

A Review: Department of Energy's Assessment of Potential Flood Hazards at the Moab Project Site

Recommendations:

- Address uncertainties associated with catastrophic floods.
- Conduct a paleoflood hydrology investigation at an appropriate Colorado River site in the vicinity of Moab. This study of slackwater deposits should include surveys of elevations, geometry of the adjacent flood, channel ways, stratigraphy of the flood deposits, geochronology, and hydraulic calculations of the associated paleoflood discharges.

The end result will be an estimate of the flood frequency hazard for the Colorado River in the vicinity of Moab.

Paleofloods in the Upper Colorado River near Moab, Utah

Recommendations:

- Results from the paleoflood study suggest that a further and more accurate study is definitely needed in the future in order to improve the risk assessment for the Moab area and Moab Valley.
- Data should be put into a full-up flood-frequency analysis, so that the 100- and 500-year magnitudes can be inferred directly from the paleoflood data alone.
- Test the validity of estimates of frequency and rate of the probable maximum flood.
- Conduct further studies to investigate the complex relationship between the Moab Valley and the Colorado River.

The Moab Mill Project:

A technical report towards reclaiming uranium mill tailings along the Colorado River in Grand County, Utah

Conclusions and Recommendations

LIVING RIVERS Colorado Riverkeeper

P.O. Box 466
Moab, Utah 84532
www.livingrivers.org
435-259-1063

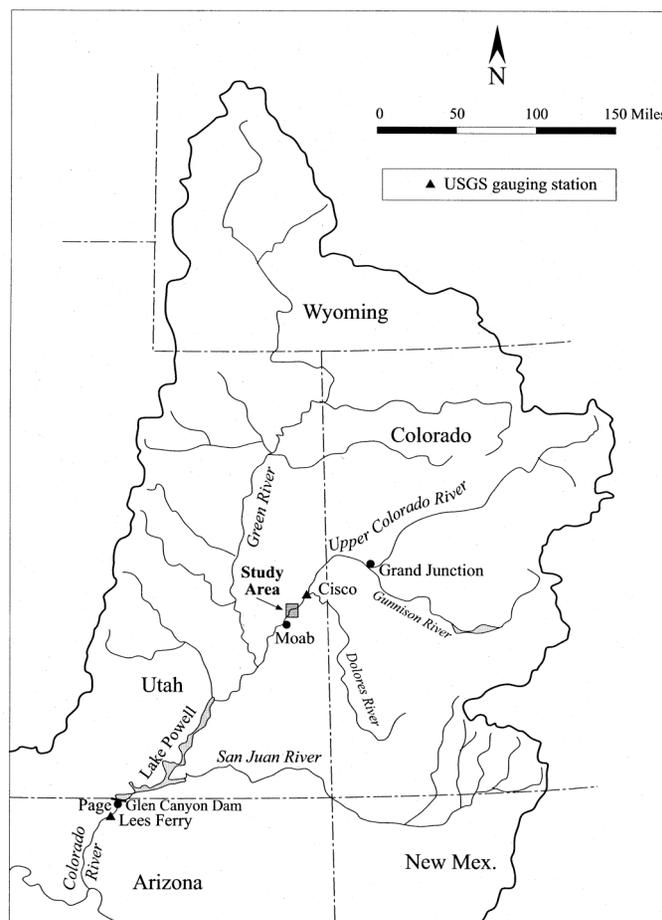
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A Review: Department of Energy's Assessment of Potential Flood Hazards at the Moab Project Site (Atlas Tailings Pile)

by Dr. John C. Dohrenwend
January 2005

Summary of Conclusions:

- The Colorado River is not migrating south and east away from the Moab tailings pile.
- Courthouse Wash and Moab Wash have not caused the Colorado River channel to migrate away from the mill site. Floods have deposited sediments on the south side of the river channel and have actively contributed to the northward migration of the river channel.
- Continuing subsidence could cause the river to move closer the pile.
- Possibility that extreme localized subsidence or extreme deep channel scour has occurred in this area sometime during the past 45,000 years.
- The geometry and position of ancient Colorado River gravels buried under the surface of Moab Valley show that the river has shifted back and forth across mill and tailings site in the recent geologic past.



Paleoflood Study Area

The complete report is available from Living Rivers and at <http://www.livingrivers.org/MoabMillProject.pdf>

Paleofloods in the Upper Colorado River near Moab

by Dr. Noam Greenbaum,
John S. Weisheit, Tess Harden,
and John C. Dohrenwend
May 2006

Summary of Conclusions:

- At least 3 floods exceed the probable maximum flood (PMF), about 300,000 cfs ($8,500 \text{ m}^3 \text{ s}^{-1}$), during the last 1,300 to 1,520 years.
- Paleoflood record probably includes another 2 undated larger floods with peak discharges exceeding 350,000 cfs ($10,000 \text{ m}^3 \text{ s}^{-1}$) that may have occurred during the last 1,920 to 2,360 years.
- The maximal peak discharge values need to be confirmed by the HEC-RAS procedure. If correct, these values exceed the PMF value (300,000 cfs) of the USGS for the Moab Valley.
- The peak discharge of about 20 paleofloods during the last 1,920 to 2,360 years exceeded the 500-year flood (120,000 cfs or $3,400 \text{ m}^3 \text{ s}^{-1}$).
- Over 25 paleofloods exceeded peak discharges of the 100-year flood ($97,600 \text{ cfs}$ or $2,765 \text{ m}^3 \text{ s}^{-1}$).

