



**Department of Energy**

Washington, DC 20585

JUN 20 1994

Mr. Joseph J. Holonich, Director  
High-Level Waste and Uranium  
Recovery Projects Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Holonich:

This letter transmits the Office of Civilian Radioactive Waste Management Yucca Mountain Site Characterization Office Monthly Study Plan Status Report for the month of May 1994. This report summarizes review and approval status of Site Characterization Plan study plans for the Yucca Mountain Site Characterization Office. This summary includes the major accomplishments in the process of developing study plans for the month of May 1994, and the status of all study plans that are currently planned or in review at the Yucca Mountain Site Characterization Office, the Office of Civilian Radioactive Waste Management, and the U.S. Nuclear Regulatory Commission.

If you have any questions, please contact Ms. Sheila Long at 202-586-1447.

Sincerely,

Dwight E. Shelor  
Associate Director for  
Systems and Compliance  
Office of Civilian Radioactive  
Waste Management

Enclosure:  
Study Plan Status Report  
for May 1994

9406300327 940620  
PDR WASTE  
WM-11 PDR

NH0311  
WM-11  
102-8

cc: w\enclosure  
R. Nelson, YMPO  
R. Loux, State of Nevada  
T. Hickey, Nevada Legislative Commission  
D. Bechtel, Las Vegas, NV  
Eureka County, NV  
Lander County, Battle Mountain, NV  
P. Niedzielski-Eichner, Nye County, NV  
W. Offutt, Nye County, NV  
L. Bradshaw, Nye County, NV  
C. Schank, Churchill County, NV  
F. Mariani, White Pine County, NV  
V. Poe, Mineral County, NV  
J. Pitts, Lincoln County, NV  
J. Hayes, Esmeralda County, NV  
B. Mettam, Inyo County, CA  
M. Delligatti, NRC

**MONTHLY STUDY PLAN STATUS  
FOR MAY 1994**

**1.0 INTRODUCTION**

The following report summarizes the status of review and approval of Site Characterization Plan (SCP) study plans for the Yucca Mountain Project. Table 1 provides a summary status of all study plans that are currently planned or in review at the Yucca Mountain Site Characterization Project Office (YMSCO), the Office of Civilian Radioactive Waste Management (OCRWM), and the U.S. Nuclear Regulatory Commission (NRC).

Section 2 of this report provides the major accomplishments in the process of developing study plans for the month of May 1994. Section 3 summarizes the status of all study plans in the review process at the Project Office. Section 4 summarizes the status of study plan reviews that have been completed by the NRC and the State of Nevada.

<b>STATUS: END OF MAY 94</b>	<b>Initial Plans</b>	<b>Major Revisions</b>
Not Submitted to YMSCO	32	
In Screening Review	0	0
In Project Office Review	2	3
Awaiting Comment Resolution	3	3
In Verification Audit	7	0
Awaiting YMSCO Approval	1	1
Awaiting Submission to the NRC	0	0
Awaiting NRC Initial Review	9	6
Accepted by the NRC_	50	6
<b>Totals_</b>	<b>104</b>	<b>19</b>
<b>Total Submitted to the NRC</b>	<b>59</b>	<b>12</b>
Received Comments from the State of Nevada	32	N/A
Response Transmitted to the State of Nevada	29	N/A
Received Comments from the NRC	31	N/A
Responses Transmitted from DOE to the NRC	27	N/A

## **2.0 STUDY PLAN HIGHLIGHTS FOR THE MONTH OF MAY, 1994**

### **2.1 NEW STUDY PLAN SUBMITTALS**

One new Study Plan, 8.3.1.4.3.2 Three-Dimensional Rock Characteristics Models, was submitted to YMSCO in May.

### **2.2 REVIEW COMMENTS COMPLETED**

One Study Plan, 8.3.1.3.3.2 Kinetics and Thermodynamics of Mineral Evolution, and one major revision of a Study Plan, 8.3.1.17.3.1 R1 Relevant Earthquake Sources, completed the initial YMSCO technical review in May.

### **2.3 COMMENT RESOLUTION MEETINGS**

One comment resolution meeting, for Study Plan 8.3.4.2.4.4 Engineered Barrier System Field Tests, was held in May.

### **2.4 STUDY PLAN REVISIONS**

Two revisions of Study Plans to resolve reviewer's comments, 8.3.1.5.1.6 Characterization of Future Regional Climates and Environments and 8.3.1.17.3.3 Ground Motion From Regional Earthquakes and UNE's, were completed in May.

### **2.5 COMMENT VERIFICATION**

One Study Plan, 8.3.1.15.2.2 Characterization of Site Ambient Thermal Conditions, and one major revision to a Study Plan, 8.3.1.2.2.4 R2 Characterization of the Yucca Mountain Unsaturated Zone in the ESF, completed verification of comment resolution in May.

### **2.6 STUDY PLANS APPROVALS**

One Study Plan, 8.3.1.3.1.1 Groundwater Chemistry Model, and one major revision to a Study Plan, 8.3.1.2.2.4 R2 Characterization of the Yucca Mountain Unsaturated Zone in the ESF, were approved by YMSCO in May.

