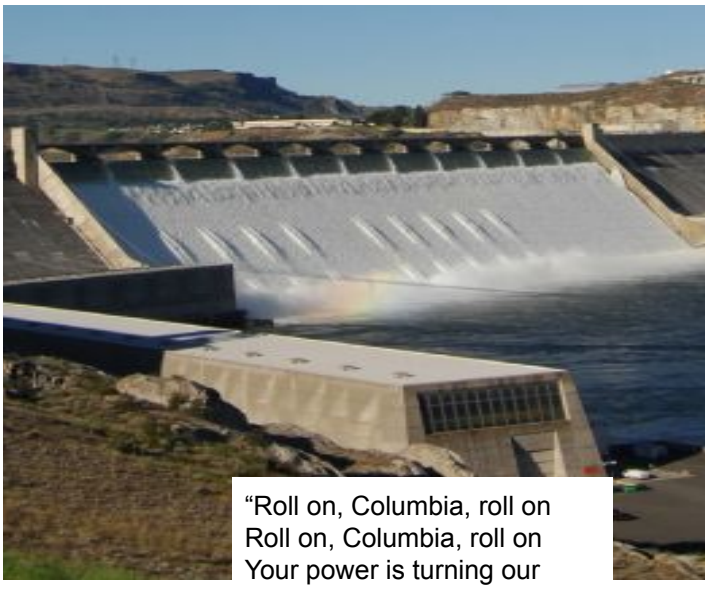


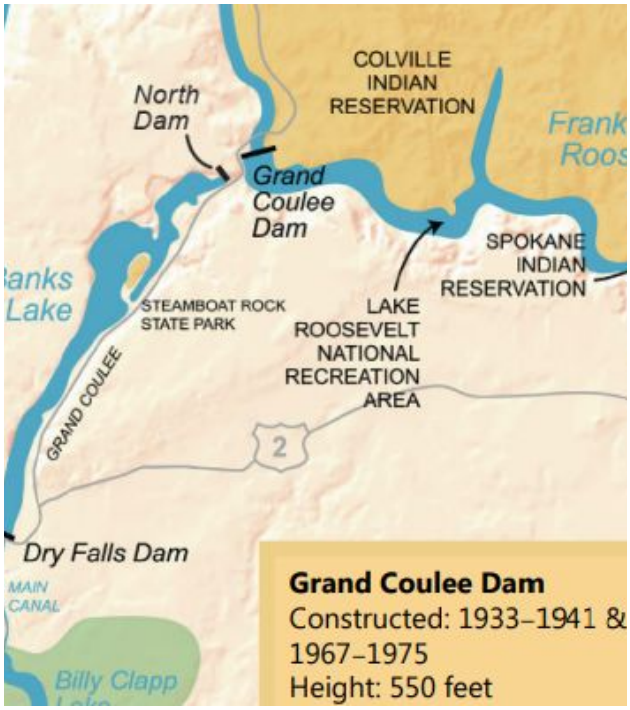
"Roll on, Columbia, roll on
Roll on, Columbia, roll on
Your power is turning our darkness to dawn
Roll on, Columbia, roll on"
-Woody Guthrie

GEOLOGY OF STEAMBOAT ROCK STATE PARK

Todd Folsom • Nov, 2022

Photos by C. Wilcox and T. Folsom or Public Domain

To put Steamboat Rock State Park and its geology into context we first have to look at the Columbia River and the Grand Coullee Dam.

