

# memorandum

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REPLY TO  
ATTN OF: RW-241

SUBJECT: Minutes of the September 10, 1986, Environmental Coordinating  
Group Meeting

TO: Distribution

This memorandum transmits the attached minutes of the September 10, 1986, Environmental Coordinating Group (ECG) meeting.

The next ECG meeting is scheduled for January 20-22, 1987, in Las Vegas, Nevada. A reference package will be provided to you in mid-December.

Should you have any questions about the minutes or the next ECG meeting, please contact me on (202) 252-5679 or Susan Peterson on (202) 252-4957.

*Jerry*  
Gerald J. Parker, Chief  
Site Evaluation Branch  
Office of Civilian Radioactive  
Waste Management

Attachments

WM Record File

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WM Project 1

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S. Mann, DOE-Chicago  
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R. Rothman, DOE-Chicago  
G. Marmer, ANL  
P. Campbell, ANL  
E. Stenehjem, ONWI  
D. Toft, SRA  
E. Pentecost, ANL  
W. Hewitt, Weston  
D. Siefken, Weston  
G. Shaw, Weston  
C. McDavid, Weston  
J. Friedman, Weston  
K. St. John, Weston  
S. Brocoum, Weston  
J. DiCerbo, Weston  
E. Livingston-Behan, Weston  
B. Gamble, Weston  
J. Gibson, Weston  
M. Saranovich, Weston  
E. Taylor, Weston  
R. Travis, Weston  
R. Halfmoon, Nez Perce  
A. Slickpoo, Nez Perce  
G. Lane, Nez Perce  
B. Burke, Umatilla  
K. Hall, Umatilla  
D. Hester, Umatilla  
M. Sampson, Yakima  
R. Jim, Yakima  
J. Hovis, Yakima  
G. V. Abi Ghanem, Yakima  
J. Wittman, Yakima  
S. Frishman, TX  
J. Reed, TX  
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E. Caywood, WA  
T. Husseman, WA  
C. Glenn, NRC  
W. Lilley, NRC  
M. Axelrad, EEI  
N. Montgomery, EEI  
S. Kraft, EEI  
R. Helgerson, Battlle/PNL  
J. States, Battelle/PNL  
D. Carrell, RWO  
M. Brown, SAIC/LV  
M. Dussman, SAIC/LV  
G. Fasano, SAIC/LV  
M. Foley, SAIC/LV  
E. McCann, SAIC/LV  
S. Volek, SAIC/LV  
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*Encl. to memo to  
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D. Parker - 10/29/86*

ENVIRONMENTAL COORDINATING GROUP (ECG) MEETING

SEPTEMBER 10, 1986

WASHINGTON, D.C.

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Environmental Coordinating Group (ECG) Meeting

September 10, 1986

Washington, D.C.

I. ATTENDEES (Attachment 1)

DOE-HQ: Carol Borgstrom, Ched Bradley, James Bresee, Linda Desell, J. Bennett Easterling, Jim Fiore, Steve Frank, Steve Gomberg, Carol Hanlon, Jay G. Jones, Jim Knight, Lois Marks, Ann McDonough, Robert Mussler, Gerald Parker, Susan Peterson, Raj Sharma, Vic Trebules, Debbie Valentine

Argonne National Laboratory: Peter Campbell, Gary Marmer, Ed Pentecost

Weston: Jerry DiCerbo, Janet Friedman, Jeff Gibson, Ellen Livingston-Behan, Catherine McDavid, Michele Saranovich, Gardner Shaw, David Siefken

DOE-BWIP: Jo Anne Comins Rick, Jim Mecca

Battelle/PNL: Ron Helgerson, Jim States

DOE-NNWSI: Betty Jankus

SAIC: Monica Dussman, Greg Fasano, Michael Foley, Ed McCann

DOE-SRPO: Tony Ladino, Bill White, Dee Williamson

Battelle/ONWI: J. R. Finley, Erik Stenehjem

DOE-Chicago: Vicki Prouty, Rob Rothman

Louisiana: Hall Bohlinger

Mississippi: Kathy Atchison, Don Christy

Nevada: Carl Johnson, Charles Malone

Texas: Jim Reed

Utah: Pat Spurgin

Washington: Ellen Caywood

Confederated  
Tribes of the  
Umatilla  
Indian  
Reservation: Dan Hester

Nez Perce  
Indian  
Tribe: Ron T. Halfmoon

Yakima  
Indian  
Nation: Jack Wittman

Nuclear  
Regulatory  
Commission: William Lilly

Edison  
Electric  
Institute: Nancy Montgomery

## II. AGENDA

An agenda was prepared and distributed to participants in advance of the meeting (Attachment 2).

## III. INTRODUCTION

Jerry Parker welcomed the participants to the fifth ECG meeting which, he stressed, was to facilitate communication and information exchange. He introduced Headquarters (HQ) and Project Office (PO) representatives. He discussed HQ reorganization of the Site Evaluation Branch and introduced Jim Knight, Head of the Siting, Licensing and Quality Assurance Division.

## IV. ENVIRONMENTAL MONITORING AND MITIGATION PLANS (EMMPs)

### HEADQUARTERS STATUS REPORT (Attachment 3)

Steve Gomberg, DOE-HQ, reviewed the draft Annotated Table of Contents (ATC) for the Environmental Monitoring and Mitigation Plans (EMMPs). The draft ATC had been distributed to the States and Indian Tribes for review and comment in May 1986. Comments had been received from Mississippi, Nevada, Washington, and the Yakima Indian Nation. The ATC was revised July 1986, based on comments, and issued in final form August 1986.

Steve Gomberg identified and responded to several comments that had been received on the ATC. Questions had been raised regarding the EMMP guidance and the relationship of the EMMP to the SMMP, the SCP and other DOE documents. There was also discussion of how to define potentially significant adverse environmental impacts, and how to change SCP activities in the event of a significant impact. Topic-specific details were also discussed briefly. Steve Gomberg referenced the June 25, 1986 DOE guidance memo in discussing the direction which the EMMP will take.

Ed Pentecost, Argonne National Laboratory (ANL), distributed and reviewed the revised ATC for the EMMP (Attachment 4). He made several major points:

- Section 3.3 refers to the site characterization program itself;
- All 11 categories in Chapter 5 may not be appropriate at all sites;

- Chapter 5 will include fairly detailed information on the location of sampling plots, the frequency of sampling, and the standards to be applied;
- EMMP Progress Reports will be issued every six months. They will discuss changes in rationale, changes due to monitoring results, and emergency problems;
- EMMPs will not cover restoration of sites characterized but not developed;
- States and Indian Tribes will work directly with POs on the EMMPs, even though they worked with HQ on the ATC (because EMMPs are site-specific, whereas the ATC applies to the entire program).

#### V. PROJECT OFFICE STATUS REPORTS ON EMMPs

Representatives of States and Indian Tribes requested the opportunity to review the EMMP during its development, before it received HQ concurrence. They also requested further involvement in the decision making process leading up to document preparation. Considerable discussion followed on this issue. Jim Knight explained that the program has become a single project with three field offices relating to HQ. As a matter of policy, any document will be reviewed by HQ before it goes outside of DOE. This is necessary to ensure Quality Assurance (QA) and consistency for regulatory compliance and the licensing process.

The States and Indian Tribes requested more than 45 days to review the EMMP. Jerry Parker agreed that DOE would consider accommodating the State's request by extending the scheduled time for response.

Nevada representatives were concerned that they could not properly review the EMMP without knowing what specific site characterization activities were planned.

Jim States, Battelle/PNL, and Jim Mecca, DOE-BWIP, discussed the EMMP for the Basalt Waste Isolation Project (BWIP). Attachment 5 details the major points of their presentation. State representatives requested a list of activities that are planned at the BWIP site. Jim Mecca said that he would see that its development is expedited in order to be able to distribute it to States and Indian Tribes by the end of October.

Betty Jankus, DOE-NNWSI, explained the EMMP activities at the Nevada Nuclear Waste Storage Investigations Project (NNWSI). Attachment 6 provides the highlights of her discussion.

Bill White, DOE-SRPO, presented background on the Salt Repository Project Office (SRPO) EMMPs. Attachment 7 provides that information.

#### VI. EIS PLANNING (Attachment 8)

Raj Sharma, DOE-HQ, explained the current status of EIS planning. The EIS activity is divided into two phases: preliminary planning and scoping (including the ATC); and the actual preparation of the EIS. HQ is in the process of procuring a contractor for the first phase. An organization is being developed for guiding EIS planning; it includes technical, review, and coordination committees.

## VII. KEY ISSUE III

Gary Marmer, Argonne National Laboratory (ANL), presented a strawman approach for dealing with Environmental Field activities and Key Issue #3 (Attachment 9).

The Mission Plan identifies four issues and system guidelines. The Site Characterization Plan will address Key Issues 1, 2 and 4; Key Issue 3 (environment, socio-economics and transportation) must be handled in another way. The Environmental Program Plan will come from and address Key Issue 3 as a means for ensuring comparability and a uniform data reporting format. By using the same method, all POs will ensure project consistency and help avoid replicating field work.

The major theme is top-down planning. DOE will begin at the top, identifying and examining the major requirements and regulations, and will collect data to satisfy those needs. In this way, it will be possible to avoid unnecessary field studies, and to focus, instead, on those that are required to meet regulatory, statutory, licensing and safety requirements.

The issues hierarchy will be reported in an OGR baseline document. Key Issue 3 will be distributed to the States and Indian Tribes at the time that it has been developed to the level that Issues 1, 2 and 4 currently are. A draft EIS-Implementation Plan which follows the organization of the Issue 3 hierarchy will be distributed when scoping begins.

## VIII. REGULATORY COMPLIANCE

Debbie Valentine, DOE-HQ, discussed environmental regulatory compliance. She explained that DOE will comply with Federal and Federal flow-down statutory requirements not inconsistent with DOE responsibilities under NWPA. The consultation and cooperation agreements with States and Indian Tribes will provide an appropriate vehicle for discussion and negotiation of applicable State and local statutory requirements. She provided a list of representative Federal authorities which may generally apply to all projects (Attachment 10).

The POs are in various stages of developing their own environmental regulatory compliance plans. Each document will list the Federal, State and local statutory requirements, how and when DOE will comply, and a schedule for completion.

## IX. PROJECT OFFICE ENVIRONMENTAL ACTIVITY REPORTS

Each PO reviewed its environmental field program. They are included as Attachment 5 (BWIP), Attachment 11 (NNWSI) and Attachment 12 (SRPO).

**ATTACHMENT 1**

**ENVIRONMENTAL COORDINATING GROUP MEETING**

**ATTENDANCE SHEET**

September 10, 1986  
PLEASE PRINT

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JAY G. Jones	DOE - HQ	FTS 252-4970
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ORGANIZATION/ADDRESS

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John Campbell ANL Chicago, Ill.

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MICHELE SARANIVICH WESTON 646-6725

Robert Mauer DOE HQ 252641

Jeff Gibson Weston  
Benjamin Esterling DOE 252-2280

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Carol Borgstrom DOE 252-4600

Steve Gomberg DOE-HQ 252-5560

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Vic TREBULES DOE/HQ 252 5399

Stacie Frank EH-23 252-1979

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CHED BRADLEY	DOE/EA	FTS 252-4600
Dee Williamson	DOE/SRPO	FTS 976-5916
BILL White	DOE/SRPO	FTS 976-5916
Tony Leding	" "	" "
Hall Dohlinger	State of LA	FTS 687-0598
Gardner Shan	Weston	202-646-6742
Dobbie Valentina	DOE-HQ	252-4910
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Jerry DiCERBO	Weston	202 646 6635
R.T. Halfonson	Nevada Tribe	208 843-2253

**ATTACHMENT 2**

**AGENDA FOR THE  
ENVIRONMENTAL COORDINATING GROUP MEETING**

AGENDA FOR THE  
ENVIRONMENTAL COORDINATING GROUP MEETING

Session II - Environmental Status:  
Environmental Monitoring and Mitigation Plans (EMMPs), EIS Planning,  
Environmental Regulatory Compliance, and  
Environmental Field Activities

September 10, 1986

Forrestal Building, Room 1E-245  
Washington, D.C.

<u>Time</u>	<u>Item</u>	<u>Speaker</u>
8:30 - 8:45	Opening Remarks	J. Parker
8:45 - 10:15	EMMP Annotated Table of Contents	S. Gomberg/E. Pentecost
10:15 - 10:30	Break	
10:30 - 11:00	EMMP Process and Schedule	S. Gomberg/E. Pentecost
11:00 - 11:20	BWIP Status Report on EMMP	S. Whitfield
11:20 - 11:40	NNWSI Status Report on EMMP	B. Jankus
11:40 - 12:00	SRPO Status Report on EMMP	W. White
12:00 - 1:15	Lunch	
1:15 - 1:45	EIS Planning	R. Sharma
1:45 - 2:30	Key Issue #3 Hierarchy/Environmental Program Plan Working Group Report	J. Jones/R. Sharma
2:30 - 3:15	Environmental Regulatory Compliance Working Group Report	D. Valentine
3:15 - 3:30	Break	
3:30 - 3:50	BWIP Environmental Activities Report	S. Whitfield
3:50 - 4:10	NNWSI Environmental Activities Report	B. Jankus
4:10 - 4:30	SRPO Environmental Activities Report	W. White
4:30 - 4:45	Summary	J. Parker

ENVIRONMENTAL MONITORING AND MITIGATION PLANS (EMMPs)  
HEADQUARTERS STATUS REPORT

STATUS OF  
ENVIRONMENTAL MONITORING AND MITIGATION PLANS

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ENVIRONMENTAL COORDINATING GROUP MEETING

WASHINGTON, D.C.

SEPTEMBER 10, 1986

# ENVIRONMENTAL MONITORING AND MITIGATION PLAN - ANNOTATED TABLE OF CONTENTS (ATC) FINALIZATION PROCESS

- DRAFT ATC RELEASED TO STATES/INDIAN TRIBES IN MAY 1986 FOR REVIEW AND COMMENT
- COMMENTS RECEIVED FROM MISSISSIPPI, NEVADA, WASHINGTON, YAKIMA NATION
- COMMENTS CLASSIFIED AS "IN SCOPE" OR "OUT OF SCOPE" FOR ATC
- REVISED ATC ISSUED IN JULY 1986 FOR HQ, PO REVIEW BASED ON COMMENTS
- PURPOSE OF REVIEW WAS TO DETERMINE IF STATE/INDIAN TRIBE COMMENTS WERE ADEQUATELY ADDRESSED IN REVISED ATC
- HQ, POS, CONTRACTORS MET TO RESOLVE ALL OPEN ISSUES
- ATC FINALIZED IN AUGUST 1986
- COMMENTS CLASSIFIED AS "OUT OF SCOPE" FOR ATC CAN STILL BE CONSIDERED, IF APPLICABLE, DURING DEVELOPMENT OF EMMP

# RESPONSES TO COMMENTS RECEIVED ON EMMP ANNOTATED TABLE OF CONTENTS

- EMMP GUIDANCE AND RELATIONSHIP TO OTHER DOE DOCUMENTS
- POTENTIALLY SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS
- MONITORING AND MITIGATION
- EMMP MODIFICATION AND REPORTING
- EMMP TOPIC-SPECIFIC DETAILS

# ENVIRONMENTAL MONITORING AND MITIGATION PLAN TENTATIVE SCHEDULE

<u>ACTIVITY</u>	<u>DATE</u>
PROJECT OFFICE (PO) ROUGH WORKING DRAFT EMMP TO HEADQUARTERS (HQ)	SEPTEMBER 15, 1986
HQ REVIEWERS SUBMIT COMMENTS TO SITE EVALUATION BRANCH	OCTOBER 6, 1986
HQ COMMENT CONSOLIDATION MEETING	OCTOBER 9, 1986
HQ TRANSMITS COMMENTS TO POS	OCTOBER 20, 1986
HQ AND PO COMMENT RESOLUTION MEETING	NOVEMBER 6, 1986
PO WORKING DRAFT EMMP TO HQ	NOVEMBER 21, 1986
DOE TRANSMITS WORKING DRAFT EMMP TO STATES AND INDIAN TRIBES	DECEMBER 1, 1986
PO, STATE, AND INDIAN TRIBE INTERACTIONS	DECEMBER 1, 1986 -
- STATE AND INDIAN TRIBE REVIEW	JANUARY 15, 1987
- PO, STATE, AND INDIAN TRIBE MEETINGS	
- FORMAL WRITTEN COMMENTS FROM STATES AND INDIAN TRIBES	
HQ AND PO COMMENT RESOLUTION MEETING	JANUARY 15, 1987
PO REVISED EMMP TO HQ	JANUARY 29, 1987
HQ REVIEW COMMENTS TO POS	FEBRUARY 9, 1987
PO DRAFT EMMP TO HQ	FEBRUARY 16, 1987
DOE TRANSMITS DRAFT EMMP TO STATES AND INDIAN TRIBES	FEBRUARY 23, 1987
DOE ISSUES EMMP PROGRESS REPORTS	CURRENT WITH SCP PROGRESS REPORTS

ANNOTATED TABLE OF CONTENTS  
FOR ENVIRONMENTAL MONITORING AND MITIGATION PLANS

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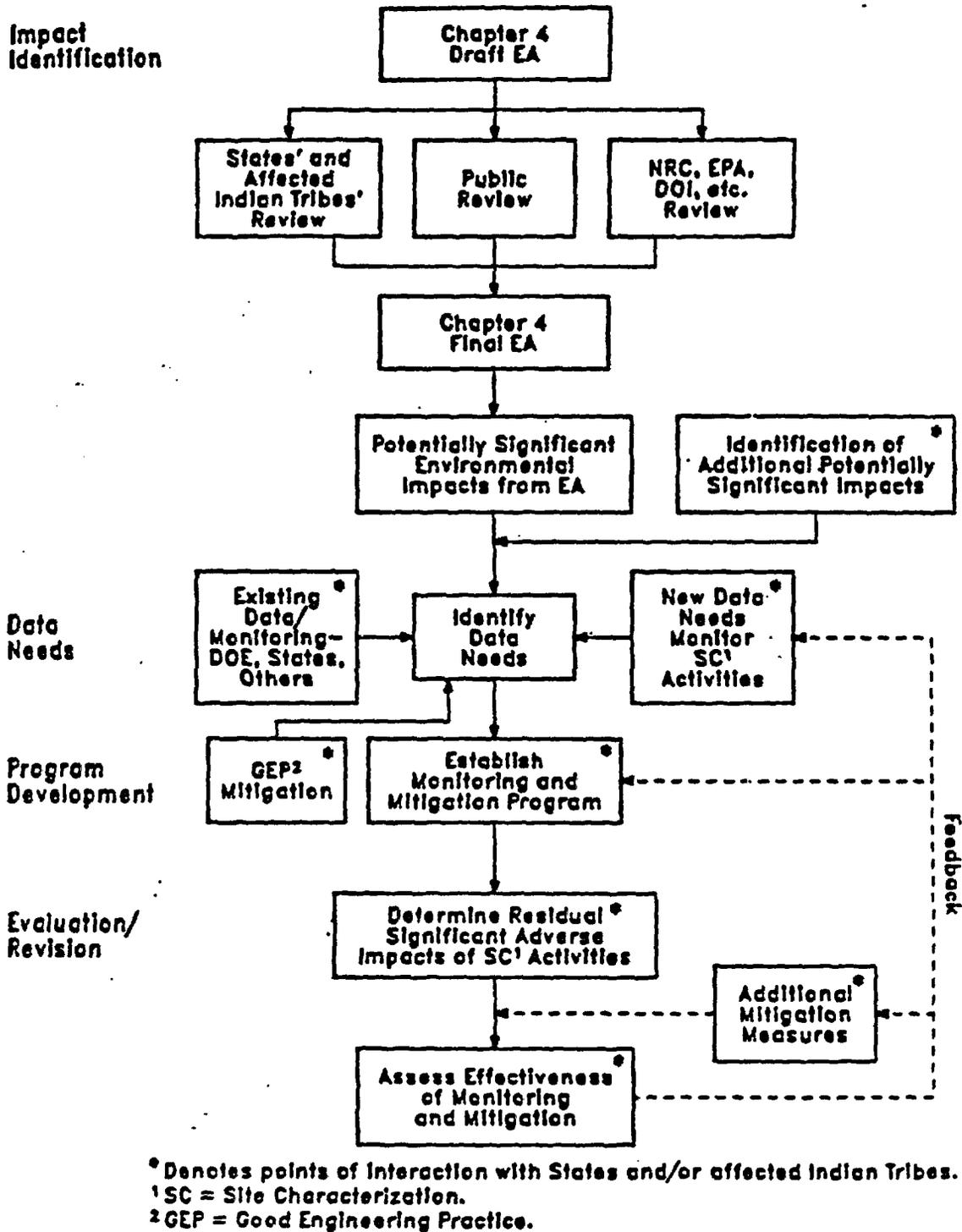


Figure 1. General Approach for EEMP Development and Implementation.

## **EMP CONTENTS**

- 1. EXECUTIVE SUMMARY**
- 2. INTRODUCTION**
- 3. SITE CHARACTERIZATION PROGRAM SUMMARY**

4. POTENTIALLY SIGNIFICANT ADVERSE ENVIRONMENTAL  
CONSEQUENCES IDENTIFIED FOR SITE  
CHARACTERIZATION ACTIVITIES
5. ENVIRONMENTAL MONITORING AND MITIGATION
6. METHODOLOGY FOR MODIFYING ENVIRONMENTAL  
MONITORING AND MITIGATION PLAN

## **EMMP DATA REPORTING AND CHANGE PROCEDURES**

- **Summary Progress Reports Issued at Six-month Intervals**
- **Justification/Rationale for Changes to Future Monitoring Programs Provided in Progress Reports**
- **Mechanism to Inform States/Indian Tribes of Changes**

BASALT WASTE ISOLATION PROJECT  
STATUS REPORT ON  
ENVIRONMENTAL MONITORING AND MITIGATION PLAN

# **BASALT WASTE ISOLATION PROJECT**

## **Environmental Field Activities Report**

**A Summary for the**

**Environmental Coordinating Group Meeting**

**Washington, D.C., September 10, 1986**

# TOPICS TO BE COVERED

- Environmental Monitoring/Mitigation Strategy
- Two Types of Environmental Field Activities
- Environmental Monitoring Conducted to Date

# **ENVIRONMENTAL MONITORING/MITIGATION STRATEGY**

- Identify Environmental Issues
- Gather Info on Project Plans and Site Environment
- Interact Plans versus Environment to Predict Impacts
- Develop Monitoring/Mitigation Measures
- Assess Results

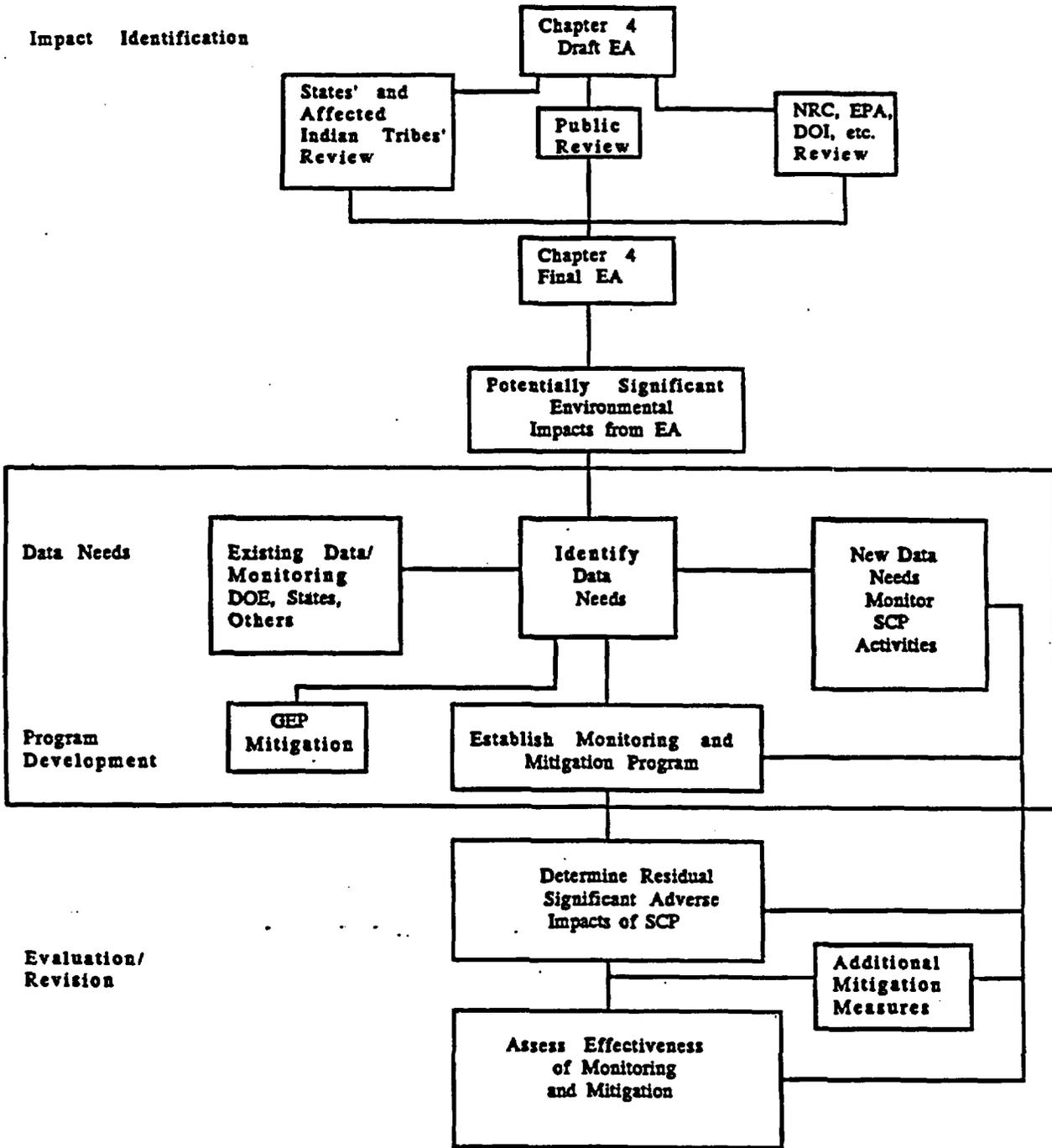
## **TWO TYPES OF ENVIRONMENTAL FIELD ACTIVITIES**

- BWIP Environmental Reviews of Activity Locations
- Site-Wide Monitoring and Mitigation Activities

## **ENVIRONMENTAL MONITORING CONDUCTED TO DATE**

- BWIP Reference Grid
- Aerial Photography Plans
- Threatened and Endangered Species
- Vegetation Characterization
- Vertebrate Animal Characterization

Impact Identification



(From: Annotated Table of Contents EMMP, ANL, 1986)

# **BWIP EMMP DEVELOPMENT SCHEDULE**

- Identify Data Needs
- Existing Data/Monitoring
- Strategy for New Data Collection
- Solicit Input From Affected Parties
- Initial Draft EMMP
- Review
- Revisions in Response to Review
- Implementation of Monitoring and Mitigation Plan
- Assess Effectiveness of Monitoring and Mitigation Plan, Revise if Necessary

## **BWIP EMMP APPROACH**

- Link With Issues
- Environmental Assessment (EA)
- Legislation

## **SPECIAL CONSIDERATIONS IN BWIP EMMP**

- Differentiation of BWIP Impacts from Others
- Indian Tribe Concerns
- Threatened and Endangered Species
- Existing Hanford Monitoring Networks

## **DEVELOPMENT OF THE BWIP EMMP**

- Identify Data Needs
  - Technical Experts to Identify Variables
  
- Solicit Input From Affected Parties
  - July 1986 Meeting with the State and Tribes
  
- Draft EMMP
  
- Review

## **VARIABLES IDENTIFIED FOR MONITORING**

- Land Use and Aesthetics
- Aquatic and Terrestrial Ecosystems
- Air Quality
- Water Quality
- Soils
- Noise
- Cultural Resources
- Radiological Effects
- Transportation

# LAND USE AND AESTHETICS

## □ Potentially Significant Impacts

- Land Use Conversion
- Vegetation Removal
- Soil Erosion
- Land Use Restriction

## □ Monitoring

- Amount of Landscape Impacted
- Visual Resources Management System Analysis

## □ Mitigation

- Location and Timing of Activities
- Revegetation
- Situation-Specific

# **TERRESTRIAL AND AQUATIC ECOSYSTEMS**

## **□ Potentially Significant Impacts**

- Habitat Loss**
- Displacement**
- Destruction of Plants**

## **□ Monitoring**

- Threatened, Endangered, Sensitive Species**
- Vegetation**
- Animals**

## **□ Mitigation**

- Timing and Location of Activities**
- Revegetation and Habitat Restoration**
- Situation-Specific**

## **AIR QUALITY (Non-Radiation)**

- **Potentially Significant Impacts**

- **Fugitive Dust**

- **Monitoring**

- **Particulates**

- **Mitigation**

- **Revegetation**

- **Watering**

## **AIR QUALITY (Non-Radiation)**

- Potentially Significant Impacts: None
  
- Monitoring: None
  
- Mitigation: None

## **WATER QUALITY (Non-Radiation)**

- **Potentially Significant Impacts**
  - **Introduction of Salt and Contaminants to Groundwater**
  - **Contamination of Surrounding Surface Waters During Flash Floods**
  
- **Monitoring**
  - **Groundwater: Total Alkalinity, Anions and Cations, Silicon Dioxide, Total Dissolved Solids, pH, Total Carbon**
  - **Surface Water: Anions and Cations, Oil and Grease, Total Organic Carbon**
  
- **Mitigation**
  - **Treatment of Discharge**

# **SOILS**

## **□ Potentially Significant Impacts**

- Disturbance/Removal**
- Compaction**
- Vegetation Removal**
- Erosion**
- Blowing Dust**

## **□ Monitoring**

- Size of Area Affected**

## **□ Mitigation**

- Location of Activities**
- Minimize Land Area Affected**
- Revegetation**
- Topsoil Stockpiling**
- Grading and Stabilization**
- Water to Minimize Dust**

# **NOISE**

- **Potentially Significant Impacts**
  - **Wildlife**
  
- **Monitoring**
  - **Noise Sampling and Computer Modeling**
  
- **Mitigation**
  - **Controlling Equipment Noise With Acoustic Enclosures, Mufflers**
  - **Timing and Location of Activities**

## **CULTURAL RESOURCES**

- **Potentially Significant Impacts**
  - **Destruction of Artifacts/Sites**
  
- **Monitoring**
  - **Records**
  - **Field Survey**
  
- **Mitigation**
  - **Location of Activities**
  - **Preservation**
  - **Data Recovery**

# **RADIOLOGICAL LEVELS**

## **□ Potentially Significant Impacts**

- Onsite External Radiation**
- Onsite Airborne Contaminants**
- Surface or Groundwater Contamination**

## **□ Monitoring**

- Whole Air Samples**
- Air Particulates**
- Soil**
- Surface Water**
- Spoil Ponds**
- Biota**
- Groundwater**

## **□ Mitigation**

- Good Health-Physics Practices**

## **TRANSPORTATION**

- Potentially Significant Impacts: None
  
- Monitoring: None
  
- Mitigation: None

NEVADA NUCLEAR WASTE STORAGE  
INVESTIGATIONS (NNWSI) PROJECT  
STATUS REPORT ON  
ENVIRONMENTAL MONITORING AND MITIGATION PLAN

U.S. DEPARTMENT OF ENERGY

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OGR**

**N**evada  
**N**uclear  
**W**aste  
**S**torage  
**I**nvestigations  
PROJECT

**Nevada  
Nuclear Waste  
Storage Investigations Project**

**NNWSI PROJECT**

**STATUS REPORT ON EMMP**

**Environmental Monitoring and Mitigation Plan**

by

**E.V. Jankus**

**ENVIRONMENTAL COORDINATION GROUP MEETING**

**September 10, 1986**

**U.S. DEPARTMENT OF ENERGY**

**Nevada Operations Office / Waste Management Project Office**



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**I**nvestigations  
**PROJECT**  
  
YUCCA  
MOUNTAIN

**OGR**

## STATUS OF EMMP

**DRAFT EMMP TO WMPO/OGR 9-2-86**

● **DRAFT CONTAINS**

- **PREFACE (NNWSI VERSION)**
- **CHAPTER 1 EXECUTIVE SUMMARY (TO BE WRITTEN BY OGR)**
- **CHAPTER 2 INTRODUCTION (NNWSI VERSION)**
- **CHAPTER 3 SITE CHARACTERIZATION PROGRAM SUMMARY**
- **CHAPTER 4 POTENTIALLY SIGNIFICANT ENVIRONMENTAL CONSEQUENCES**
- **CHAPTER 5 ENVIRONMENTAL MONITORING AND MITIGATION**
- **CHAPTER 6 PROCEDURES FOR CHANGES**



# STATUS OF THE EMMP

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## CHAPTER 3. SITE CHARACTERIZATION PROGRAM SUMMARY

### 3.1 INTRODUCTION

### 3.2 GEOTECHNICAL FIELD STUDIES

#### 3.2.1 FIELD STUDIES THAT MAY BE INITIATED TO SCP PUBLICATION

- PER 8-21 DRAFT LETTER DESCRIBING SURFACE BASED SITE CHARACTERIZATION ACTIVITIES AND AUGUST 1986 DRAFT PLAN FOR SURFACE BASED CHARACTERIZATION ACTIVITIES.
- CONSTITUTES ADDITIONAL DETAIL TO EA CHAPTER 4
- "NEW" STUDIES TO DATE INCLUDE INFILTRATION TESTS

#### 3.2.2 FIELD STUDIES THAT MAY BE INITIATED AFTER SCP PUBLICATION

- AS ABOVE

### 3.3 THE EXPLORATORY SHAFT FACILITY

- PER THE EA CHAPTER 4

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**I**nvestigations  
PROJECT

**YUCCA  
MOUNTAIN**

# STATUS OF THE EMMP

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## CHAPTER 4. POTENTIALLY SIGNIFICANT ENVIRONMENTAL CONSEQUENCES

### 4.1 INTRODUCTION

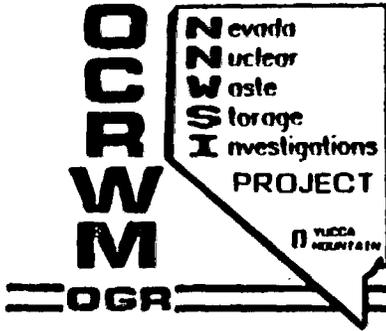
- CONTAINS MATRIX LINKING ACTIVITIES TO TRADITIONAL IMPACT CATEGORIES

### 4.2 THRU 4.11 IMPACT CATEGORIES

- CONTAINS TEXT DESCRIBING EXPECTED IMPACTS IN EACH CATEGORY

### 4.12 ISSUES RESULTING FROM EXPECTED IMPACTS

- 2 OPTIONS
  - \* NO ISSUES
  - \* 3 ISSUES
- AIR QUALITY (PARTICULATES)
- RADIOLOGICAL (RADON)
- LAND DISTURBANCE



## STATUS OF THE EMMP

---

### CHAPTER 5. ENVIRONMENTAL MONITORING AND MITIGATION

#### ● OPTIONS

- OPTION 1. NO MONITORING PURSUANT TO SECTION 113(A)
- OPTION 2. MONITORING 3 ISSUES:
  - \* PARTICULATES
  - \* RADON
  - \* LAND DISTURBANCE

ON SEPTEMBER 2, THE EMMP INCLUDED PRELIMINARY DRAFTS OF MONITORING PROGRAMS FOR THE ABOVE THREE ISSUES. THE NEXT STEP IS TO FORMULATE THE NNWSI PREFERRED STRATEGY, FOLLOWED BY WORKING WITH OGR AND THE STATE OF NEVADA TO FINALIZE ISSUES FOR MONITORING.