### **2.7 COMPLETED NRC REVIEWS**

No Study Plan technical reviews were completed by the NRC in May.

### 3.0 CURRENT STATUS OF ALL STUDY PLANS

#### 3.1 STUDY PLANS IN REVIEW

The following study plans have not yet completed the screening and technical reviews by YMSCO.

Identification/Organization	Date Draft Transmitted
8.3.1.2.2.4 R3: Characterization of the Yucca Mountain Unsaturated Zone in the ESF/USGS	3/31/94
8.3.1.4.3.2: 3-D Rock Characteristics Models/SNL	5/4/94
8.3.1.8.2.1 R1: Tectonic Effects/USGS	2/18/94
8.3.1.17.3.3 R1: Ground Motion from Reg Earthquakes/USGS	4/21/94
8.3.4.2.4.5: Effects Man-Made Materials on Post-Emplacement Environment/LLNL	4/28/94

#### 3.2 STUDY PLANS IN REVISION

The following study plans are being revised by the authors in response to comments.

Title/Organization	Comments Transmitted to PI
8.3.1.3.3.2: Kinetics and Thermodynamics of Mineral Evolution/LANL	5/17/94
8.3.1.3.6.1: Dynamic Transport Column Experiments/LANL	6/25/93
8.3.1.15.1.3 R1: Laboratory Determination of the Mechanical Properties of Intact Rock/SNL	9/23/93
8.3.1.17.3.1 R1: Relevant Earthquake Sources/USGS	5/20/94
8.3.1.17.4.1 R1: Current & Historic Seismicity/USGS	2/4/94
8.3.4.2.4.2: Hydrologic Properties of the Waste-Package Environment/LLNL	3/29/94

### 3.3 STUDY PLANS IN VERIFICATION AUDIT

The following study plans are being audited by reviewers to verify that comments have been satisfactorily responded to.

Identification/Organization	Date Draft Transmitted
8.3.1.3.4.1/8.3.1.3.4.3: Batch Sorption Studies/ Development of Sorption Models/LANL	10/22/93
8.3.1.5.1.1: Characterization of Modern Regional Climate/USGS	1/13/94
8.3.1.15.1.4: Laboratory Determination of the Mechanical Properties of Fractures/SNL	4/20/93
8.3.1.5.1.6: Characterization of Future Regional Climates and Environments/SNL	5/9/94
8.3.1.17.3.3: Ground Motion from UNE's/SNL	5/25/94
8.3.1.17.4.12: Tectonic Models and Synthesis/USGS	3/2/94
8.3.4.2.4.4: Engineered Barrier System Field Tests/LLNL	4/13/94

### 3.4 BEING PREPARED FOR YMSCO APPROVAL

8.3.1.2.2.4 R2: Characterization of the Yucca Mountain Unsaturated Zone in the ESF/USGS	5/26/94
8.3.1.15.2.2: Characterization of Site Ambient Thermal Conditions/USGS	5/24/94

### 3.5 APPROVED STUDY PLANS

None

#### 4.0 STUDY PLANS IN REVIEW AT NRC AND THE STATE OF NEVADA

##### 4.1 NRC ACCEPTANCE REVIEW

The following study plans are in Phase 1 review at the NRC.

Identification/Organization	Transmittal Date
8.3.1.2.2.6 R1: Characterization of Gas-Phase Movement in the Unsaturated Zone/USGS	10/7/93
8.3.1.2.2.8 R1: Fluid Flow in Unsaturated, Fractured Rock/USGS	12/29/93
8.3.1.3.1.1: Groundwater Chemistry Model/LANL	5/20/94
8.3.1.3.5.1/2: Dissolved Species Concentration Limits and Colloid Behavior/LANL	9/17/93
8.3.1.8.1.2: Physical Processes of Magmatism and Effects on the Potential Repository/LANL	10/4/93
8.3.1.8.5.2: Characterization of Igneous Intrusive Features/USGS	3/18/94
8.3.1.12.2.1 R1: Meteorological Data Collection at the Yucca Mountain Site/SAIC	8/16/93
8.3.1.15.1.1 R1: Laboratory Thermal Properties/SNL	9/14/93
8.3.1.15.1.2 R1: Laboratory Thermal Expansion Testing/SNL	9/14/93
8.3.1.15.1.3: Laboratory Determination of the Mechanical Properties of Intact Rock/SNL	06/21/91
8.3.1.15.1.5 R1: Excavation Investigations/SNL	5/5/94
8.3.1.15.2.1.2: Characterization of Site Ambient Stress Conditions/USGS	02/09/89

## 4.2 STUDY PLANS ACCEPTED BY THE NRC

The following study plans have been accepted by the NRC.