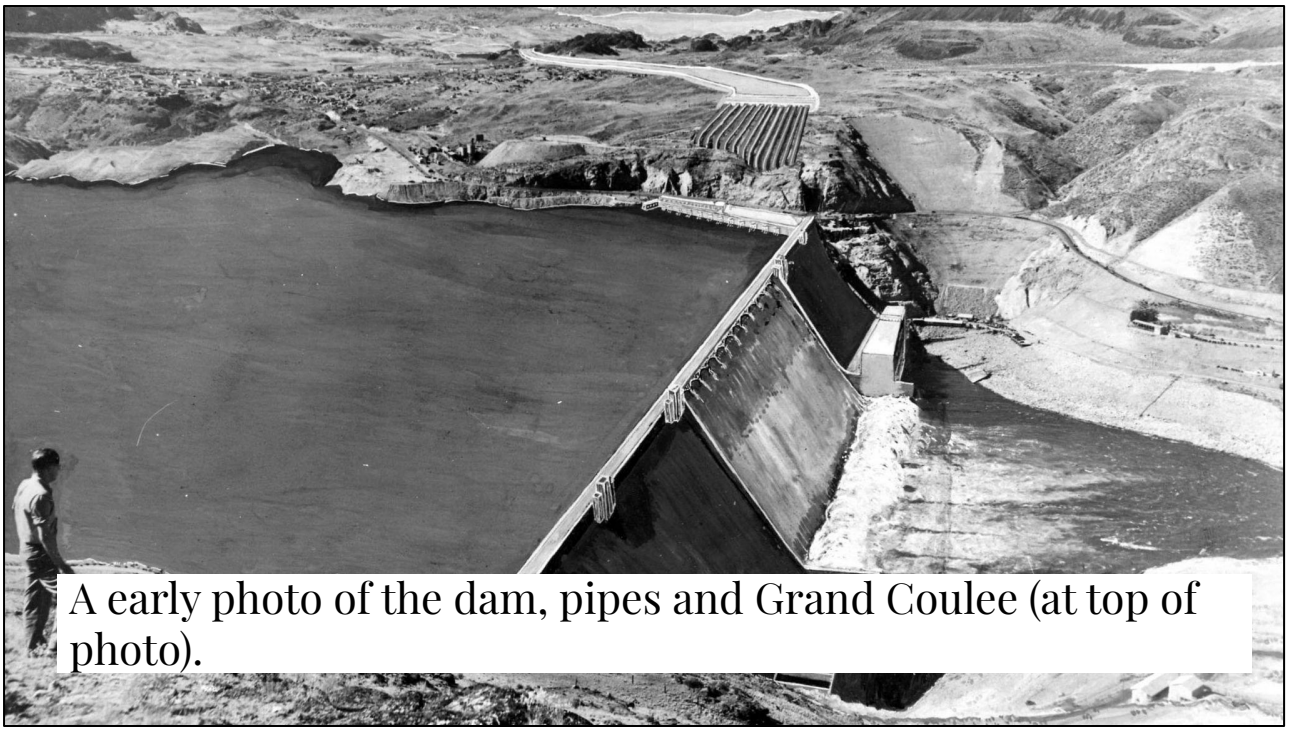


The Grand Coulee Dam is on the Columbia River. It flooded the Grand Coulee by pumping river water up to the Grand Coulee creating Banks Lake.

The coulee is in the Channeled Scablands which were created by megafloods out of Glacial Lake Missoula.

Steamboat Rock State Park is on Banks Lake, and that lake was created by filling the Grand Coulee with Columbia River water. Electricity generated at the dam is used to pump water up to the coulee where the water is mainly used for irrigation. Some water can also be released back to the turbines at the dam to make electricity at times of peak demand.

This region of central Washington is part of the Channeled Scablands which were created by multiple megafloods. The floods occurred when rising water from melting icesheets broke thru barriers and tore across the land. The great power of deep water rushing at high speed scoured the land and eroded channels, coulees, potholes and water falls.



A early photo of the dam, pipes and Grand Coulee (at top of photo).

Here at the top you can see the pipes and canal that bring water up to Banks Lake in the coulee.

The floods carved a coulee 25 miles long, around 2 miles wide, and 700’ deep with near vertical walls. (Hiking Washington’s Geology)

Steamboat Rock State Park includes Northrup Canyon and the mesa called Steamboat Rock which towers above Banks Lake.