SALT REPOSITORY PROJECT OFFICE (SRPO)  
STATUS REPORT ON  
ENVIRONMENTAL MONITORING AND MITIGATION PLAN

## SRPO EMP OVERVIEW

### CHAPTER 3

- O PROVIDES A SUMMARY OF SITE CHARACTERIZATION ACTIVITIES
  - GEOTECHNICAL FIELD STUDIES
  - EXPLORATORY SHAFT FACILITY STUDIES
  - ENVIRONMENTAL STUDIES
  
- O PROVIDES MAJOR MILESTONES AND SCHEDULES
  - GEOTECHNICAL ACTIVITIES
  - ESF DESIGN RELATED ACTIVITIES
  - ESF CONSTRUCTION ACTIVITIES
  - ENVIRONMENTAL STUDIES

### CHAPTER 4

- O IDENTIFIES IMPACTS THAT POTENTIALLY COULD BECOME SIGNIFICANT

### CHAPTER 5

- O IDENTIFIES SENSITIVE AREAS AND PROPOSES APPROACHES FOR MONITORING AND MITIGATING IMPACTS

### APPENDIX

- O DETAILS SITE CHARACTERIZATION ACTIVITY CHARACTERISTICS AND ENVIRONMENTAL IMPACT SOURCES

## SITE CHARACTERIZATION ACTIVITY SUMMARY

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### GEOTECHNICAL FIELD ACTIVITIES (GT)

---

SHALLOW AQUIFER HYDROTESTS  
DEEP AQUIFER HYDROTESTS  
SHAFT MONITORING WELLS  
EXPLORATORY SHAFT FACILITY MONITORING WELLS  
STRATIGRAPHIC BOREHOLES  
DEEP PLAYA WELLS  
SURFACE GEOLOGIC MAPPING  
TOPOGRAPHIC MAPPING  
BOREHOLE SEARCH AND CHARACTERIZATION TRENCHING  
MICROSEISMIC MONITORING NETWORK  
SEISMIC REFLECTION LINE  
SEISMIC REFRACTION LINE  
3-D SEISMIC SURVEY  
POTENTIAL FIELD SURVEY  
ENGINEERING DESIGN BOREHOLES  
FREEZE-WALL DESIGN BOREHOLES  
EARLY FOUNDATION BORINGS  
FOUNDATION BORINGS FOR SURFACE FACILITIES AND ACCESS

### EXPLORATORY SHAFT ACTIVITIES (ESF)

---

ACCESS ROAD CONSTRUCTION  
SITE PREPARATION  
SURFACE FACILITY  
CONSTRUCTION OF SHAFTS AND OUTFITTING  
UNDERGROUND EXCAVATION - INITIAL AND EXPANDED PHASES  
SALT MANAGEMENT AND DISPOSAL  
IN SITU TESTING  
FINAL DISPOSITION

**SITE CHARACTERIZATION ACTIVITY SUMMARY  
(continued)**

**ENVIRONMENTAL FIELD ACTIVITIES (0)**

LAND USE AND MINERAL RESOURCES  
TERRESTRIAL ECOLOGY  
AQUATIC ECOLOGY  
THREATENED AND ENDANGERED SPECIES  
METEOROLOGY/AIR QUALITY  
WATER RESOURCES  
SOILS  
NOISE  
AESTHETIC RESOURCES  
ARCHAEOLOGY  
BACKGROUND RADIATION  
TRANSPORTATION/UTILITY

**SOCIOECONOMICS ACTIVITIES (0)**

SOCIOECONOMIC SURVEY

**LAND ACQUISITION ACTIVITIES (0)**

LAND ACQUISITION FOR EXPLORATORY SHAFT  
ACQUISITION OF INTEREST IN LAND COMPRISING THE LIMITED ACCESS AREA  
ACQUISITION OF SURFACE AND SUBSURFACE RIGHTS AND LESSER INTERESTS FOR THE  
PROTECTED AREA

JGF:rmw  
7/18/86

## SITE CHARACTERIZATION ACTIVITIES

### ACTIVITY DESCRIPTIONS

- O ACTIVITY
- O NUMBER/DIMENSION
- O LOCATION
- O AREA
- O DURATION
- O PROCEDURES

### ENVIRONMENTAL IMPACT SOURCES

- O EFFLUENTS
- O EMISSIONS
- O REGULATED SUBSTANCES
- O SURFACE/SUBSURFACE
- O NOISE
- O PROTECTED RESOURCES ENCOUNTERED
- O RECLAMATION REQUIREMENTS

JGF:mmw  
7/22/86

SENSITIVE AREAS TO BE  
MONITORED

---

- O PRIME FARMLAND/LAND USE
- O PLAYA WETLANDS
- O SURFACE WATER QUALITY
- O FUGITIVE SALT EFFECTS ON IMPORTANT CROPS AND  
NATURAL VEGETATION
- O CULTURAL RESOURCES
- O SALT PILE MANAGEMENT

MONITORING APPROACHES: SITE STUDY PLANS

ACOUSTICS

AESTHETICS

\*AQUATIC AND TERRESTRIAL ECOLOGY

BACKGROUND ENVIRONMENTAL RADIOACTIVITY

\*CULTURAL RESOURCES

\*LAND USE

METEOROLOGY/AIR QUALITY

\*SALT

\*SOILS

TRANSPORTATION

UTILITIES AND SOLID WASTE

\*WATER RESOURCES

RESOURCES COMMITMENT

---

\*SITE STUDY PLANS CITED IN THE  
ENVIRONMENTAL MONITORING AND  
MITIGATION PLAN.

ENVIRONMENTAL MITIGATION DURING SITE CHARACTERIZATION

SENSITIVE AREA

POTENTIAL IMPACT

MITIGATION

SALT

- SALT PILE MANAGEMENT
- FUGITIVE SALT (WINDBLOWN/RUNOFF)
- PRIME FARMLAND/LAND USE

SALT LOADING

- SURFACE WATER QUALITY
- LANDUSE: CROP STRESS

- COVER INACTIVE SALT PILES
- WET ACTIVE SALT PILES
- REDUCE HANDLING DISPERSAL  
(WATER SPRAYS)
- EVAPORATION PONDS

DRILLING IN PLAYA WETLANDS

HABITAT LOSS

- SPATIAL/TEMPORAL PLANNING
- "CLOSE-CYCLE" DRILLING
- COORDINATION WITH USFWS

CULTURAL RESOURCES

DISRUPTION

- LOSS OF RESOURCE
- DAMAGE TO RESOURCE

- AVOIDANCE
- PRESERVATION THROUGH RELOCATION
- PMAA PROVISIONS

SURFACE WATER QUALITY

SEDIMENT LOADING

- PREVENTATIVE CONTOURING
- SEDIMENTATION PONDS

STATUS OF  
REPOSITORY ENVIRONMENTAL IMPACT STATEMENT (EIS)  
PRELIMINARY PLANNING ACTIVITIES

STATUS OF  
REPOSITORY ENVIRONMENTAL IMPACT STATEMENT (EIS)  
PRELIMINARY PLANNING ACTIVITIES

---

ENVIRONMENTAL COORDINATING GROUP MEETING  
WASHINGTON, DC  
SEPTEMBER 10, 1986

# TOPICS

- 0 PRELIMINARY EIS PLANNING ACTIVITIES-CURRENT STATUS
- 0 PROPOSED NEAR-TERM EIS SCHEDULE
- 0 STATES/TRIBES INVOLVEMENT OPPORTUNITIES

# PRELIMINARY EIS PLANNING ACTIVITIES

## CURRENT STATUS

- 0 NEGOTIATING FOR CONTRACTOR TO ASSIST HQ WITH EIS SCOPING AND PREPARATION OF EIS IMPLEMENTATION AND MANAGEMENT PLANS
- 0 DEVELOPING ORGANIZATIONAL STRUCTURE FOR PLANNING AND PREPARING THE EIS
- 0 BEGINNING TO PREPARE DRAFT MEMORANDA OF AGREEMENT WITH NRC AND OTHER FEDERAL AGENCIES (WITH CEQ INVOLVEMENT)
- 0 DEVELOPING PRELIMINARY ENVIRONMENTAL FIELD PLANS FOR COLLECTING EIS BASELINE DATA USING KEY ISSUE #3 FROM THE MISSION PLAN AS A PLANNING BASIS
- 0 DEVELOPING WORKING DRAFT DOCUMENTS FOR EIS MANAGEMENT PLAN, EIS IMPLEMENTATION PLAN, AND EIS ANNOTATED TABLE OF CONTENTS

# NEAR-TERM EIS SCHEDULE

<u>ACTIVITY</u>	<u>PROPOSED DATES</u>
HQ CONTRACTOR PROCUREMENT FOR EIS SCOPING AND RELATED TASKS	NOVEMBER 1986
DRAFT WORKING BACKGROUND DOCUMENTS (EIS IMPLEMENTATION PLAN; EIS MANAGEMENT PLAN; EIS ANNOTATED TABLE OF CONTENTS)	FALL 1986
COOPERATING AGENCY MEMORANDA OF AGREEMENT	NOVEMBER 1986 TO MARCH 1987
<u>FEDERAL REGISTER NOTICE OF INTENT TO PREPARE AN EIS</u>	MAY 1987
EIS SCOPING PROCESS	JUNE TO SEPTEMBER 1987
DRAFT EIS IMPLEMENTATION PLAN	NOVEMBER 1987
FINAL EIS IMPLEMENTATION PLAN	JANUARY 1988

# STATES AND TRIBES INVOLVEMENT OPPORTUNITIES

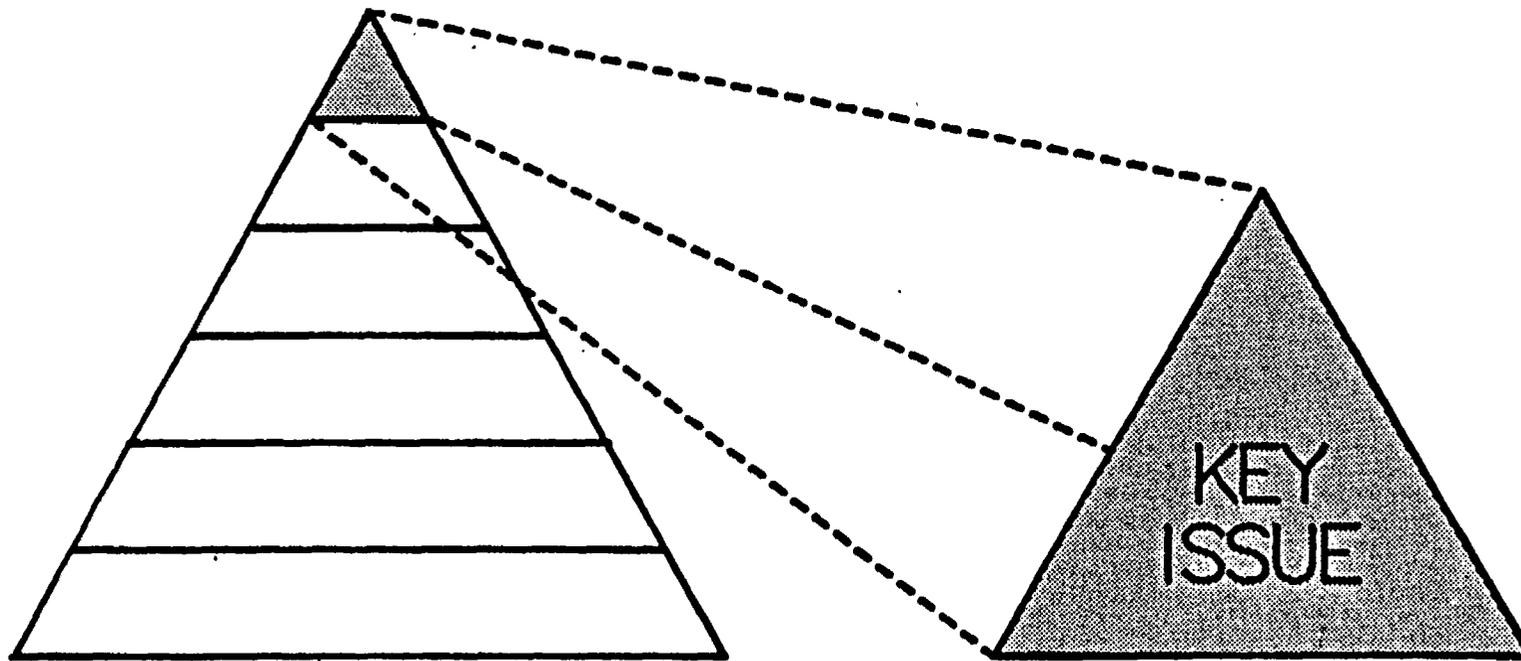
- 0 ENVIRONMENTAL COORDINATING GROUP MEETINGS
- 0 OTHER COORDINATION GROUPS MEETINGS
- 0 EIS SCOPING PROCESS
- 0 MEMORANDA OF AGREEMENT WITH STATES AND TRIBES
- 0 CONSULTATION AND COOPERATION AGREEMENTS WITH STATES AND TRIBES
- 0 REVIEW OF DRAFT EIS

ATTACHMENT 9

KEY ISSUE III

KEY ISSUES ARE DERIVED DIRECTLY FROM THE  
SYSTEM GUIDELINES IN THE DOE'S SITING GUIDELINES

---



# KEY ISSUES

## (Example from the Mission Plan)

---

- Key Issue 1:** Will the geologic repository, consisting of multiple natural and engineered barriers, isolate the radioactive waste from the accessible environment after closure in accordance with the requirements set forth in 10 CFR Part 60 and the proposed Environmental Protection Agency rule to be codified as 40 CFR Part 191?
- Key Issue 2:** Will projected radiological exposures of the general public and releases of radioactive materials to restricted and unrestricted areas during repository operation and closure meet applicable safety requirements set forth in 10 CFR Part 20, 10 CFR Part 60, and 40 CFR Part 191, Subpart A?
- Key Issue 4:** Are repository construction, operation, and closure feasible on the basis of reasonably available technology and are the associated costs reasonable?

# KEY ISSUES

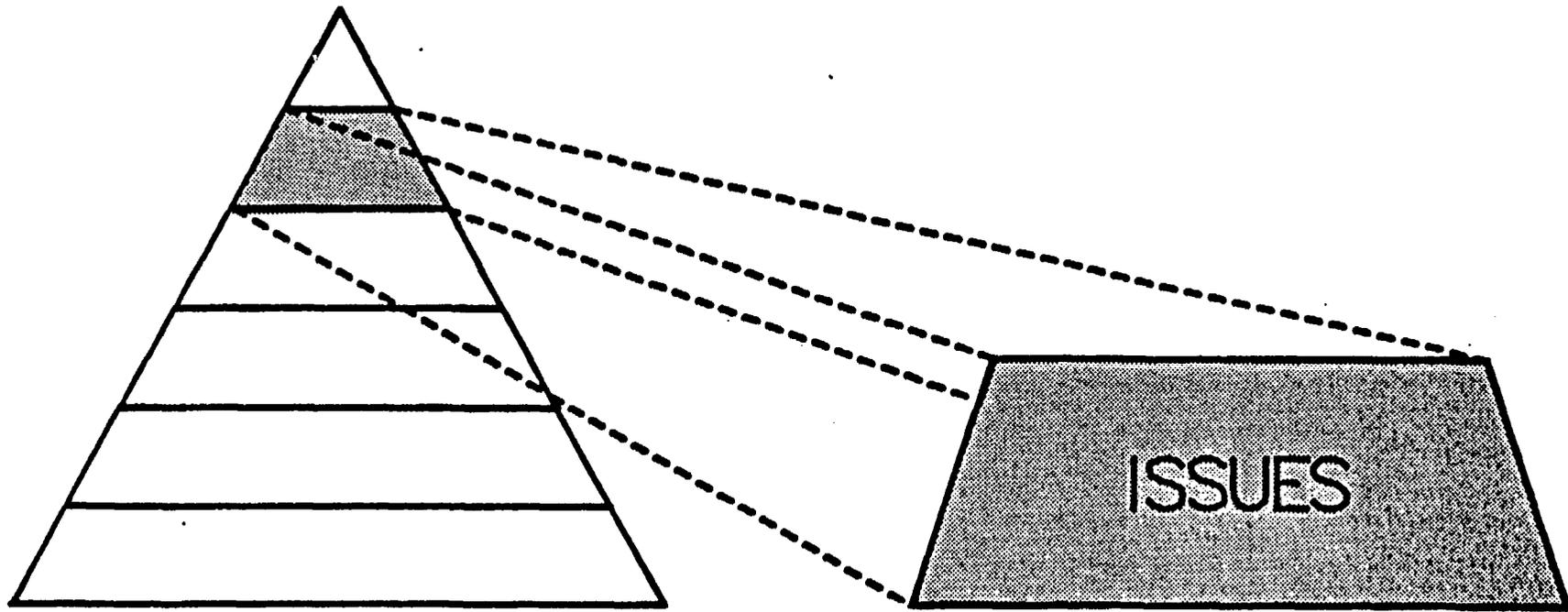
(Example from the Mission Plan)

---

Key Issue 3: Can the repository and its support facilities be sited, constructed, operated, closed, and decommissioned so that the quality of the environment will be protected and can waste-transportation operations be conducted without causing unacceptable risks to public health or safety?

ISSUES GROUPED UNDER A KEY ISSUE INDICATE WHAT  
QUESTIONS MUST BE ANSWERED TO RESOLVE THE KEY ISSUE

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# ISSUES UNDER KEY ISSUE 3

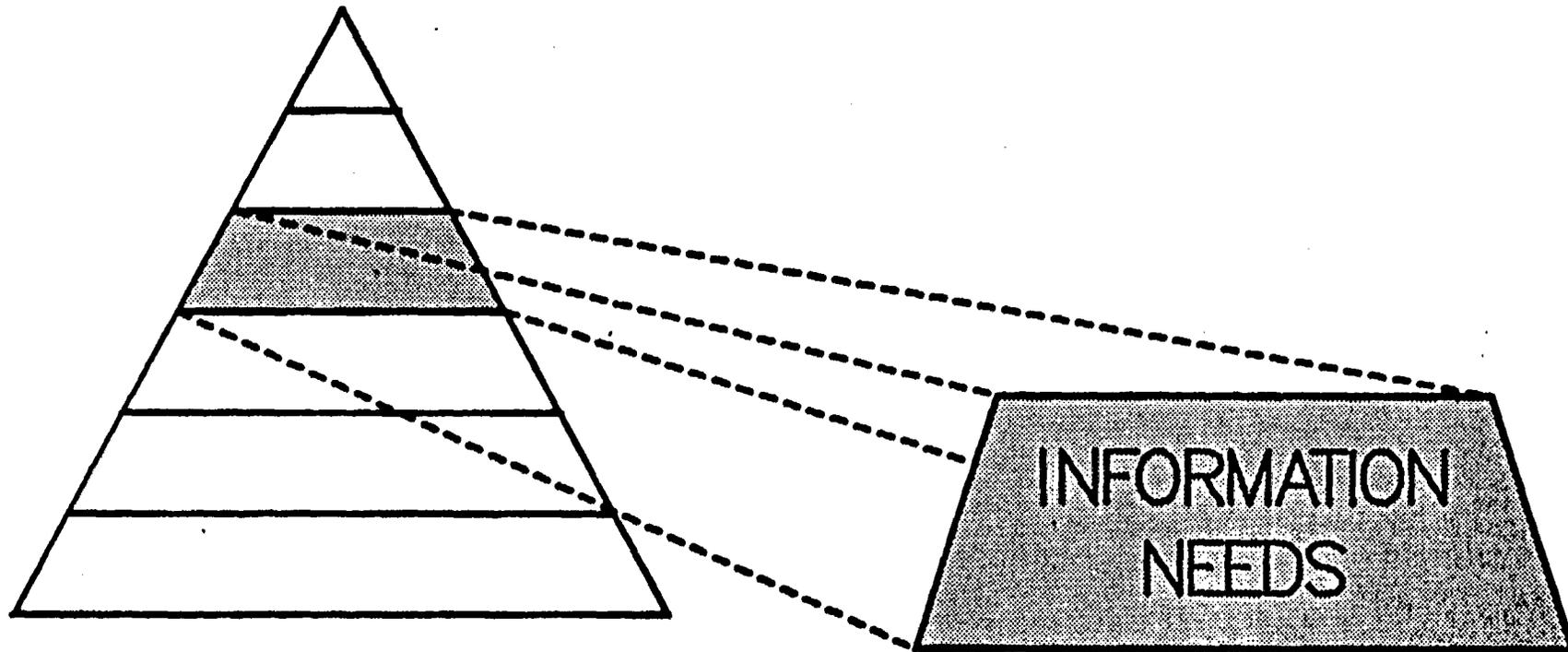
## (Example from the Mission Plan)

---

- Issue 3.1:** Can a site be located such that the quality of the environment will be protected during repository siting, construction, operation, closure, and decommissioning and can significant adverse environmental impacts in the affected area be mitigated by reasonable measures?
- Issue 3.2:** Can access routes from existing local highways and railroads to the site be constructed with reasonably available technology, accommodate transportation system components with the performance standards specified in applicable DOT and NRC regulations, and allow transportation operations to be conducted without causing unacceptable risks to public health and safety or unacceptable environmental impacts?
- Issue 3.3:** Can any significant adverse socioeconomic impacts induced in communities and surrounding regions by repository siting, construction, operation, closure, and decommissioning be offset by reasonable mitigation measures or by compensation?

INFORMATION NEEDS ARE THE TECHNICAL  
INFORMATION REQUIRED TO RESOLVE THE ISSUES

---



# REGULATIONS ON ENVIRONMENTAL ISSUES ASSOCIATED WITH SITING, CONSTRUCTION, OPERATION AND CLOSURE OF HIGH-LEVEL WASTE GEOLOGIC REPOSITORY

---

- 10 CFR Part 20: Standards for Protection Against Radiation
- 10 CFR Part 60: Disposal of High-Level Radioactive Wastes in Geologic Repositories
- 10 CFR Part 960: Nuclear Waste Policy Act of 1982; General Guidelines for the Recommendation of Sites for the Nuclear Waste Repositories

# REGULATIONS ON ENVIRONMENTAL ISSUES ASSOCIATED WITH SITING, CONSTRUCTION, OPERATION AND CLOSURE OF HIGH-LEVEL WASTE GEOLOGIC REPOSITORY (cont'd)

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- 40 CFR Part 191: Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes
- 40 CFR Parts 1500-1508: Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act of 1969, as Amended
- 40 CFR Part 1502 (April 25, 1986): CEQ Regulations for Implementing NEPA; Incomplete or Unavailable Information

# ENVIRONMENTAL ISSUE

---

Issue 3.1 Can a site be located such that the quality of the environment will be protected during repository siting, construction, operation, closure and decommissioning, and can significant adverse environmental impacts in the affected area be mitigated by reasonable measures?

## INFORMATION NEEDS (Example from the Mission Plan)

---

- 3.1.1 Existing air-quality levels and trends
- 3.1.2 Existing surface-water and ground-water quantity and quality and trends
- 3.1.3 Existing terrestrial and aquatic vegetation and wildlife, including evidence of threatened or endangered species and their critical habitats

# ENVIRONMENTAL ISSUE

---

Issue 3.1: Can a site be located such that the quality of the environment will be protected during repository siting, construction, operation, closure and decommissioning, and can significant adverse environmental impacts in the affected area be mitigated by reasonable measures? (cont'd)

## INFORMATION NEEDS (Example from the Mission Plan)

---

- 3.1.4 Soil characteristics, such as structure, composition, and erodability
- 3.1.5 Existing levels of background radiation
- 3.1.6 Land use patterns and trends
- 3.1.7 Noise levels
- 3.1.8 Locations of State or regional protected—resource areas, such as State parks or wildlife areas

## ENVIRONMENTAL ISSUE

---

Issue 3.1: Can a site be located such that the quality of the environment will be protected during repository siting, construction, operation, closure and decommissioning, and can significant adverse environmental impacts in the affected area be mitigated by reasonable measures? (cont'd)

## INFORMATION NEEDS (Example from the Mission Plan)

---

- 3.1.9 Locations of significant Native American resources, such as major Indian religious sites, or other sites of unique cultural interest
- 3.1.10 Locations of components of the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Wildlife Preservation System, and National Forest Land
- 3.1.11 Other unique environmental resources, as they become identified

# TRANSPORTATION ISSUE

---

**Issue 3.2** Can access routes from existing local highways and railroads to the site be constructed with reasonably available technology, accommodate transportation system components with the performance standards specified in applicable DOT and NRC regulations, and allow transportation operations to be conducted without causing unacceptable risks to public health and safety or unacceptable environmental impacts?

## INFORMATION NEEDS (Example from the Mission Plan)

---

- 3.2.1** Assessment of whether an existing secondary transportation network can handle the increased traffic load attributable to the repository
- 3.2.2** Identification of improvements required in the secondary transportation network and the feasibility, cost, and environmental impacts of the improvements

# TRANSPORTATION ISSUE

---

Issue 3.2 Can access routes from existing local highways and railroads to the site be constructed with reasonably available technology, accommodate transportation system components with the performance standards specified in applicable DOT and NRC regulations, and allow transportation operations to be conducted without causing unacceptable risks to public health and safety or unacceptable environmental impacts?  
(cont'd)

## INFORMATION NEEDS (Example from the Mission Plan)

---

- 3.2.3 Determination of the compatibility of the required transportation network improvements with the local and regional transportation and land-use plans
- 3.2.4 Analysis of emergency-response requirements and capabilities

# SOCIOECONOMIC ISSUE

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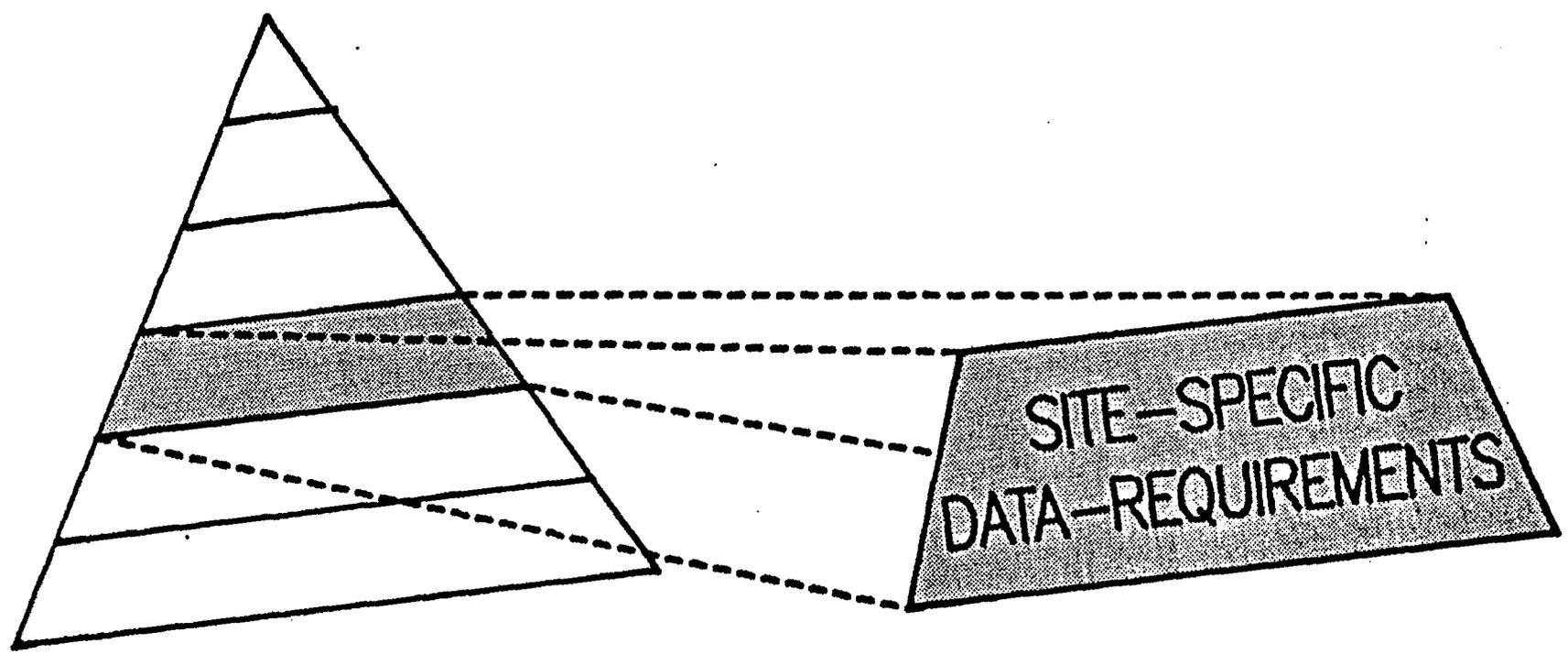
Issue 3.3 Can any significant adverse socioeconomic impacts induced in communities and surrounding regions by repository siting, construction, operation, closure, and decommissioning be offset by reasonable mitigation measures or by compensation?

