

Geology & Cultural History of Vermilion Cliffs National Monument (VCNM), Arizona

VCNM Parameters

- *Established* 9 Nov. 2000 - Exe. Order President W.J. Clinton
- *Land Mangement:* Bureau of Land Management & minor private in-holdings
- *Footprint:* 293,689 acres
- *Cultural features:* 100+ archaeological sites dating to 12,000 YBP, abundant and invaluable rock-art.
- Endangered species: Californian condor
- Current Use(s): Recreation,

Physiographic Features

Colorado Plateau, Paria Plateau, West Clark Bench, East Kaibab Monocline, Vermilion Cliffs, Echo Cliffs, the Wave at Coyote Buttes, White Pocket.

Historical Mineral Resources

Mining in what is now the VCNM was confined to small production uranium extraction from the Chinle Formation exposed in the Vermilion Cliffs on the east side of the monument. Efforts to identify economic gold and mercury deposits failed. Small volume sand and gravel deposits possibly suitable for construction are found in small volumes along stream courses (Bush and Lane, 1980). Small scale oil and gas exploration yielded no evidence of economic deposits.

Groundwater is abundant in the Navajo Sandstone and the Moenave and Kayenta Formations.

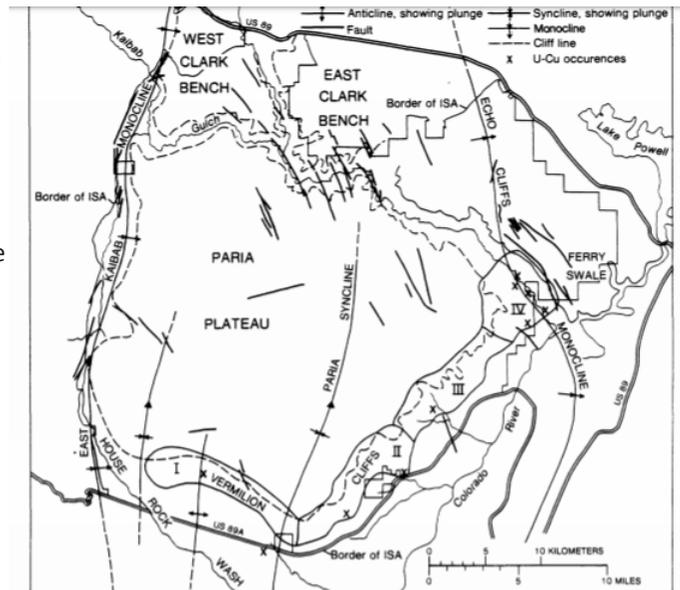
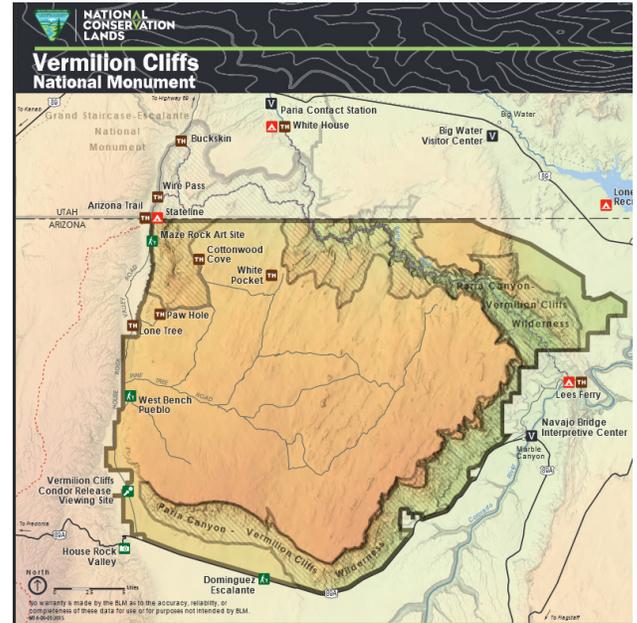
Mineral Resource Summary. The absence of formally identified and characterized mining districts in the VCNR reflects the lack of extractable mineral resources here. In their 1980 mineral assessment of the Vermilion Cliffs and Paria Plateau area, Burns and Lane concluded, 'No reserves of uranium, gold or mercury can be postulated for the study area with data presently available.'

Concluding Statement.

The VCNM is remote and lacks even basic infrastructure. Historically, mineral extraction was rare and there is little geologic evidence for economic minerals deposits in the monument (Bush and Lane, 1980).

Select Literature Resources

- Bush A.L. and Lane, M.E., 1980, Preliminary Report on the Mineral Resource Potential of the Vermilion Cliffs-Paria Canyon Instant Study Area, Coconino County, Arizona, and Kane County, Utah. US Geological Survey Open-File Report 80-1056, 24 p.
- Lane, M.E., 1983, Mine and prospect map of the Vermilion Cliffs-Paria Canyon Instant Study Area and adjacent wilderness areas, Coconino County, Arizona,



Simplified geologic map of VCNM (Bush and Lane, 1980).

and Kane County, Utah. US Geological Survey Miscellaneous Field Studies Map 1475, map scale 1:6250.

Billingsley, G.E. and Priest, S., 2013, Geologic map of the Glen Canyon Dam 30' x 60' quadrangle, Coconino County, northern Arizona. US Geological Survey Scientific Investigations Map 3268, 3 map plates, scale 1:50,000.