Identification/Organization	Acceptance Date
8.3.1.2.1.1: Characterization of the Meteorology for Regional Hydrology and Meteorological Monitoring/USGS	10/21/91
8.3.1.2.1.2: Characterization of Run-off and Streamflow/USGS	08/14/92
8.3.1.2.1.3: Characterization of the Regional Ground-Water Flow System/USGS	10/4/91
8.3.1.2.1.4: Regional Hydrologic Synthesis and Modeling/USGS	5/6/92
8.3.1.2.2.1: Characterization of Unsaturated Zone Infiltration/USGS	5/31/91
8.3.1.2.2.2 R1: Water Movement Test/LANL	4/8/93
8.3.1.2.2.3: Characterization of Percolation in the Unsaturated Zone--Surface Based Study/USGS	3/26/92
8.3.1.2.2.4 R1: Characterization of the Yucca Mountain Unsaturated Zone/USGS	3/5/93
8.3.1.2.2.5: Diffusion Tests in the ESF/LANL	1/19/93
8.3.1.2.2.6: Characterization of Gaseous-Phase Movement in the Unsaturated Zone/USGS	10/07/91
8.3.1.2.2.7: Hydrochemical Characterization of the Unsaturated Zone/USGS	05/01/92
8.3.1.2.2.7 R1: Hydrochemical Characterization of the Unsaturated Zone/USGS	1/26/94
8.3.1.2.2.8: Fluid Flow in Unsaturated, Fractured Rock/USGS	1/28/93
8.3.1.2.2.9: Site Unsaturated Zone Synthesis & Modeling/USGS	11/8/93



<b>8.3.1.2.3.1.1-6: Characterization of the Site Saturated Ground-Water Flow System/USGS</b>	<b>12/06/91</b>
<b>8.3.1.2.3.1.7: Testing of the C-Hole Site with Reactive Tracers/LANL</b>	<b>12/06/91</b>
<b>8.3.1.2.3.2: Characterization of the Saturated Zone Hydrochemistry/USGS</b>	<b>1/4/93</b>
<b>8.3.1.2.3.3: Site Saturated Zone Hydrologic Synthesis and Modeling/USGS</b>	<b>6/16/93</b>
<b>8.3.1.3.2.1: Mineralogy, Petrology, and Chemistry of Transport Pathways/LANL</b>	<b>03/13/91</b>
<b>8.3.1.3.2.2: History of Mineralogic and Geochemical Alteration of Yucca Mountain/LANL</b>	<b>04/27/92</b>
<b>8.3.1.3.4.2: Biological Sorption and Transport/LANL</b>	<b>3/25/93</b>
<b>8.3.1.3.6.2: Diffusion/LANL</b>	<b>1/19/94</b>
<b>8.3.1.3.7.1: Retardation Sensitivity Analysis/LANL</b>	<b>1/19/93</b>
<b>8.3.1.4.2.1: Characterization of Vertical and Lateral Distribution of Stratigraphic Units in the Site Area/USGS</b>	<b>12/14/92</b>
<b>8.3.1.4.2.2 R2: Characterization of Structural Features within the Site Area/USGS</b>	<b>2/8/93</b>
<b>8.3.1.4.3.1: Systematic Acquisition of Site-Specific Subsurface Information/SNL</b>	<b>1/11/93</b>
<b>8.3.1.5.1.2: Paleoclimate Study: Lake, Playa, and Marsh Deposits/USGS</b>	<b>04/27/92</b>
<b>8.3.1.5.1.3: Climatic Implications of Terrestrial Paleoecology/USGS</b>	<b>09/03/92</b>
<b>8.3.1.5.1.4: Analysis of the Paleoenvironmental History of the Yucca Mountain Site/USGS</b>	<b>12/06/91</b>

<b>8.3.1.5.2.1: Characterization of the Quaternary Regional Hydrology/USGS</b>	<b>06/08/90</b>
<b>8.3.1.5.2.1.1 R2: Characterization of Quaternary Regional Hydrology/USGS</b>	<b>6/24/93</b>
<b>8.3.1.5.2.2: Characterization of Future Regional Hydrology due to Climate Change/USGS</b>	<b>4/5/93</b>
<b>8.3.1.8.1.1: Probability of Magmatic Disruption of the Repository/LANL</b>	<b>10/5/91</b>
<b>8.3.1.8.2.1: Analysis of Waste Package Rupture due to Tectonic Processes and Events/SAIC</b>	<b>11/19/93</b>
<b>8.3.1.8.5.1: Characterization of Volcanic Features/LANL</b>	<b>08/20/90</b>
<b>8.3.1.9.2.1: Natural Resource Assessment of Yucca Mountain, Nye County/USGS</b>	<b>3/16/93</b>
<b>8.3.1.9.2.2: Water Resource Assessment for Yucca Mountain/SAIC</b>	<b>5/4/92</b>
<b>8.3.1.12.2.1: Meteorological Data Collection at the Yucca Mountain Site/SAIC</b>	<b>11/12/91</b>
<b>8.3.1.14.2: Studies to Provide Soil and Rock Properties of Potential Locations of Surface and Subsurface Facilities/USGS</b>	<b>01/24/92</b>
<b>8.3.1.15.1.8: In Situ Design Verification/SNL</b>	<b>4/15/93</b>
<b>8.3.1.16.1.1: Characterization of Flood Potential of the Yucca Mountain Site/USGS</b>	<b>05/08/91</b>
<b>8.3.1.17.3.1: Relevant Earthquake Sources/USGS</b>	<b>5/18/92</b>
<b>8.3.1.17.3.4: Effects of Local Site Geology on Surface and Subsurface Ground Motions/USGS</b>	<b>6/8/92</b>
<b>8.3.1.17.3.5: Ground Motion at the Site from Controlling Seismic Events/USGS</b>	<b>11/2/93</b>
<b>8.3.1.17.4.1: Historical and Current Seismicity/USGS</b>	<b>05/14/91</b>