## INFORMATION NEEDS (Example from the Mission Plan)

---

- 3.3.1 Baseline data on population density and distribution, major industries, employment and the economic base for the affected area, including land-use patterns and trends
- 3.3.2 Estimates of local versus migrant work-force numbers for various phases from site characterization through repository operation, consequent demands on local communities for housing, education, utilities, transportation access, and community services, and impacts on lifestyles, government infrastructure, and government expenditures and revenues

PARAMETERS TO BE MEASURED WHICH, WHEN TAKEN TOGETHER PROVIDE THE TECHNICAL INFORMATION REQUIRED TO SATISFY THE INFORMATION NEEDS



# EXAMPLE OF DATA REQUIREMENTS

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## Information Need 3.1.1

Existing air-quality levels and trends

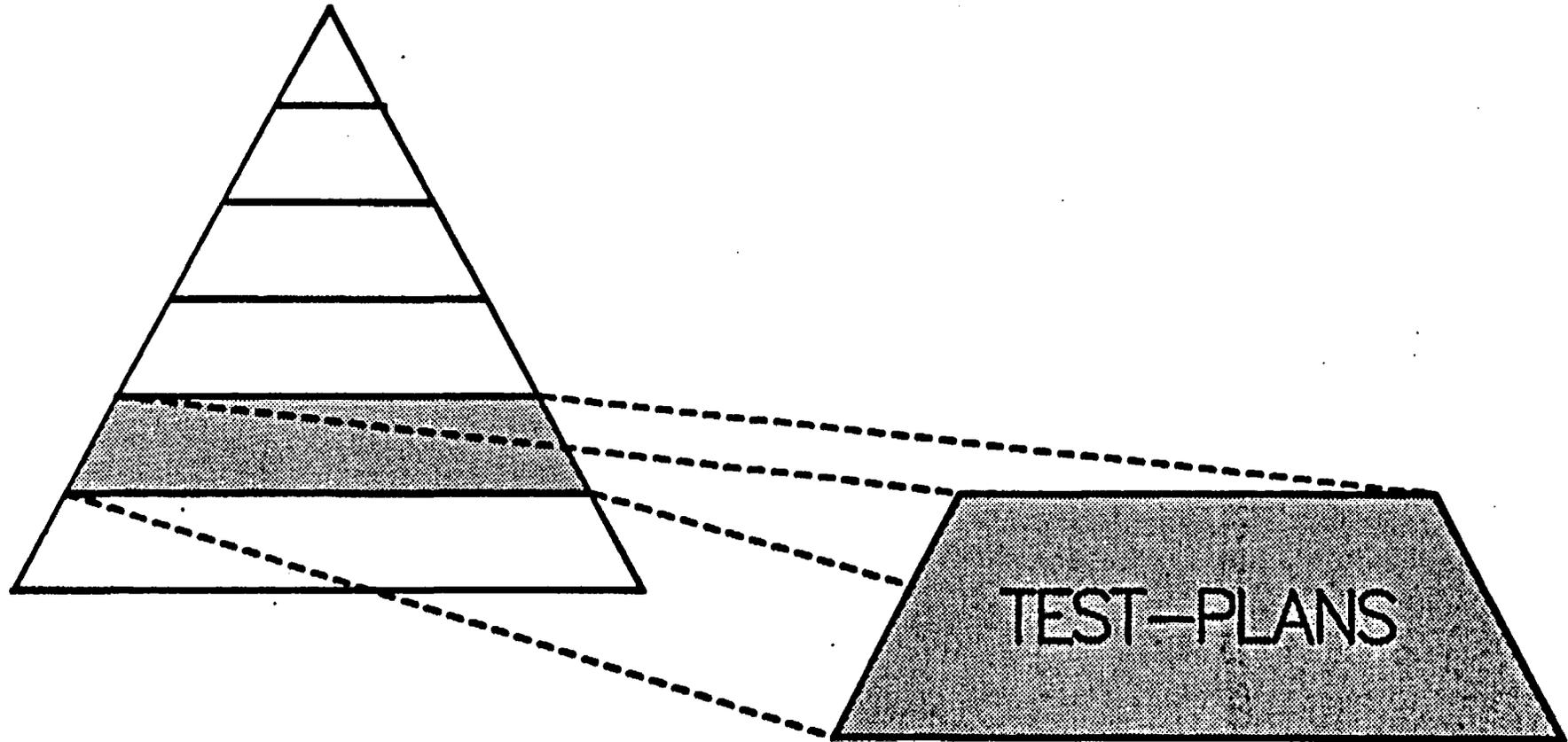
## Data Requirements

3.1.1.1	Ambient TSP	3.1.1.6	Air Temperature
3.1.1.2	Ambient NO <sub>x</sub>	3.1.1.7	Relative Humidity
3.1.1.3	Ambient SO <sub>x</sub>	3.1.1.8	TSP Emission Rates
3.1.1.4	Wind Speed	3.1.1.9	NO <sub>x</sub> Emission Rates
3.1.1.5	Wind Direction	3.1.1.10	SO <sub>x</sub> Emission Rates



# PLANS TO OBTAIN THE DATA ON THE PARAMETERS

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# EXAMPLE OF A TEST PLAN

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## Information Need 3.1.1

Existing air-quality levels and trends

## Data Requirement

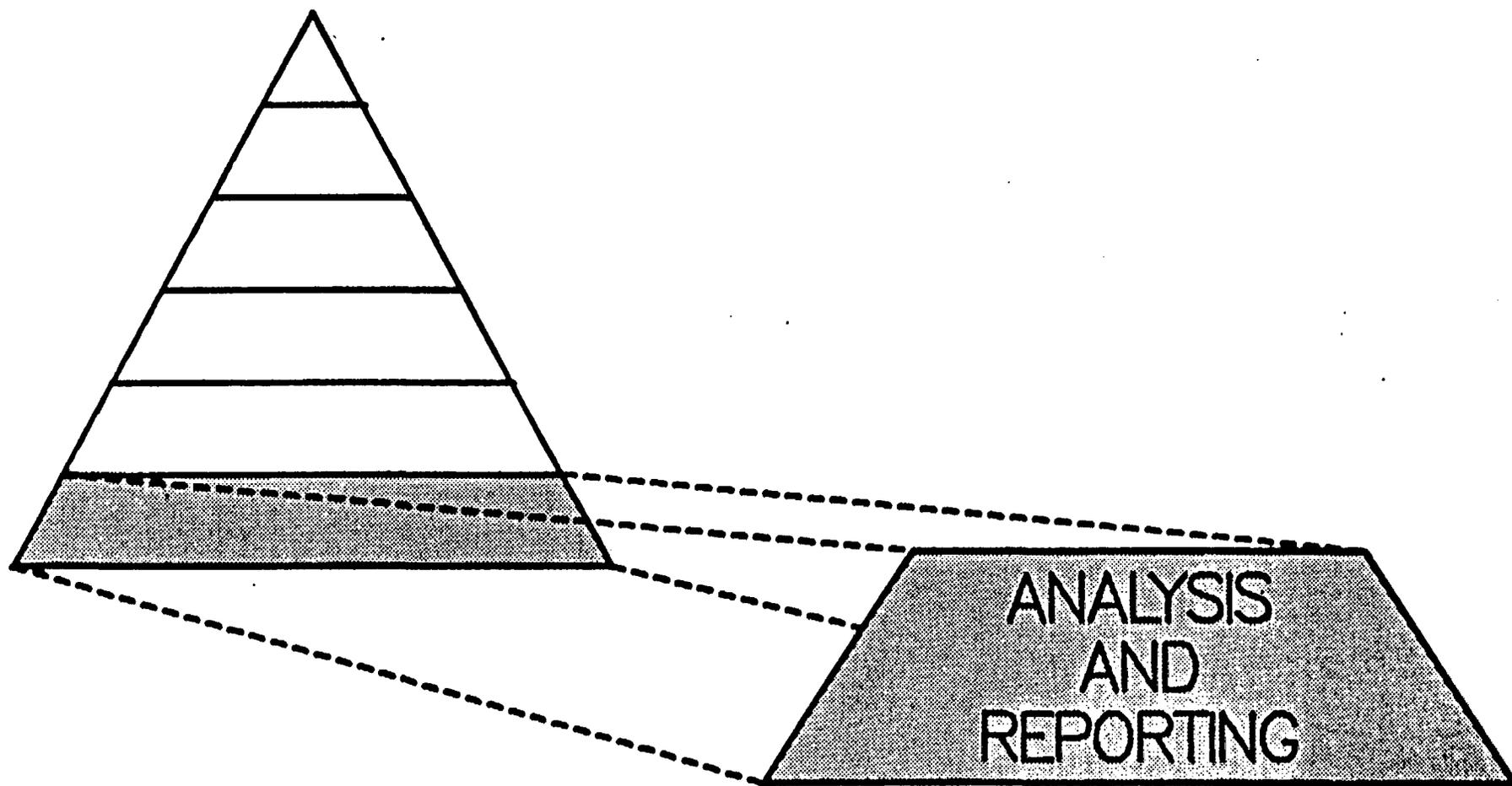
Air Temperature

## Test Plans

- 3.1.1.6.1 Location of Sensors
- 3.1.1.6.2 Type of Sensors
- 3.1.1.6.3 Frequency of Measurement
- 
- 
-

# THE ANALYSIS REQUIRED AND THE METHOD OF REPORTING CONCLUSIONS AT THE "INFORMATION NEEDS" LEVEL

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# ANALYSIS AND REPORTING

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## Information Need 3.1.1

---

### Existing air-quality levels and trends

1. Method of presenting data
2. Mathematical models to be used
3. Results of model predictions
4. Conclusions related to air quality degradation
5. Recommendations for mitigating predicted impacts
6. Annotated table of contents of air quality report



STATUS OF ENVIRONMENTAL  
REGULATORY COMPLIANCE

STATUS OF  
ENVIRONMENTAL REGULATORY COMPLIANCE  
WORKING GROUP

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ENVIRONMENTAL COORDINATING GROUP MEETING, WASHINGTON D.C.

SEPTEMBER 10, 1986

## DOE EXECUTIVE ORDER 5400.1

IT IS THE POLICY OF THE DOE TO CONDUCT ITS OPERATIONS IN AN ENVIRONMENTALLY SAFE AND SOUND MANNER. MOREOVER, DOE IS COMMITTED TO MEETING ALL SUBSTANTIVE AND PROCEDURAL FEDERAL ENVIRONMENTAL REQUIREMENTS AND ALL STATE AND LOCAL REQUIREMENTS WHICH ARE NOT INCONSISTENT WITH THE NUCLEAR WASTE POLICY ACT.

REPRESENTATIVE FEDERAL AUTHORITIES WHICH  
MAY GENERALLY APPLY TO ALL PROJECTS

- 0 CLEAN AIR ACT
- 0 CLEAN WATER ACT
- 0 COASTAL ZONE MANAGEMENT ACT
- 0 ENDANGERED SPECIES ACT
- 0 AMERICAN INDIAN RELIGIOUS FREEDOM ACT
- 0 MIGRATORY BIRD TREATY ACT
- 0 NATIONAL HISTORIC PRESERVATION ACT
- 0 WILD AND SCENIC RIVERS ACT

REPRESENTATIVE FEDERAL AUTHORITIES WHICH  
MAY GENERALLY APPLY TO ALL PROJECTS

(CONTINUED)

- 0 NATIONAL ENVIRONMENTAL POLICY ACT
- 0 DEPARTMENT OF TRANSPORTATION ACTS
- 0 OCCUPATIONAL SAFETY AND HEALTH ACT
- 0 HAZARDOUS MATERIALS TRANSPORTATION ACT
- 0 SOLID WASTE DISPOSAL ACT
- 0 SAFE DRINKING WATER ACT
- 0 FEDERAL MINE SAFETY AN HEALTH ACT

PURPOSES OF ENVIRONMENTAL REGULATORY COMPLIANCE  
WORKING GROUP (ERCWG)

- 0 TO ENSURE SUCCESSFUL ENVIRONMENTAL REGULATORY COMPLIANCE.
- 0 TO ENSURE CLOSE COORDINATION AND COMMUNICATION AMONG HQ AND THE  
PO'S.
- 0 TO FACILITATE SUCH COORDINATION AND COMMUNICATION.

ATTACHMENT 11

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION  
ENVIRONMENTAL FIELD PROGRAM

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**U.S. DEPARTMENT OF ENERGY**

**Nevada  
Nuclear Waste  
Storage Investigations Project**

**NNWSI PROJECT  
ENVIRONMENTAL ACTIVITIES  
REPORT**

by

**E.V. Jankus**

**ENVIRONMENTAL COORDINATION GROUP MEETING  
September 10, 1986**

**U.S. DEPARTMENT OF ENERGY  
Nevada Operations Office / Waste Management Project Office**



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# PROGRAM SCHEDULE

## (OCRWM PROJECT DECISION SCHEDULE, MARCH, 1986)

**SITE INVESTIGATION/  
SITE NOMINATION PHASE**

**SITE CHARACTERIZATION PHASE**

**LICENSING PHASE**

DRAFT EA  
12/84

FINAL EA  
5/86

PRESIDENTIAL  
APPROVAL  
5/28/86

SITE  
CHARACTERIZATION  
PLAN  
12/86

EIS SCOPING  
8/87

DRAFT EIS  
1/91

FINAL EIS  
7/91

PRESIDENT  
RECOMMENDS  
SITE  
10/91

SITE  
INVESTIGATIONS  
BEGAN 1977

START  
CONSTRUCTION  
1993

EMMP RELEASED CONCURRENT WITH SCP

INITIATE DISCUSSIONS WITH PERMITTING AGENCIES

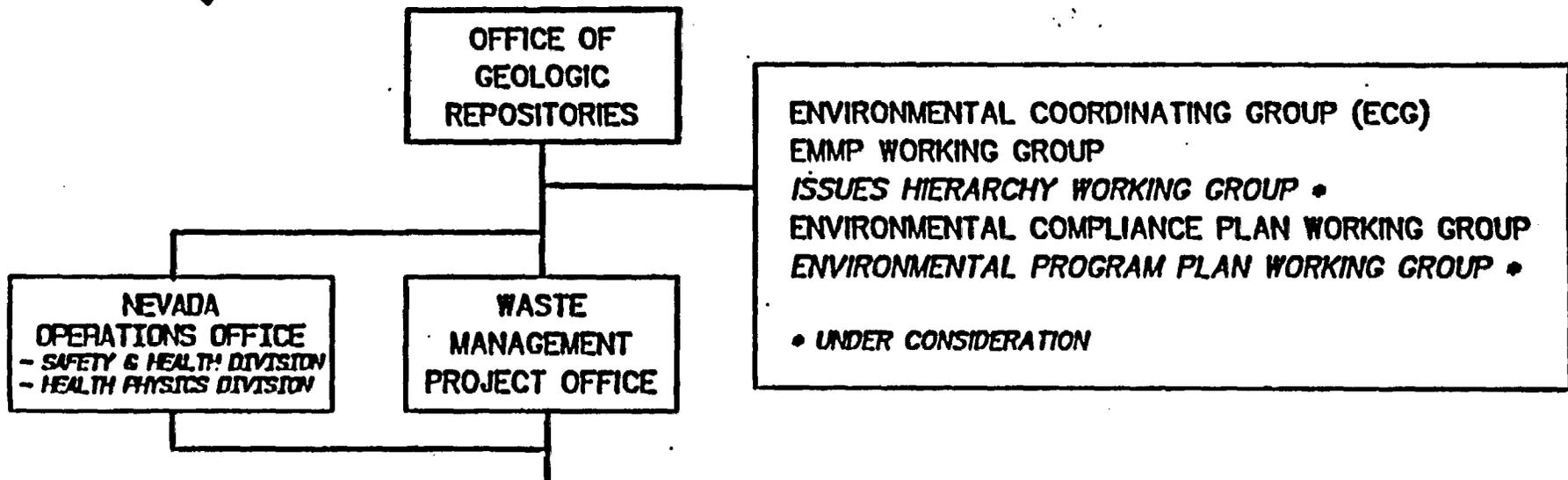
CONTINUE CONSULTATION ON EMMP

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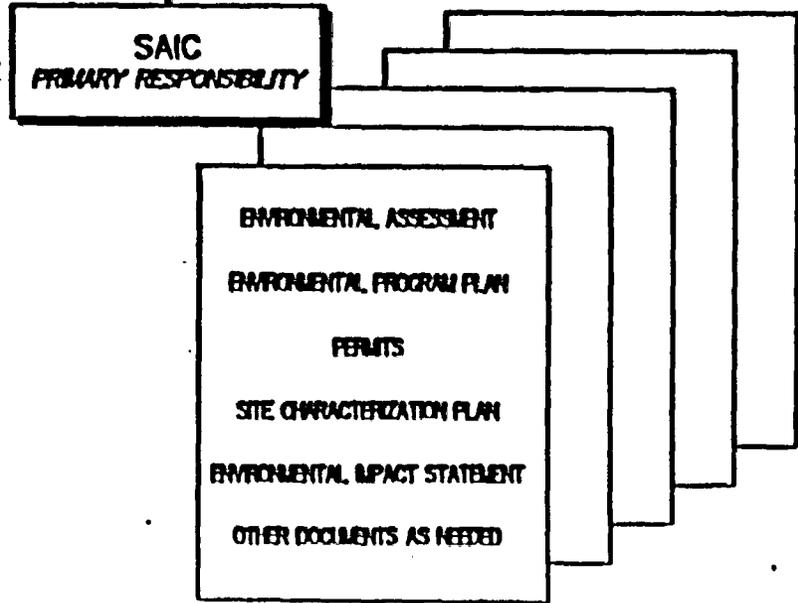
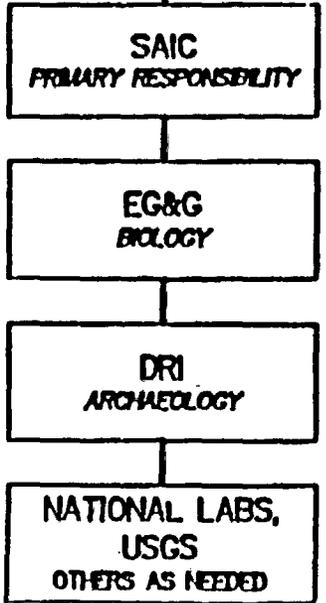
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# ENVIRONMENTAL ORGANIZATION CHART



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WBS 1.2.3 SITE INVESTIGATION      WBS 1.2.5 REGULATORY & INSTITUTIONAL



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## PURPOSE OF MAJOR ENVIRONMENTAL ACTIVITIES

### WBS 1.2.5 REGULATORY AND INSTITUTIONAL

- **ENVIRONMENTAL ASSESSMENT - COMPLETED MAY 1986**
  - EVALUATED SITE SUITABILITY AND SERVED AS THE BASIS FOR SITE NOMINATION.
- **ENVIRONMENTAL PROGRAM PLAN**
  - IDENTIFIES FROM THE REGULATIONS THE PERTINENT ISSUES AND INFORMATION NEEDS, AND THE STUDIES AND DOCUMENTS NECESSARY TO ANSWER THESE ISSUES.
- **PLAN FOR OBTAINING ENVIRONMENTAL REGULATORY APPROVALS (PERMITS)**
  - IDENTIFIES THE APPROVALS AND PERMITS FOR SITE CHARACTERIZATION AND DESCRIBES A PLAN FOR OBTAINING THESE APPROVALS.
- **ENVIRONMENTAL MONITORING AND MITIGATION PLAN**
  - IDENTIFIES THE SPECIFIC MONITORING AND MITIGATION PROGRAMS THAT WILL BE USED FOR DETECTING AND MITIGATING POTENTIALLY SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS RESULTING FROM SITE CHARACTERIZATION.

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## MAJOR ENVIRONMENTAL ACTIVITIES

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- **ENVIRONMENTAL IMPACT STATEMENT**
  - **EVALUATES ENVIRONMENTAL IMPACTS OF DEVELOPING A REPOSITORY AND SUPPORTS THE DECISION OF ONE SITE FOR A REPOSITORY.**

### WBS 1.2.3 SITE INVESTIGATION

- **ENVIRONMENTAL FIELD INVESTIGATIONS**
  - **FIELD ACTIVITIES NECESSARY TO GATHER THE DATA NEEDED TO EVALUATE THE SITE AND ASSESS ENVIRONMENTAL IMPACTS.**

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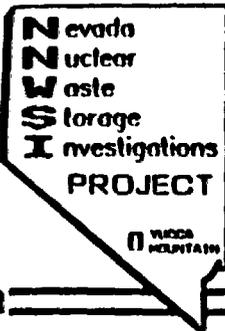
# **ENVIRONMENTAL PROGRAM PLAN (EPP)**

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**OBJECTIVE: TO PROVIDE A COMPREHENSIVE PLAN FOR ENVIRONMENTAL ACTIVITIES WHICH IS:**

- **RESPONSIVE TO THE REQUIREMENTS OF NWPA WHICH INCLUDES NRC AND NEPA**
- **FORWARD-LOOKING IN THAT IT ADDRESSES OUTYEAR STUDIES**
- **DYNAMIC, TO ACCOMMODATE CHANGING PROGRAM NEEDS**

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# **ENVIRONMENTAL PROGRAM PLAN (EPP)**

**CONTINUED**

## **1. INTRODUCTION**

- **NEED/JUSTIFICATION FOR PREPARATION OF AN ENVIRONMENTAL PROGRAM PLAN (EPP) IS GIVEN**
- **MAJOR PARTICIPATING PROGRAMMATIC COMPONENTS ARE DESCRIBED BY ROLE/RESPONSIBILITIES**
- **BRIEF ROADMAP IS PROVIDED FOR REST OF DOCUMENT**

## **2. PURPOSE AND SCOPE**

- **OBJECTIVES**
- **AREAS/DISCIPLINES COVERED**
- **TIE TO WBS ELEMENTS 2.5 AND 2.3 GIVEN**

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# ENVIRONMENTAL PROGRAM PLAN (EPP)

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## 3. EXISTING INFORMATION

- SUMMARY OF EXISTING DATA/INFORMATION IS GIVEN, BASED ON:
  - ENVIRONMENTAL ASSESSMENT
  - ONGOING ACTIVITIES

## 4. KEY ISSUE 3: ISSUES HIERARCHY

- COMPILATION METHODOLOGY
- RELATIONSHIP OF TECHNICAL ISSUES TO REGULATORY NEEDS
- ISSUES AND INFORMATION NEEDS

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# ENVIRONMENTAL PROGRAM PLAN (EPP)

CONTINUED

## 5. ISSUES RESOLUTION STRATEGIES

- **DETAILS OF TECHNICAL ISSUES**
- **SPECIFIC ISSUE RESOLUTION STRATEGIES (INCLUDING TOPICAL REPORTS)**
- **SCHEDULE COMPONENTS FOR EACH ISSUES RESOLUTION METHODOLOGY**

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# ENVIRONMENTAL PROGRAM PLAN (EPP)

CONTINUED

## 6. MAJOR DELIVERABLES

- MAJOR DELIVERABLES THAT TOPICAL REPORTS CONTRIBUTE TO ARE IDENTIFIED (PERMITS, EMMP, SEMMP, EIS, LA, SAR)
- FOR EACH, THE FOLLOWING ARE GIVEN: LEGISLATIVE REQUIREMENT, PURPOSE AND SCOPE, TIME FRAME FOR PREPARATION, APPLICABLE ISSUE RESOLUTION STRATEGIES AND TOPICAL REPORTS, AND RELATIONSHIP TO OTHER MAJOR DELIVERABLES

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# ENVIRONMENTAL PROGRAM PLAN (EPP)

CONTINUED

## 7. SCHEDULES/NETWORKS

- **OVERALL SCHEDULE OR COMBINED NETWORK FOR ALL ACTIVITIES GROUPED BY PROGRAMMATIC WBS CATEGORY**

## 8. QUALITY ASSURANCE

- **QA PROCEDURES TO BE FOLLOWED**

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# PURPOSE OF THE ENVIRONMENTAL COMPLIANCE PROGRAM (PERMITS)

**"DOE MUST MEET ALL SUBSTANTIVE AND PROCEDURAL FEDERAL ENVIRONMENTAL REQUIREMENTS.... DOE WILL ENDEAVOR TO ADDRESS THOSE REQUIREMENTS, AS A MATTER OF COMITY, TO THE EXTENT THAT THOSE REQUIREMENTS ARE NOT INCONSISTENT WITH DOE'S RESPONSIBILITIES UNDER THE NWPA."**

**W. J. PURCELL, JULY 23, 1985**

## ENVIRONMENTAL REGULATORY APPROVALS (PERMITS) FOR SITE CHARACTERIZATION

### 1. INTRODUCTION

- IDENTIFIES THE ENVIRONMENTAL REGULATORY APPROVALS FOR SITE CHARACTERIZATION AND DESCRIBES A PLAN TO OBTAIN THESE APPROVALS

### 2. SITE CHARACTERIZATION PROGRAM SUMMARY

- DESCRIPTION OF FIELD STUDIES AND THE EXPLORATORY SHAFT

### 3. PERMITS AND APPROVALS

- DESCRIPTION OF FEDERAL AND STATE APPROVALS REQUIRED FOR SITE CHARACTERIZATION

### 4. PLAN FOR OBTAINING APPROVALS

- APPROACH ORGANIZATION PROCEDURES AND QUALITY ASSURANCE TO BE USED TO OBTAIN PERMITS

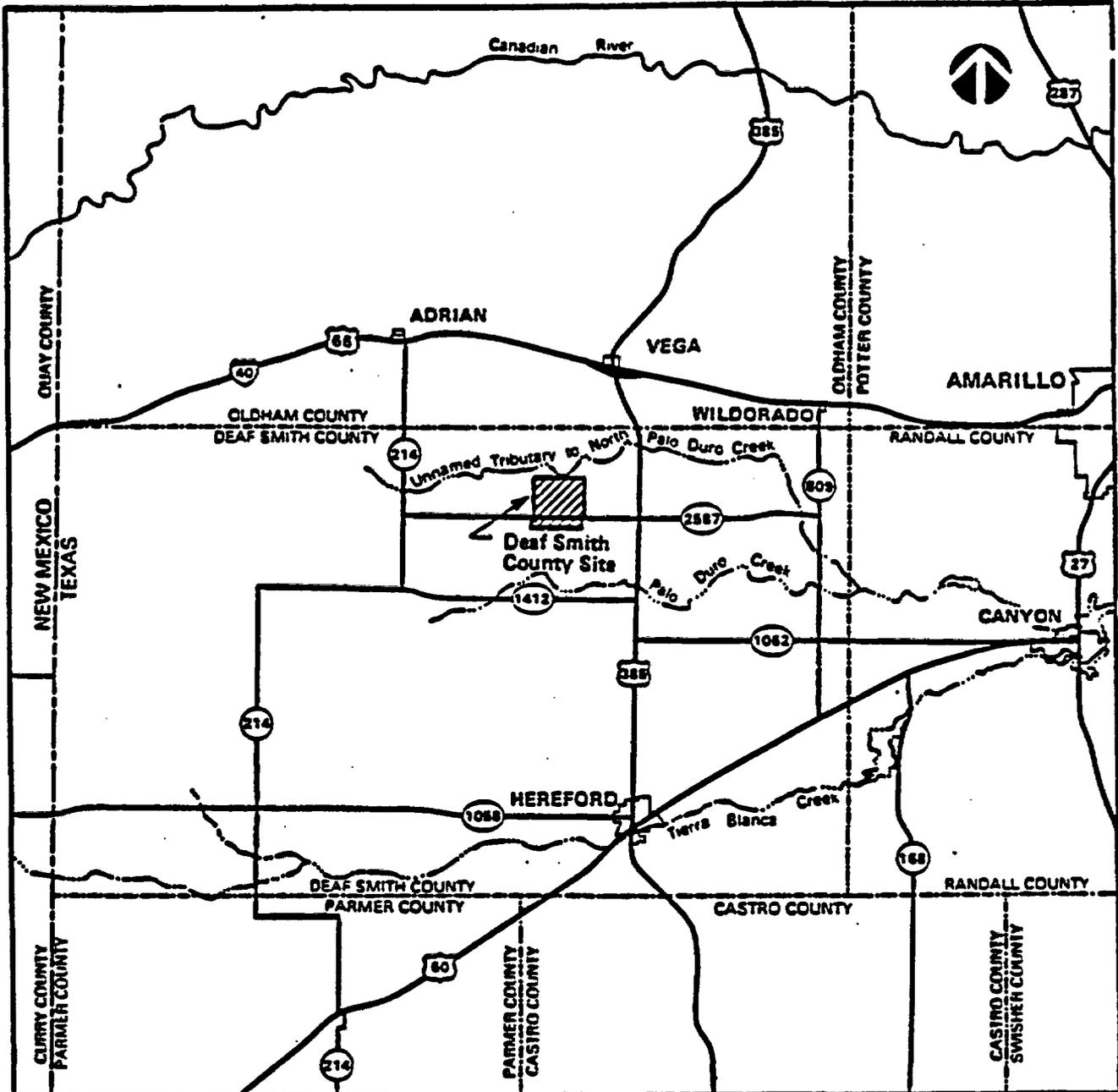
### 5. SCHEDULE FOR OBTAINING APPROVALS

- SCHEDULE FOR INTERACTING WITH AGENCIES, COMPLETING APPLICATIONS AND AGENCY REVIEW AND APPROVAL OF EACH APPLICATION

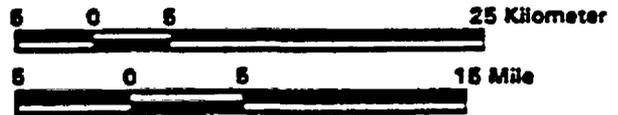
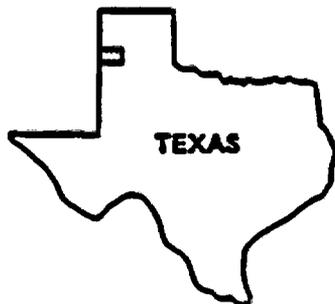
SALT REPOSITORY PROJECT OFFICE  
ENVIRONMENTAL FIELD PROGRAM

**SRPO**

**ENVIRONMENTAL FIELD PROGRAM**



**Explanation**



**Location of the Deaf Smith County Site, Texas**

Source: Compiled From USGS 1:250,000 Maps

**Figure 1-1**

## **LIST OF STUDY PLANS**

**CULTURAL RESOURCES**

**METEOROLOGY/AIR QUALITY**

**AQUATIC & TERRESTRIAL ECOLOGY**

**WATER RESOURCES**

**UTILITIES/SOLID WASTE**

**BACKGROUND ENVIRONMENTAL RADIOACTIVITY**

**AESTHETICS**

**ACOUSTICS**

**LAND USE**

**TRANSPORTATION**

**SOILS**

**SALT**

## **CULTURAL RESOURCES INFORMATION NEEDS.**

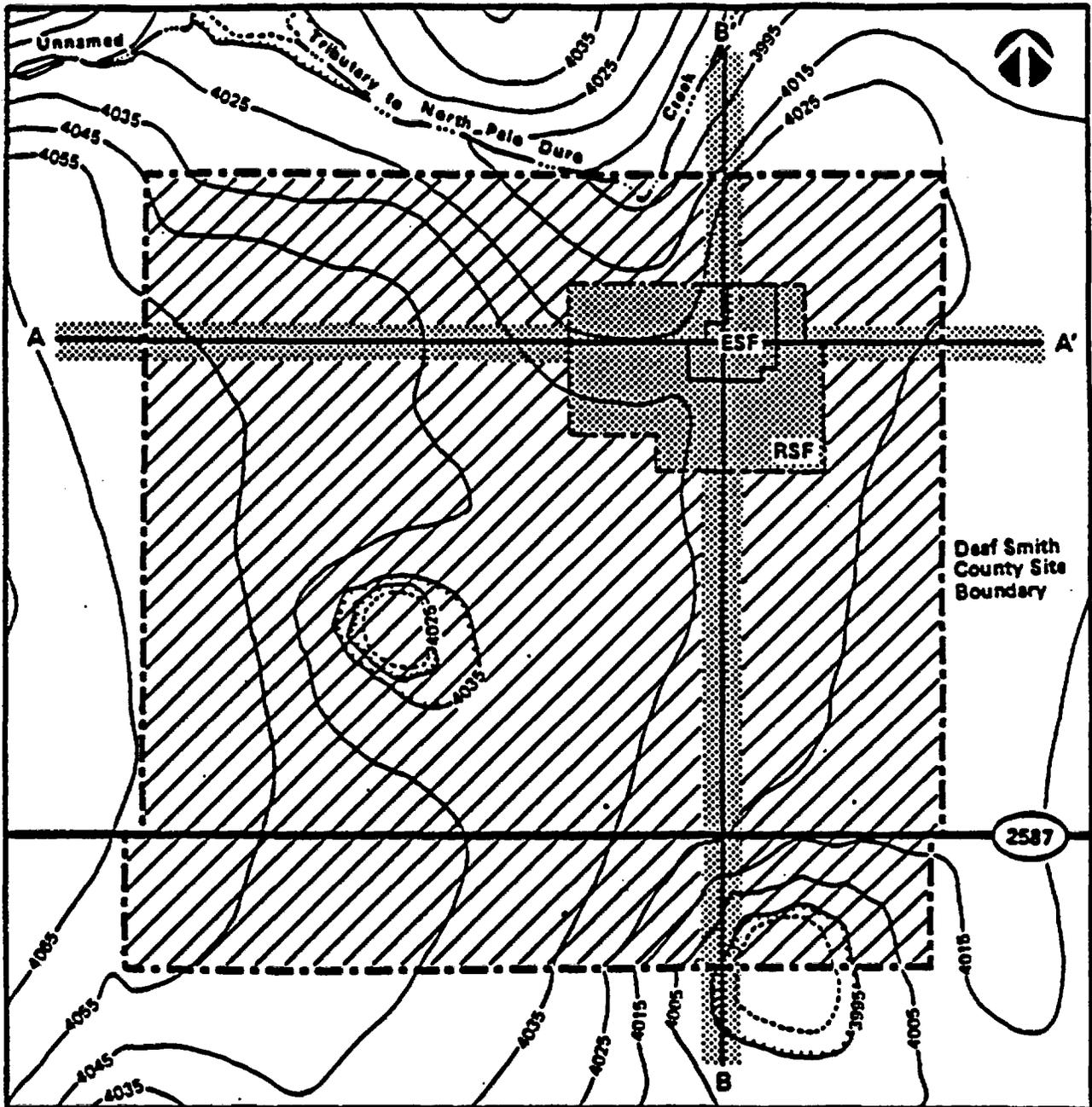
- **LOCATION AND DESCRIPTION OF PROJECT ACTIVITIES**
- **LITERATURE AND ARCHIVAL DATA**
- **CURRENT AND HISTORICAL LAND OWNERSHIP**
- **EXISTING CULTURAL RESOURCES**
- **LOCATION AND SIGNIFICANCE OF NATIVE AMERICAN SITES**
- **HISTORICAL AND ARCHITECTURAL RESOURCES**
- **DETAILED MAPPING**

## **CULTURAL RESOURCES STUDIES**

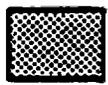
- **ARCHAEOLOGICAL FIELD INVESTIGATIONS**
- **ANALYSIS AND EVALUATION OF ARCHAEOLOGICAL RESOURCES**
- **HISTORICAL FIELD INVESTIGATIONS**
- **ANALYSIS AND EVALUATION OF HISTORICAL RESOURCES**
- **ARCHITECTURAL AND ENGINEERING STRUCTURE FIELD INVESTIGATIONS**
- **ANALYSIS AND EVALUATION OF ARCHITECTURAL AND ENGINEERING STRUCTURES**
- **NATIVE AMERICAN CULTURAL AND RELIGIOUS LOCALE FIELD INVESTIGATIONS**
- **ANALYSIS AND EVALUATION OF NATIVE AMERICAN CULTURAL AND RELIGIOUS LOCALES**

## **CULTURAL RESOURCES DATA NEEDS**

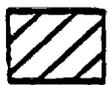
- **ARCHAEOLOGICAL RESOURCES (INCLUDES ABORIGINAL AND NONABORIGINAL).**
- **ARCHITECTURAL AND ENGINEERING STRUCTURES**
- **NATIVE AMERICAN RESOURCES**



**Explanation**



**Survey 1** Survey Includes Exploratory Shaft Facility Area, Repository Surface Facility Area, and EDBH Seismic Survey Rights-of-Way



**Survey 2** Survey Includes the Deaf Smith County Site Except for Area Surveyed During Survey 1

**ESF** - Exploratory Shaft Facility

**RSF** - Repository Surface Facility



**Location of Cultural Resource Surveys 1 and 2**

**Figure 3-1**

## **AQUATIC AND TERRESTRIAL ECOSYSTEM INFORMATION NEEDS**

- **NATIVE PLANT SPECIES AND COMMUNITIES**
- **PLANT SPECIES CHARACTERISTICS AND ADAPTATIONS**
- **DESCRIPTION OF TERRESTRIAL AND AQUATIC ECOSYSTEMS**
- **ACTIVITIES AND/OR FACILITIES IMPACTING TERRESTRIAL/AQUATIC ECOSYSTEMS**

## **AQUATIC AND TERRESTRIAL ECOSYSTEM DATA NEEDS**

### **- AQUATIC**

- **MACROPHYTES/MACROINVERTEBRATES**
- **PLAYA WATER QUALITY**
- **PHYSICAL PARAMETERS OF PLAYAS**
- **PREEXISTING STRESSES**
- **PREEXISTING DISTURBANCES**

### **- TERRESTRIAL**

- **SPECIES/HABITATS**
- **PLANT COMMUNITIES**
- **PREEXISTING ENVIRONMENTAL STRESSES**
- **PREEXISTING ENVIRONMENTAL DISTURBANCES**

