

PRIEST RAPIDS DEVELOPMENT

GEOLOGY OF PRIEST RAPIDS



SITE OF PRIEST RAPIDS DAM

Under Construction by
**PUBLIC UTILITY DISTRICT
OF GRANT COUNTY
EPHRATA, WASH.**

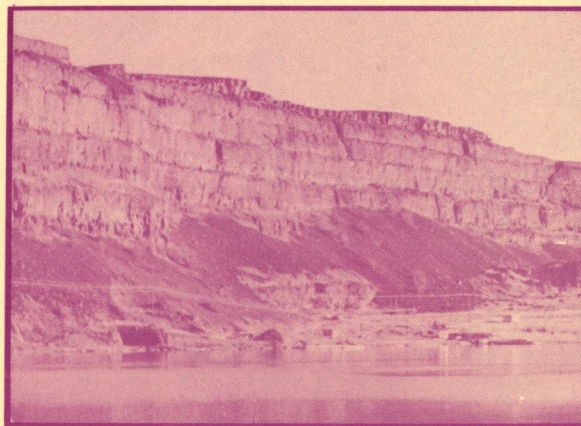
THE GEOLOGY OF PRIEST RAPIDS

This is a very brief description of the geologic history of the area. The history of the formation of Priest Rapids bedrock extends back over millions of years. More than 20,000,000 years ago the Columbia River flowed south from Canada to the Pacific Ocean.

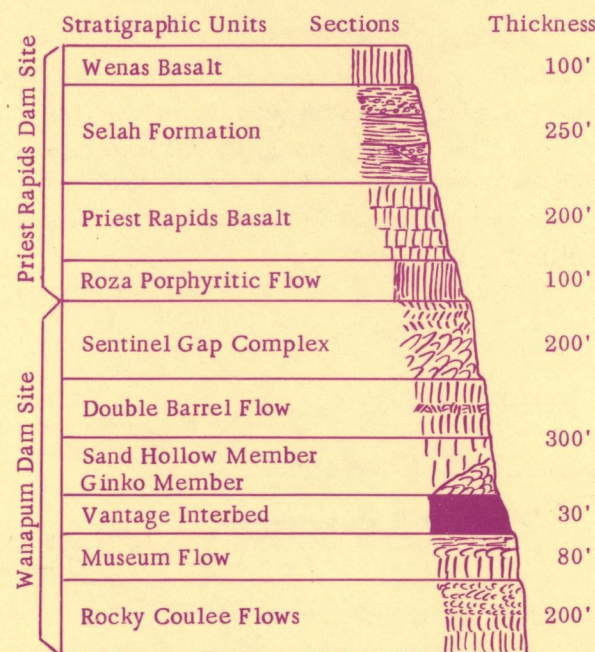
Then came the first of several wide-spread cataclysms that caused deep cracks to open in the surface of the earth. From these cracks lava welled up and spread out over the land. The molten lava hardened and formed basalt. Successive flows of lava occurred, some of them hundreds of thousands of years apart, piling layer on layer until the basalt was from 6,000 to 8,000 feet thick over much of Central Washington.

The Priest Rapids basalt is the more important unit, as it is the foundation rock for all concrete structures and most of the embankments of the dam. The Priest Rapids basalt consists of four flows with an overall thickness of about 200 feet, and is exposed in isolated outcrops along the river and in Panhandle and Whale Islands, upstream from Priest Rapids Dam.

The bedrock at the Priest Rapids Dam site consists generally of three different layers. The bottom layer is known as the Priest Rapids basalt, the middle layer is a relatively impermeable conglomerate of volcanic ash and gravel known as the Selah formation, and these two are overlain by a formation known as the Wenas basalt.



ROCK STRATA



DIAGRAMS OF ROCK STRATA

These successive flows of lava kept pushing the Columbia River farther and farther west until, finally, the river was pushed around past Bridgeport, Wenatchee and Vantage to form the loop known as the "Big Bend." In the following years the river kept cutting through the rock and enlarging the cut to form its present deep channel.

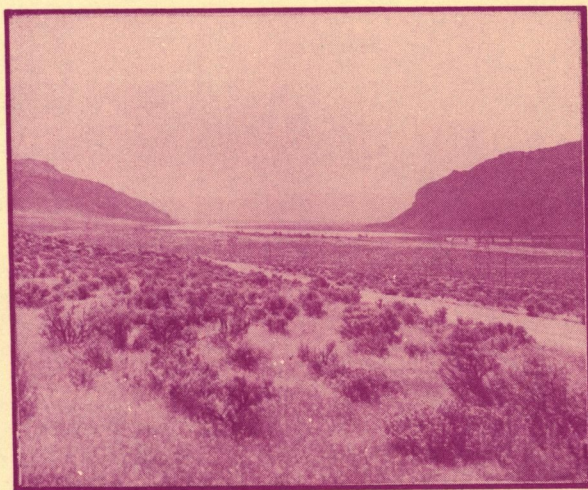


COLUMBIA RIVER GORGE

When one recalls the many millions of years involved in creating the present geological features at the Priest Rapids Dam site it is difficult to realize that changes are still constantly occurring. Nature may be unhurried - but she is never static.

About a million years ago the Pleistocene Epoch, or Ice Age, began. Huge sheets of ice came down from the north, extending as far south as Coulee City.

Weak spots occurred in the earth's crust, forming volcanic peaks. The basalt flows folded into ridges and hills known as the Frenchman Hills, Saddle



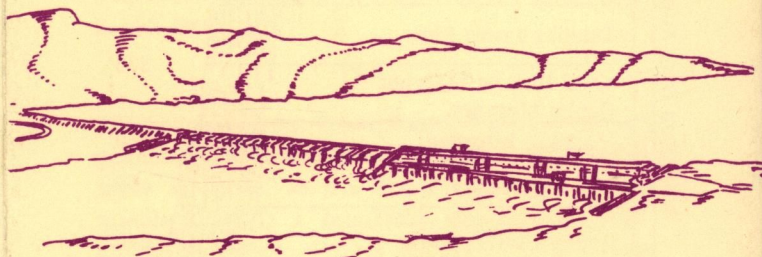
SENTINEL GAP

Mountains and the Umtanum Ridge (the Umtanum Ridge is on the west bank of the Columbia River at Priest Rapids.) As the Saddle Mountains gradually rose the Columbia kept cutting its way through the opening now known as Sentinel Gap, near Beverly. This passageway is still used by the river.



DRY FALLS

The blocking of the Columbia River at the site of Grand Coulee Dam by the mass of glacial ice caused the Columbia River to cut a new channel south, past Coulee City, forming the upper and lower Grand Coulee, creating Dry Falls and flowing into a huge lake reaching from Soap Lake to the Frenchman Hills.



PRIEST RAPIDS HYDROELECTRIC DEVELOPMENT