<b>8.3.1.17.4.2: Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities/SNL</b>	<b>03/16/90</b>
<b>8.3.1.17.4.3: Quaternary Faulting within 100 km of Yucca Mountain, including the Walker Lane/USGS</b>	<b>2/9/93</b>
<b>8.3.1.17.4.4: Quaternary Faulting Proximal to the Site within NE Trending Fault Zones/USGS</b>	<b>5/18/93</b>
<b>8.3.1.17.4.5: Detachment Faults at or Proximal to Yucca Mountain/USGS</b>	<b>2/1/93</b>
<b>8.3.1.17.4.6: Quaternary Faulting Within the Site Area/USGS</b>	<b>10/3/91</b>
<b>8.3.1.17.4.10: Geodetic Leveling/USGS</b>	<b>10/4/91</b>
<b>8.3.4.2.4.3: Mechanical Properties of the Waste Package Environment/LLNL</b>	<b>4/21/93</b>

### 4.3 COMMENTS ON APPROVED STUDY PLANS

The following approved study plans have been the subject of written comments by the NRC and the State of Nevada. The status of the responses to these comments is given below.

Study Plan	Source & No. of Comments		Status
8.3.1.2.1.1: Characterization of the Meteorology for Regional Hydrology and Meteorological Monitoring	NV	10	Response sent 7/13/92
8.3.1.2.1.2: Regional Surface Water Run-Off and Streamflow	NV	7	Response sent 8/20/91
8.3.1.2.1.3 Regional Groundwater Flow System	NV	55	Response sent 9/22/93
8.3.1.2.1.4: Regional Hydrologic System Synthesis and Modeling	NRC	1	Response sent 7/23/92
	NRC	5	Response sent 8/30/93
	NV	18	Response sent 4/2/93
8.3.1.2.2.5: Diffusion Tests in the Exploratory Studies Facility	NV	12	Response sent 5/20/94
8.3.1.2.2.6: Characterization of Gas Phase Movement in the Unsaturated Zone	NRC	1	Response sent 7/23/92
	NV	16	Response sent 7/27/92
8.3.1.2.2.7: Hydrochemical Characterization of the Unsaturated Zone	NV	27	Response sent 2/18/93
8.3.1.2.2.8: Fluid Flow in Unsaturated, Fractured Rock	NRC	2	Response sent 5/27/93
8.3.1.2.3.1.1-6: Characterization of the Site Saturated Zone Ground Water Flow System	NRC	2	Response sent 9/14/92
8.3.1.2.3.1.7: Testing of the C-Hole Site with Reactive Tracers	NRC	2	Response sent 9/14/92

Study Plan	Source & No. of Comments	Status
8.3.1.3.2.1: Mineralogy, Petrology and Chemistry Along Transport Pathways	NRC 6	Response sent 10/29/91
	NV 12	Response sent 2/24/93
8.3.1.3.2.2: History of Min and Chem Alt of Yucca Mtn	NV 25	Response sent 5/20/94
8.3.1.3.6.2: Diffusion	NRC 1	Response sent 6/7/94
8.3.1.4.2.1: Characterization of Vertical and Lateral Distribution of Stratigraphic Units within the Site Area	NRC 3	Response sent 3/22/93
	NRC 2	Response sent 9/3/93
8.3.1.4.2.2: Characterization of Structural Features at the Site	NV 33	In Preparation
8.3.1.5.1.2: Paleoclim Study: Lake, Playa, Marsh Deposits	NV 17	Response sent 5/20/94
8.3.1.5.1.3: Climatic Implication Terrest Paleocology	NV 18	Response sent 5/20/94
8.3.1.5.1.4: Analysis of the Paleoenvironmental History of the Yucca Mountain Site	NRC 1	Response sent 9/16/92
	NV 9	Response sent 4/5/94
8.3.1.5.2.1: Quaternary Regional Hydrology	NRC 9	Response sent 12/19/90
	NV 10	Response sent 9/19/91
8.3.1.5.2.1: Quaternary Regional Hydrology R2	NRC 3	Response sent 12/27/93
	NV 7	Response sent 4/5/94
8.3.1.5.2.2: Characterization of Future Regional Hydrology	NV 12	Response sent 4/5/94
8.3.1.8.1.1: Probability of Volcanic Eruption Penetrating the Repository	NV 9	Response sent 7/19/92
	NRC 13	Response sent 3/9/93
8.3.1.8.2.1: Analysis Waste Package Rupture Due to Tectonic Events	NRC 9	In Preparation