**CONCURRENT DATA NEEDS: WATER RESOURCES, LAND USE**

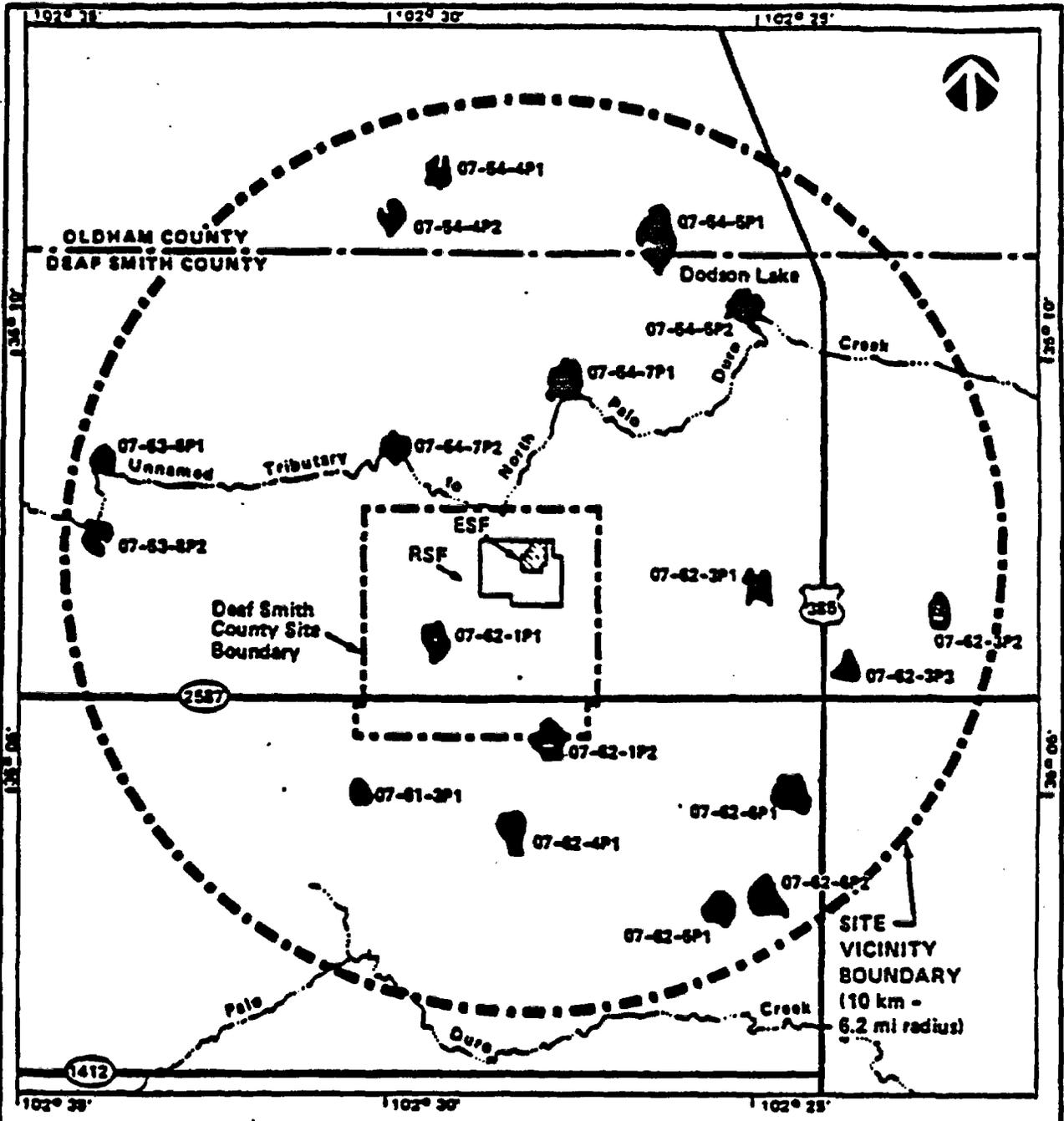
## **AQUATIC AND TERRESTRIAL ECOLOGY STUDIES**

### **AQUATIC STUDIES**

- **FIELD RECONNAISSANCE**
- **AVAILABILITY AND QUALITY OF AQUATIC HABITATS**
- **PREEXISTING ENVIRONMENTAL STRESSES AND DISTURBANCES**

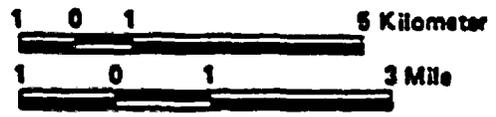
### **TERRESTRIAL STUDIES**

- **WALKOVER SURVEYS FOR THREATENED, ENDANGERED, OR CANDIDATE SPECIES**
- **TERRESTRIAL VEGETATION ANALYSIS**
  - **VEGETATION MAPPING**
  - **WET LANDS AND FLOOD PLAINS**
  - **PLANT SUCCESSION**
  - **PREEXISTING ENVIRONMENTAL STRESSES AND DISTURBANCES**
- **WILD LIFE ANALYSIS**
  - **WILD LIFE RECONNAISSANCE**
  - **ROAD KILLS**
  - **TOWER KILLS**



**Explanation**

- 07-64-7P1 Plays Identification Number
- ESF - Exploratory Shaft Facility
- RSF - Repository Surface Facility



Location of Plays in the Deaf Smith County Site and Vicinity

Figure 1-2

Source: FWS, 1977; Compiled from USGS 1:250,000 Maps

## **WATER RESOURCES INFORMATION NEEDS**

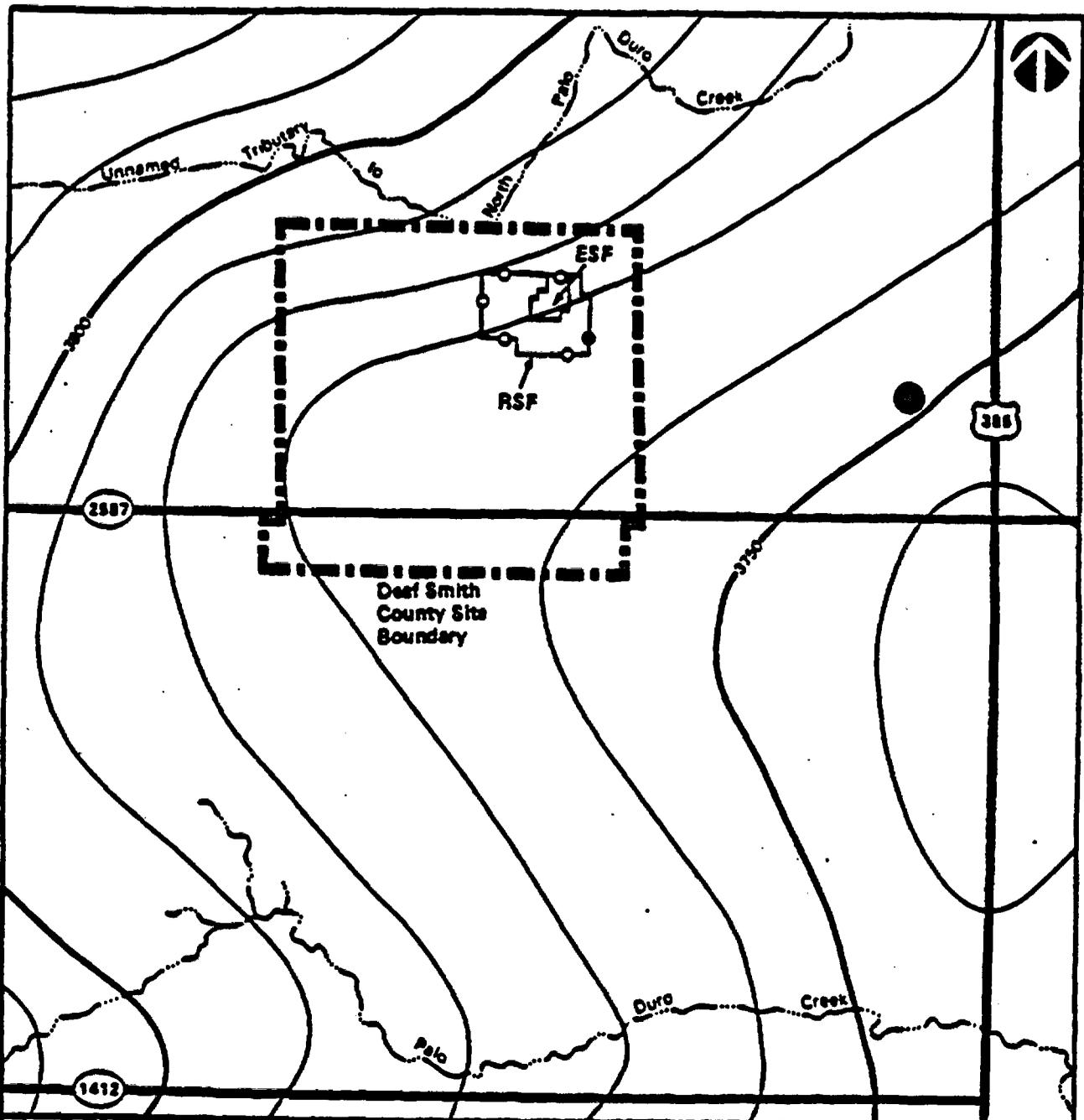
- **PLAYA BASIN TOPOGRAPHIC CHARACTERISTICS**
- **CHEMICAL COMPOSITION**
- **STREAM FLOW**
- **FLOOD HISTORY**
- **CURRENT SURFACE-WATER USE NEAR THE SITE**
- **CURRENT GROUND-WATER USE NEAR THE SITE**
- **WATER SUPPLY**
- **WATER AND CHEMICAL RECHARGE FROM PLAYA**
- **PILE/POND LEAKAGE**

## **WATER RESOURCES DATA NEEDS**

- **DRAINAGE BASIN CHARACTERISTICS**
- **HYDROMETEOROLOGY**
- **RUNOFF**
- **SURFACE-WATER QUALITY**
- **HYDROGEOLOGIC FRAMEWORK**
- **POTENTIOMETRIC LEVELS**
- **AQUIFER AND UNSATURATED ZONE PROPERTIES**
- **GROUND-WATER QUALITY**
- **FLOOD DISCHARGE**
- **FLOOD ELEVATION**

## **WATER RESOURCES STUDIES**

- **SURFACE-WATER CHARACTERIZATION**
  - **DRAINAGE BASIN CHARACTERISTICS**
  - **HYDROMETEOROLOGY**
  - **RUNOFF**
  - **SURFACE-WATER QUALITY**
  
- **GROUND-WATER CHARACTERIZATION**
  - **HYDROGEOLOGIC FRAMEWORK**
  - **POTENTIOMETRIC LEVELS**
  - **AQUIFER AND UNSATURATED ZONE PROPERTIES**
  - **GROUND-WATER QUALITY**
  
- **WATER-USE CHARACTERIZATION**
- **EVALUATION OF FLOODING POTENTIAL**



**Explanation**



1980 Potentiometric Levels After Knowles et al. (1984b)

- Two Three-Well Shallow Hydrologic Nests at Playa Lake P6
- Shallow Hydrologic Observation Well
- Three-Well Shallow Hydrologic Nests

ESF - Exploratory Shaft Facility

RSF - Repository Surface Facility

1 0 1 3 Kilometer

1 0 1 Mile

Location of Ground-Water  
Monitoring Wells

Figure 3-2

## **SALT INFORMATION NEEDS**

- **SOURCE TERMS**
- **SALT TRANSPORT MECHANISM**
- **ENVIRONMENTAL MONITORING**
- **SALT PILE CHARACTERIZATION**

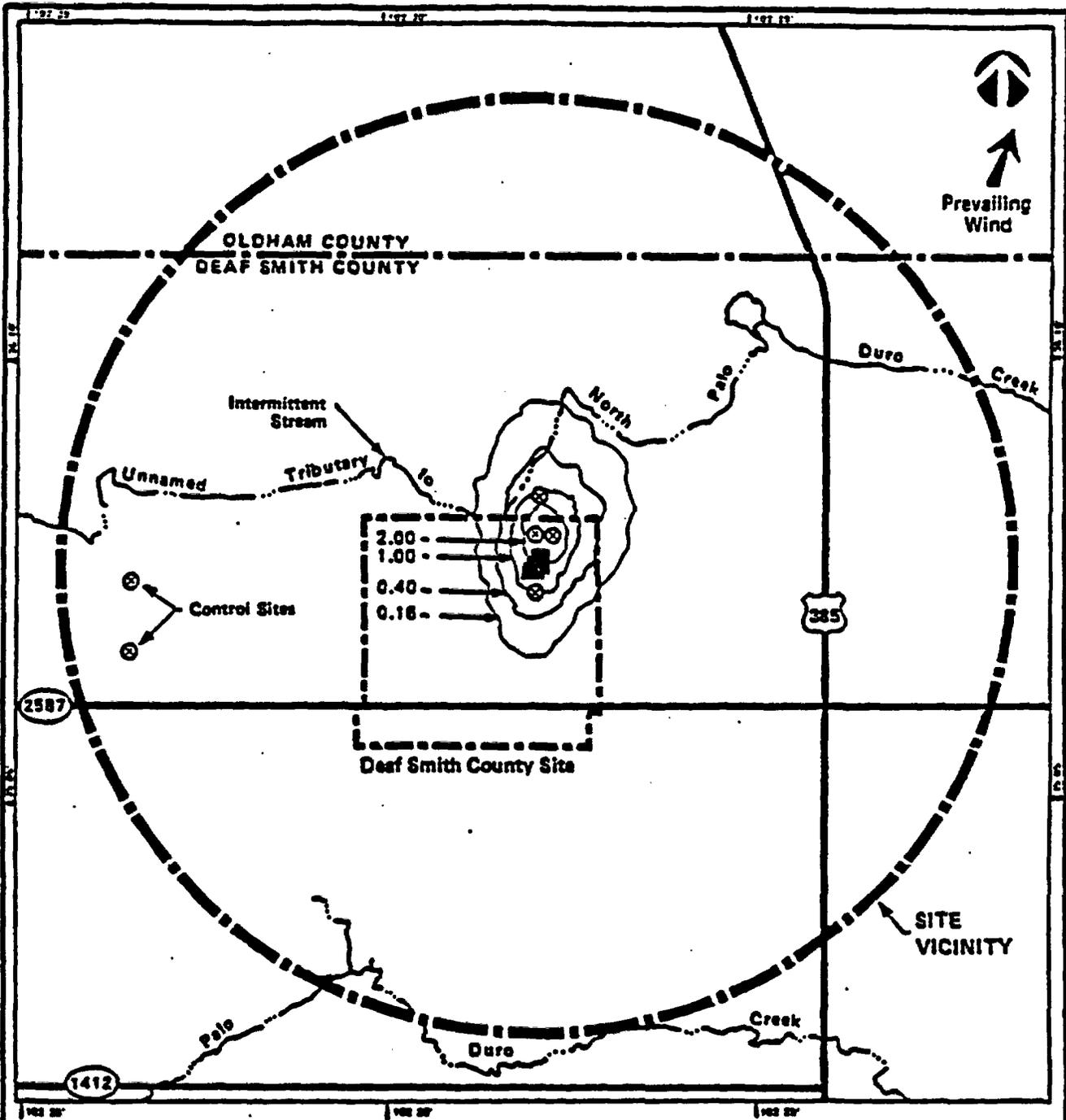
## **SALT DATA NEEDS**

- **CHARACTER OF EXISTING ENVIRONMENT**
  - **EXISTING SALT**
  - **ASSOCIATED STRESSES**
- **SALT EMISSIONS**

**CONCURRENT DATA NEEDS: WATER RESOURCES, MET/AQ,  
LAND USE, ECOSYSTEMS, AND  
SOILS.**

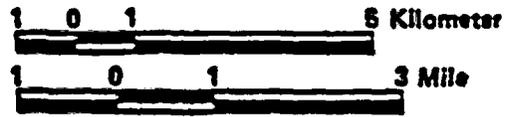
## **SALT STUDIES**

- **FACTORS INFLUENCING SALT PILE EROSION**
- **MITIGATION MEASURES EVALUATION**
- **MONITORING EXISTING SALT STRESSES IN CROPS AND VEGETATION**
- **CHARACTERIZATION OF SALT IN EXISTING ENVIRONMENT (WATER, AIR, SOIL)**
- **SALT SOURCE (POND, PILE) STRENGTH CHARACTERIZATION**
- **MONITOR SALT IN ENVIRONMENT**



**Explanation**

-  Exploratory Shaft Facility
-  Aerial Deposition, Soil, and Vegetation Monitoring Station. Measure Dustfall, Electrical Conductivity, Salt Stress, and Changes in Yield (Including Hybrid Seed Quality)
-  Salt Deposition for Repository Operations Phase in kg/ha/yr



Location of Salt Monitoring Stations at the Deaf Smith County Site and Vicinity

Figure 4-2

**BACKGROUND ENVIRONMENTAL RADIOACTIVITY  
INFORMATION NEEDS**

- **PROGRAMMATIC INFORMATION NEEDS**
- **RADIOLOGICAL SOURCE TERMS**
- **RADIOLOGICAL BACKGROUND**
- **RADIOLOGICAL TRANSPORT MECHANISMS**

**BACKGROUND ENVIRONMENTAL RADIOACTIVITY  
DATA NEEDS**

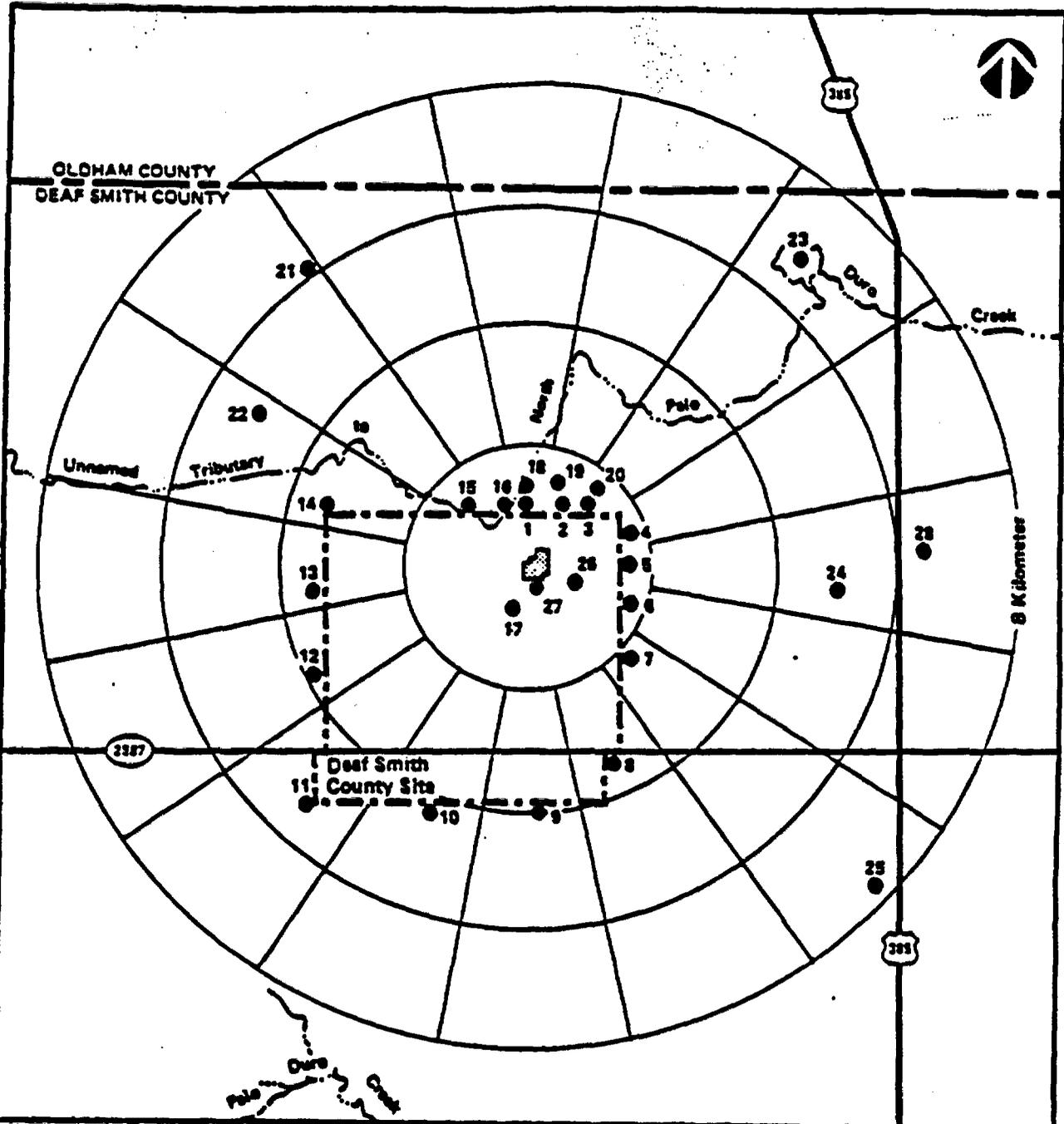
- **AIR PARTICULATES**
- **AIRBORNE RADON**
- **PRECIPITATION**
- **SOIL (SURFACE AND SUBSURFACE)**
- **RADON EXHALATION FROM SOIL**
- **GROUND WATER**
- **SURFACE WATER**

**BACKGROUND ENVIRONMENTAL RADIOACTIVITY  
DATA NEEDS (CONTINUED)**

- **DRINKING WATER**
- **MILK**
- **VEGETATION (GRAZING MATERIAL)**
- **FOOD CROPS**
- **MEAT**
- **GAME**
- **POULTRY**
- **DIRECT RADIATION**

## **BACKGROUND ENVIRONMENTAL RADIOACTIVITY STUDIES**

- **RADIOACTIVITY RECONNAISSANCE SURVEY**
- **COLLECTION OF BACKGROUND ENVIRONMENTAL RADIOACTIVITY SAMPLES**
- **OTHER DISCIPLINES' STUDIES**



**Explanation**

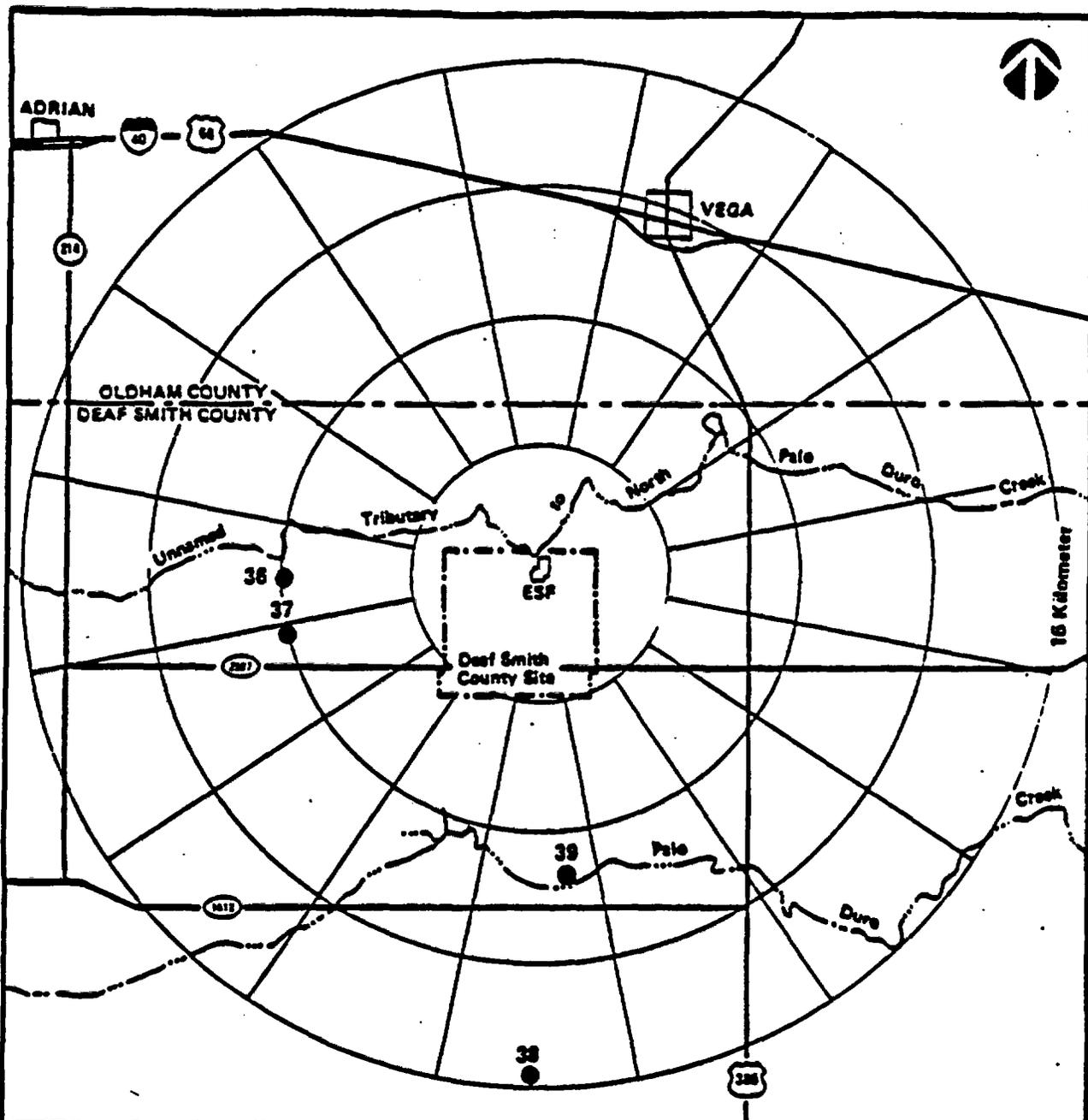
- Approximate Location of Monitoring Station (Refer to Table 3-1)
- Exploratory Shaft Facility (ESF)

1 0 1 5 Kilometer

1 0 1 3 Mile

Locations of Background Environmental Radioactivity Monitoring Stations Within 8-km Radius of the Exploratory Shaft Facility

Figure 3-2



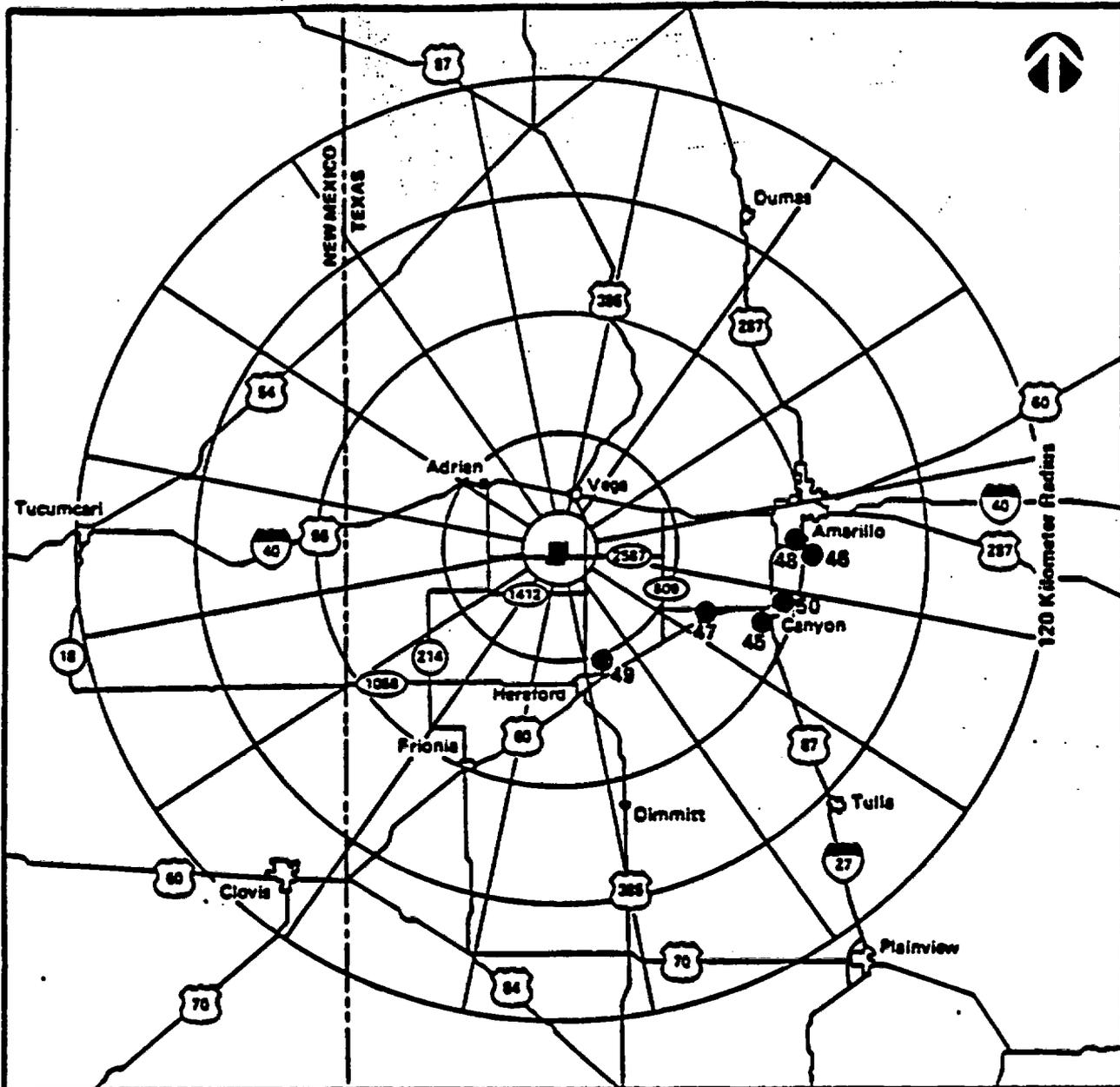
**Explanation**

- Approximate Location of Monitoring Station (Refer to Table 3-1)



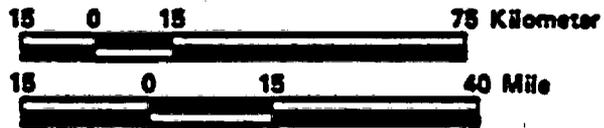
Locations of Background Environmental Radioactivity Monitoring Stations Within 16-km Radius of the Exploratory Shaft Facility

Figure 3-3



**Explanation**

- Approximate Location of Monitoring Station (Refer to Table 3-1)
- Deaf Smith County Site

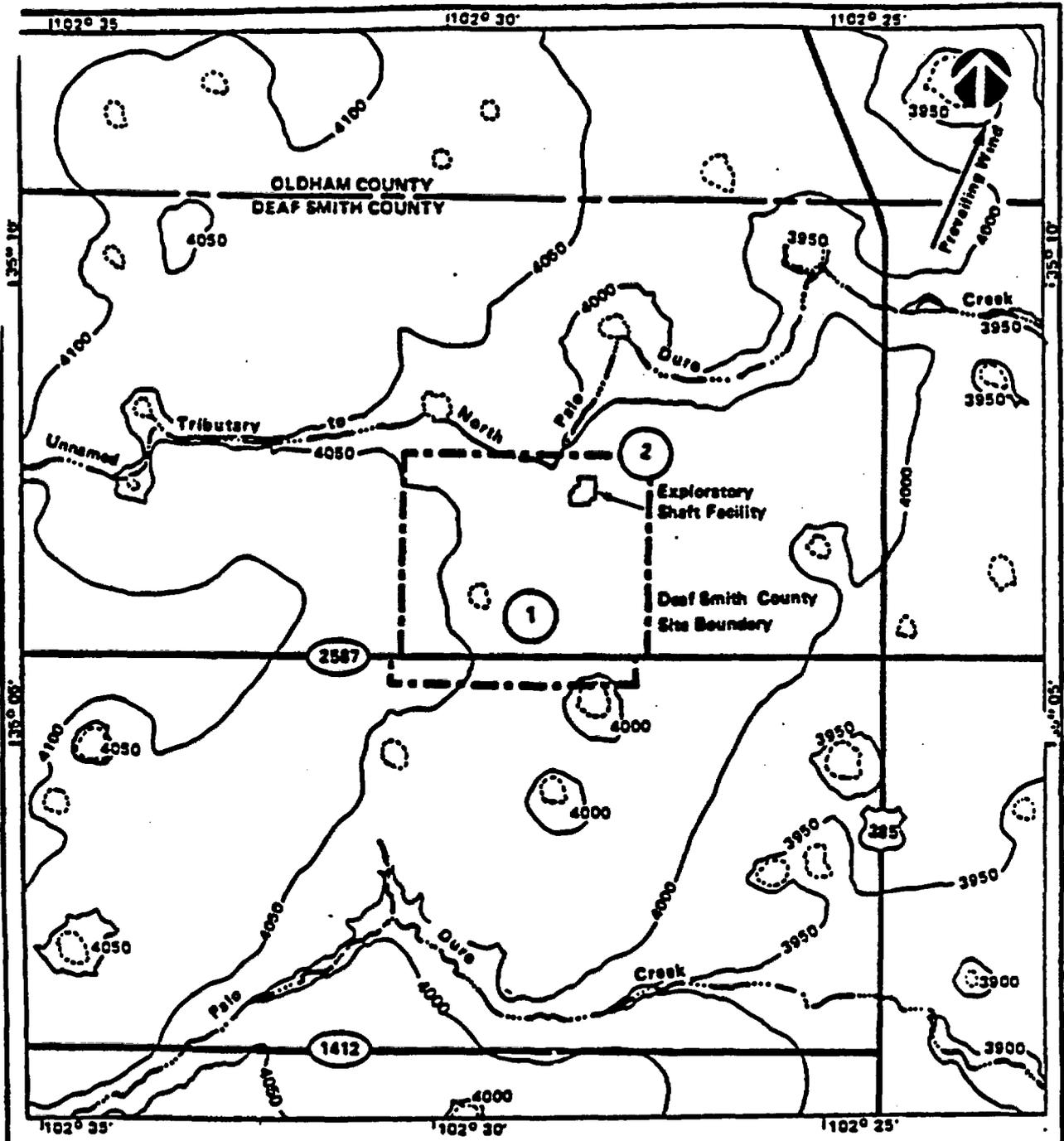


**Locations of Background Environmental Radioactivity Monitoring Stations Within 120-km Radius of the Exploratory Shaft Facility**

**Figure 3-4**

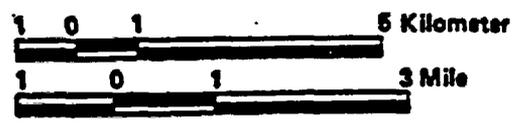
## **METEOROLOGY/AIR QUALITY INFORMATION NEEDS**

- **AIR QUALITY**
- **RECENT CLIMATE**
  - **GENERAL CLIMATOLOGY**
  - **NORMALS, MEANS, EXTREMES**
- **TRANSPORT WINDS AND ATMOSPHERIC STABILITY**
- **TOPOGRAPHY FOR DISPERSION MODELING**



**Explanation**

- ① Upwind Meteorological and Air Quality (TSP) Monitoring Location
  - ② Downwind Air Quality (TSP) Monitoring Location
- TSP = Total Suspended Particulates



**Location of Meteorology/Air Quality Monitoring Stations**

Figure 3-1

## **METEOROLOGY/AIR QUALITY STUDIES**

- **METEOROLOGICAL MONITORING PROGRAM**
- **AIR QUALITY MONITORING PROGRAM**

## **ACOUSTICS INFORMATION NEEDS**

- **NOISE BASELINE**
- **SITE ATTENUATION CHARACTERISTICS**

## **CONCURRENT INFORMATION NEEDS**

- **POPULATION DATA**
- **LAND USE/LAND COVER**
- **TERRESTRIAL ECOSYSTEMS**
- **METEOROLOGICAL INFORMATION**
- **TRANSPORTATION DATA**