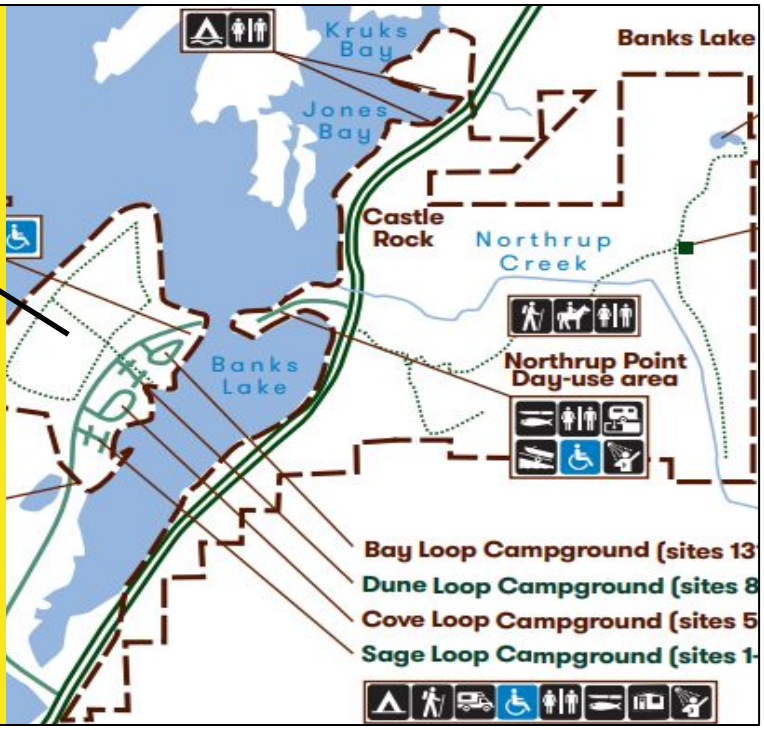
So what is Steamboat Rock? It is an isolated mesa in the Grand Coulee and it now rises well above Banks Lake.Northrup Canyon is on the east side of the coulee, as I'll show later.

Steamboat Rock State Park displays the Miocene (23-5 MYA) basalt that was repeatedly scourged by mega floods 18-20 thousand years ago.

Here, the pinkish area shows the Channeled Scablands in Washington and the location of the Coulee Monocline where Route 2 cuts across the area.

The Steamboat mesa is on the peninsula in Banks Lake.

Northrup Canyon is on the “mainland”. The creek in the canyon flows down the canyon to Banks Lake.



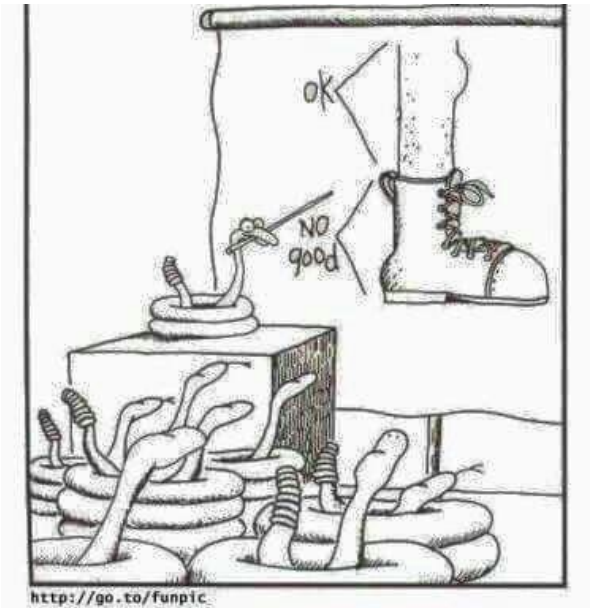
This is the map from the State Park’s website. To visit the canyon you drive a short way to a trailhead not shown on this map. Trails are the dotted lines.

Northrup Canyon hike

Northrup Canyon is a glaciated coulee with cliffs of Columbia River basalt and outcrops of granite carved by glaciers and the floods.