Study Plan	Source & No. of Comments	Status
8.3.1.8.5.1: Characterization of Volcanic Features	NV 5	Response sent 8/23/91
	NRC 3	Response sent 7/24/91
8.3.1.9.2.1: Natural Resource Assessment of Yucca Mountain	NRC 8	In Preparation
	NV 34	In Preparation
8.3.1.9.2.2: Water Resource Assessment of Yucca Mountain	NRC 1	Response sent 6/29/92
	NV 24	Response sent 4/22/93
8.3.1.12.2.1: Meteorological Data Collection at the Yucca Mountain Site	NV 5	Response sent 2/13/92
8.3.1.14.2: Studies to Provide Soil and Rock Properties for Potential Locations of Surface Facilities	NRC 1	Response sent 8/31/92
	NV 10	Response sent 8/21/92
8.3.1.15.1.8: In-Situ Design Verification	NV 3	Response sent 4/5/94
8.3.1.16.1.1: Characterization of Flood Potential	NV 9	Response sent 6/6/91
	NRC 1	Telecon resolution 6/17/91
8.3.1.17.3.1: Relevant Earthquake Sources	NRC 1	Response sent 8/15/92
	NV 32	Response sent 4/21/93
8.3.1.17.3.4: Effect of Local Site Geology on Surface and Subsurface Motion	NRC 1	Response sent 9/4/92
	NV 25	Response sent 4/27/93
8.3.1.17.3.5: Grd Motion at the Site from Controlling Seismic Events	NRC 1	Response sent 2/14/94
8.3.1.17.4.1: Historic and Current Seismicity	NRC 3	Telecon resolution 8/15/91
	NV 3	Response sent 4/5/94
8.3.1.17.4.2: Location and Recency of Faulting Near Prospective Surface Facilities	NRC 16	Response sent 12/19/90
	NV 3	Response sent 10/15/90

Study Plan	Source & No. of Comments		Status
8.3.1.17.4.3: Quaternary Faulting within 100 Km of Yucca Mtn	NRC	3	In Preparation
	NV	26	In Preparation
8.3.1.17.4.4: Quaternary Faulting within NE-Trending Zones	NRC	3	In Preparation
8.3.1.17.4.5: Detach Faults At or Proximal to Yucca Mountain	NV	68	Response sent 5/20/94
8.3.1.17.4.6: Quaternary Faulting	NRC	1	Response sent 12/16/91
	NV	14	Response sent 3/8/93
8.3.1.17.4.10: Geodetic Leveling	NV	16	Response sent 4/9/93
	NRC	2	Response sent 9/21/93
8.3.4.2.4.3: Characterization of the Geomechanical Attributes of the Waste Package Environment	NRC	3	Response sent 9/3/93

**LEGEND FOR TABLE 1**

<b>Submit to YMSCO</b>	<b>Actual date of the submission of the draft study plan.</b>
<b>Screening Review Complete</b>	<b>Date that screening review was recieved by the YMSCO. Screening reviews were not done for some study plans submitted early in the process. These are indicated by the word "None". Revs. 2 &amp; 3 of AP-1.10Q did not require a screening review. Plans reviewed under Rev. 2 &amp; 3 are indicated by "NA".</b>
<b>Comments to PI</b>	<b>Date that review comments were transmitted to the Principal Investigator for review.</b>
<b>PI Revision Complete</b>	<b>Date that revised study plan that responds to YMSCO and Headquarters comments is submitted to the YMSCO.</b>
<b>Verify Comm. Res.</b>	<b>Date that the verification of actual dispositions of comments is completed by reviewers.</b>
<b>YMSCO Approve</b>	<b>Date that YMSCO approves the plan.</b>
<b>Submit To NRC</b>	<b>The date that the study plan is submitted to the NRC for review.</b>
<b>NRC Initial Review</b>	<b>Date that NRC Acceptance and Start-Work Reviews are completed.</b>
<b>NRC Detailed Review</b>	<b>Date that NRC Detailed Technical Reviews are completed or note that none will be completed or the review will be deferred.</b>
<b>NV Review</b>	<b>Date that the State of Nevada Technical Reviews are completed.</b>