## **ACOUSTICS DATA NEEDS**

- **EXISTING SOUND LEVELS**
- **SOUND-PROPAGATION CHARACTERISTICS**

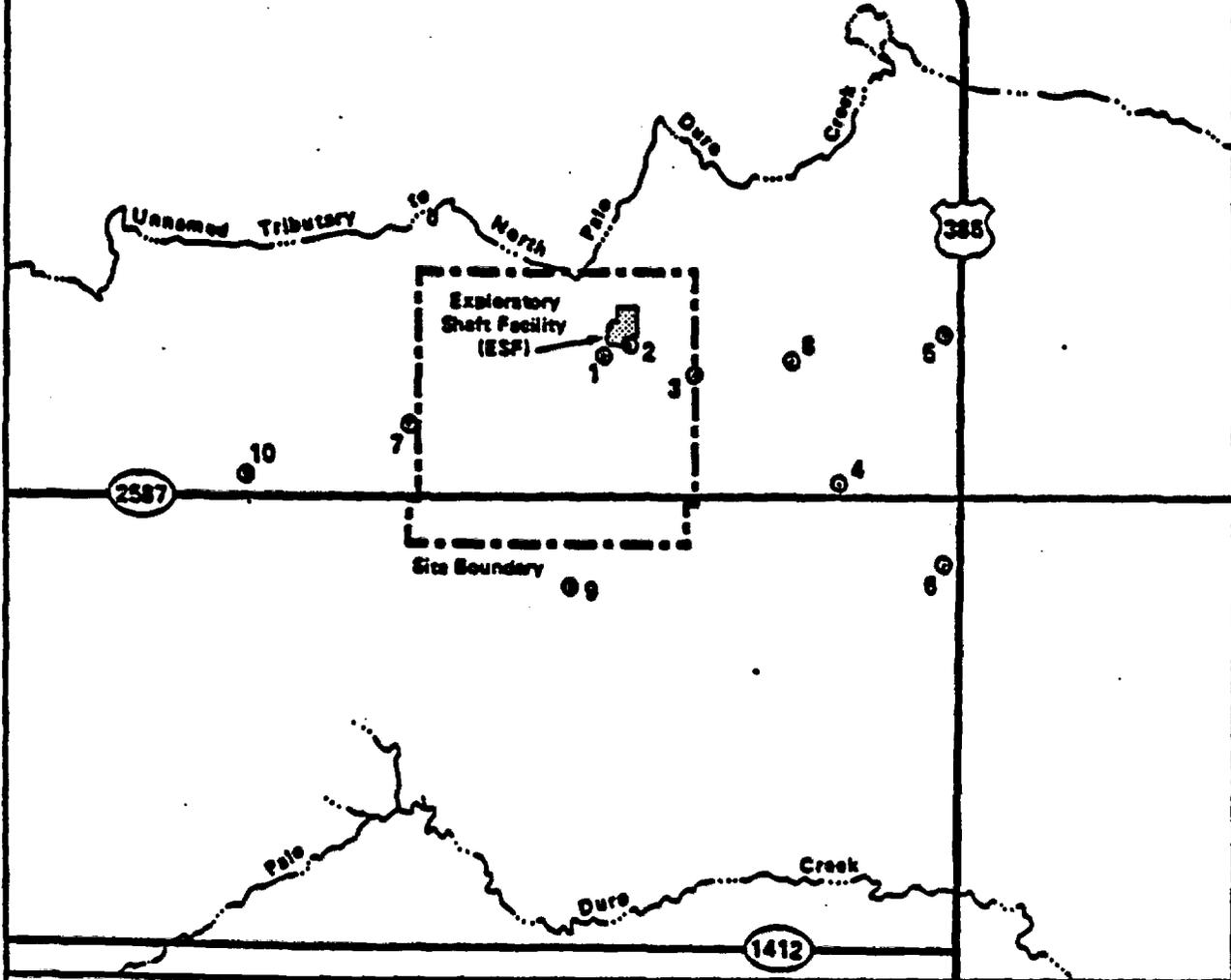
**CONCURRENT DATA NEEDS: LAND USE, ECOSYSTEMS, MET/AQ,  
CULTURAL RESOURCES AND  
TRANSPORTATION**

## **ACOUSTICS STUDIES**

- **SOUND PROPAGATION STUDY**
- **EXISTING SOUND LEVELS AND SITE CHARACTERIZATION MONITORING**

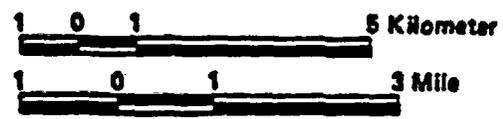


OLDHAM COUNTY  
DEAF SMITH COUNTY



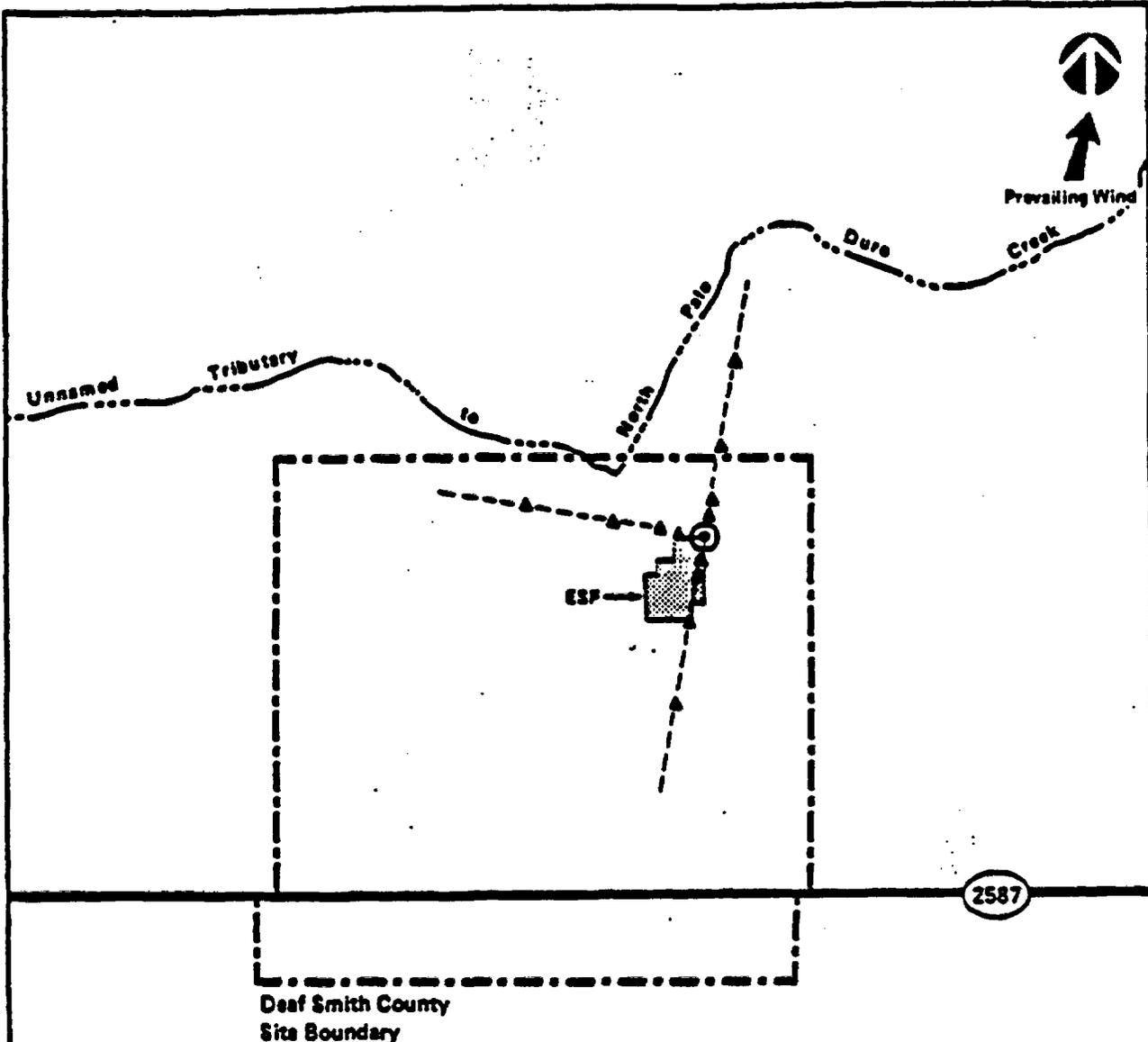
**Explanation**

- - Sampling Stations .
- 1 - Nearest Residence to ESF (Along Access Routes)
- 2 - Site Boundary of ESF
- 3 - Site Boundary
- 4 - Residence Along Access Road (FM 2587)
- 5, 6 - U.S. 385
- 7 - Site Boundary - Remote From Most ESF Activities
- 8, 9 - Nearby Residences
- 10 - Access Road (FM 2587) West of the Site



Location of Sound-Level  
Sampling Stations

Figure 3-1

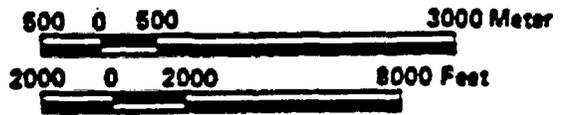


**Explanation**

- ▲ Sound Source
- ⊗ Microphone Location
- ESF - Exploratory Shaft Facility

**Note:**

The orientation of microphone layout is based on the prevailing wind direction.



**Sampling Layout for  
Sound Attenuation Studies**

**Figure 3-2**

## **LAND USE INFORMATION NEEDS**

- **LAND-USE PATTERNS: PAST AND PRESENT**
- **LAND-USE POTENTIAL**
- **RESIDENTIAL LAND USE**
- **BIOLOGICAL LIMITATIONS OF LAND USE**

## LAND USE DATA NEEDS

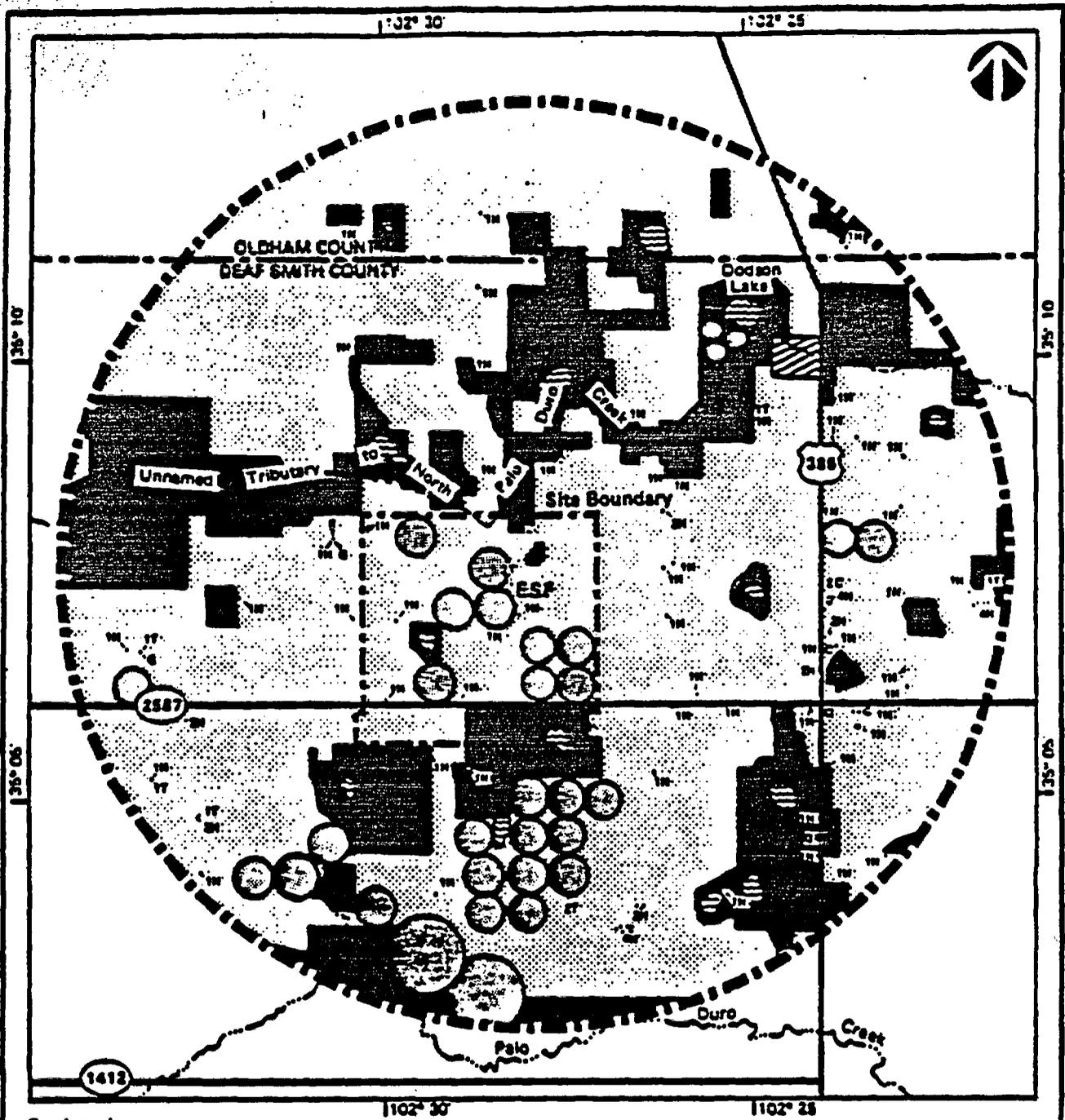
- CHARACTERIZATION OF PRESENT LAND USE AT THE SITE
  - AGRICULTURAL LAND
    - 1) CROP TYPE
    - 2) IRRIGATION SYSTEM
  - RANGELAND
  - PLAYA LAKES

## **LAND USE DATA NEEDS (CONTINUED)**

- **CHARACTERIZATION OF THE VICINITY**
  - **AGRICULTURAL LAND**
  - **CONFINED FEEDING OPERATIONS**
  - **GRAIN-STORAGE FACILITIES**
  - **DAIRY OPERATION**
  - **RANGELAND**
  - **PLAYA LAKES**
  - **STREAMS**
  - **COMMERCIAL OPERATIONS**

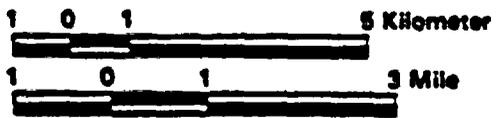
## **LAND USE STUDIES**

- **LAND USE CHARACTERIZATION OF THE SITE**
- **LAND USE CHARACTERIZATION OF SEISMIC SURVEY RIGHTS-OF-WAY, TRANSPORTATION AND UTILITY CORRIDORS, AND OFFSITE FACILITIES**
- **LAND USE CHARACTERIZATION OF THE VICINITY**
- **MONITORING LAND USE CHANGES**



**Explanation**

- |  |   |
|--|---|
|  Agriculture  |  Pivot Irrigation System |
|  Rangeland    |  Structures              |
|  Country Club | C = Commercial  |
|  Playa Lake   | G = Grain Storage   |
| ESP - Exploratory Shaft Facility   | H = House   |
|  | R = Richardson Seeds Inc.   |
|  | T = Trailer   |



**Land Use at the Deaf Smith County Site and Vicinity**

Source: NUS Photointerpretation of 1983 1:12,000  
CIR Photography and Field Reconnaissance.

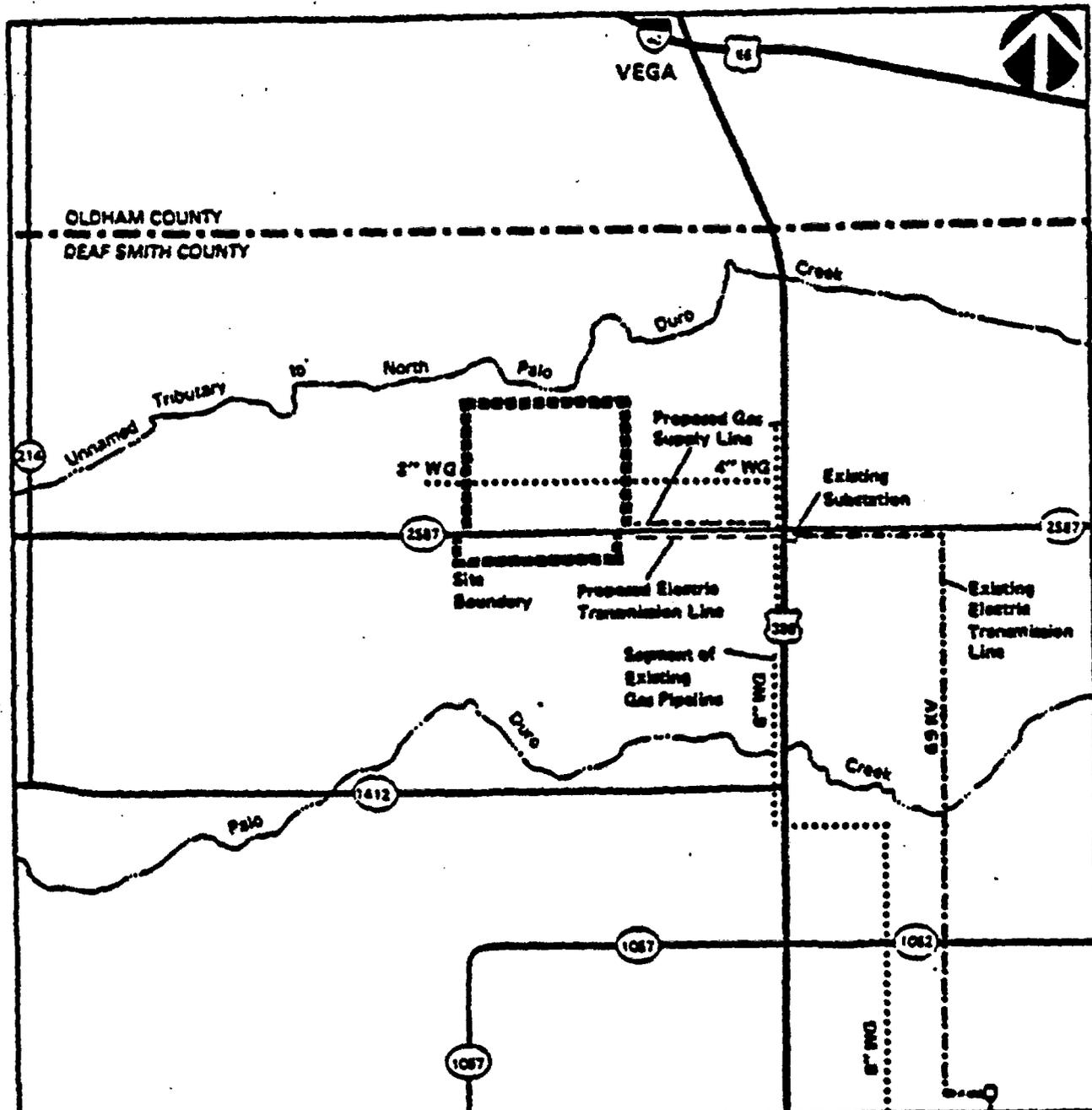
Figure 1-2

## **UTILITIES AND SOLID WASTE INFORMATION NEEDS**

- **REPOSITORY UTILITY REQUIREMENTS**
- **LOCATION, LIMITATIONS, AND REQUIREMENTS FOR UTILITY CORRIDORS**
- **CURRENT UTILITIES AND FACILITIES**

### **CONCURRENT INFORMATION NEEDS:**

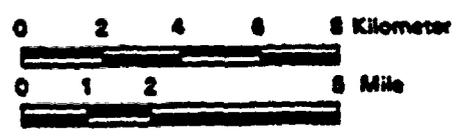
- **WATER RESOURCES**
- **LAND USE**
- **IMPORTANT SPECIES AND SENSITIVE HABITATS**
- **CULTURAL RESOURCES**
- **AIR QUALITY**
- **ACOUSTICS**
- **AESTHETICS**



**Explanation**

**Utilities**

- Transmission Line\*
- Substation
- Natural Gas Pipeline
- Proposed Transmission Line
- Proposed Gas Supply Line
- WG - Water Gas
- \*Electric Distribution Lines Not Shown



Existing and Proposed Gas and Electric Utility Connections to the Deaf Smith County Site

Source: Adapted from Dewitt and Company, Inc., 1983

Figure 1-2

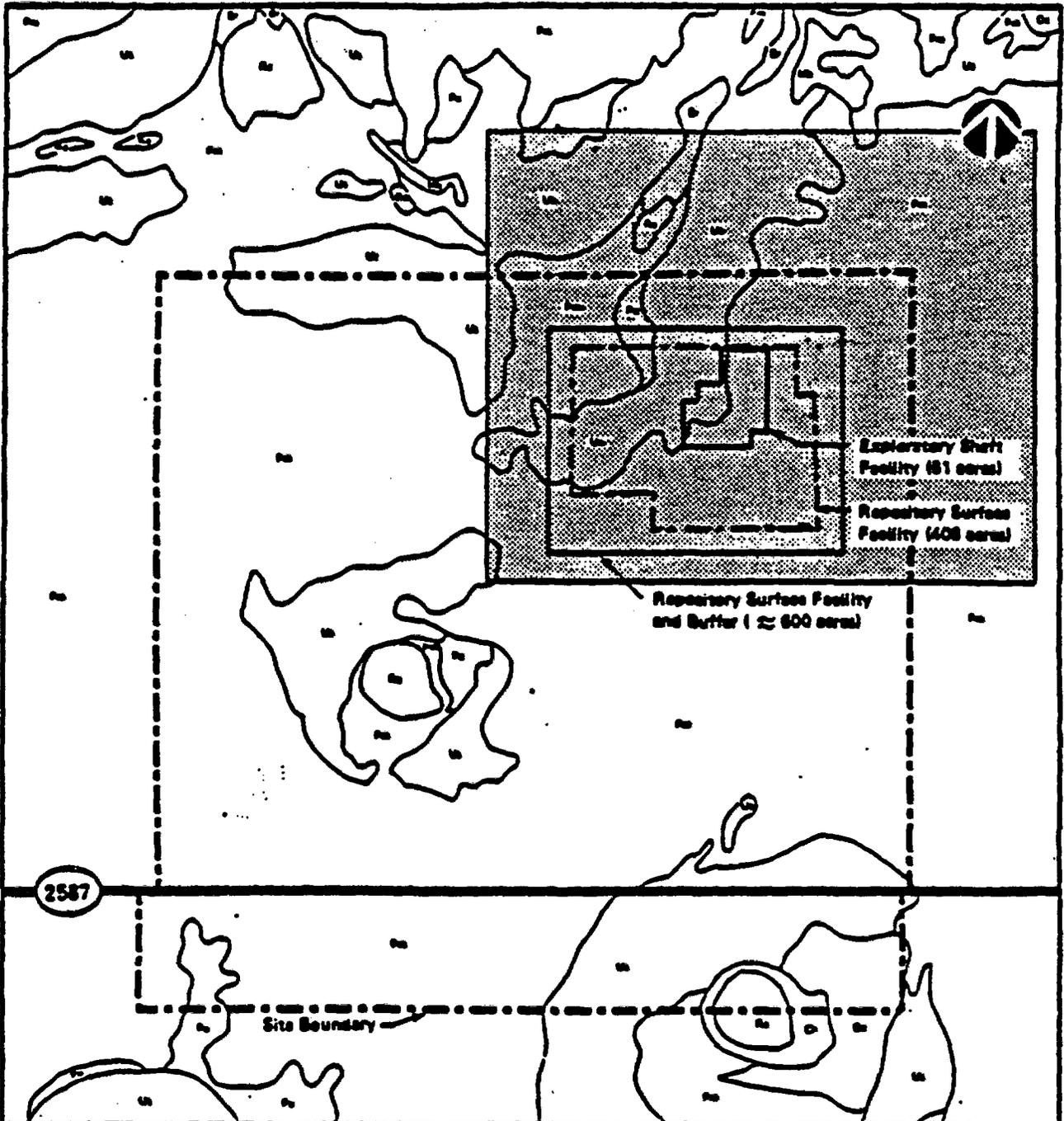
## **SOILS DATA NEEDS**

- **SOILS CLASSIFICATION**
- **PHYSICAL CHARACTERISTICS**
- **CHEMICAL CHARACTERISTICS**
- **SOIL SALINITY**

**CONCURRENT DATA NEEDS: LAND USE, SALT, WATER  
RESOURCES, MET/AQ.**

## **SOIL STUDIES**

- **WALKOVER SOIL SURVEY OF THE EXPLORATORY SHAFT FACILITY AND RECLAMATION PLAN**
- **SALINITY SURVEY**
- **REPOSITORY SURFACE FACILITY AND BUFFER SURVEY AND RECLAMATION PLAN**
- **GENERAL SOIL SURVEY**
- **SOILS IMPACTS MONITORING**

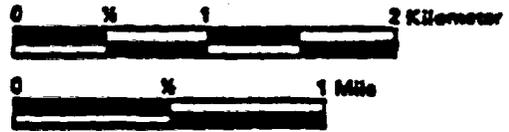


**Explanation**



**Area To Be Surveyed for Salinity**

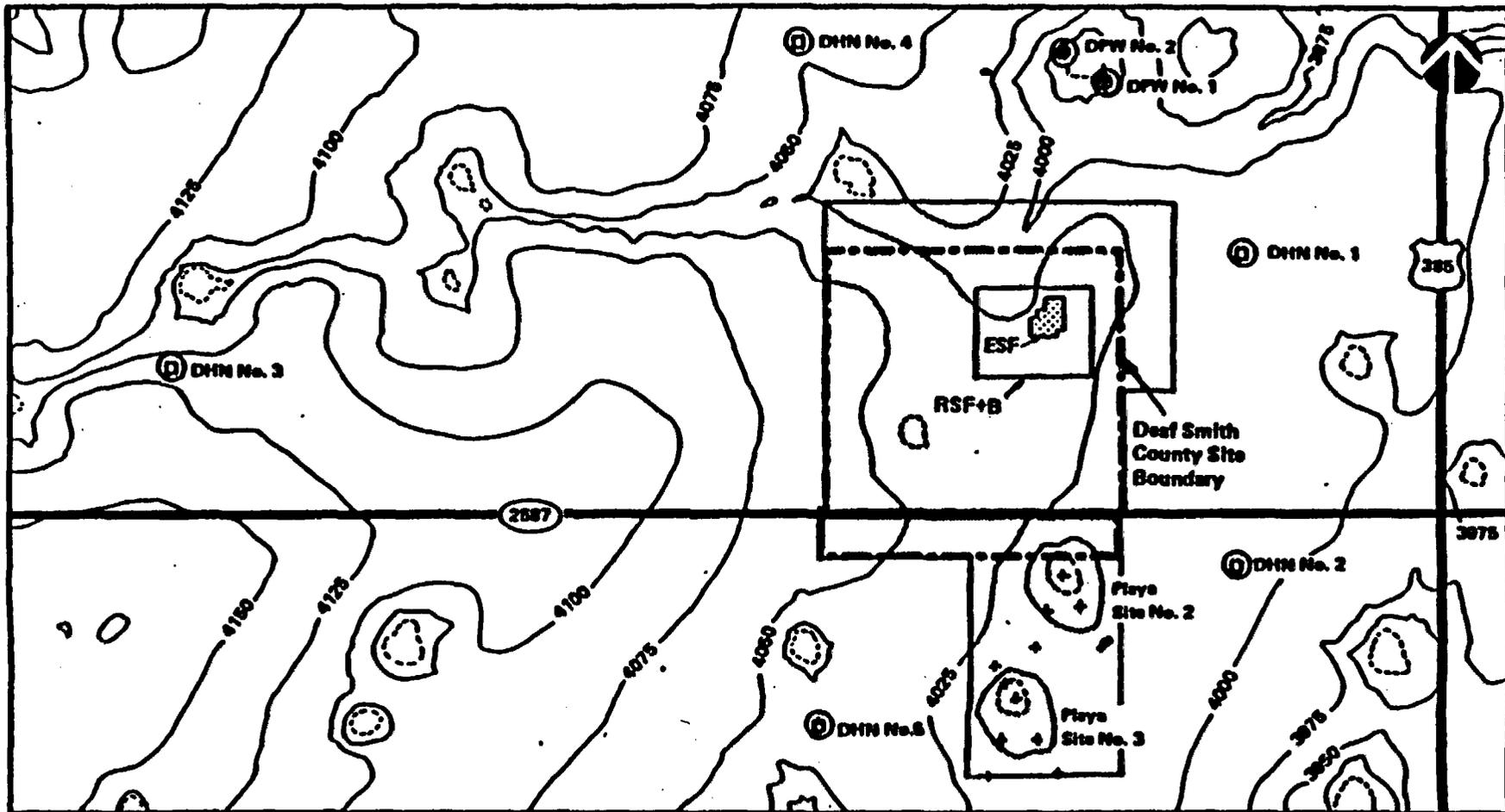
**Note:** For Soil Identification Refer to Figure 1-2



**Soil Salinity Survey Area**

**Source:** Soil Conservation Service, 1968

**Figure 3-2**



-  Area Where SCS Soils Survey Maps Will Be Selectively Field Checked
-  Deep Hydrologic Well Nests
-  Deep Playa Wells
-  Boreholes
-  4125 Topographic Lines
-  Playa

ESF - Exploratory Shaft Facility  
 RSF+B - Repository Surface Facility and Buffer



Area Where Soil Taxonomy  
 Will Be Confirmed

Figure 3-3

## **AESTHETIC RESOURCES INFORMATION NEEDS**

- **DESCRIPTION OF LANDSCAPE CHARACTER**
- **INFORMATION ON PUBLIC PERCEPTION**
- **PROJECT DESIGN**
- **ASSESSMENT OF VISUAL DOMINANCE**

### **CONCURRENT INFORMATION NEEDS:**

- **LAND USE/LAND COVER**
- **ATMOSPHERIC EFFECTS**

*Encl. to Sept.  
Policy Readed*

1. Correspondence
2. Remarks by Ben C. Rusche before the American Chemical Society, Anaheim, California, September 9, 1986
3. Remarks by Ben C. Rusche before the American Nuclear Society Topical Meeting, Niagara Falls, New York, September 14, 1986.
4. Remarks by Ben C. Rusche before the 43rd Annual Convention of the National Congress of American Indians, Phoenix, Arizona, September 24, 1986.



**Department of Energy**  
Washington, DC 20585

SEP 17 1986

Mr. Robert R. Loux  
Executive Director  
Agency for Nuclear Projects  
Nuclear Waste Project Office  
Capitol Complex  
Carson City, Nevada 89710

Dear Mr. Loux:

Thank you for your letter of July 17, 1986, regarding information requested at the Meeting of the Nevada Commission on Nuclear Projects on May 15.

I am pleased to provide the information requested by the Commission and regret the delay in transmitting this information to you.

If I can be of further assistance, please let me know.

Sincerely,

A handwritten signature in cursive script that reads "Ben C. Rusche".

Ben C. Rusche, Director  
Office of Civilian Radioactive  
Waste Management

Enclosure

QUESTION 1: Mr. Rusche said he would have people look into the routes used for transportation, and the number of people that could be affected to see it is a minimum.

ANSWER: It is the intent of the Office of Civilian Radioactive Waste Management (OCRWM) to address routing issues (including the potential effect on population along transportation routes) through a cooperative process involving the States and Indian Tribes. OCRWM will support State and Tribal routing studies through contractual arrangements and technical assistance.

As an initial note, OCRWM's stated policy on highway routing is that waste will be shipped in accordance with Department of Transportation (DOT) regulations. On January 19, 1981, the DOT by its authority under the Hazardous Materials Transportation Act (HMTA) published a final rule governing the highway routing of radioactive materials. The regulations (commonly referred to by the rulemaking docket number HM-164) are codified in the Code of Federal Regulations, Title 49 Parts 171, 172, 173, 177. DOT recently amended these regulations and included notice of the amendments in Volume 51 of the Federal Register, page 5968, February 18, 1986. The DOE will, of course, comply with all DOT regulations. According to HM-164, highway carriers of "highway route controlled quantity radioactive materials" (such as spent

nuclear fuel) are required to use "preferred routes." A preferred route consists of an Interstate System highway, including the use of Interstate beltways or bypasses when available to avoid city centers, for which an alternative route is not designated by a State routing agency (which includes appropriate Indian tribal authorities). State-designated alternative routes must be selected in accordance with DOT "Guidelines for Selecting Preferred Highway Routes for Highway Route Controlled Quantity Shipments of Radioactive Materials" or an equivalent routing analysis which adequately considers overall risks to the public. An important consideration in this process is that this designation of alternate routes must have been preceded by substantive consultation with affected local jurisdictions or with any other affected States to ensure consideration of all impacts and continuity of designated routes.

OCRWM has started the process of providing technical assistance to Western States on routing issues through a contract with the Western Interstate Energy Board (WIEB). The State of Nevada is part of this process, through, in part, its membership on the WIEB. Under this contract, the Western Interstate Energy Board is investigating methods by

which State routing agencies can, if desired, designate routes through their States. These WIEB studies are structured so that the Western States (including Nevada) are involved, through their Governor's representatives, in the development of this route selection methodology. The methodology as now drafted includes full consideration of the evaluation of routes to avoid densely populated areas as much as possible. The study is ongoing and we are in regular contact with WIEB and the Governor's representatives to provide assistance and guidance to this process.

OCRWM is also preparing to provide technical assistance to those States that request assistance in their alternate route designation process. This assistance will involve the use of computer models to assess transportation risks. One important criteria in this risk assessment is the population density along the routes being investigated.

In addition, both OCRWM headquarters and the Nevada Nuclear Waste Storage Investigations Project Office are willing to work closely with Nevada State personnel to address specific routing issues of State and local concern. Since alternate route selection can be a protracted process, this is an

ongoing effort to consider and coordinate all national, regional and Nevada-specific routing issues. It is also through this joint effort that we can ensure the reduction of any potential transportation risks to the population.

QUESTION 2:

Chairman Sawyer asked Mr. Rusche to send Nevada a copy of the legislative authority for the Department of Energy to fund Massachusetts' studies.

ANSWER:

Prior to the announcement by the Secretary on May 28, 1986, indefinitely postponing site-specific activity for a potential second repository, the Secretary had exercised his discretionary authority in making NWPA grant funds available to those States and Indian Tribes involved in the Crystalline Repository Project. Grant funds were restricted to the following activities:

- Review and comment on DOE documents and plans related to repository development activities;
- Attendance at DOE-sponsored meetings and workshops;
- Preparation for consultation and cooperation agreements;
- Public information programs.

Pursuant to the May 28 decision, all grants which had been awarded to crystalline States and Indian Tribes, including Massachusetts, are in the process of being phased out and brought to an orderly termination.

QUESTION 3: Mr. Rusche is to indicate in writing the status of the socioeconomic study under the terms of the Ninth Circuit Court decision.

ANSWER: On April 30, 1986, the Department awarded \$3,589,886 to the State of Nevada including the \$350,000 requested for a socioeconomic study. Special condition H-9 of the grant award limited expenditures to \$125,000 until the President approved the Yucca Mountain site for characterization, and that none of the \$125,000 would be utilized for the collection of baseline data.

On May 28, 1986, the President approved the Yucca Mountain site for characterization. As a result of that action, the restrictions on the expenditure of the \$350,000 no longer apply.