The floods occurring around 15,000 years ago dug into the basalt, creating the cliffs.Per the USGS, this valley was likely once a glacial lake. The Northrups were able to homestead here because there is a perennial water source. They lived here from the 1890’s until 1926. The trail to Northrup Lake continues behind an old shed to the left of that house.

Be wary on this hike.

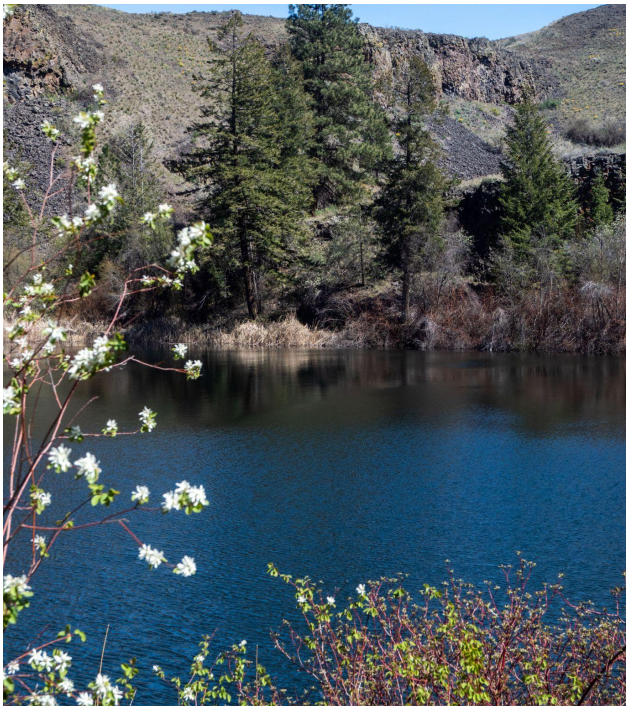


We did hear a rattle while walking on the section of old road between the trailhead and the homestead. While building the dam and reservoirs, “the snakes were so bad at a reservoir site that work was delayed one summer until hibernation time”. The Columbia River: A historical Travel Guide.

Northrup Lake showing plunge pool character.

Northrup Lake is a plunge pool. Granite bedrock is exposed on a ridge that the trail crosses on the way to the lake. This view looks down-canyon to the upper right.

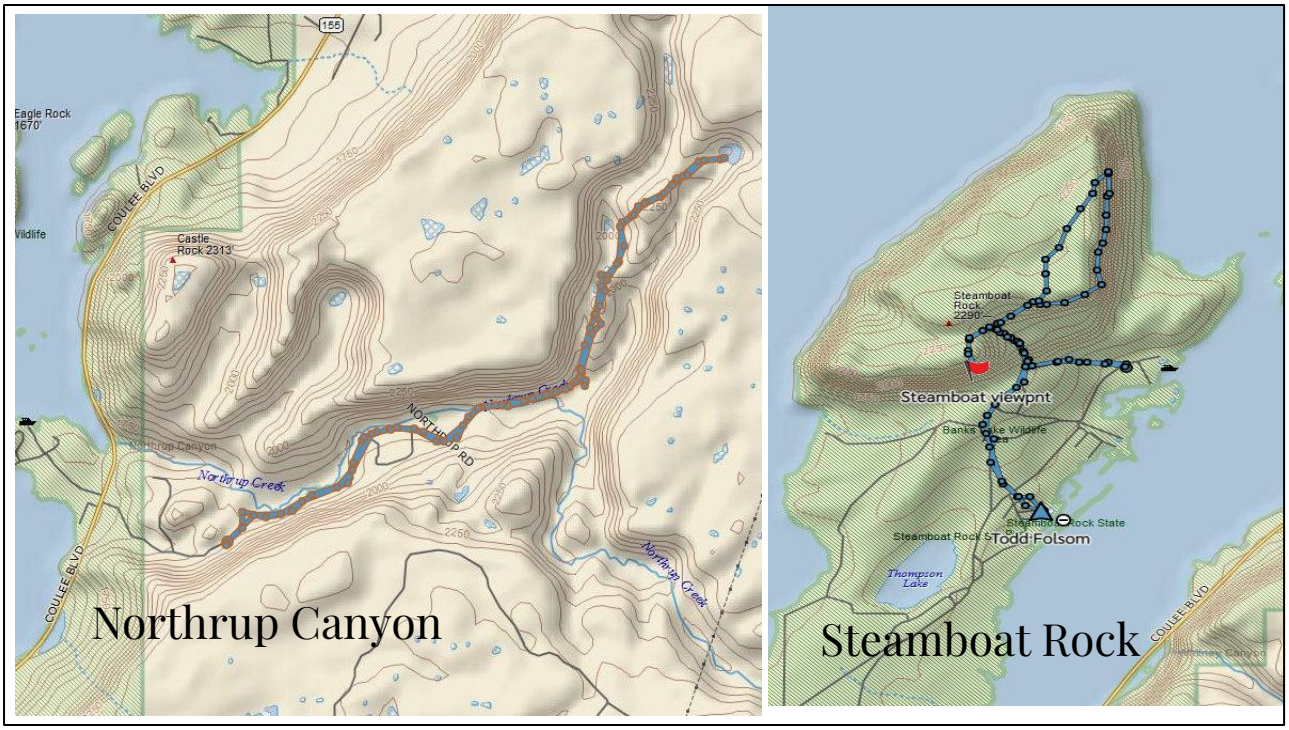
Two views of Northup Lake. Note the glacial erratic boulder dropped within the last 2 MY.



