Scale
1 mile
1 km

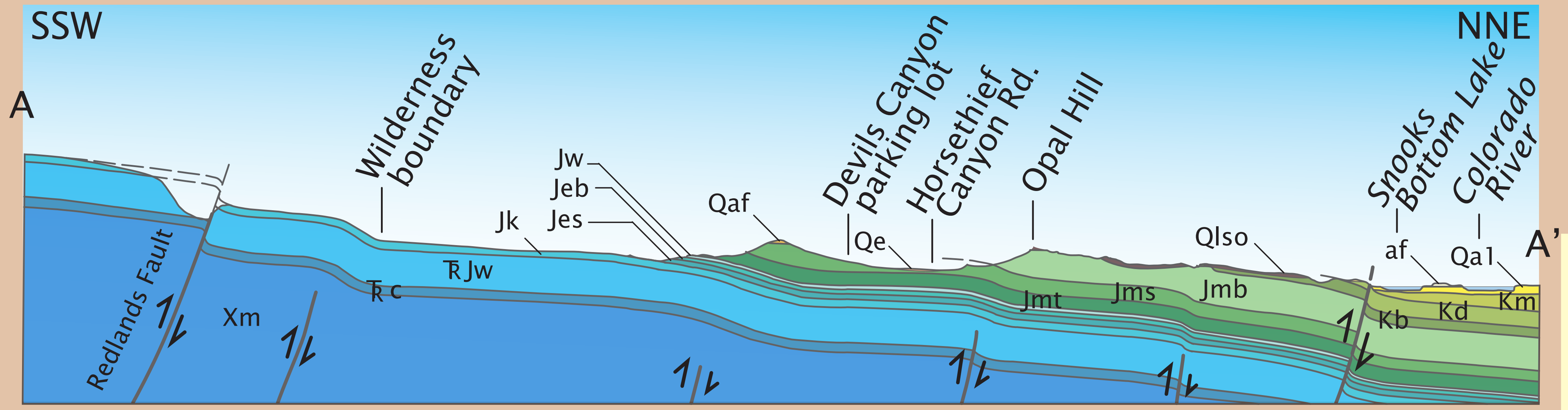




When geologists make a map, they start with a topographic map, a "topo map" for short. This is a topo map of the Opal Hill area.

The brown lines show the elevation, in feet above sea level.

You can tell the shape of the land from the lines: the closer together the lines are, the steeper the slope is. The lines curve around hills and point up valleys.



Cross Section of the Opal Hill - Devils Canyon Area

This cross section, from Devils Canyon to the Colorado River, shows how the rocks are oriented below the surface.

All but the most recent layers were folded and in places faulted upward when the Uncompahgre Plateau was pushed up during the time between 70,000,000 and 40,000,000 years ago. Rocks move, but they take their time!