To Hilley  
Bacell  
8/4

**AGENCY FOR NUCLEAR PROJECTS  
NUCLEAR WASTE PROJECT OFFICE**

Capitol Complex  
Carson City, Nevada 89710  
(702) 885-3744

July 17, 1988

Mr. Ben Rusche, Director  
Office of Civilian Radioactive  
Waste Management  
U.S. Department of Energy  
Washington, D.C. 20585

Dear Mr. Rusche:

As you recall, during your presentation to the Nevada Commission on Nuclear Projects on May 15, 1988, you made several commitments to provide additional information in writing to the Commission. I have attached a list of those commitments, which, as of the date of this letter, have not been received by the Commission. Your prompt attention to this matter in providing the aforementioned information would be greatly appreciated.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in cursive script, appearing to read "Robert R. Loux".

Robert R. Loux  
Executive Director

RRL/gjb

Attachment

003761



The Secretary of Energy  
Washington, DC 20585

September 12, 1986

Dear Mrs. Vucanovich:

Thank you for your letter of July 9, 1986, regarding the effect of tectonic activity on the suitability of the Yucca Mountain site in Nevada.

When the Yucca Mountain site was first examined as a potential site for a repository, the issue of earthquakes and possible fault movement was of primary concern. Earthquake and faulting hazards were reviewed and carefully analyzed in the Environmental Assessment that was prepared for the Yucca Mountain site. Based on data currently available, it was concluded that earthquake-induced ground motion and faulting at the site are expected to be within design limits for a nuclear disposal facility.

Site characterization activities will continue to evaluate the tectonic activity of the Yucca Mountain site and surrounding region. These investigations will include monitoring of earthquake activity at the site, and detailed fault studies such as searching for fault scarps, trenching, and mapping. This data will provide a suitable data base, along with other site-specific data, to enable the Department of Energy to evaluate the suitability of the Yucca Mountain site.

I appreciate your concern about the site selection and characterization process and want to assure you that the Yucca Mountain site would be removed from active consideration if it becomes apparent that seismic activity would render the site unacceptable.

Yours truly,

A handwritten signature in dark ink, appearing to read "John S. Herrington".

John S. Herrington

Honorable Barbara F. Vucanovich  
House of Representatives  
Washington, D.C. 20515

BARBARA F. VUCANOVICH  
2ND DISTRICT, NEVADA

COMMITTEE ON INTERIOR  
AND INSULAR AFFAIRS

COMMITTEE ON HOUSE  
ADMINISTRATION

REGIONAL TRAVEL AND  
TOURISM CAUCUS

ENVIRONMENTAL AND ENERGY  
STUDY CONFERENCE

CONGRESS OF THE UNITED STATES

HOUSE OF REPRESENTATIVES

WASHINGTON, D.C. 20515

July 9th, 1986

312 CANNON BUILDING  
WASHINGTON, D.C. 20515  
(202) 225-6155

FEDERAL BUILDING  
300 BOOTH STREET, SUITE 1139  
RENO, NEVADA 89509  
(702) 784-6003

443 5TH STREET  
ELKO, NEVADA 89801  
(702) 738-4064

POST OFFICE BOX A  
2200 CIVIC CENTER DRIVE  
NORTH LAS VEGAS, NV 89030  
(702) 399-3535

Honorable John S. Herrington  
Secretary of Energy  
Department of Energy  
1000 Independence Avenue, S.W.  
Washington, D.C., 20585

Dear John,

I was dismayed this morning to discover that yet another earthquake has occurred in California which sent both shockwaves and after-shockwaves which were clearly felt and caused damage in parts of Nevada as far east as Las Vegas. ..

I am told by the National Earthquake Information Center that an equally serious earthquake has been experienced with an almost identical epicenter less than 40 years ago, and that this earthquake is connected to potentially more damaging tectonic activity in that section of the San Andreas Fault.

As you are aware, the Yucca Mountain site the Department of Energy has named as a candidate for a high-level waste repository is considerably west of Las Vegas, putting it well within the perimeter of the area affected by yesterday's quake.

I find it unconscionable that we can consider locating a high-level radioactive waste repository, capable of causing irreparable damage to the environment for tens of thousands of years, in an area known to be subject to violent underground pressure.

I have requested a detailed assessment of the damage at the Nevada Test Site from the Department of Energy, and, as you know, I have introduced legislation to completely reconsider the site selection and characterization process, as well as the inadequate methodology used to select sites such as Yucca Mountain.

It is none too soon to realize the incredible deadly legacy we are responsible for handing over to hundreds of future generations by such short-sighted activities as locating an underground repository in a known earthquake zone.

In the light of this recent event and a large number of irrefutable facts about the unsuitability of Yucca Mountain, I am strongly urging you to suspend all activities there immediately.

Sincerely,

*Barbara F. Vucanovich*  
Barbara F. Vucanovich

003607

# memorandum

DATE: SEP 11 1986

TO:  
ATTN OF: RW-1

SUBJECT: Provision of Additional Financial Assistance

TO: Sally Mann

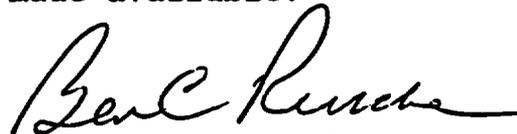
The Department has received several requests from Crystalline States and Indian Tribes for additional financial assistance since May 28, 1986.

The May 28, 1986, announcement regarding the indefinite postponement of site-specific activity for a potential second repository could not have been anticipated by the States and Indian Tribes. Recognizing that there was a 90-day comment period on the draft Area Recommendation Report (ARR), some States and Indian Tribes committed funds beyond the scope of their grants in anticipation of receiving supplemental awards. Since the Department had already solicited the States and Indian Tribes to submit supplemental applications, the Department has determined that additional financial assistance to Crystalline States and Indian Tribes can be made available for reasonable expenses resulting from review of the draft ARR which were irrevocably committed or expended prior to May 28, 1986.

Applications noted above should be reviewed on a case-by-case basis to determine if the requests identify reasonable costs incurred as a direct result of review of the draft ARR. Prior to any amendment of an existing grant award, applicants will be required to provide proof of expenditure or obligation of funds before the May 28, 1986, date.

If other such requests are submitted, they should be reviewed on a similar basis.

While there should be no formal solicitation, you may want to contact any States or Indian Tribes which informally inquired if additional assistance would be made available.



Ben C. Rusche, Director  
Office of Civilian Radioactive  
Waste Management



Department of Energy  
Washington, DC 20585

SEP 09 1986

Honorable Gordon J. Humphrey  
United States Senate  
Washington, D.C. 20510

Dear Senator Humphrey:

I am responding to your June 4, 1986, letter to Secretary Herrington concerning the Department of Energy's (DOE) decision to indefinitely postpone further site-specific study with regard to the search for a second nuclear waste repository. You specifically asked about the legal aspects of the Department's decision with respect to the Nuclear Waste Policy Act of 1982 (the Act).

As you know, on May 28, 1986, Secretary Herrington announced that the Department has postponed indefinitely site-specific work for a second repository because of the progress in siting the first repository and the uncertainty of when a second repository might be needed.

The decision whether to proceed with a second repository is a matter that the Congress must ultimately decide. By its nature, that decision is one that will merit the most thorough consideration by the Congress, for the statute contemplates only a recommendation in the future for site-specific construction authorization for a second repository.

The Department intends to provide the Congress a thorough and complete explanation of precisely how we believe the second repository program can best be carried out through formal amendment of the Mission Plan that the statute specifically requires for the program. In this way, we can begin the task of assuring that the Congress has available to it all the information necessary for it to make the ultimate judgments regarding the future of the second repository program. I believe that approach will afford the Congress ample time to consider the policy merits of the course of action thus far taken, our progress in meeting the objectives of the Nuclear Waste Policy Act, and the opportunity to consider any amendments to that statute that might appear constructive or necessary.

Regarding your question about the Department's specific plans for the future "study" under the second repository program, the planned technical studies under the second repository program consist of the continuation of current studies and new investigations proposed for consideration. In general, these studies fall under the general categories of in-situ monitoring and instrumentation, development of prototype testing equipment, development

of ground water models for different geologic media, and consideration of alternative geologic media, such as argillaceous rocks. Technical programs of international cooperation will continue. The second repository program for FY 1987 and beyond will be described in greater detail as part of the Department's FY 1988 budget submission to Congress.

You also asked if, in the event the Department determined that a second repository is desirable, would the search revert to the candidate sites recommended in the draft Area Recommendation Report (ARR), or would the search be started from the beginning. When DOE reactivates site-specific work for the second repository program, in the mid-1990's or much later, those sites proposed in the draft ARR will have no different status than any other possible sites throughout the entire country. This is due to uncertainties in the following areas: whether crystalline rock will be a preferred medium at that time as a result of technical studies in crystalline and other media; the regions of the United States where DOE will be focusing site-screening activities; and whether regional data used today, when updated, will still result in the same conclusions.

I, too, look forward to working with you and other members of the Congress on the important matter of safely disposing of our Nation's nuclear waste.

Sincerely,

Ben C. Rusche, Director  
Office of Civilian Radioactive  
Waste Management

GORDON J. HUMPHREY  
NEW HAMPSHIRE

831 HART SENATE OFFICE BUILDING  
CONCORD, NH 03301  
NEW HAMPSHIRE TOLL FREE NUMBER  
1-800-852-3714

# United States Senate

WASHINGTON, DC 20510

June 4, 1986

COMMITTEES  
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CHAIRMAN: SUBCOMMITTEE ON  
PREPAREDNESS  
ENVIRONMENT AND PUBLIC WORKS  
CHAIRMAN: SUBCOMMITTEE ON  
REGIONAL AND COMMUNITY  
DEVELOPMENT

The Honorable John S. Herrington  
Secretary  
U. S. Department of Energy  
Washington, DC 20585

Dear Mr. Secretary:

I was pleased to hear of the Department of Energy's decision to indefinitely postpone further study with regard to the search for a second nuclear waste repository under the Nuclear Waste Policy Act of 1982. I have argued for some time that, because of declining projections of nuclear waste and rapidly escalating costs, a second nuclear repository is not needed.

However, I am concerned about a number of issues surrounding the DOE decision. I understand from your statements that the Department's General Counsel had reviewed DOE's statutory requirements under the Nuclear Waste Policy Act and had determined that their obligations would be fulfilled through non-site specific study under the second round program. I am requesting from you a written copy of your Department's legal analysis. Further, I would appreciate your efforts to address the following questions related to this matter:

1. What are the Department's specific plans for the future "study" under the second repository program?

2. Should the Department eventually determine that a second repository is desirable, would the search revert to the candidate sites recommended in the Draft Area Recommendation Report, or would the search be started from the beginning?

3. What is the legal status of the various deadlines for the second repository program specified in the Act?

4. Does the Department feel that any additional legislation is needed to accomplish the objective of the decision not to continue the active search for a second repository?

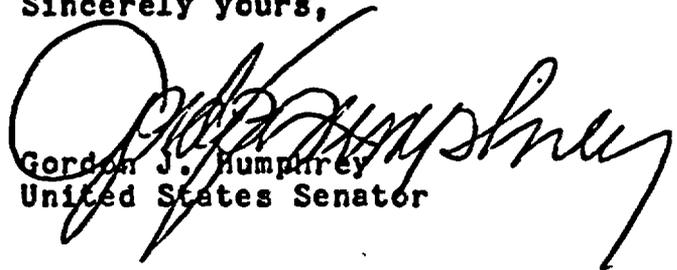
Again, I wish to commend you for your recent decision. I look forward to working with you in the future on this important matter.

002981

The Honorable John S. Herrington  
June 4, 1986  
Page 2

With warmest regards, I am

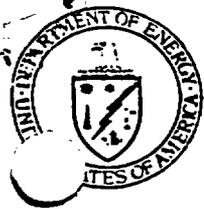
Sincerely yours,



Gordon J. Humphrey  
United States Senator

**Department of Energy**

Washington, DC 20585



**SEP 08 1986**

Honorable Jim Weaver  
Chairman, Subcommittee on General  
Oversight, Northwest Power, and  
Forest Management  
Committee on Interior and  
Insular Affairs  
House of Representatives  
Washington, D.C. 20515

Dear Mr. Chairman:

This is in response to your letter of August 1, 1986, to Secretary Herrington requesting documents relating to his decision regarding the first repository program and the Department's response to questions concerning the high-level waste management program.

With regard to your request for all documents relating to the decisions concerning the Hanford and Richton Dome sites, and the transition between the overall ranking and the selection of the three sites for characterization, we wish to accommodate the Subcommittee request in every respect. We will be happy to arrange for access by the Subcommittee and its staff to each and every document described in your request through mutually convenient arrangements that will enable the Department to continue its work in carrying out the law. Because there is pending litigation involving these decisions, however, our agreement to afford the Subcommittee access to all documents in no way can be construed as waiving any of the government's rights in discovery during this pending litigation, including any and all legal bases the government might assert for declining to produce given documents to adverse litigants. Thus, we would request and expect that the Subcommittee not make available any particular document or documents to those litigants prior to consultation with the Department, whether such availability would be done through public disclosure or other means. I am sure you can appreciate the inappropriateness of any litigant being able to expand upon its legal rights as a litigant through the powers and privileges available to committees of the House of Representatives.

We are pleased to provide the answers to the questions of the Subcommittee relating to the high-level radioactive waste management program and are enclosing the responses to those questions.

Sincerely,

  
Ben C. Rusche, Director  
Office of Civilian Radioactive  
Waste Management

Enclosures

cc: Honorable Charles Pashayan, Jr.  
Ranking Minority Member

MORRIS K. UDALL, ARIZONA, CHAIRMAN

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 JAMES WEAVER, OREGON  
 GEORGE MILLER, CALIFORNIA  
 PHILIP R. SHARP, INDIANA  
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 JIM MOODY, WISCONSIN  
 ALAN B. MOLLOMAN, WEST VIRGINIA  
 RICHARD H. LEHMAN, CALIFORNIA  
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 GEORGE (BUDDY) DARDEN, GEORGIA  
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 BOCK CHENEY, WYOMING  
 CHARLES PASHAYAN, JR., CALIFORNIA  
 LARRY CRAIG, IDAHO  
 DENNY SMITH, OREGON  
 JAMES V. HANSEN, UTAH  
 BILL EMERSON, MISSOURI  
 JOHN MCCAIN, ARIZONA  
 BARBARA F. YUCANOVICH, NEVADA  
 WILLIAM M. HENDON, NORTH CAROLINA  
 MICHAEL L. STRANG, COLORADO  
 BEN BLAZ, GUAM  
 JOE BARTON, TEXAS

## COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

U.S. HOUSE OF REPRESENTATIVES  
 WASHINGTON, DC 20515  
 August 1, 1986

STANLEY SCOVILLE  
 STAFF DIRECTOR  
 AND COUNSEL

ROY JONES  
 ASSOCIATE STAFF DIRECTOR  
 AND COUNSEL

LEE McELVAIN  
 GENERAL COUNSEL

RICHARD AGNEW  
 CHIEF MINORITY COUNSEL

John Herrington, Secretary  
 Department of Energy  
 1000 Independence Avenue, S.W.  
 Washington, D.C. 20585

Dear Secretary Herrington:

Please provide to the Subcommittee by August 5 all documents (including correspondence, memoranda, notes, drafts, and any written or otherwise recorded material of any description), in the possession of the Department of any of its employees or contractors, other than documents already issued to the public, pertaining to:

1. The decision to recommend Hanford as one of the 3 sites for characterization as the first high-level radioactive waste repository, despite its low ranking in the Multiattribute Utility Analysis of Sites Nominated for Characterization for the First Radioactive-Waste Repository, May 1986.
2. The decision not to recommend Richton Dome as one of the 3 sites for characterization as the first high-level radioactive waste repository, despite its high ranking in the Multiattribute Utility Analysis.
3. The transition between the overall ranking presented in the Multiattribute Utility Analysis (p. 5-16) and the selection of 3 sites in the Recommendation by the Secretary of Energy of Candidate Sites for Site Characterization for the First Radioactive-Waste Repository, May 1986.

Please also answer the following questions.

1. When Congress enacted the Nuclear Waste Policy Act in 1982, how many commercial nuclear power plants were operating, under construction, or on order?
2. How many plants have been cancelled since then?
3. In absolute and percentage terms, how much less commercial high-level radioactive waste does DOE expect than it did in 1982?

003971 When will the first repository begin accepting waste?

5. When will the first repository be able to accept waste at its rated capacity of 3000 tons per year?
6. Under DOE's current plan, when will the second repository begin accepting waste?
7. When will the second repository be able to accept waste at its rated capacity of 3000 tons per year?
8. How much high-level and transuranic defense waste exists and is expected to exist at the Hanford, Savannah River, INEL, and West Valley sites? Please specify for each site and separately for high-level and transuranic waste the volumes and weight for such waste in 1985, 1990, 1995, 2000, and every subsequent 5-year interval to the year 2050:
  - a. Prior to solidification or other volume- or weight-reduction measures.
  - b. After application of volume- or weight-reduction measures.
9. Does the Nuclear Waste Policy Act require disposal of high-level or transuranic defense waste by means of deep geologic storage?
10. When would DOE have to restart site-specific examinations of the second repository sites in order to meet a July 1, 1989, deadline for nominating 5 and recommending 3 second repository sites?
11. What reasoning did DOE employ in deciding to use the diversity of geologic media criterion as the determining criterion for selecting the final 3 first repository sites?
12. Why was diversity of geologic media the determining factor instead of regional diversity or transportation distances or costs?

Thank you very much.

Sincerely,



JIM WEAVER, Chairman  
Subcommittee on General  
Oversight, Northwest Power,  
and Forest Management



THE SECRETARY OF ENERGY  
WASHINGTON, D.C. 20585

September 5, 1986

Dear Mr. Fields:

In response to your letter of August 22 regarding the DOE preliminary assessment of costs and risks of transporting spent fuel by barge, I appreciate the opportunity to provide the following information.

This was a basic technical report intended to look into the general concepts of barge shipment. This was not a decisional document. The fact that Houston was one of the ports cited in this study has no significance in terms of the final choice of transporting nuclear waste materials. As a matter of fact, it will be many years before any such choices are made.

I trust this information is helpful to you. If you have any additional questions, please do not hesitate to contact the Department.

Yours truly,

A handwritten signature in black ink that reads "John S. Herrington".

John S. Herrington

Honorable Jack Fields  
House of Representatives  
Washington, D.C. 20515

Roger

COMMITTEE ON  
ENERGY AND  
COMMERCE  
COMMITTEE ON  
MERCHANT MARINE  
AND FISHERIES

# Congress of the United States

House of Representatives • Washington, DC 20515  
August 22, 1986

Mr. John S. Herrington  
Secretary of Energy  
1000 Independence Avenue SW  
Washington, D.C. 20585

Dear Mr. Secretary:

I am outraged to learn -- and through press accounts, at that -- of the study underway by your Department that would ship nuclear waste through the Port of Houston enroute to its final destination.

I am unalterably opposed to such a move, and promise you, Mr. Secretary, that you and your Department will be in for all the legislative guerrilla warfare I can muster if you do not withdraw any thought of such a plan.

Texans are a proud people and we certainly do not hesitate to take care of our own problems, including nuclear waste generated in Texas. We are not interested, however, in caring for the rest of the country's waste, and I will fight you tooth-and-toenail you proceed.

The Port of Houston ranks No. 1 in America in terms of imports and is fourth in overall tonnage. In these troubled economic times, the last thing our port needs is loss of business because of the fear factor this asinine plan would produce.

Finally, I must tell you that I think it is the height of negligence to even undertake such a study without contacting duly elected officials such as myself. The Port of Houston lies in my 8th Congressional District and common courtesy, which was obviously missing in this case, dictates that you inform me of such a study.

Again, John, my promise to you is that you and the Department are in for the fight of your life if you continue to move forward on such a proposal.

Sincerely,

*Jack*  
JACK FIELDS  
Member of Congress

*John -*  
*This letter has*  
*not caused my*  
*full anger!*  
*Jack*

JF:emm

# DOE May Transport Nuclear Waste Across Texas

By MARY ALICE ROBBINS  
Globe-News Service Staff

AUSTIN - Texas could become a thoroughfare for several tons of high-level radioactive waste beginning in 1994, even if there isn't a nuclear waste dump located in the state, a joint legislative committee was told Thursday.

A preliminary risk analysis done for the U.S. Department of Energy calls for the spent fuel from nuclear plants on the East Coast to be shipped by barge to Houston. Steve Frishman, director of the Governor's Nuclear Waste Program Office, told the House Joint Committee on Hazardous Materials Trans-

portation. From Houston, it would be transported by rail across Texas through the Panhandle to the repository site, he said.

Deaf Smith County is one of three sites chosen as a finalist for the nation's first high-level nuclear waste dump. The other sites are in Yucca Mountain, Nev., and Hanford, Wash.

John Smithsee, R-Amarillo, posed whether the transporting of nuclear wastes is as dangerous as the repository.

According to Frishman, the potential for transportation accidents is probably equal to the potential for accidents at a repository site.

"That's what I've been trying to get across to the rest of the state," Smithsee said, adding that residents along the proposed transportation routes should be as concerned about the DOE's plans as Panhandle residents.

Frishman said the waste would be transported in rail casks.

If one of the casks broke open, it could cause injuries and deaths in an area the size of a city, Frishman said.

"It could injure people within a few feet to a few miles," he added.

So far, Frishman said, no casks have ruptured during the limited

transportation of nuclear waste in this country.

Several members of the committee cited a need to inform DOE of this state's strong objections to having the nuclear waste shipped to Houston for transportation to the repository site.

"If Washington is seriously considering running the nuclear waste of the entire Eastern seaboard through Houston, we need to let them know we won't stand for it," said Rep. Al Luna, D-Houston, who co-chairs the joint committee.

The dangers involved in transporting the waste are not the only transportation problems that the

Panhandle faces, another speaker told committee members.

Jim Reed of the Texas Advisory Commission on Intergovernmental Relations said the area around Amarillo and Hereford can expect a massive increase in traffic during the approximately 10 years that the DOE will be doing the site characterization study in Deaf Smith County.

Reed said some highways in the area will see a significant increase in traffic, which will increase the potential for accidents.

The highways that will be impacted the most, he said, are Farm to Market Road 2387, U.S. Highway 285 and Interstate 40.

DOE officials already have plans to construct a cloverleaf interchange at the intersection of U.S. 285 and FM 2387, Reed said.

Another problem facing Deaf Smith County is the large amount of salt and rock material that will be excavated from the site, he said.

If the county is not selected as the repository site, Reed said, officials must find a way to dispose of 45,000 cubic yards of excavated materials. If the repository is placed in the county, there will be an estimated 11 million tons of salt and rock awaiting disposal, he noted.

Reed said the current plans call for the excavated material to be transported by truck to Port Arthur.

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STONE & WEBSTER  
ENGINEERING CORP.

What?

Friday, August 22, 1986 Amarillo Globe-Times

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# Texas route for N-waste reviewed

By Ken Herman  
*Associated Press*

AUSTIN — The U.S. Department of Energy is reviewing a plan to bring a shipment of high-level nuclear waste through Texas once every three days for 25 years, a state official told lawmakers Thursday.

Steve Frishman of the nuclear

■ House-Senate rift.	1A
■ Clements defended.	22A
■ Nominees supported.	23A
■ Discipline bill.	23A

wastes program division of the governor's office testified that the plan is mentioned in a December 1985 report prepared for the Department of Energy.

The plan is to load the waste from East Coast nuclear power plants onto barges, ship it to Houston and take it by rail to the site eventually picked as the nation's high-level waste repository.

A site in Texas' Deaf Smith County is among the three finalists for the repository, with a decision expected in 1992.

Frishman said the wastes could travel through Texas even if one of the other sites — one in Nevada and one in Washington state — is selected.

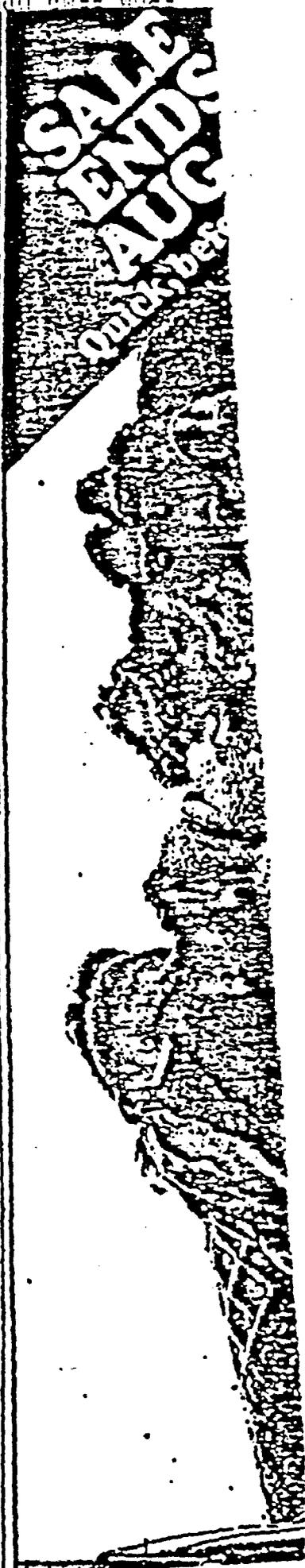
The waste could move safely as long as the casks do not rupture, Frishman told the House Joint Committee on Hazardous Materials Transportation.

"If the casks do rupture, it's a whole new game," he said, adding that if a cask ruptures in the water, officials would have to "just keep people away from it, essentially forever."

Department of Energy officials have made no decision on transporting nuclear waste, Frishman said.

Committee chairman Al Luna, D-Houston, said federal officials were invited to the Thursday hearing, but did not attend.

Based on a report prepared by the Argonne National Laboratory in Illinois for the Department of Energy, Frishman said up to 3,200 shipments could be made over 25 years. One potential rail route through Texas begins at the Port of Houston and moves northwest through Dallas, Fort Worth and San Antonio.



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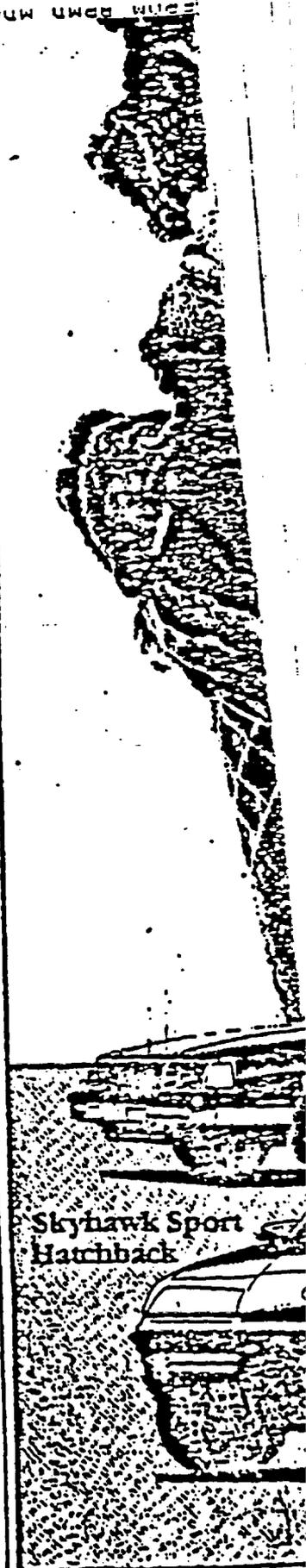
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One potential rail route through  
Texas begins at the Port of Houston  
and moves northwest through Dal-  
las, Fort Worth and Amarillo.

"If a cask ruptures, you are deal-  
ing with a few tons of spent fuel in  
a city, you could have injuries,  
death and long-term effects," Frish-  
man said.

Spent fuel from nuclear power  
plants can remain hazardous for 2  
million years, he said.

Federal officials should an-  
nounce their nuclear waste trans-  
portation plans, Luna said.

Luna said, "If Washington is seri-  
ously considering running the nu-  
clear waste of the entire Eastern  
Seaboard through Houston, we need  
to let them know we won't stand for  
it. If they're not serious about it,  
then we want to see this idea offi-  
cially killed and laid to rest."





THE SECRETARY OF ENERGY  
WASHINGTON, D.C. 20585

August 28, 1986

Dear Governor Perpich:

Thank you for your letter of June 20, 1986, requesting clarification on the disposition of the crystalline repository program.

We have reviewed carefully the questions you submitted following our announcement that site-specific work relating to a second high-level nuclear waste repository has been postponed indefinitely. We are pleased to provide the enclosed responses to your questions.

If we can be of further assistance, please let me know.

Yours truly,

A handwritten signature in dark ink, appearing to read "John S. Herrington".

John S. Herrington

Enclosure

Honorable Rudy Perpich  
Governor of Minnesota  
St. Paul, Minnesota 55155



# STATE OF MINNESOTA

OFFICE OF THE GOVERNOR

ST. PAUL 55155

Y PERPICH  
GOVERNOR

June 20, 1986

The Honorable John Herrington  
Secretary of Energy  
U.S. Department of Energy  
1000 Independence Avenue Southwest  
Washington, DC 20585

Dear Mr. Secretary:

On May 28, 1986, you announced that the Department of Energy's (DOE) second-round nuclear waste repository program was "postponed indefinitely" and that all sites previously identified were no longer "under active consideration." On June 4, 1986, I received your statement and a copy of the DOE press release issued on May 28.

The statement, press release, and comments attributed to you in association with the announcement were unclear as to the ultimate disposition of the crystalline repository program. I have several questions that I would like to have answered.

- 1) At what point will the DOE consider reactivating the second repository program?
- 2) Will the DOE notify the states at the time you consider reactivating the program?
- 3) What signs will the DOE look for in determining that reactivation is appropriate?
- 4) The announcement was silent on the focus of the second round program if the Department chooses or is directed to reactivate it. While you were quoted as saying that the program would return to "square one," it is unclear whether this means a) the 235 rock bodies in the 17 states identified at the beginning of the Crystalline Repository Program, b) all legally eligible states, or c) something else.
  - a. Will the program begin with a new draft national survey which the affected states may review?
  - b. Will the program include geologic media other than crystalline rock?
  - c. Will it include unsaturated crystalline rock?
  - d. Will all states, other than those states chosen for the first repository and the MRS, be eligible for consideration?
  - e. Will the program include Potentially Acceptable Sites legally eligible from the first round program?

AN EQUAL OPPORTUNITY EMPLOYER

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June 20, 1986

The Honorable John Herrington

page two

f. Will the states have the opportunity to participate in the siting process from the start?

5) What plans does the DOE have for technical work on crystalline rock?

6) Will the DOE rely solely on foreign research or is domestic research also envisioned?

7) What objective is DOE seeking to achieve before site selection can begin?

8) What opportunities will states previously identified as candidates by the CRP have to participate in technical studies to be conducted prior to the resumption of site specific studies? The former crystalline states have a legitimate claim to access to technical information about crystalline repository research, since the results will influence decisions about the siting and design of a crystalline repository, should the program resume. In addition, the DOE has on-going responsibilities in developing a nuclear waste transportation system. State participation in system development can not justifiably be limited to the three remaining first round states.

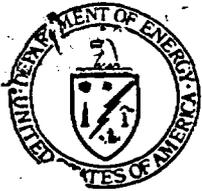
Answers to these questions will help us understand our status under the decisions announced on May 28.

Sincerely,



RUDY PERPICH  
Governor

cc: Minnesota Congressional Delegation



Department of Energy  
Washington, DC 20585

AUG 28 1986

Honorable Samuel J. Chilk  
Secretary  
Nuclear Regulatory Commission  
Attention: Docketing & Service Branch  
Washington, D.C. 20555

Dear Mr. Secretary:

The Federal Register notice of May 27, 1986, sets forth proposed changes to 10 CFR Part 72 and related regulations to provide for safe storage of spent nuclear fuel and high-level radioactive waste. The Commission has requested comments on this proposed rule and they are provided in the enclosure.

The Commission stated that it is particularly interested in receiving comments on three specific issues and a brief summary of our position is as follows:

1. The need for the Commission to make a finding before Monitored Retrievable Storage (MRS) facility operation that construction conforms to the license application: A finding of conformance is unnecessary because the Part 72 provisions for on-site inspections and staff reviews for conformity all throughout the construction period will provide ample confidence of conformity by the time construction is completed.
2. Provisions for second stage hearing rights on issues not previously litigated: It is inappropriate and unnecessary to make explicit provisions for a second stage hearing in a process that is designed for a single step to license a facility with a complete design. The regulations provide adequate opportunity for additional hearings if new issues are identified that could have a major impact on public health and safety. A single stage process would further encourage early identification and resolution of all significant issues before, rather than after, construction.
3. The format for the hearing, if held: The format for this hearing, if held, should be simple and of appropriately limited scope and participation. A suggested format is included in the enclosure.

The enclosure explains our position on these matters in greater detail and provides a number of specific comments and suggestions on this proposed rule. We are particularly concerned with certain aspects of the mandatory continuous monitoring requirement of Part 72.92(h)(4) and the additional requirements on the Department for security and physical protection not required of other licensees under Part 72.15(o).

We commend the Commission staff for its thorough background analysis in the area of emergency planning. We concur with their conclusion that there is no need for special offsite emergency preparedness actions to comply with Environmental Protection Agency guides.

We appreciate the opportunity to provide comments on this proposed rule. This rule, together with the Staff Evaluation of U.S. Department of Energy Proposal for MRS, NUREG 1168, provides further confidence that our MRS design that is awaiting submission to Congress can be built and operated safely. If Congress approves the MRS, a facility built and licensed under this rule will significantly contribute to the safe management of the nation's nuclear waste.

Sincerely,



Ben C. Rusche, Director  
Office of Civilian Radioactive  
Waste Management

Enclosure

DOE Comments on Proposed Rule

10 CFR Part 72

The Commission specifically requested comments on three issues:

1. The need for a Commission finding that construction is in conformance with the license application before Monitored Retrievable Storage (MRS) operation is permitted.

The Commission's regulations currently provide for strict adherence to license conditions at all stages of construction, operation, and decommissioning of a facility for which a license is required. These regulations provide for on-site inspections and conformity to the license throughout the construction period. Provisions are included for license revocation or withdrawal if license conditions are not met. The regulations also include provisions for backfitting where substantial additional protection of public health and safety is afforded.

In addition, 10 CFR Part 72 requires that the Safety Analysis Report (SAR) submitted with the license application be updated every 6 months and submitted for review. The final SAR update must be submitted at least 90 days prior to planned receipt of spent fuel or high-level radioactive waste. With these requirements already in place, it is unnecessary for the Commission also to make the suggested finding of conformance. The comprehensive review needed to support a conformance finding would merely duplicate, at considerable expense, the detailed, ongoing reviews conducted by the Commission all through the construction phase. It would also introduce the potential for considerable delay from procedural requirements alone without commensurate benefit regarding assurance of conformance previously gained through intensive, real-time inspections during construction.

If the Commission does require such a review and finding, they should be limited to known areas where substantive issues regarding manner of conformance have been raised.