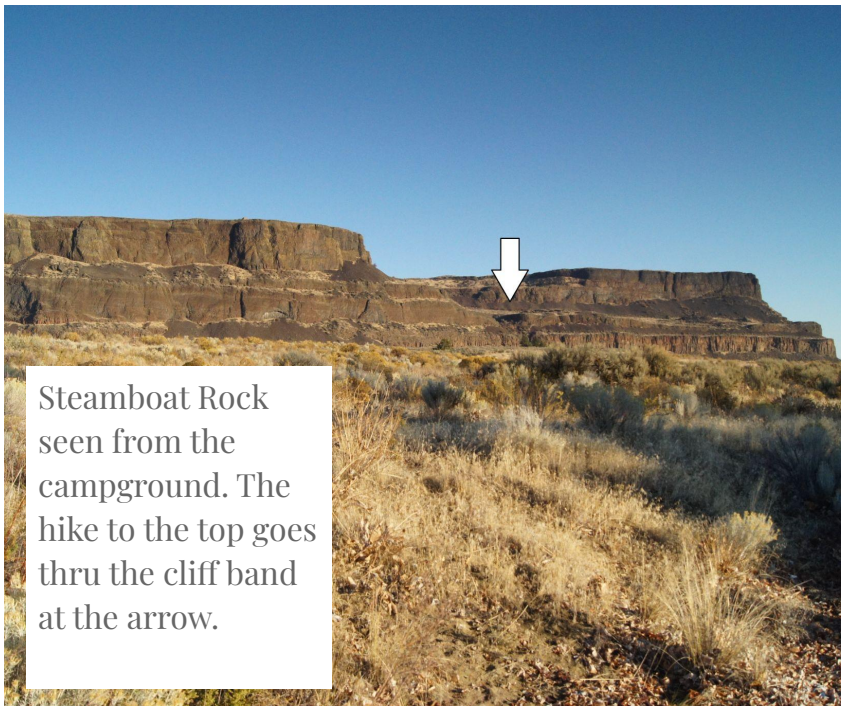
Granite is exposed along the trail to the lake.

Trash dumped by kitchen workers during dam construction.

Granite outcrops on the valley floor are known as roche moutonnees. These outcroppings are generally rounded on the uphill side and have steeper cliffs on the downhill side, a vestige of a moving glacier yanking away blocks of granite bedrock. Near the start of the trail, there is a huge expanse of rusty cans, broken crockery, and so on. This trash was dumped by the kitchen workers during construction of the Grand Coulee Dam. It will eventually form a stratum indicating the Antrhopocene!



