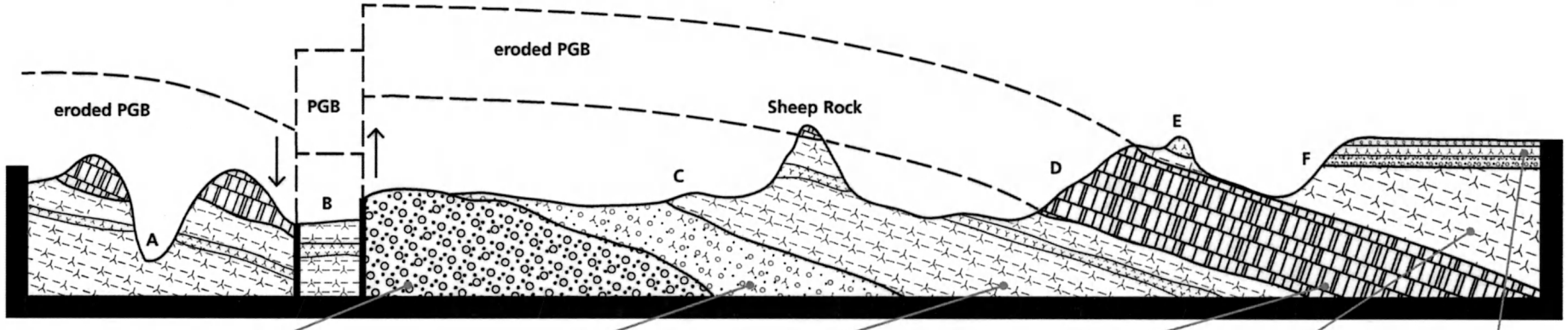
Sheep Rock Geology

National Park Service
U.S. Department of the Interior

John Day Fossil Beds
National Monument



Goose Rock Conglomerate, formed when much of Oregon was still ocean floor. The well rounded and diverse rocks in the matrix suggest a large river emptied into the ocean here, 90 million years ago.

Clarno Formation, made up of volcanic ash falls, mudflows, and lava deposits. A lush semi-tropical rainforest dominated the landscape while these rocks were forming, 54 to 37 million years ago.

John Day Formation, made primarily of ash fall material from the Ancestral Cascade Vocanoes. Temperate hardwood forests and open woodlands dominated the area during the formation of these rocks from 37 million to 18 million years ago. Grasses would appear in the area during the late part of this period.

Picture Gorge Basalts subgroup formed from a series of 61 lava flows from fissures in the earth's crust 16 million years ago. They covered approximately 2,500 square miles. These are a small subgroup of the Columbia River Basalts, which include hundered of flows in the region.

Mascall Formation, consisting of ashfall deposits from volcanoes to the east, south, and west from 15 to 12 million years ago. Savannas dominated the area.

Rattlesnake Formation, consisting of material from nearby mountains that eroded into grassy valley floors and ashfall deposits from volanoes to the south. Formed 8 to 5 million years ago in a steppe environment similar to today's.