2. The provision for an optional second stage hearing for addressing issues not litigated at the initial hearings.

For reasons given above and because the MRS is a relatively benign nuclear facility (it will handle waste that has decayed for several years so that radioactivity and heat generation are a small fraction of that for spent fuel at reactor discharge), a second stage hearing is unnecessary and would be wasteful. In addition the final MRS design is scheduled to be complete well before a license is issued so

there should be no unresolved issues that could not have been addressed during the first stage hearing process. This is a significant improvement over commercial reactor licensing where design continues after the construction permit is issued. Further, a second stage hearing would be counter to current regulatory reform trends to which the Commission is committed. As indicated above, the Commission retains the option to act in safety matters at any time and to respond to public requests for review under 10 CFR Part 2.206.

The Commission staff (Inspection and Enforcement) will have conducted numerous periodic inspections to assure that the facility is constructed in conformance with the design including any approved changes to this design. As proposed by this rule, a second, unnecessary and protracted hearing is very likely at the completion of construction making it a one stage process in name only.

3. The format for a second stage hearing, if held.

The proposed rule states that issues to be considered in a second hearing are those not addressed at the initial hearing. Because the proceedings leading to licensing of MRS will undoubtedly be exhaustive, there will be few, if any, issues to be adjudicated at a second hearing. If the Commission still feels that provision for a second stage hearing is warranted such a hearing should be as informal as is permitted under 10 CFR Part 2 rules of practice. An amendment to 10 CFR Part 2 may be needed to assure a simplified procedure given that the Department already would have a license to receive and process spent fuel for storage. Also, only parties to the initial proceedings should be allowed to raise new issues for consideration at a second hearing.

A suggested scenario for a second stage hearing is as follows:

Under a one stage licensing process, the Department would be issued a license to construct an MRS and to receive and process spent nuclear fuel and high-level radioactive waste for storage.

Once construction is completed, and prior to receiving waste as provided by the combined license issued under this rule, the Commission would publish a Federal Register notice that the Department was about to begin operation and to receive waste. Any interested party with standing from the initial licensing proceeding would have a specified time to notify the Commission of its belief that the license should be revoked or modified.

Documentation would be required to show (1) that there was new information important to safety and (2) that this information, if true, would cause the Commission to conclude that it no longer would have reasonable assurance that the public health and safety was adequately protected under the existing license. After receiving documentation to support these claims, and receiving written comments on them from the Department and other interested parties on the issue(s), the Commission could schedule a hearing on the specific issue(s), provided (1) the Commission made the required determination, and (2) the Commission stated the basis for the determination that it no longer had reasonable assurance that the public health and safety was adequately protected. It is insufficient merely to have new information important to health and safety without the Commission also determining that the new information may cause them to reverse their earlier determination that they had reasonable assurance that the public health and safety was adequately protected.

Other comments and suggestions on this rule are:

1. Background

It would be appropriate and informative in item 1(d)(2) after the word "form" to add the words "a durable solid with excellent leach resistance."

2. Background

Item 10, the emergency planning discussion, provides useful perspective on the degree of risk associated with an MRS facility. It documents the risks to public health and safety from the storage of aged spent nuclear fuel and high level radioactive waste, indicating that they are far below levels that Environmental Protection Agency specifies for implementing protective actions in nuclear incidents. This provides a sound basis for regulation and avoids the use of nuclear reactor standards that are not appropriate for these low risk storage activities.

3. 72.1

Line 11 after the word "including", add the words "under some conditions." Section 135(a)(1)(A) of the Nuclear Waste Policy Act of 1982 (NWPA) exempts from licensing government facilities owned when the act was passed and subsequently used for the storage of civilian nuclear fuel.

4. 72.3

The definition of "Affected Indian tribe" includes, in line 4, the words "test and evaluation facility, or a repository for high-level radioactive waste or spent fuel." These words

should be deleted because section 141(g) of the NWPA specifically precludes co-location of MRS and repository facilities.

5. 72.3

The definition of the word "Region" is so broad that it could be construed to include extensive and variable transportation routes as well as the facility sites and surrounding areas. However, extensive regulations governing transportation already exist. This rule is primarily related to Independent Spent Fuel Storage Installation (ISFSI) and MRS facilities whose definitions are limited to activities occurring on the site. For example, "waste receipt, processing and storage pending shipment for disposal" are included in the MRS definition. To avoid a gerrymandered "Region", the definition should be combined to a single part and the portion after the word "impact" on line 6 deleted. In place of the deleted section add the words "the safe or environmentally sound construction, operation or decommissioning of an ISFSI or MRS facility as defined above."

6. 72.3

The definition "structures, systems and components important to safety" is included in other regulations such as Parts 50 and 60. The quantitative definition of Part 60 is appropriate for this Part and should be substituted for the one in the proposed rule as follows: "Structure, systems and components important to safety" means those engineered structures, systems, and components essential to the prevention or mitigation of an accident that could result in a radiation dose to the whole body, or any organ, of .5 rem or greater at or beyond the nearest boundary of the restricted area during the operation and decommissioning of the ISFSI or MRS.

7. 72.15(c)(3)

Line 9 after the word "safely" add the words "for the duration of the license period." This limits environmental concerns to the period of interest.

8. 72.15(d)

Line 7 after "MRS" add the words "during the license period" (see item 7).

9. 72.15(o)

The requirement that the Department certify that safeguards at an MRS are equivalent to those it employs at comparable Department surface facilities is an additional item not

specified for commercial facilities. This could cause compliance problems because there may be classified defense facilities that could be considered comparable. Classified defense facilities should be excluded from this Part and a definition of "comparable surface facilities" added to Part 72.3.

10. 72.19

In item 10 of the background, the NRC acknowledges that offsite emergency preparedness is not necessary for public health and safety reasons but rather as a means of communication. Part 72.19 provides elaborate procedures for coping with these non-emergencies. These matters have been addressed in an institutional context. It is planned that a plant operation oversight group with substantial State and local participation will be formed to provide the necessary communications link. This communications function could best be provided through institutional agreements with State and local officials.

11. 72.31(a)(8)

As indicated in Comment 9 above, there is no basis to hold the Department to a higher, more costly standard of physical protection and security than is required of commercial facilities. The last sentence of this paragraph should be deleted.

12. 72.31(b)

This section presents the potential grounds for denial of a license to store spent fuel at an ISFSI or MRS.

In summary this section states that the basis for denial of a license to store spent fuel may be the commencement of construction prior to a formal finding by appropriate Nuclear Regulatory Commission (NRC) officials that the issuance of the license is the appropriate action based on the environmental analyses. The proposed changes to this section further complicate a very confusing sentence to include MRS considerations. As written the proposed changed section states that "...in the case of the MRS, on the basis of evaluations made pursuant to section 141(c) of the NWSA, and after weighing the environmental, economic, technical and other benefits against environmental costs and considering available alternatives...." This indicates that the Commission must make a finding regarding the cost/benefit of the MRS which is contrary to the explicit direction in the NWSA section 141(c)(2) which states that "...any EIS prepared with respect to such facility shall not be required to consider the need for such facility..."

This would be corrected if the specific phrase "...or in the case of the MRS on the basis of evaluations made pursuant to section 141(c) of NWPA..." is moved so the revised section reads: "...on the basis of information filed and evaluations made pursuant to Subpart A of Part 51 of this chapter, and after weighing the environmental, economic, technical and other benefits against environmental costs, and considering available alternatives, or in the case of the MRS, on the basis of evaluation made pursuant to section 141(c) of the NWPA, that the action called for..."

13. 72.32(a)

Duration of license. The phrase "date of issuance" occurs in lines 5 and 7 to signal the start of the license period. However, plant deterioration results primarily from operation, not license issuance. To remove the effect of protracted delays between license issuance and plant operation, the license period should begin when the plant first receives spent nuclear fuel or high level radioactive waste.

14. 72.34

We have already stated our position that a second hearing is unnecessary. However, if this option remains in the rule, the words "among other things" in lines 13 and 14 of paragraph (c) should be deleted. Any hearing must be focused on matters that could not have been litigated at the first hearing. The words "among other things" make the second hearing open-ended.

Similarly, after the word "whether" on line 14 of 72.34(c), the Commission should consider the words "significant nonconformances to the SAR" rather than "conformity." Our position, stated earlier, is that this finding is unnecessary and may imply a costly, duplicative review of the project to give added assurance of conformity to the SAR.

Further, lines 16, 17 and 18 should explicitly limit considerations to items that could not have been litigated earlier.

15. 72.42

The backfitting requirement should be brought into conformance with recent changes to Part 50.109 which require a cost/benefit test and documented analyses to justify proposed backfits. Backfitting should be justified only (1) when it will provide substantial additional protection and (2) when there has been a determination that the NRC no longer has reasonable assurance that the public health and safety are adequately protected. Improvement of a design

that has been determined to be adequate under Part 72 is unwarranted.

16. 72.55(d)

Provision should be made for keeping records using state of the art technology such as computer disks, laser disks, etc. As written, this provision could soon become obsolete.

17. 72.75

The siting limitations listed herein are a re-statement of those in the NWP. They are not related to public health and safety and it is unnecessary to repeat them in this rule.

18. 72.81

Application of commercial nuclear reactor geological and seismological standards to the ISFSI, or MRS, are unreasonable because of the substantially lower risks to the public health and safety associated with these facilities. Because there is no basis for applying reactor standards to ISFSI or MRS facilities, a lower requirement, consistent with the significantly lower risk associated with them, should be developed.

19. 72.81(a)

The word "sustained" should be inserted in line 6 between "known" and "seismic activity." The phrase "known sustained seismic activity" should then be defined as seismic activity occurring during a previous given period such as 200 years.

20. 72.83(b)

The meaning of this paragraph is not clear because, at the end of line 3, the word "or" appears instead of the intended word "for."

21. 72.89

The words "within the region" should be inserted in line 3 after the word "environment." This addition is necessary to avoid the interpretation that transportation impacts back to the point of origin of a shipment are involved. It is clear from Part 72.70(e) that siting evaluation factors are to address effects on the region.

22. 72.92(h) (4)

Continuous monitoring of storage confinement systems is required by this part of the proposed rule. It stems from NWP section 141(b)(1)(B) that specifies an MRS design that

will "permit" continuous monitoring. The present MRS conceptual design provides for continuous monitoring of all receiving and handling building effluent streams while fuel rods (whose cladding provides a substantial barrier) are being consolidated, canistered in separate sealed metal containers and then again confined in a sealed storage cask (SSC). The SSCs, now with at least two, if not three, independent barriers, are moved to field storage.

The SSCs are designed with fittings for sampling the atmosphere between the cask and canister which would "permit" continuous monitoring. However, the current conceptual design does not envision monitoring each of the many SSCs continuously. The risk of releases, even under accident conditions, has been shown to be very low. Requiring continuous monitoring of thousands of SSCs is unwarranted and not only would be expensive but also would increase the risk of releases by providing a pathway around one of the barriers.

For all of these reasons, it is inappropriate to require continuous, real-time monitoring of field storage units.

23. 72.92(h)(5)

"For the life of the installation" should be changed to "for the duration of the license." This would allow the option of qualifying existing containment for extended use or providing new containment should the DOE decide to apply to extend the license. Additionally, since the "life of the installation" is not fixed, such a requirement places a potentially impractical burden on the designer at the initial stages of a project.

24. 72.92(l) (see FR page 19124 - Retrievability)

The NWPA in section 141(b)(1)(C) directs the Department to design the MRS for ready retrieval. This is a matter of policy rather than public health and safety. It is not necessary to include it in this rule.

25. 72.93(a)

A discussion should be added to the Supplementary Information which indicates the acceptable degree of subcriticality. A margin of 5% as used in other spent fuel storage facilities is suggested.

26. 72.101

DOE has the option of delegating the execution of quality assurance activities but may wish only to partially delegate this work. It is suggested that the words "or any part thereof" be inserted in line 7 of this section following the

word "program" to recognize partial delegation.

27. 72.105(a)

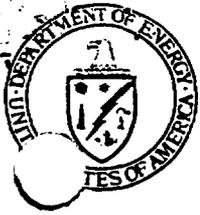
To clarify the intent of this section on Design Control, the word "basis" should be inserted after the word "design" in line 3 and the word "application" after the word "license" in line 4. (This wording is used in Part 50, Appendix B).

28. 72.133

The word "written" should be removed from the beginning of line 2 because not all records (i.e., x-rays) are written.

29. 51.61 (Conforming amendments)

To limit the environmental analysis for an MRS to the term of the license, as is done for the ISFSI, in line 32 after "ISFSI" add, "or spent nuclear fuel or high-level radioactive waste at an MRS." Also in line 37 after "ISFSI" add, " or for spent nuclear fuel or high-level radioactive waste at an MRS."



**Department of Energy**

Washington, DC 20585

**AUG 25 1986**

Honorable Norman H. Bangerter  
Chairman, Western Governors' Association  
600 17th Street  
Suite 1205 South Tower  
Denver, Colorado 80202-5442

Dear Governor Bangerter:

On behalf of President Reagan, thank you for your letter of July 25, 1986, regarding a resolution passed recently by the Western Governors' Association in connection with the nuclear waste repository program.

Let me assure you that the Department of Energy (DOE) has not discontinued its effort to develop a second geologic repository for high-level nuclear waste. We have only postponed indefinitely site-specific activity. The Department will continue its research on disposal methods, examine various geologic media, exchange resource information with other countries, and pursue other relevant activity under the Nuclear Waste Policy Act until the timing and need for a second repository can be addressed with more certainty.

The reasons for postponement of site-specific activity for a possible second repository include the progress made toward siting the first repository and declining projections of spent fuel generation. Accordingly, it is DOE's position that it is not necessary to consider a second repository until the mid-1990's or later. Spending hundreds of millions of dollars now on site-specific activities for a repository the country may not need for some time is unsound fiscal management.

Sincerely,

  
Ben C. Rusche, Director  
Office of Civilian Radioactive  
Waste Management

August 6, 1986

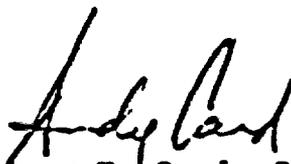
Dear Governor Bangertter:

On behalf of the President, I want to thank you for your letter regarding the recent resolutions of the Western Governors' Association dealing with high-level waste repository, the national speed limit and sequestration of public land based federal-state share receipts.

I have forwarded copies of your correspondence to the appropriate White House officials and to the Departments of Energy and Transportation and the Office of Management and Budget for further review.

Thank you for bringing your concerns to the attention of the Administration. If I can be of any further assistance, please do not hesitate to contact me.

Sincerely,



Andrew H. Card, Jr.  
Special Assistant to the President  
for Intergovernmental Affairs

The Honorable Norman H. Bangertter  
Chairman, Western Governors' Association  
Governor of Utah  
600 17th Street  
Suite 1205 South Tower  
Denver, Colorado 80202-1102



Western Governors' Association  
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Norman E. Bangerter  
Governor of Utah  
Chairman  
Booth Gardner  
Governor of Washington  
Vice Chairman  
Paul M. Cunningham  
Executive Director

*A. Card*  
July 25, 1986

The Honorable Ronald W. Reagan  
President of the United States  
The White House  
1600 Pennsylvania Avenue, N.W.  
Washington, DC 20500

Dear Mr. President:

The governors of the sixteen western states and three Pacific territories just concluded their third annual meeting in Colorado Springs, Colorado. As the newly elected chairman of the Western Governors' Association, I look forward to working with you in addressing important western and national issues. During our meeting, we adopted three resolutions expressing concern in the following areas: (1) high level nuclear waste, (2) sequestered public land payments, and (3) greater flexibility for the 55 MPH speed limit on rural Interstate highways.

The governors unanimously expressed their disapproval of the Secretary of Energy's recent decision to indefinitely postpone all work on locating a second repository for high-level nuclear waste and spent fuel. The western governors find the Secretary's decision to be arbitrary, a clear violation of the intent of Congress, and a violation of the spirit, if not the letter, of the Nuclear Waste Policy Act of 1982.

The western governors further find the Secretary's decision to be a breach of faith with Congress and the western states and constitutes a total disregard by the Secretary of any fundamental concept of regional equality. Two of the three sites approved by the Secretary are located in western states — Nevada and Washington — and the third is in Texas. In the event only one repository for high-level nuclear waste and spent nuclear fuel is developed, and that repository is in the West, a disproportionate share of the nation's burden, will be borne by the western states. That includes both transporting and disposing of spent fuel and high-level waste.

The western governors urge you to suspend all further work on site characterization for a first repository until work on the siting and development of a second repository is recommended, and on a schedule reasonably intended to meet all statutory deadlines. Alternatively, the governors would urge that the Secretary's decision be recalled and efforts begun immediately on a comprehensive nationwide search for the best available site for a second repository, to include all appropriate geologic media, including granite.

The second resolution of the western governors unanimously opposes the interpretation of the sequestration provisions of the Gramm-Rudman-Hollings Act (Public Law 99-177) as applied to public land based federal-state shared receipts by the Office of Management and Budget and Congressional Budget Office. Because these programs are not federal grant-in-aid funds but rather compensation for continued federal ownership of land and resources, the governors believe that Congress intended to exempt natural resource transfer payments from the sequestration process. The legislative history of Gramm-Rudman-Hollings appears quite clear that inclusion of these programs was never explicitly recognized, lending support to arguments that they were meant to be exempt from sequestration.

The Honorable Ronald Reagan  
July 25, 1986  
Page Two

Recent letters and rulings by the Office of Management and Budget, Congressional Budget Office, and the General Accounting Office indicate that the sequestered transfer payments will be returned at the beginning of the fiscal year following the year of sequestration. If action to ratify the earlier sequestration order is eventually taken, we prefer that it specify that shared receipt payments not be interpreted in any manner as sequesterable budgetary resources. At a minimum, any ratification action should reinforce and specify the current interpretation that sequestered shared receipt payments are only deferred and not permanently cancelled. The governors request your support in securing this interpretation on these important programs.

The third issue which we took action on is the 55 mile per hour national speed limit. The national speed limit was originally established in 1974 as an emergency fuel conservation measure and has been retained based on its purported safety benefits.

The retention of the 55 mile per hour speed limit on rural Interstates and freeways has fostered a growing disrespect for speed limits on other highways, where reduced speed limits are warranted. This increased disrespect is evidenced by the average speed on this nation's Interstate and primary highways increasing annually, approaching pre-1974 levels. Additionally, the number of states exceeding the fifty percent level of compliance is also increasing annually, even in light of greater efforts on the part of law enforcement.

The governors support greater flexibility for states in setting maximum speed limits on selected rural Interstates and freeways where safety would not be significantly reduced. By selectively increasing the speed limits on rural Interstates and freeways the efficiency of state transportation systems will be improved, respect for traffic laws reinstated, and law enforcement resources can be concentrated on less safe highways and drunk drivers.

The governors also urge the adoption of a safety-based method for determining the level of compliance by states with a national speed limit. Such a formula should consider the severity of the violations, the location of the violations in respect to the safeness of the highways, and the unique driving characteristics of different regions. The governors' position is supported by the findings of the National Transportation Research Board as reported to Congress in 1984.

The western governors recognize your continued interest in the western states and the issues we face. The attached resolutions are an expression of key issues before the western states and the governors request your careful consideration of the positions presented.

Sincerely,



Norman H. Bangert  
Chairman  
Governor of Utah

attachments:

**SPONSORS:** Governors Gardner, Bryan, and Evans

**SUBJECT:** High-Level Waste Repository

**A. BACKGROUND**

1. The United States Secretary of Energy has recommended, and the President has approved, three sites for characterization as the nation's first repository for high-level nuclear waste and spent nuclear fuel.
2. The three sites approved for characterization are located in the states of Nevada, Washington and Texas.
3. The Nuclear Waste Policy Act of 1982 requires the United States Department of Energy to plan for, and to site, a second repository for high-level nuclear waste and spent nuclear fuel, and places a limitation on the amount of material which can be emplaced in first repository before a second repository is available.
4. The United States Secretary of Energy must nominate, not later than July 1, 1989, five sites, and recommend by such date to the President, three candidate sites for characterization for a second repository.
5. The President must submit to the Congress, a recommendation, not later than March 31, 1990, of a site for a second repository.
6. It was the intent of the Congress in enacting the Nuclear Waste Policy Act, and in requiring the planning and development of the second nuclear waste repository, that regional and geographic equity be recognized, and thus required "the planning and development of more than one high-level radioactive waste repository located so as to serve various regions of the country.
7. Eighty-five percent of the spent fuel produced in this country is produced east of the Mississippi River.
8. In the event that only one repository for high-level nuclear waste and spent nuclear fuel is developed in the country, and that repository is located in a western state, a disproportionate share of the nation's burden, not only of disposing of such spent fuel and high-level waste, but of transporting such waste, will be borne by the western states. (Reference WGA Resolution 85-003.)
9. On May 28, 1986, in announcing the three sites to be characterized for the nation's first repository, the United States Secretary of Energy also announced that all site specific work on the second repository would be indefinitely postponed.

**B. GOVERNORS' POLICY STATEMENT**

1. The western governors strenuously object to the Secretary of Energy's decision to indefinitely postpone all work on locating and developing a second repository for high-level nuclear waste and spent fuel.
2. The western governors find the Secretary's decision to be arbitrary, and a clear violation of the intent of the Congress, and the spirit, if not the letter, of the Nuclear Waste Policy Act.
3. The western governors find the Secretary's decision to be a breach of faith with the Congress, and with the western states, and to constitute a total disregard by the Secretary of any fundamental concept of regional equity.
4. The western governors urge the Congress, and the President, to suspend all further work on site characterization for a first repository for high-level nuclear waste and spent nuclear fuel until work on the siting and development of a second repository is recommenced, and on a schedule reasonably intended to meet all statutory deadlines, or, alternatively, to reconsider and to recall their decision to recommend and approve three sites located in the western states for characterization for the nation's first repository, and to begin immediately a comprehensive nationwide search for the best available site for such a repository, to include all known, appropriate geologic media, including granite.

**C. GOVERNORS' MANAGEMENT DIRECTIVE**

1. The staff of the Western Governors' Association is directed to transmit this Resolution to the President of the United States, the United States Secretary of Energy, the Speaker of the United States House of Representatives, the President of the United States Senate, and the members of the Senate and House of Representatives from each of the member states of the Western Governors' Association.

**DISPOSITION:**

Approved: Deukmejian, Lamm, Ariyoshi, Schwinden, Kerrey, Anaya, Sinner, Atiyeh, Janklow, Bangerter, and Gardner

Disapproved: \_\_\_\_\_

Abstained: \_\_\_\_\_

Not Present: Sheffield, Lutali, Babbitt, Bordallo, Evans, Bryan, Tenorio, and Herschler

**SPONSOR:** Governor Deukmejian  
**SUBJECT:** National Maximum Speed Limit

**A. BACKGROUND**

1. In 1974, the United States Congress enacted the 55 MPH National Maximum Speed Limit (NMSL) as an emergency fuel conservation measure. The 55 limit has been retained because of its significant safety benefits.
2. Traffic regulation has traditionally been a state responsibility. To ensure nationwide adoption of the 55 limit, Congress required all states to adopt conforming legislation or lose federal highway funding.
3. Average and 85th percentile speed on certain Interstate highways and freeways have been steadily increasing, and are approaching pre-55 levels.
4. Selectively increasing the speed limit on major rural Interstate highways and freeways will increase the efficiency of state transportation systems, foster greater respect for traffic laws, and allow law enforcement resources to be redirected without significantly reducing highway safety.
5. Federal regulations now require each state to annually certify that no more than 50 percent of its motorists are exceeding the 55 MPH limit or be subject to the sanction of designated highway funds.
6. The Transportation Research Board (affiliated with the National Research Board) has recommended that the federal government adopt a system of compliance measurement which better recognizes safety priorities. Congress is presently considering adoption of compliance measurement procedures which would assign greater significance to higher speed violations and those which occur on less safe roadways.

**B. GOVERNORS' POLICY STATEMENT**

1. We support allowing states the flexibility to increase the maximum speed limit on selected rural Interstates and freeways where safety would not be significantly reduced.
2. We support adoption of a safety-based method of compliance measurement which considers the severity and location of noncompliance.
3. We encourage the establishment of a compliance threshold which would be equitable for all states, recognizing the unique driving conditions in different regions. In the event sanctions are imposed, highway safety-related projects should be exempted to avoid compounding the negative safety impacts of NMSL noncompliance.

**C. GOVERNORS' MANAGEMENT DIRECTIVE**

1. A copy of this resolution shall be transmitted to the Congressional delegations of the WGA states, other appropriate members of Congress, the United States Department of Transportation, and the Federal Highway Administration.
2. The WGA staff shall monitor and report to the governors on the impacts of any legislative proposals to amend the present 55 speed limit sanction procedures.

**DISPOSITION:**

Approved: Deukmejian, Lamm, Ariyoshi, Schwinden, Kerrey, Anaya, Sinner, Janklow, Bangerter, and Gardner

Disapproved: Atiyeh

Abstained: \_\_\_\_\_

Not Present: Sheffield, Lutali, Babbitt, Bordallo, Evans, Bryan, Tenorio, and Herschler

**SPONSOR:** Governors Herschler and Atiyeh

**SUBJECT:** Sequestration of Public Land Based Federal-State Shared Receipts Under Public Law 99-177, Commonly Known as the Gramm-Rudman-Hollings Act

**A. BACKGROUND**

1. State and local government shares of federal mineral, timber, grazing, recreation and other public land resource related receipts were designed to compensate public land states for the continued federal ownership of land and mineral resources and the concurrent tax base diminishment and development restraints created by that ownership.
2. State shared receipt programs were basic to the Congressional compromise which led to the retention of significant federal land and mineral interests in the western states.
3. Federal-state shared receipts are an important revenue source for impact assistance, road and highways, sewer and water, education and other public facilities and programs needed to support the industries and work forces engaged in management and development activities on federal lands.
4. Western states expend significant amounts of their own source revenues for the planning, accommodation and regulation of federal land and mineral resource development and management activities.
5. The joint report from the Office of Management and Budget and the Congressional Budget Office, issued January 15, 1986, treated the various federal-state shared receipts as sequesterable budgetary resources under provisions of the Gramm-Rudman-Hollings Act. This interpretation was carried forward in the Comptroller General's determination of January 21, 1986, and the President's Order of February 1, 1986 which became effective March 1, 1986.
6. A number of key Congressional and Administration officials have expressed their belief that Congress intended to exempt public land based federal-state shared receipts from sequestration under provisions of the Gramm-Rudman-Hollings Act.
7. The interpretation that public land based federal-state shared receipts are sequesterable budgetary resources has created gross inequities among the various states in respective federal deficit reductions and has caused substantial budgetary hardships for western public land state and local governments.

**B. GOVERNORS' POLICY STATEMENT**

1. We are opposed to the interpretation that public land based federal-state shared receipts are sequesterable budgetary resources and believe that Congress intended to exempt such federal-state shared receipts from the sequestration provisions of the Gramm-Rudman-Hollings Act.
2. We support, if necessary, legislative and judicial remedies to correctly and explicitly define public land based federal-state shared receipt programs as being exempt from the sequestration provisions of the Gramm-Rudman-Hollings Act.
3. We support efforts to assure full collection and proper accounting of federal mineral and other public land based resource receipts in order to improve returns to the federal government and affected states.

**C. GOVERNORS' MANAGEMENT DIRECTIVE**

1. A copy of this resolution shall be transmitted to the President of the United States, the Director of the Office of Management and Budget, the Director of the Congressional Budget Office, the Comptroller General, the Congressional Delegations of the WGA states, other appropriate members of Congress, and the Secretaries of Interior and Agriculture.
2. The WGA staff and retained counsel shall monitor and report to the Governors on any legislative or judicial actions affecting the various federal-state shared receipt programs under provisions of the Gramm-Rudman-Hollings Act.
3. Work with other organizations with like interests if litigation of this issue is approved by the governors.

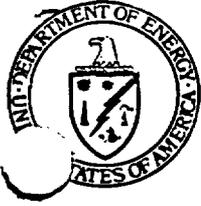
**DISPOSITION:**

Approved: Deukmejian, Lamm, Ariyoshi, Schwinden, Kerrey, Anaya, Sinner, Atiyeh  
Janklow, Bangerter, and Gardner

Disapproved: \_\_\_\_\_

Abstained: \_\_\_\_\_

Not Present: Sheffield, Lutali, Babbitt, Bordallo, Evans, Bryan, Tenorio, and Herschler



**Department of Energy**

Washington, DC 20585

AUG 22 1986

Mr. John G. Davis  
Director, Office of Nuclear  
Material Safety and Safeguards  
Nuclear Regulatory Commission  
1717 H Street, N.W.  
Washington, D.C. 20555

Dear Mr. Davis:

The Department of Energy issued in March of this year, as required by section 114(e) of the Nuclear Waste Policy Act of 1982 (NWPA), a Project Decision Schedule for the Radioactive Waste Management System. The Project Decision Schedule portrays the major milestones and the associated activities for which Federal agencies have responsibility with regard to the Radioactive Waste Management Program.

As indicated in the Project Decision Schedule (item 13(b) of Table I), the Nuclear Regulatory Commission (NRC) was to issue a proposed amendment in March 1986 to conform 10 CFR Part 60 to the standards issued by the Environmental Protection Agency (EPA) concerning the protection of the general environment from off-site releases from radioactive material in repositories. The Department notes that the proposed amendment was issued on June 13, 1986 (51 FR 22288). The Department further recognizes that this activity was essentially a procedural step. Since we were fully aware of the substance of the EPA standards and had been in close contact with NRC staff during the development of the proposed amendment to 10 CFR Part 60, we do not anticipate that this three month slippage will cause any delay in the continuing development of the Radioactive Waste Management System.

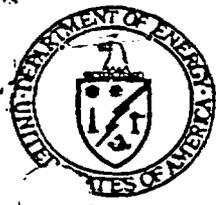
Given that background, the Project Decision Schedule has been updated to accommodate NRC's issuance of proposed conforming amendments to 10 CFR Part 60 in June 1986.

Should you have any questions regarding this, please contact me.

Sincerely,

A handwritten signature in cursive script that reads "Ben C. Rusche".

Ben C. Rusche, Director  
Office of Civilian Radioactive  
Waste Management



THE SECRETARY OF ENERGY  
WASHINGTON, D.C.

SAMPLE

July 30, 1986

Honorable James A. McClure  
Chairman, Committee on Energy  
and Natural Resources  
United States Senate  
Washington, D. C. 20510

Dear Mr. Chairman:

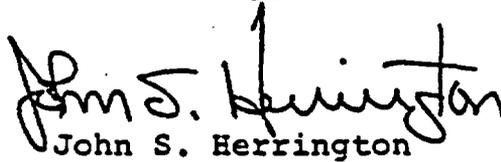
Thank you for your letter of June 11, 1986 in which you brought to my attention certain policy and legal concerns regarding the Department's administration of the Nuclear Waste Policy Act of 1982, and particularly the recent decision to suspend site-specific activities in the second repository program.

I agree completely with the point you make in your letter that the decision whether to proceed with a second repository is a matter that the Congress, and not this Department, must ultimately decide. By its nature that decision is one that will merit the most thorough consideration by the Congress, for as you observed in your letter the statute contemplates only a recommendation in the future for site-specific construction authorization for a second repository.

Please be assured that I am committed to providing the Congress a thorough and complete explanation of precisely how we believe the second repository program can best be carried out. The Department intends to accomplish this through formal amendment of the mission plan that the statute specifically requires for the program. In this way we can begin the task of assuring that the Congress has available to it all the information necessary for it to make the ultimate judgments regarding the future of the second repository program. I believe that approach will afford the Congress ample time to consider the policy merits of the course of action thus far taken, our progress in meeting the objectives of the Nuclear Waste Policy Act, and the opportunity to consider any amendments to that statute that might appear constructive or necessary.

Finally I wish to assure you that I am committed to administering this program in a way that reflects in good faith the Congress' judgment you described in resisting parochial considerations in formulating the Nuclear Waste Policy Act. I very much appreciate your sharing with me your concerns as part of the continued good faith cooperation with the Congress necessary to all our efforts in administering this statute.

Yours truly,

  
John S. Herrington

JAMES A. McCLURE, IDAHO, CHAIRMAN  
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LOWELL P. WEICKER, JR., CONNECTICUT  
PETE V. DOMENICI, NEW MEXICO  
MALCOLM WALLOP, WYOMING  
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GARY G. ELLSWORTH, CHIEF COUNSEL  
D. MICHAEL HARVEY, CHIEF COUNSEL FOR THE MINORITY

# United States Senate

COMMITTEE ON  
ENERGY AND NATURAL RESOURCES

WASHINGTON, DC 20510

June 11, 1986

The Honorable John S. Herrington  
Secretary  
U.S. Department of Energy  
1000 Independence Avenue, S.W.  
Washington, D.C. 20585

Dear Mr. Secretary:

We are writing to express our concern over the Department's recently announced decision to indefinitely postpone site-specific work on a second geologic repository under the Nuclear Waste Policy Act of 1982 (NWPA). We have questions about this decision as a matter of policy. In addition, and perhaps more importantly, the decision violates the clear statutory mandate of the NWPA that the Department proceed with a program for the siting of two geologic repositories, in accordance with a statutorily prescribed time schedule.

The Nuclear Waste Policy Act was enacted in 1982 after years of Congressional effort to achieve an equitable and workable balance of a great diversity of interests. As you may recall, numerous efforts were made in the course of the legislative debate to exclude individual sites, individual states, specific geologic media, or entire regions from consideration. The Congress voted overwhelmingly to reject such parochial efforts.

The bill ultimately enacted by Congress -- including provisions for the siting of a second repository -- strikes a delicate and carefully considered balance, in a manner designed to ensure the success of this most challenging undertaking. Your decision to postpone indefinitely the Department's site-specific work on the second repository program could destroy that delicate balance and might ultimately lead to an erosion of the technical balance and political compromise that was so essential to enactment of this Act in the first place.

The requirement to proceed with a program for the siting of a second repository is firmly established throughout the Act. Section 112(b)(1)(C) of the Act requires the Secretary to recommend to the President, not later than July 1, 1989, three sites that the Secretary determines are suitable for site characterization for selection of the second repository. Section 114(a)(2)(A) of the Act requires the President, not later than March 31, 1990, to recommend to the Congress one of the three sites characterized that the President considers qualified for a construction authorization for a second repository.

The decision on whether to proceed with a second repository is a matter that the Congress, not the Department, must ultimately decide. The Act has been carefully structured to ensure that the Congress will have the necessary information available to it -- including the extensive information that will be developed through the second repository program -- at the time that it must decide whether or not to authorize construction of a second repository. The

003123

The Honorable John S. Herrington

June 11, 1986

Page 2

schedules established in the Act are an integral part of this framework. The statutory framework does not, by design, give the Department the flexibility to tailor the repository program in the manner that your decision contemplates, based upon your judgment as to what is economically prudent, what the discharge rate of spent fuel is, or by the progress that you are making in siting the first repository.