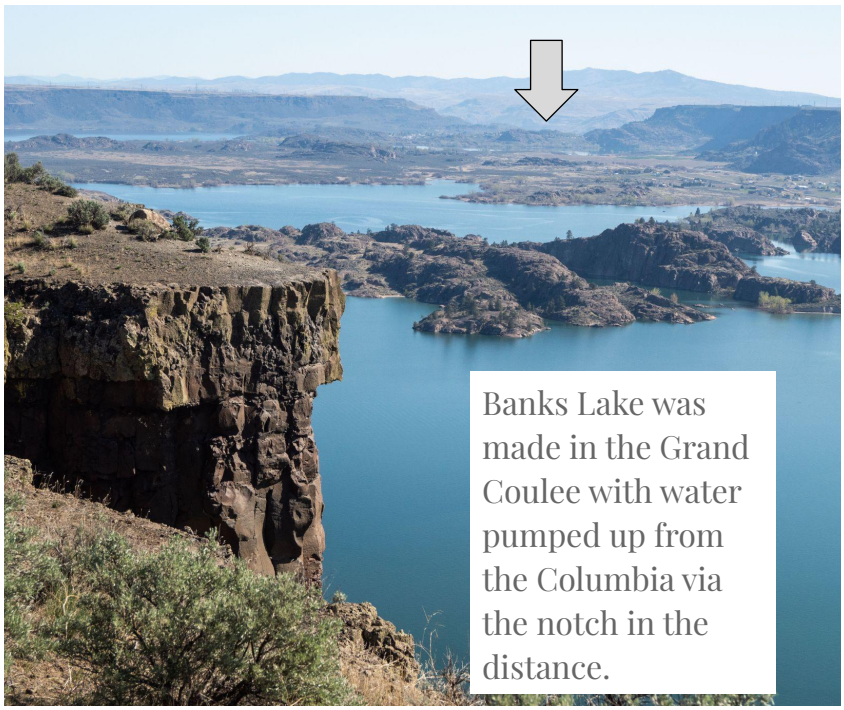
These screen shots show my hiking tracks as recorded by GPS. We visited Steamboat twice so there are two tracks here with different starting points.



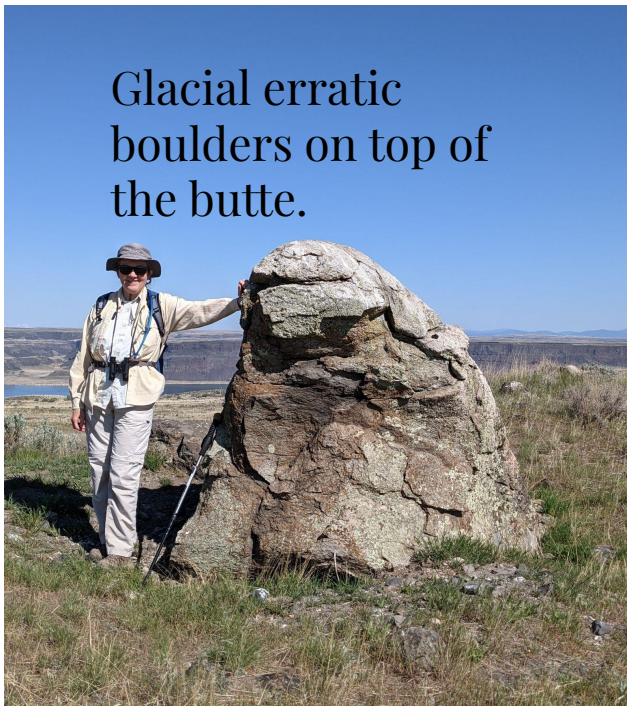
Steamboat Rock seen from the campground. The hike to the top goes thru the cliff band at the arrow.

The saddle in the middle of the mesa was likely carved by flood waters sweeping west across the southern end of Steamboat Rock. Imagine such a flood, 700’ above modern Banks Lake and 1300’ above the original (undammed) Columbia River. (hiking Washington’s Geology)

This is the steep scramble up thru the cliff band.



