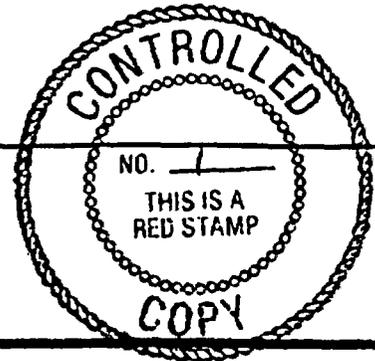
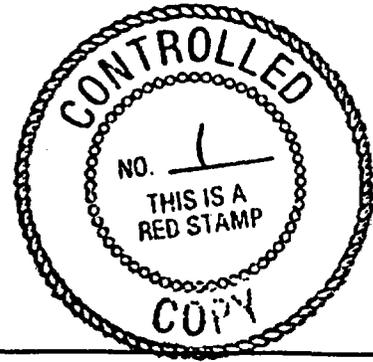

**Study Plan for
Study 8.3.1.2.1.2**



Characterization of the Yucca Mountain Regional Surface- Water Runoff and Streamflow

**U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585**

Prepared by
U.S Geological Survey



Study Plan Number 8.3.1.2.1.2

Study Plan Title Characterization of the Yucca Mountain Regional Surface --
Water Runoff and Streamflow

Revision Number 1

Prepared by: U. S. Geological Survey

Date: 11/30/92

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for Director, Regulatory and Site Evaluation Division / Date
R.C. Spence
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for a variety of different-size drainages of varying aspects at widely scattered locations on Yucca Mountain. The data are also needed for site flood and debris-hazards studies (Activity 8.3.1.16.1.1.1) and will also add to the understanding of regional surface-water characteristics (Activity 8.3.1.2.1.2.2). Final site locations may differ from those proposed in Figure 3.1-4 and Table 3.1-1. A prototype-testing phase is planned to field-test measurement devices, systems, and techniques that may be used by this network. This prototype testing is recommended to be undertaken early, whenever possible; however these evaluations may be conducted in parallel with the selection and emplacement of gages. Early prototype testing will enhance the proper selection of equipment and techniques to finalize the objectives, design, construction, and activation of the Yucca Mountain intensive, streamflow network.

Precipitation gages are also planned for each of the streamflow sites to provide data on rainfall for the drainages of interest, to supplement Activity 8.3.1.2.1.1.1 (Precipitation and meteorological monitoring). These site-specific precipitation data will be used in conjunction with the regional precipitation data to define quantitative relations between rainfall and runoff for the selected drainages. Fluvial suspended-sediment monitoring is also planned for about six of the measurement sites. These measurements, if successful, will provide data regarding the magnitudes and temporal distributions of the relative proportions of water and sediment in the streamflow mixtures. The sediment data are needed to improve accuracy when assessing the true water-volume component of the streamflow mixtures. The sediment-transport data will also be useful to activities that relate debris transport to severe runoff and flooding (Activities 8.3.1.16.1.1.1 and 8.3.1.2.1.2.2). Equipment to be used for these auxiliary activities of the network (precipitation and sediment-transport monitoring) may also be tested to varying degrees as part of the prototype investigation.

As noted in the above discussion, this activity only addresses the measurement and documentation of streamflow in channels. No attempts are planned to assess overland (unchannelized) flow as part of this activity, because it is being investigated in Study 8.3.1.2.2.1 (Unsaturated-zone infiltration).

Alternatives to determining the durations of runoff events by use of continuously-recording streamgages are: (1) by use of human observers, (2) by use of moisture detectors with recorders, and (3) by use of audio-visual recordings of runoff in channels. These alternatives were rejected because: (1) human observers are not present during most times of runoff and are therefore unreliable, (2) moisture detectors with recorders are not as reliable as streamgages and may be more costly, and (3) audio-visual recorders are not yet proven as adequate substitutes for stream-stage recorders, may be more costly, and do not provide as accurate or as dependable data on streamstage at given times as standard streamstage recorders.

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