09-Jun-94

## Study Plan Tracking Sheet

1

#	SP NAMES/CODE	SP NUMBER	SUBMIT TO	SCREENING REVIEW	COMMENTS TO PI	PI REVISION	VERIFY COMMENT	YMSCO APPROVE	SUBMIT TO NRC	NRC INITIAL	NRC DETAILED	NV REVIEW						
													YMSCO	COMPLETE	COMPLETE	RESOL	REVIEW	REVIEW
1	CHAR OF MET FOR REG HYDRO/USGS	8.3.1.2.1.1	6/26/90	6/27/90	10/1/90	11/9/90	2/25/91	3/13/91	6/21/91	10/21/91	NONE	12/10/91						
2	CHAR RUNOFF AND STREAMFLOW/USGS	8.3.1.2.1.2	3/27/89	NA	10/17/89	3/22/90	7/17/90	8/21/90	10/4/90	5/14/91	8/14/92	4/12/91						
3	CHAR OF REG GRD W FLOW SYSTEM/USGS	8.3.1.2.1.3	3/1/90	3/14/90	7/3/90	9/17/90	10/19/90	1/18/91	2/15/91	10/4/91	NONE	3/19/93						
4	REG HYDRO SYS SYN AND MODELING/USGS	8.3.1.2.1.4	6/6/90	6/29/90	3/14/91	5/8/91	10/2/91	12/18/91	1/15/92	5/6/92	4/6/93	1/29/93						
5	CHAR UNSAT ZONE INFILTRATION/USGS	8.3.1.2.2.1	3/9/90	3/14/90	7/3/90	9/17/90	10/15/90	1/18/91	3/1/91	5/31/91	NONE							
6	WATER MOVEMENT TEST/LANL, REV O	8.3.1.2.2.2	9/23/87	N/A	COMPLETE	10/30/87	1/9/89	11/9/89	2/9/89	4/8/93								
6 R1	WATER MOVEMENT TEST/LANL, REV I	8.3.1.2.2.2	10/17/91	N/A	5/12/92	12/10/92	2/4/93	2/10/93	2/19/93	4/8/93	DEFERRED							
7	CHAR PERCOL IN UZ-SURFACE BASED STUDY/USGS	8.3.1.2.2.3	8/12/88	NA	1/23/89	2/20/90	1/9/91	04/08/91	5/10/91	3/26/92								
8	CHAR YUC MTN PERCO UNSAT ZONE-ESF/USGS (4.5.,7.,8.9)	8.3.1.2.2.4	9/9/87	NA	12/7/88	1/4/89	1/9/89	1/09/89	2/9/89	3/5/93								
8 R1	CHAR YUC MTN UNSAT ZONE-ESF/USGS (4.5.,7.,8)	8.3.1.2.2.4	12/4/92	12/9/92	12/11/92	12/19/92	1/5/93	1/14/93	1/21/93	3/5/93								
8 R2	CHAR YUC MTN UNSAT ZONE-ESF INVEST/USGS (10)	8.3.1.2.2.4	3/16/93	3/24/93	5/12/93	10/1/93	5/26/94	6/2/94										
8 R3	CHAR YUC MYN UNSAT ZONE-ESF INVEST/USGS (1,2)	8.3.1.2.2.4	4/29/94	5/6/94														
9	DIFFUSION TESTS IN ESF/LANL	8.3.1.2.2.5	11/1/88	11/18/88	2/28/90	6/11/91	1/24/92	4/22/92	6/8/92	1/19/93	DEFERRED	11/1/93						
10	CHAR GAS-PHASE MOVEMENT IN UZ/USGS	8.3.1.2.2.6	6/12/89	7/14/89	3/9/90	3/24/90	04/03/91	6/11/91	6/24/91	10/07/91	NONE	5/1/92						
10 R1	CHAR GAS-PHASE MOVEMENT IN UZ/USGS	8.3.1.2.2.6	4/6/93	4/20/93	6/8/93	8/27/93	9/21/93	9/30/93	10/7/93									
11	HYDROCHEM CHAR OF UZ/USGS	8.3.1.2.2.7	10/24/88	11/4/88	3/8/89	6/27/89	4/10/90	9/18/90	5/8/91	5/1/92	DEFERRED	12/28/92						
11 R1	HYDROCHEM CHAR OF UZ/USGS	8.3.1.2.2.7	12/1/92	12/2/92	2/8/93	3/31/93	6/30/93	9/9/93	9/17/93	1/26/94								