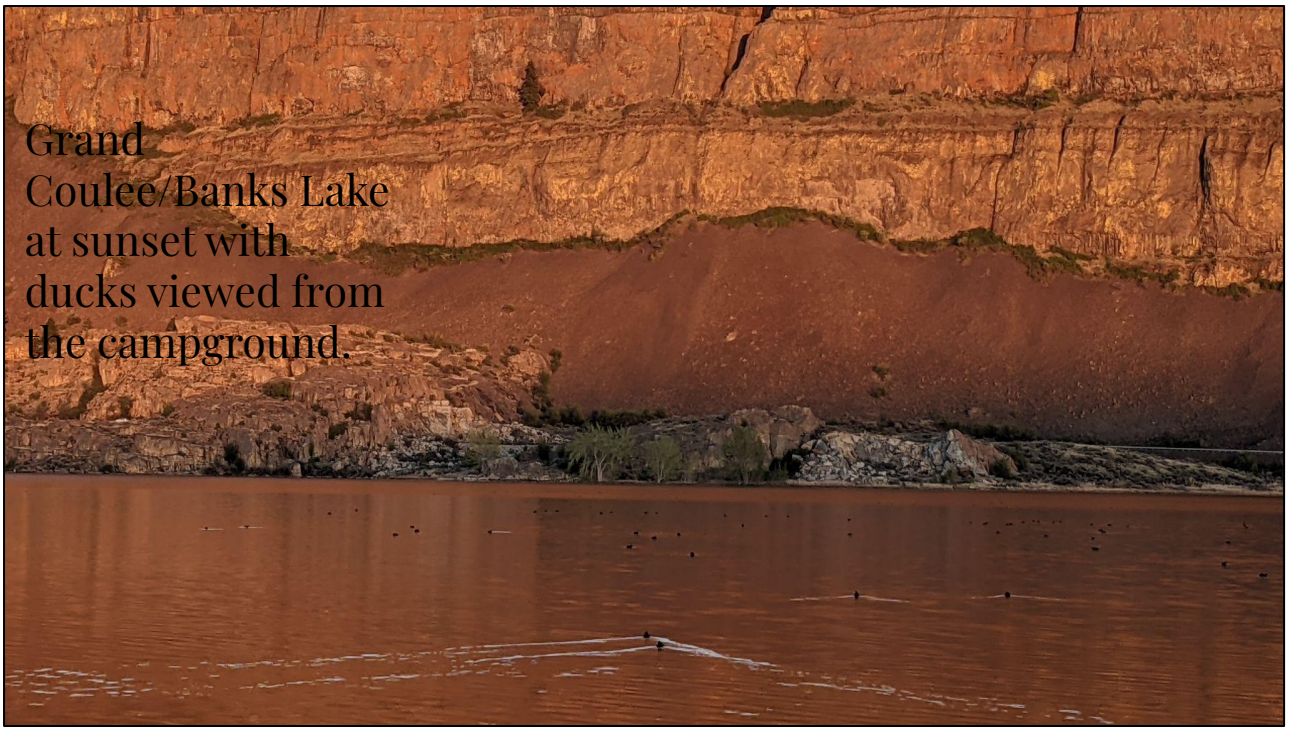
Banks Lake was made in the Grand Coulee with water pumped up from the Columbia via the notch in the distance.



The granite rocks are 100 million years older than the basalt under them. They were either dropped here when an ice sheet melted or “rafted” here by icebergs carried along in the floods. (Hiking WA Geology)

This is the view when standing beside the erratic boulder on the left in the previous slide. The edge of the cliff is a few feet in front of me. The sand on the peninsula to the left was blown here up the coulee by the prevailing southwesterly winds before the lake was formed. (Hiking WA Geology).

Here you can see the campground on the lakeshore.



Relax at your campsite and watch the setting sun turn the cliffs and lake golden.