A. Blue Basin

B. Middle Mountain Fault area

C. Thomas Condon Paleontology Center and Cant Ranch

D. Picture Gorge is cut through the Picture Gorge Basalts in this area

E. Mesa topped by Rattlesnake Ash Flow Tuff

F. Mascall Overlook

Interbedded claystone and tuff

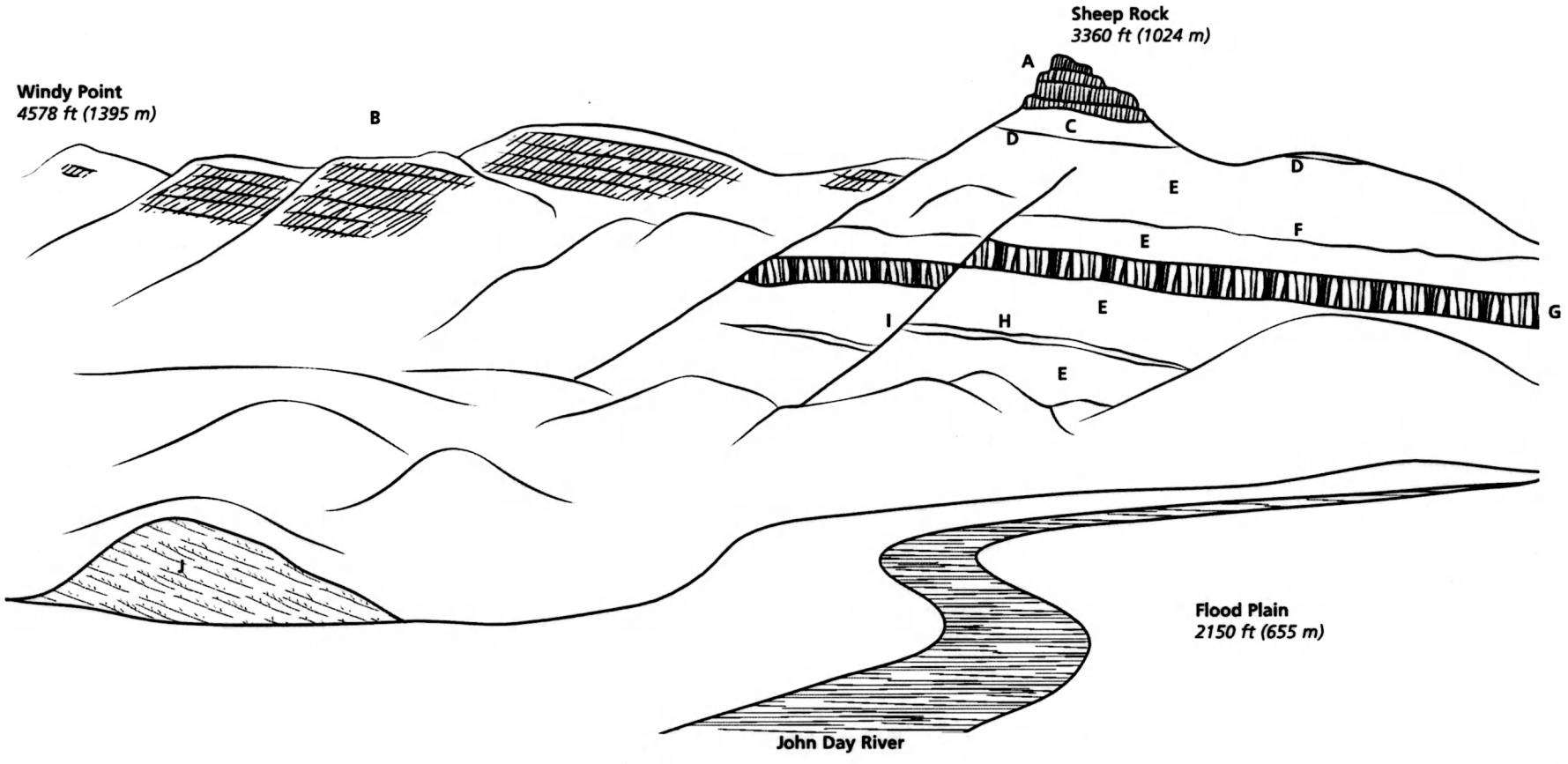
Conglomerate

Lahar

Basalt

Ingnimbrite

Quaternary deposits



A. Sheep Rock capstone is a remnant of 16 million year old Picture Gorge Basalts.

B. Ridgelines also topped by Picture Gorge Basalts.

C. Tan and pink claystones and siltstones of the Kimberly Member of the John Day Formation, 26 to 24 million years old.

D. Tin Roof Tuff, 25.9 million years old.

E. Blue-green and tan claystones and siltstones of the Turtle Cove Member of the John Day Formation, 32 to 26 million years old.

F. Deep Creek Tuff, 27.9 million years old.

G. Greenish brown Picture Gorge Ignimbrite layer, 28.7 million years old. Appears reddish in some other locations, such as the top of Cathedral Rock.

H. Whitish Blue Basin Tuff, 28.8 million years old.

I. Small fault line running diagonally through Sheep Rock. Note the offset layers to each side.

J. Red claystones of the Big Basin Member of the John Day Formation, 32-40 million years old.