12	FLUID FLOW IN UNSAT, FRAC ROCK/USGS	8.3.1.2.2.8	9/7/90	10/3/90	5/01/91	11/26/91	5/28/92	8/12/92	9/1/92	1/28/93	DEFERRED							
12 R1	FLUID FLOW IN UNSAT, FRAC ROCK/USGS	8.3.1.2.2.8	12/1/92	12/2/92	2/8/93	10/1/93	11/29/93	12/17/93	12/29/93									
13	SITE UZ MODELING & SYNTHESIS/USGS	8.3.1.2.2.9	1/25/91	NA	2/27/92	4/19/93	6/14/93	7/1/93	7/14/93	11/8/93	DEFERRED							
14	CHAR SITE SAT ZONE GRD W FLOW SYS/LANL (.7)	8.3.1.2.3.1	2/8/88	NA	7/15/89	11/16/89	1/-/90	2/22/90	4/6/90	12/6/91	DEFERRED							
15	CHAR SITE SAT ZONE GRD W FLOW SYS/USGS (1.-6)	8.3.1.2.3.1	5/31/89	6/15/89	11/1/89	5/18/90	10/15/90	2/13/91	3/7/91	12/6/91	DEFERRED							
14 R1	CHAR SITE SAT ZONE GRD W FLOW SYS/LANL (.8)																	
16	CHAR SAT ZONE HYDROCHEM/USGS	8.3.1.2.3.2	3/28/90	5/9/90	11/27/90	11/27/91	3/11/92	4/22/92	6/5/92	1/4/93	NONE							
17	SAT ZONE HYDRO SYSTEM SYNTH AND MODELING/USGS	8.3.1.2.3.3	9/4/90	10/12/90	8/30/91	3/31/92	10/19/92	1/14/93	1/28/93	6/16/93	DEFERRED							
18	GROUNDWATER CHEMISTRY MODEL/LANL	8.3.1.3.1.1	3/15/91	NA	5/6/92	11/8/93	4/22/94	5/4/94	5/20/94									
19	MIN, PET, CHEM OF TRANSPORT PATHWAYS/LANL	8.3.1.3.2.1	1/22/88	5/24/88	7/13/88	12/23/88	9/12/89	6/13/89	11/30/89	8/20/90	3/13/91	12/28/92						
20	HIST OF MIN AND GEOCHEM ALT OF YUCCA MTN/LANL	8.3.1.3.2.2	3/28/88	NA	5/25/89	6/13/91	9/23/91	12/18/91	1/31/92	4/27/92	DEFERRED	1/24/94						
21	NAT ANLOG HYDROTHERM SYS IN TUFF/LANL	8.3.1.3.3.1																
22	KINETICS AND THERMODYN OF MIN EVOL/LANL	8.3.1.3.3.2	3/25/94	3/30/94	5/17/94													
23	CONCEPTUAL MODEL OF MINERAL EVOL/LANL	8.3.1.3.3.3																
24	BATCH SORPT STUDIES AND DEVEL SORPT MODELS/LANL	8.3.1.3.4.1/3	10/28/92	11/4/92	2/18/93	10/22/93												
25	BIOLOGICAL SORPTION & TRANSPORT/LANL	8.3.1.3.4.2	12/12/88	1/5/89	3/12/90	8/28/91	12/7/91	11/25/92	12/24/92	3/25/93	DEFERRED							
26	DISSOLVED SPECIES CONC LIMITS AND COLLOID BEH/LANL	8.3.1.3.5.1/2	9/7/90	NA	11/8/91	10/21/92	8/6/93	9/9/93	9/17/93									
27	DYNAMIC TRANSPORT COLUMN EXPERIMENTS/LANL	8.3.1.3.6.1	3/10/93	3/22/93	6/25/93													
28	DIFFUSION/LANL	8.3.1.3.6.2	7/24/89	8/9/89	5/10/90	12/4/92	6/28/93	8/6/93	8/12/93	1/19/94	1/19/94							
29	RETARDATION SENSITIVITY ANALYSIS/LANL	8.3.1.3.7.1	12/14/88	2/8/89	3/12/90	6/18/91	7/28/92	8/11/92	9/1/92	1/19/93	NONE							



