



United States Department of the Interior

40-3453

GEOLOGICAL SURVEY

WATER RESOURCES DIVISION
1016 Administration Building
1700 S 1745 W
Salt Lake City, UT, 84104

RETURN ORIGINAL TO PDR, HQ.

January 18, 1994

Mr. Ramon E. Hall, Director
Nuclear Regulatory Commission
Region IV
Uranium Recovery Field Office
Box 25325
Denver, Colorado 80225

DOCKETED
JAN 24 1994
USNRC
MAIL SECTION
DOCKET CLERK

94
JAN 21 10:03
URFO
RECEIVED

Dear Mr. Hall,

Thank you for inviting the USGS-Water Resources Division to your technical meeting with Atlas January 13th. We appreciate being able to provide hydrologic assistance if needed.

We might be able to provide streamflow velocity to use in estimating bank erosion potential. Colorado River flow velocities are measured directly with a current meter when our hydrologic technicians make discharge measurements. That means during each discharge measurement, the velocity of flow is directly measured 25 to 30 times at 2 depths in the section under the cableway; thus, streamflow velocities are available for many different points within the section, near the banks as well as in midstream. Although no measurements have been made on the Colorado near the Atlas mill tailings, I'm sure that discharge measurements have been made at the Cisco gage for a full range of discharges. If your hydrologist or the Atlas engineers think these velocity values at Cisco would be useful in assessing the bank erosion potential, they could contact George Birdwell or one of his staff in our Moab Field Office. The values for flow velocities would have to be extracted from the field notes, provided they are still available. The Moab Field Office phone is (801)259-5495.

Another technical aspect of data collection that we have been thinking about is that of sampling the Colorado River upstream and downstream of the Atlas tailings site to determine the concentration of radionuclides that may be entering the river in that reach. We have not seen the reports regarding the sampling procedure and frequency used by Atlas. If these are adequate to identify and characterize any introduction of radionuclides to the river, this may be a dead issue, but we feel it should be mentioned so that all parties are aware.

For several decades it has been established procedure at the USGS Water Resources Division to collect river water samples using the equal-discharge-increment (EDI) or the equal-transit-rate (ETR) methods. This procedure assures that a sample representing the entire river is obtained, and that the sample is not biased toward or away from any single portion of the river cross section.

9402240077 94011B
PDR ADOCK 04003453
C PDR

18:170

DF02
110

Certified By *Mary C. Hord*

94-0208

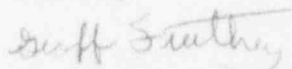
Samples collected using other methods may over or under estimate the concentration of solute dissolved in the entire volume of water in the river. The degree of over or under estimation would depend on the exact release point of the solute in question and how much mixing has taken place between that point of release and the cross section where the sample was collected. If other than the EDI, ETR, or equivalent method was used, the resulting numbers for average concentration of solutes for the entire flow of the river may be flawed, and thus, open to question during subsequent reviews. The sampling methods mentioned are described in:

Guy, H.P., and Norman, V.W., 1970, Field methods for measurement of fluvial sediment: U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter C2, p. 26-40.

The sampling techniques are described for collection of sediment loads, but are equally applicable for sampling to determine dissolved chemical constituents.

Please call if you or any of your staff have questions regarding hydrologic aspects of the Atlas tailings remediation. We would be glad to help if we can.

Sincerely,



Geoff Freethey
Supervisory Hydrologist

cc: Jim Kolva, Surveillance Section Chief
George Birdwell, Moab Field Office Chief