



Department of Energy
Washington, DC 20585

DEC 24 1992

Mr. Joseph J. Holonich, Director
Repository Licensing & Quality Assurance
Project Directorate
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Holonich:

Enclosed with this letter is a controlled copy of Study Plan 8.3.1.5.2.1, Revision 2, prepared by the U.S. Department of Energy (DOE) for the Yucca Mountain site. The study plan numbers correspond to the same numbers used in the Site Characterization Plan (SCP) for the Yucca Mountain site.

<u>Number</u>	<u>Title</u>
8.3.1.5.2.1, R2	"Characterization of Yucca Mountain Quaternary Regional Hydrology"

DOE has reviewed the study plan for consistency with the content requirements for study plans, as given in Attachment B to the Summary of the DOE/U.S. Nuclear Regulatory Commission (NRC) meeting on the Level-of-Detail for the SCP (May 7-8, 1986). DOE is submitting this plan to NRC as agreed to in the meeting.

As discussed during the DOE/NRC meeting (December 15, 1988) on study plans, DOE has decided to control preparation and review of study plans as a quality activity. This study plan was reviewed under current Yucca Mountain Site Characterization Project Office (YMPO) and U.S. Department of Energy/Headquarters quality assurance (QA) procedures.

Study plans prepared under current procedures do not require detailed information on QA requirements. To satisfy the May 7-8, 1986, agreement to provide specific QA requirements, current study plans indicate that applicable QA criteria will be specified in Yucca Mountain Site Characterization Project QA Grading Reports, which are issued as separate controlled documents.

It should also be noted that there may be some inconsistencies in the milestone report titles and schedules given in this study plan and those in the SCP. Study plans, in general, represent a further evolution of the study in the areas related to schedules

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and milestones relative to the SCP, and as such, represent DOE's current plans.

Revision 2 adds activity 8.3.1.5.2.1.1, "Regional Paleoflood Evaluation" to this study plan. Activity 8.3.1.5.2.1.2, "Quaternary Unsaturated-Zone Hydrochemical Analysis," has been deleted from this study plan because the scope of this activity is covered under Study Plan 8.3.1.2.2.7, "Unsaturated-Zone Hydrochemistry." Study Plan 8.3.1.5.2.1, Revision 2, now includes all activities planned for this study.

DOE did not identify any Site Characterization Analysis open items related to this study plan.

The Document Transmittal/Acknowledgement Record for your controlled copy of the study plan should be signed and dated and returned to the Document Control Center in Las Vegas, Nevada.

If you have any questions, please contact Mr. Chris Einberg of my office at 202-586-8869.

Sincerely,

for Linda J. Devel

John P. Roberts
Acting Associate Director for
Systems and Compliance
Office of Civilian Radioactive
Waste Management

Enclosures:

on the shelf
Study Plan 8.3.1.5.2.1, R2

cc: w\enclosure
Alice Cortinas, CNWRA, San Antonio, TX

cc: w\o enclosure
C. Gertz, YMPO
R. Loux, State of Nevada
T. Hickey, Nevada Legislative Commission
M. Baughman, Lincoln County, NV
J. Bingham, Clark County, NV
B. Raper, Nye County, NV
P. Niedzielski-Eichner, Nye County, NV
G. Derby, Lander County, NV
P. Goicoechea, Eureka, NV
C. Schank, Churchill County, NV
F. Mariani, White Pine County, NV
V. Poe, Mineral County, NV
E. Wright, Lincoln County, NV
J. Pitts, Lincoln County, NV
R. Williams, Lander County, NV
J. Hayes, Esmeralda County, NV
B. Mettam, Inyo County, CA
C. Abrams, NRC

RECORD OF REVISIONS

<u>REVISION NUMBER</u>	<u>REVISION</u>	<u>DATE</u>
R0	Study rationale and plans for three activities: Evaluation of past-discharge areas (Section 3.3) Analog recharge studies (Section 3.4) Studies of calcite and opaline-silica vein deposits (Section 3.5)	5/15/89
R1	Delete discussions of Quality Assurance Level Requirements and replace with discussions of current requirements	2/12/91
R2	Addition of plans for one activity: Regional paleoflood evaluation (Section 3.1)	3/31/92

ABSTRACT

This study plan describes four activities to be performed in the Yucca Mountain vicinity or at analog sites as part of the Climate Program. The objective of these activities is to describe hydrologic conditions in the Yucca Mountain area for the Quaternary and more especially for the past 20,000 years. Data resulting from the study will permit the development and testing of various models describing paleohydrologic and possible future hydrologic conditions, and the study is expected to result in a characterization of the Quaternary regional hydrology at Yucca Mountain and environs, and to provide data on responses of the hydrologic system to possible climatic changes. The activities include:

- o Evaluation of past-discharge areas,
- o Analog recharge studies,
- o Studies of calcite and opaline-silica vein deposits, and
- o Regional paleoflood evaluation (added in R2).

The scope of SCP Activity 8.3.1.5.2.1.2 (Quaternary unsaturated-zone hydrochemical analysis) is covered by work that will be performed as part of Study 8.3.1.2.2.7 (Unsaturated-zone hydrochemistry, YMP-USGS SP 8.3.1.2.2.7), and therefore the inclusion of the activity in the present study would be redundant. The justification for omitting the activity from this study is presented in more detail in a change request transmitted in parallel with this study plan.

The rationale of the overall Quaternary regional hydrology study is described in Sections 1 (regulatory rationale) and 2 (technical rationale). Section 3 describes the specific activity plans, including the tests and analyses to be performed, the selected and alternate methods considered, and the technical procedures to be used. Section 4 summarizes the application of study results to other investigations, and Section 5 presents the schedules and associated milestones.

March 31, 1992