#	SP NAMES/CODE	SP	SUBMIT	SCREENING	COMMENTS	PI	VERIFY	YMSCO	SUBMIT	NRC	NRC	NV
		NUMBER	TO	REVIEW	TO PI	REVISION	COMMENT	APPROVE	TO NRC	INITIAL	DETAILED	REVIEW
NRC & NV COMMENTS TABULATED IN SECTION 4.3			YMSCO	COMPLETE		COMPLETE	RESOL			REVIEW	REVIEW	
60	NAT RES ASSESS YUCCA MTN, NYE COUNTY/USGS	8.3.1.9.2.1	7/13/90	8/16/90	1/7/91	1/13/92	9/28/92	11/6/92	12/17/92	3/16/93	2/18/94	2/11/94
61	WATER RES ASSESS YUCCA MTN, NV/SAIC	8.3.1.9.2.2	10/6/89	1/30/90	8/15/90	12/26/90	6/13/91	8/26/91	9/20/91	5/4/92		12/28/92
62	EVAL DATA NEEDED TO SUPP ASSESS LIKLIHOOD FUT INADVER HUMAN INTRU YUC MTN EXPLO/EXT NAT RES/M&O	8.3.1.9.3.1										
63	EVAL POTENTIAL EFFECT OF EXPLOIT NAT RES ON HYDRO CHAR AT YUCCA MTN/M&O	8.3.1.9.3.2										
64	METEOROLOGICAL DATA COLLECT YUCCA MTN SITE/SAIC	8.3.1.12.2.1	9/28/90	NA	2/4/91	2/21/91	2/26/91	3/20/91	5/16/91	11/12/91	NONE	12/2/91
64 R1	METEOROLOGICAL DATA COLLECT YUCCA MTN SITE/SAIC, REV 1	8.3.1.12.2.1	3/31/92	4/21/92	6/17/92	12/2/92	7/29/93	8/9/93	8/16/93			
65	STUDIES TO PROVIDE SOIL/ROCK PROP OF POTENTIAL LOCATIONS OF SURFACE/SUBSURFACE FACILITIES/SNL	8.3.1.14.2	7/15/91	7/23/91	8/11/91	8/21/91	9/22/91	10/01/91	10/16/91	1/24/92		4/6/92
66	LAB THERMAL PROPERTIES/SNL	8.3.1.15.1.1	3/17/88	NA	11/1/89	3/16/90	5/23/90	10/21/90	1/25/91	DEFERRED		
66 R1	LAB THERMAL PROPERTIES/SNL	8.3.1.15.1.1	11/3/92	11/9/92	12/10/92	4/8/93	8/3/93	8/27/93	9/14/93			
67	LAB THERMAL EXPANSION TESTING/SNL	8.3.1.15.1.2	12/1/88	12/20/88	Done	11/20/89	5/23/90	8/21/90	10/4/90	DEFERRED		
67 R1	LAB THERMAL EXPANSION TESTING/SNL	8.3.1.15.1.2	11/3/92	11/9/92	2/3/93	4/8/93	8/3/93	8/27/93	9/14/93			
68	LAB DETERMIN MECH PROP INTACT ROCK/SNL	8.3.1.15.1.3	2/8/88	NA	7/6/88	11/29/88		5/21/91	6/21/91	DEFERRED		
68 R1	LAB DETERMIN MECH PROP INTACT ROCK/SNL	8.3.1.15.1.3	7/19/93	7/23/93	9/23/93							
69	LAB DETERMIN MECH PROP FRACTURES/SNL	8.3.1.15.1.4	10/23/91	2/5/92	5/12/92	4/20/93						
70	EXCAVATION INVESTIGATIONS/SNL	8.3.1.15.1.5	3/26/87	NA	Done	9/1/87	5/27/88	1/09/89	2/9/89	DEFERRED		
70 R1	EXCAVATION INVESTIGATIONS/SNL	8.3.1.15.1.5	3/18/93	3/24/93	5/10/93	3/4/94	4/11/94	4/22/94	5/5/94			
71	IN SITU THERMOMECH PROP/SNL	8.3.1.15.1.6										
72	IN SITU MECHANICAL PROP/SNL	8.3.1.15.1.7										
73	IN SITU DESIGN VERIFICATION/SNL	8.3.1.15.1.8	3/20/90	4/12/90	10/10/91	11/23/92	1/12/93	2/3/93	2/8/93	4/15/93	NONE	11/1/93
74	CHAR SITE AMBIENT STRESS CONDITIONS/USGS (2)	8.3.1.15.2.1	9/22/87	NA	Done	2/23/88	2/9/89	1/11/89	2/9/89	DEFERRED		
74 R1	CHAR SITE AMBIENT STRESS CONDITIONS/SNL (1)	8.3.1.15.2.1										
75	CHAR SITE AMBIENT THERMAL CONDUSGS	8.3.1.15.2.2	10/13/92	10/16/92	2/19/93	5/19/93	5/24/94					
76	CHAR OF FLOOD POTENTIAL YUCCA MTN SITE/USGS	8.3.1.16.1.1	3/30/89	5/2/89	10/13/89	4/27/90	8/6/90	9/17/90	10/11/90	5/8/91	NONE	1/22/91
77	LOC OF ADEQ WATER SUPPLY CONST OPER, CLOS, DECOMM OF A MODS AT YUCCA MTN/SAIC	8.3.1.16.2.1										
78	DETERMINE PRECLOS HYDRO COND UZ YUCCA MTN/USGS	8.3.1.16.3.1										
79	POTENTIAL FOR ASH FALL AT SITE/LANL	8.3.1.17.1.1										
80	FAULTING POTENTIAL AT REPOSITORY/USGS	8.3.1.17.2.1										
81	RELEVANT EARTHQUAKE SOURCES/USGS	8.3.1.17.3.1	8/1/90	8/22/90	12/28/90	5/1/91	11/15/91	12/18/91	1/16/92	5/18/92		1/13/93
81 R1	RELEVANT EARTHQUAKE SOURCES/USGS	8.3.1.17.3.1	2/18/94	2/22/94	5/20/94							
82	UNDERGROUND NUCLEAR EXPLOSION SOURCES/SNL	8.3.1.17.3.2										
83 R1	GRD MOTION FROM REG EARTHQUAKES/USGS	8.3.1.17.3.3.1	4/21/94	4/28/94								
83	GRD MOTION FROM UNE/SNL	8.3.1.17.3.3.2	2/2/94	2/7/94	4/11/94	5/25/94						
84	EFFECT LOCAL SITE GEOL ON SRF&SUBSRF MOTION/USGS	8.3.1.17.3.4	7/6/90	7/23/90	1/23/91	4/16/91	8/26/91	11/14/91	12/4/91	6/8/92	NONE	1/11/93
85	GRD MOTION AT SITE FROM CONTROL SEIS EVENT/USGS	8.3.1.17.3.5	10/4/90	NA	2/27/92	4/14/92	6/29/93	7/9/93	7/19/93	11/2/93		