The course that you have elected to take -- including your disregard of the statutory schedules and requirements for a second repository -- raises the real potential that Congress will not have the information before it to decide which of these two alternatives to pursue. If the Department disagrees with the carefully structured statutory framework of the Nuclear Waste Policy Act, we urge you to make your views known to Congress and to recommend whatever amendments are necessary, together with a detailed justification for such changes.

Accordingly, we ask that you provide us with a detailed memorandum of law setting forth the basis for the Department's decision, as well as a full explanation of the technical and financial implications of this course of action.

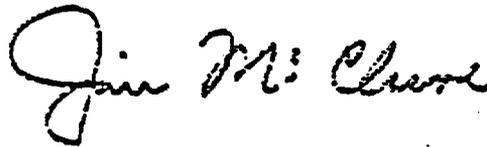
In addition, we ask that you promptly submit proposed legislation to modify the Nuclear Waste Policy Act in a manner that will reflect the conclusions that you have now reached about the need for and timing of a second repository. Alternatively, please submit a detailed programmatic and technical explanation of the steps that the Department intends to take to comply with the Act, including but not limited to the requirement that you recommend to the President, not later than July 1, 1989, three sites that are suitable for site characterization for selection of the second repository.

We trust that a timely resolution of these concerns can be achieved, and we look forward to a resumption of the good faith cooperation between Congress and the Department that has so greatly contributed to the success of the Nuclear Waste Policy Act to date.

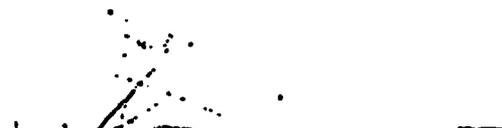
Sincerely yours,



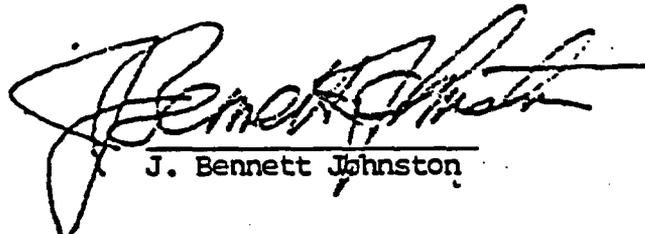
Morris K. Udall



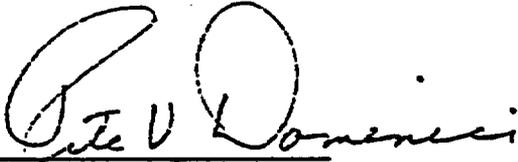
James A. McClure



Alan K. Simpson



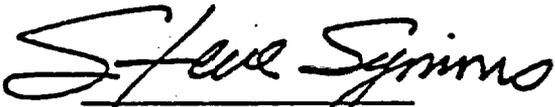
J. Bennett Johnston



Pete V. Domenici



Lloyd Bentsen



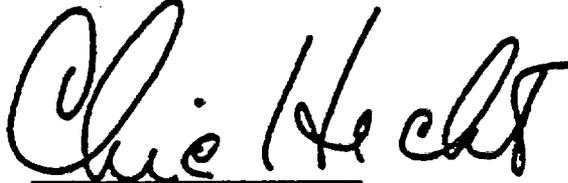
Steven D. Symms



Paul Laxalt



Daniel J. Evans



Chic Hecht



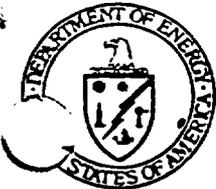
Phil Gramm



Slade Gorton



Sid Morrison



THE SECRETARY OF ENERGY  
WASHINGTON, D.C.

July 3, 1986

*SAMPLE*

Honorable Booth Gardner  
Governor of Washington  
Olympia, Washington 98504-0413

Dear Governor Gardner:

Thank you for the comments in your May 9, 1986, letter regarding the report by the Board on Radioactive Waste Management of the National Academy of Sciences (NAS) on the Department of Energy's application of the decision-aiding methodology to the selection of sites for characterization.

I appreciate your views concerning the Board's recommendation to involve "independent experts" in the application of the decision-aiding methodology and want you to know that such additional review and participation was considered. For the reasons outlined below, we believe that the involvement of outside experts, while enhancing the perceived credibility of the process, would not have significantly changed the insights obtained from the application of the methodology or the recommendation decision.

An important input to the methodology was the technical information contained or referenced in the now final Environmental Assessments (EAs). The Department's decision to make draft EAs available for comment provided an opportunity for the general public and independent experts to participate in the review of this technical information. The technical specialists who participated for the Department in the application of the methodology were all intimately familiar with the comments on and the information contained in all five EAs.

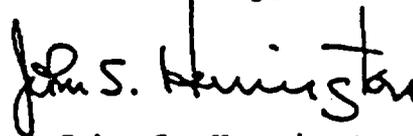
The NAS report noted that the "lack of external input in technical and value judgments could raise concerns about bias", (emphasis added). An important advantage of the selected methodology is that it allows sensitivity analyses to be conducted. Such analyses permit the reader to consider the effect of a range of

opinion (bias) regarding a particular assumption or judgment. The sensitivity analyses indicate which judgments and assumptions (e.g., weighting factors) most affect the ranking of the sites. The methodology report (DOE/RW-0074, May 1986) documents an extensive set of sensitivity analyses. In this regard, the Department was assisted by several outside experts in the field of decision analysis whose breadth of experience in other related problems provided valuable perspective on ways to take account of the values of a wide range of stakeholders. The Department believes that these sensitivity analyses are reasonably representative of such a range of stakeholders' opinions. The methodology report shows that the basic implications of the analysis are resilient to almost all changes in assumptions and judgments made in the sensitivity analyses. It is useful to note that in commenting on the potential for a perception of bias, the NAS Board found "nothing to indicate bias in the Department's implementation of the methodology and [that the Board] recognizes the value of the DOE sensitivity analysis."

Taken together, the reviews and sensitivity analyses provided the additional assurance that the Department sought before continuing. Accordingly, we determined that under the circumstances additional review and participation was not warranted and that it was in the public interest to proceed with the next steps in the site selection process.

If I can be of further assistance, please do not hesitate to call.

Yours truly,



John S. Herrington



STATE OF WASHINGTON  
OFFICE OF THE GOVERNOR

OLYMPIA  
88504-0413

BOOTH GARDNER  
GOVERNOR

May 9, 1986

The Honorable John S. Herrington  
Secretary  
Department of Energy  
Washington, D. C. 20585

Dear Mr. Herrington:

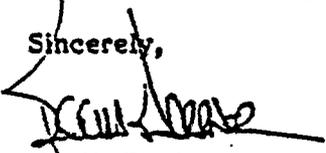
Thank you for sending the report of the National Academy of Sciences on the ranking methodology to be used in selecting sites for characterization. We believe that the Department has benefitted from the review.

In reviewing the history of this examination, we are struck by the consistent advice from the Academy's Board on Radioactive Waste Management and others that independent experts be brought into the assessment process itself, as well as into a review of the process. Our repeating the reasoning here would be redundant.

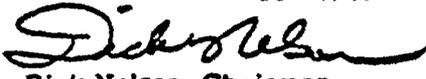
In view of the substantial contribution that bringing in the Academy thus far has made to the quality of the Department's product, we are at a loss to understand why you would not take the completing step and take that recommendation. We are convinced that not doing so will weaken the final product and also jeopardize its acceptance. Weakening and jeopardizing the selection process at this stage is not productive.

For all the reasons expressed here and by the Academy, we urge you to include knowledgeable individuals in the selection process and its review who are not DOE or contractor employees. To do so, even at this late stage, will markedly increase the credibility and strength of the final selection.

Sincerely,

  
Booth Gardner  
Governor

  
Al Williams  
Senate Energy and Utilities Committee

  
Dick Nelson, Chairman  
House Energy and Utilities Committee

cc: Ben C. Rusche,  
Office of Civilian Radioactive Waste Management



Department of Energy  
Washington, DC 20585

July 3, 1986

Honorable William Proxmire  
United States Senate  
Washington, D.C. 20510

Dear Senator Proxmire:

At the request of the Secretary, it is my pleasure to respond to your letter of May 8, 1986, which expressed concern that the present nuclear waste fee assessment system does not provide financial incentives to utilities to use nuclear fuel more efficiently and thereby decrease the amount of waste which must be disposed of by the Department. The present fee assessment system is prescribed by the Nuclear Waste Policy Act (NWPA) of 1982 and is based on the amount of electricity generated as opposed to the number of spent fuel assemblies discharged.

The Department is evaluating several possibilities of providing financial incentives to utilities to reduce the cost of waste disposal. These include actions or processes conducted by the utility which would reduce the cost of the Department's waste management system. The Department feels that this approach is fully consistent with the fiscal management of a full cost recovery program such as that mandated by the NWPA.

The Department has examined in some detail the effects of utility implementation of "extended burnup" and last year sent to the Congress a report entitled "A Study of the Costs and Benefits of Extended Burnup." A copy of this report is enclosed.

The report states that extended burnup of nuclear fuel, even though requiring higher initial enrichment, can significantly reduce overall fuel cycle costs for electricity production. However, waste management system costs are not reduced proportionally because even though fewer assemblies are required to produce a given amount of electricity, each assembly discharged would contain a greater quantity of fission products. This in effect causes the radioactivity and total heat generated in a fewer number of extended burnup spent

fuel assemblies to be approximately equal to that in the larger number of lower burnup assemblies. Repository costs, the major cost contributor to the waste management system, therefore remain relatively unaffected.

It should be noted that the implementation of extended burnup will also reduce utility on-site storage capacity requirements. Because costs to provide on-site spent fuel storage are the responsibility of the utilities, utilities with anticipated storage problems may have some additional incentive to implement extended burnup. In addition, extended burnup could provide benefits to the utility by reducing planned outages thereby enhancing the capacity factor of the plant.

In summary, unless the overall net efficiency of nuclear plants is increased, the quantity of fission products contained in spent nuclear fuel will be dependent only upon the amount of electricity generated and will therefore remain about the same regardless of burnup level. Because repository costs are proportional to repository volume and the repository volume remains approximately constant, "extended burnup" spent fuel has a relatively small effect on waste management system costs.

Thank you for your interest in the waste management program.

Yours truly,



Joseph F. Salgado  
Under Secretary

Enclosure

A STUDY OF THE COSTS AND  
BENEFITS OF EXTENDED BURNUP

PREPARED BY

THE DEPARTMENT OF ENERGY  
OFFICE OF NUCLEAR ENERGY  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

JUNE 1985

## A STUDY OF THE COSTS AND BENEFITS OF EXTENDED BURNUP

### Introduction

This study was conducted in response to a commitment by the Department of Energy (DOE) to evaluate the costs and benefits of extended fuel burnup on the entire nuclear fuel cycle. It consists of both engineering and cost evaluations of the effects of extended burnup on waste transportation, handling, storage, and disposal systems ("back end"), as well as on fuel fabrication, resource requirements, and reactor operations ("front end").

The fact that extended burnup can reduce the volume of spent fuel which would otherwise be generated has led to speculation that the facilities and services to be provided by the Federal Government for spent fuel disposal could be reduced accordingly. This has raised a question as to whether the DOE should do more to include the effects of extended burnup in its efforts to implement the provisions of the Nuclear Waste Policy Act of 1982 (NWPAA). Specifically, the General Accounting Office report states that "DOE Needs to Evaluate Fully the Waste Management Effects of Extending the Useful Life of Nuclear Fuel" (GAO/RCED-84-111). The results of such evaluations are also pertinent to current discussions about the appropriate nature and the extent of any additional research and development that should be performed on extended burnup in the near term and whether such research and development should be sponsored by the Government.

Two reports were commissioned by the DOE specifically for the purpose of this study. The first, prepared by the S. M. Stoller Corporation (Reference 1), focuses on the effects of extended burnup on the "front end" of the nuclear fuel cycle: the purchase of natural uranium concentrate, chemical conversion to uranium hexafluoride, enrichment in fissile uranium, fabrication of fuel assemblies, and the operation of the nuclear power plant. The second report was prepared by Roy F. Weston, Inc. (Reference 2). It evaluates the effects of extended burnup on the waste management system, including at-reactor storage, transportation and repository development and operations. A third study was a survey of private sector views on incentives for extending burnup as reflected in letters, published statements, congressional testimony, and discussions with utilities, their fuel suppliers and other concerned industry organizations. This study was prepared by the Department's Office of Nuclear Energy (Reference 6). To judge whether or not waste management cost saving trends appeared reasonable, the DOE evaluated other material as well. This material included a recent report by the Battelle Memorial Institute (Reference 3) and some earlier studies of the effects of burnup on the waste system. These reports represent the views and opinions of their authors, and are not necessarily the views of the DOE. Summaries of and an evaluation of the salient conclusions from these reports are provided in the Appendix.

## Conclusions

In general, extending the burnup of nuclear fuel can be of benefit to both the front end and the back end of the nuclear fuel cycle. Up to a point these benefits can be realized with little additional costs for research and development; this point represents an extension of design burnup levels to about 50,000 and 40,000 megawatt-days per metric ton of uranium, (MWD/MTU) for pressurized water reactors (PWR), and boiling water reactors (BWR), respectively. The levels of fuel burnup typically achieved today are, 33,000 MWD/MTU and 28,000 MWD/MTU for PWR and BWR fuels, respectively. The advantages of extending burnup to these levels have stimulated utilities to begin extending the burnup of their fuel in a gradual, responsible manner. This gradual implementation is expected to continue over the next 10 to 15 years. Furthermore, extending burnup to these levels does not require major changes in fuel assembly design and fabrication. Additional new research and development would not accelerate this implementation in the near term, because implementation appears to be constrained by the rate at which the industry as a whole can prudently introduce these changes and gain experience from them.

There are both advantages and disadvantages to extending burnup beyond the currently anticipated design level that may be achieved as a result of the current research and development (50,000 and 40,000 MWD/MTU for PWR's and BWR's). Additional new research and development on advanced fuel assembly designs will be needed to achieve these higher levels if they are desirable. The advantages and disadvantages of such an extension for the front end of the cycle are distinct and separate from the advantages and disadvantages for the back end. It is estimated that the research needed to achieve these higher levels would cost approximately 35 million dollars over the next ten years. Implementation of these higher burnup levels could save up to 600 million dollars in front end fuel cycle costs and about 100 million dollars in back end fuel cycle costs. These potential savings would accrue through the year 2020 and are highly dependent on the assumptions used. The utilities, the public utility commissions (PUCs) and the ratepayers will eventually require more information on the advantages and disadvantages to make appropriate investment and reactor operating decisions on whether or not to pursue these very high levels of burnup. The utilities are primarily responsible for and in control of the front end. They already have the ways and means of acquiring the information needed to evaluate front end effects, including initiating any new research and development.

The DOE's Office of Civilian Radioactive Waste Management (OCRWM) will continue to evaluate information on the effects of extended burnup to the back end of the fuel cycle, factor this information into the planning base for its waste management system and provide this information to the utilities. While this information could affect utility decisions in the late 1990s, it is unlikely to affect decisions before that time because the extension of burnup to levels already shown achievable is unlikely to be fully achieved by then.

Savings in the cost of waste disposal could result from the widespread implementation of extended fuel burnup to currently projected levels. If these benefits in fact materialize, they will decrease the total cost of the waste management program, and will be realized by the utilities through adjustments of the waste disposal fee which is reassessed annually to ensure full cost recovery of disposal program costs. The disposal system will receive spent fuel of varying burnup levels and current plans anticipate that some fuel with very high burnup levels will be received. Projections of spent fuel inventories and characteristics will continue to be developed and refined. These projections will take into account trends toward increased burnup.

One of the effects of extended burnup is a reduction in the volume of waste generated, but this reduction does not result in a proportional reduction in repository size, the number of disposal packages, or even transportation requirements. The overall disposal system requirements depend more on the total amount of radioactivity and decay heat generated by the waste than the volume of waste. These in turn depend on the energy extracted or number of fissions in the reactor. The number of fissions that take place to produce a given amount of electrical energy is relatively unaffected by the burnup levels achieved by individual assemblies. Thus, at very high levels of burnup, waste disposal savings, though significant in terms of the dollar value, are projected to be less than 4 percent of the total program cost.

Extended burnup can provide some benefits for at-reactor storage. Utilities recognize this and can easily factor it into their plans for meeting or reducing storage needs. The decisions about extending burnup and to what degree should remain with those to whom the costs and the benefits accrue, namely the utilities and ratepayers. The current research and development being sponsored by the DOE should be completed in an orderly fashion, but there appears to be little incentive or need to initiate new research

and development at this time. Several years will be required to establish how currently anticipated extended fuel burnup will affect the aggregate spent fuel discharge from the reactors. During this time, utilities, their PUC's and ratepayers will be able to ascertain whether there will be benefits to the front end by going to higher levels, and the DOE will be developing similar information for the back end.

#### Current Status of Extended Burnup and its Implementation

More than 50 fuel assemblies have been or are currently being taken to extended burnup levels under both Government and private-sector funded research and development projects in the United States. The highest average assembly burnup levels attained are 55,000 MWD/MTU and 46,000 MWD/MTU for PWR's and BWR's. Neither those assemblies nor any of the others taken to extended burnup levels have exhibited any failures. Destructive examination of the majority of this experimental fuel to measure the physical effects of the prolonged irradiation will continue to be conducted. The destructive examinations of the two highest burnup assemblies for each fuel type have been recently completed, but the full results have not yet been published. Many of the contracts under which this research has been conducted have been completed; others are still under way. Government funding for extended burnup through FY 1985 is estimated to total approximately 80 million dollars. The FY 1986 budget request is 3 million dollars and the funding expected to be needed beyond FY 1986 for completing existing Government supported contracts is 6 million dollars.

To relate burnup levels achieved in test assembly irradiations to power reactor fuel operation, it is important to understand that a power reactor fuel batch of many assemblies cannot be burned absolutely evenly; such batches must be designed and licensed for the highest burnup assembly in the batch. Batch average design burnup levels for commercial reactors therefore are typically 10-15% lower than the maximum assembly burnup level within each batch. In addition, average batch burnups of fuel realized from commercial reactors are usually somewhat below their design values because it is conservative for utilities to base their fuel cycle designs on optimistically high capacity factors rather than on the average capacity factors achieved. Thus, the maximum assembly burnup levels achieved in test assembly irradiations are estimated to support design discharge batch average burnup levels of 50,000 MWD/MTU and 40,000 MWD/MTU for PWR's and BWR's, respectively. These design values can reasonably be expected to lead to average discharge values on the order of 45,000 MWD/MTU and 38,000 MWD/MTU for the two reactor types, respectively.

Considerable time is required for these higher burnups to be realized in commercial reactors. Time is needed for data analysis, publication, peer review, consensus building, acceptance, and the use of research results for design and licensing. More time is then needed for the procurement of reload fuel, for its fabrication, and then for burning it to the newly extended burnup levels. For example, the batch average burnup levels indicated in the previous paragraph are attained after about 5 years of residence time in a power reactor. For these reasons, it is expected that the attainment of the burnup levels that can be justified by the current research and development projects (45,000 MWD/MTU for PWR's and 38,000 MWD/MTU for BWR's) will require 10 years or more. For the same reasons, the higher burnup levels being implemented by utilities now are based primarily on the research results of several years ago.

A 1984 survey of implementation of extended burnup by the utilities indicated that burnup extensions of 10 percent or more over the historic design values of several years ago had been firmly decided for just over 75 percent of the light water reactor power generating capacity of the United States. In many of these cases, implementation had progressed far beyond a firm decision to extend burnup. For example, the highest batch average discharge burnup already achieved from a utility reactor, 40,000 MWD/MTU, represents a burnup extension of just over 20 percent more than the historic maximum design value of 33,000 MWD/MTU for pressurized water reactors. Similarly, the highest design values now committed to commercially (but not yet achieved) are 45,000 MWD/MTU and 36,500 MWD/MTU for PWR's and BWR's, respectively. These represent burnup extensions of 36 and 29 percent above the historic maximum design values.

#### Effect of Further Burnup Extension on the Front End of Fuel Cycle

As described in the preceding section, the extended burnup research and development already conducted together with the completion of current contracts is projected to lead to the ultimate realization of national average discharge burnups of 45,000 MWD/MTU and 38,000 MWD/MTU for PWR's and BWR's, respectively. Burnup optimization studies recently conducted by the S. M. Stoller Corporation (Reference 1) in support of this report indicate that the optimum values could be somewhat higher, but the optimization curves tend to be quite flat, indicating diminishing returns for further burnup extensions. These optimization studies were conducted for idealized cases of constant refueling intervals.

The Stoller report estimates that further burnup extension to national average discharge burnup levels of 50,000 MWD/MTU and 45,000 MWD/MTU for PWR's and BWR's, respectively, would produce economic benefits for the nuclear utilities and their ratepayers. These benefits discounted to 1985 have been estimated to be on the order of 600 million dollars in front-end costs for the lower (no new orders) of the Energy Information Administration (Reference 4) nuclear power growth projections. Achievement of these higher burnup increments of 50000 MWD/MTU and 70000 MWD/MTU for PWR's and BWR's, respectively, would require additional research and development on the front end technology to allow nuclear fuel to be designed, licensed, and operated to these higher burnup levels. This work would be technically similar to the research and development conducted under existing contracts but with greater emphasis on modified or advanced designs incorporating higher enrichment and burnable poisons. The expenditures for this kind of research and development have been estimated to total 35 million dollars over a period of 8-10 years. The highest costs would be concentrated at the beginning and the end of the period, when the fuel irradiations are initiated and when the destructive examinations take place. In discounted 1985 dollars commensurate with the previous estimate of benefits, this estimated research cost is equivalent to 23 million dollars.

#### Effects of Extended Burnup on the Waste Management System

The waste management system considered includes at-reactor storage, transportation and a repository. The next sections will discuss the effects of extended burnup on each of these waste management system components and be followed by a summary analysis of waste management cost impacts.

##### At-Reactor Storage:

As shown in the Weston Report (Reference 2), the decrease in the number of spent fuel assemblies discharged due to extended burnup will generally result in a reduction in spent fuel storage requirements at the reactor site. Present projections for additional excess capacity requirements for at-reactor dry storage based on 33,000 MWD/MTU and 28,000 MWD/MTU for PWR's and BWR's are 6800 and 7400 MTU for the EIA "no new orders" and "middle-case forecasts, respectively. These values would be reduced by about 2000 MTU for each forecast if extended burnup was implemented to a level of 60,000 MWD/MTU and 45,000 MWD/MTU for PWR's and BWR's by the specific reactors that have either

limited in-pool capacity or transshipment capability. For these specific reactors a savings of \$100,000 per MTU of spent fuel dry storage is estimated from the Weston Report. Assuming the waste acceptance schedule used in the draft Mission Plan (Reference 5), dry storage would be required until 2007 without extended burnup and to 2004 with extended burnup. After the years 2004 and 2007, existing in-pool storage capacity will probably be sufficient for storage until the fuel is cooled and ready for transfer to a repository.

#### Transportation:

Generally, the currently available transportation casks could carry extended burnup fuel at their design capacity, unless limited by criticality concerns. Fuel designed for very high burnup will generally have a higher initial enrichment in fissile uranium than lower burnup fuel. The Nuclear Regulatory Commission requires that transportation cask capacities be determined under the assumption that the fuel to be transported is fresh, unirradiated fuel. This may result in a reduced cask capacity.

If the Nuclear Regulatory Commission allows credit for burnup in criticality calculations and the fuel is cooled sufficiently at the reactor sites, cask capacities would not be reduced. A reduction in the number of spent fuel assemblies discharged would then result in a proportional reduction in the number of cask-miles required to transport the spent fuel to the repository.

#### Repository:

Thermal limits represent constraints imposed on the maximum design temperatures in the repository and waste package after emplacement. These constraints are required to assure satisfactory repository performance and to control undesirable release of radionuclides to the biosphere through time.

These thermal limits can potentially constrain the design of waste packages and the repositories in which the packages are to be emplaced. These limits include:

- o A waste centerline temperature limit--a limit which may not be exceeded without adversely affecting the structure of the waste form.
- o A "near-field" rock temperature limit--a limit which may not be exceeded without adversely affecting the integrity of the repository host rock.

- o A "far-field" rock temperature limit--a limit which may not be exceeded without adversely affecting the host rock above and adjacent to the repository
- o A time dependent "near-field" temperature limit--a limit intended to constrain leaching and dissolution of the waste form following loss of containment.

In general, any set of values may be assigned to the above limits. However, the particular set of values assigned leads to a specific repository design and waste package performance. The set of values chosen also leads to specific design and costs which are dependent on the repository thermal conductivity and waste package heat generation rate. Transient heat transfer calculations are used to establish the maximum allowable waste package heat generation rate that does not exceed these temperature limits for each repository design. When the heat generation rate per waste package is constraining, the number of extended burnup spent fuel assemblies that can be loaded in a waste package must be reduced to account for their increased decay heat generation.

If a nonintegral number of assemblies are placed in each package, the capacity of the waste package is increased somewhat, while meeting the constraint on decay heat. The accountability for spent fuel elements that are disassembled and placed in different waste packages becomes more difficult. Current repository plans assume an integral number of assemblies per package, but this could be changed if conditions warrant.

The thermal limits of the repository determine the area required for the disposal of spent fuel. Therefore, though extended burnup provides reductions in the number of assemblies, or metric tons of spent fuel, the areal sizes of the repositories are about equivalent to that required for the present base burnup scenario because the total decay heat dissipation requirements remain about the same for the same integrated fuel exposure or energy extraction. Cost savings may be accrued by cooling spent fuel before emplacement to allow a larger quantity of spent fuel to be emplaced per unit of repository area. This option is available regardless of burnup level. However, pre-emplacement cooling would also result in additional pre-emplacement storage costs.

#### Total Waste System Costs:

In general it appears that extended fuel burnup will be implemented gradually by the utilities in accordance with their needs. The rate of implementation and the burnup levels that

will be achieved are uncertain. Thus the spent fuel inventory will contain a broad distribution of burnups from under 5000 up to 60,000 MWD/MTU. For example, the average discharge burnup in 1983 was approximately 30,000 MWD/MTU for PWR's and 24,000 MWD/MTU for BWR's. The weighted mean average burnup discharge for all assemblies discharged before April 7, 1983 was 26,450 MWD/MTU for PWR's and 19,700 MWD/MTU for BWR's. Other recent studies on the cost effects of extended burnup appear to indicate that cost savings can be realized from an industrywide implementation of extended burnup. The study by the Battelle Memorial Institute (Reference 3), estimates minimum cost as a function of homogeneous ages and burnup levels. An estimate of the maximum cost savings that could be achieved relative to current repository designs can be developed by this approach, even though this estimate is based on hypothetical conditions. These maximum cost savings do not include development and evaluation costs and only refer to a waste management system with a single salt repository. The base case for this calculation assumes a repository containing fuel with a burnup level of 33,000 MWD/MTU aged for 10 years and with an annual throughput of 3,000 MTU. The calculated cost for this base case is approximately 5.6 billion dollars for a capacity of 70,000 MTU. If all the fuel emplaced were at a burnup level of 50,000 MWD/MTU and 10 years old, the repository would only be required to emplace 46,200 MTU and the associated cost would be approximately 5.2 billion dollars for the same energy extraction. This represents a maximum cost savings of about 400 million dollars or about 8 percent of this repository cost for fuel burnup to this level. If the maximum burnup level achievable is 60,000 MWD/MTU, then the repository would only be required to emplace 38,500 MTU and have an annual throughput of 1650 MTU for the same energy extraction. The associated cost would be about 5.0 billion dollars. This represents an additional cost savings of about 200 million dollars or about 2 percent if the burnup level is increased from 50,000 to 60,000 MWD/MTU. This cost savings envelope which utilizes optimized rail transportation, and repository construction and operations costs for a hypothetical spent fuel inventory, will bracket the cost savings for the realistic cases in which the emplaced waste consists of a spectrum of spent fuel burnup levels and age. For example, the analysis by Roy F. Weston (Reference 2), indicates that the repository costs for all systems remain about the same as burnup increases if non integral waste package loading is assumed. The transportation cost for all systems decreases as burnup increases. The results indicate that a net reduction in transportation costs for an incremental increase in burnup from 38,000 to 40,000 MWD/MTU for BWR's and 45,000 to 50,000 MWD/MTU for PWR's is about 100 million dollars. This result is consistent with the scoping study by Battelle Memorial Institute.

Utilities are expected to continue the trend toward higher burnup levels utilizing current fuel designs. On the basis of these trends and data on fuel that has already been discharged, the waste management program can continue to develop and refine projections, with quantities and characteristics, for the spent fuel inventories that will eventually be emplaced in the repositories. Furthermore, the repository designs will continue to consider these projections. In any event, the spent fuel inventory will consist of a wide range of burnup levels. Consequently, repository designs will have the flexibility necessary for a wide range rather than be optimized for a single average burnup. In addition, considerable uncertainty remains in the projected costs of the waste management system. The currently projected cost effects of extended fuel burnup are expected to fall within these uncertainties.

As the development of the waste management system progresses the cost uncertainties will be reduced. In estimating the cost effects of extended burnup at this early stage of the waste management program, it is essential to ensure comparability by using the same cost basis for each element of the system. Therefore, cost results should not be interpreted as actual system costs. However, differences may represent a higher degree of certainty with respect to trends than to the total costs.

The term "Total System Life Cycle Cost" (TSLCC) as used by the Office of Civilian Radioactive Waste Management (OCRWM) includes all costs for the total program and is derived from the summation of the costs in four major categories:

- o Development and evaluation
- o Transportation
- o Repository
- o Storage

The component costs evaluated in this study refer only to the latter three categories and do not include the development and evaluation (D&E) cost of the waste management system. This cost category covers all the siting, design, development, testing, regulatory and institutional activities associated with the waste system and is therefore a major system cost. D&E costs are considered to be only minimally affected by changes in burnup.

The DOE believes that it would be inappropriate at this time to use the Nuclear Waste Program fund to encourage the increase of burnup levels beyond those otherwise desired by the utilities. The Federal waste management system is obligated to accept and will receive spent fuel of varying burnup level in any event. Furthermore, Congress elected to fund the waste management program by imposing a fee on the electricity generated. This decision was made after considering the alternative, i.e., charges based on the volume or the quantity of spent fuel. To create added incentives for extended burnup through the Nuclear Waste Fund would require changing the current fee structure to base it on volume or quantity rather than on energy generated.

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3. Spent Fuel Burnup and Age: Implications for the Design and Cost of a Waste Disposal System, BMI/ONWI-561, Battelle Memorial Institute, (December, 1984)
4. Commercial Nuclear Power 1984: Prospects for the United States and the World, DOE/EIA 0438 (84) (Washington, D.C., October, 1984)
5. Mission Plan for the Civilian Radioactive Waste Management Program, DOE/RW-0005 Draft, Office of Civilian Radioactive Waste Management (April, 1984)
6. Private Sector Incentives for Extending Burnup of Fuel in Light Water Reactors, Office of Converter Reactor Development, Office of Nuclear Energy (February 1985)

## APPENDIX

### SUMMARY AND COMMENTS ON REPORTS PREPARED FOR DOE

#### S. M. Stoller Report

The Stoller Report was commissioned to study the effects of extended burnup on the front end of the fuel cycle. The front end was assumed to consist of the purchase of natural uranium concentrate, its chemical conversion to uranium hexafluoride, enrichment, fabrication of fuel assemblies, the operation of the nuclear power plant to generate electricity, refueling of the reactor, and the short term storage of spent fuel in the reactor's spent fuel pool; i.e., all of the operations that are the responsibility of the electric utility up to the time that spent fuel is shipped from the nuclear power plant to a government facility. The back end of the fuel cycle was assumed to include all operations from the time the fuel is shipped from the reactor spent fuel storage area until it is emplaced in a repository for permanent disposal and is, under the Nuclear Waste Policy Act of 1982, the responsibility of the Federal Government. Front end and back end costs were used to calculate the total fuel cycle costs for a number of different burnup levels, followed by a search for the lowest total cost. Back end charges to the utility are independent of burnup as provided in the Nuclear Waste Policy Act of 1982.

Projections of the design discharge burnups likely to be offered by the fuel suppliers were developed by Stoller for two cases, with and without further Government support for extended burnup research and development beyond the completion of work now under way.

Corresponding estimates of the rates at which utilities might adopt these higher burnups were also made. Sets of fuel cycle cost calculations typical of both pressurized and boiling water reactors were developed for annual and 18-month refueling intervals and for two nuclear power capacity forecasts provided by the DOE/Energy Information Administration (EIA) (Reference 4) over the time frame through the year 2020, using the projected burnup levels. Unit costs for uranium, conversion, enrichment, fabrication, and spent fuel disposal were forecast over the same time frame and used in the fuel cycle cost calculations. Fabrication cost increases were estimated for the higher burnup levels and two alternative disposal fee assumptions were established in addition to the previously indicated assessed fee on electricity generation as prescribed by the Nuclear Waste Policy Act of 1982. One of these was intended to represent an

extreme, bounding case. Total national nuclear fuel cycle expenditures were calculated, discounted to 1985, and summed over the total forecast nuclear generating capacity through 2020 for each case.

The difference in estimated front end fuel cycle expenditures between the cases with and without further government funding of extended burnup research and development were estimated at approximately 1 percent of total fuel cycle expenditures or about 600 million dollars discounted to 1985 for front end costs in the case of the lower (no new orders) of the two EIA (Reference 4) forecasts. For the higher (middle growth case) forecast, savings were projected to be slightly higher, 635 million dollars. For these results, back end charges to the utilities were calculated as a fee on generated electricity.

The costs to the Federal Government for additional support of extended burnup research and development to enable utilities to extend the batch average burnup levels of the fuel discharged from their nuclear reactors up to 50,000 and 45,000 MWD/MTU for PWR's and BWR's, respectively, were estimated by the DOE staff to be 35 million in as-spent dollars. This estimate was provided to S. M. Stoller together with a projected expenditure schedule. After de-escalating and discounting these forecast expenditures to 1985, Stoller arrived at an estimate of 23 million dollars. These costs represent research and development in the field of nuclear fuel technology (i.e., front end technology) and are estimated to produce the required new technology that would allow utilities to achieve these higher burnup levels.

#### Evaluation:

The kind of projections included in the Stoller report necessarily involve a high degree of judgment given their long-term nature; this applies both to projections of future burnup levels and to projections of fuel cycle component costs. The burnup projections were based, in part, on historical data, both for batches of fuel discharged from reactors and for test assemblies irradiated under research and development projects. The cost projections were based, in part, on a utility survey and are probably representative of costs used by utilities in their fuel cycle analyses. Stoller has over 25 years of experience in making these kinds of projections and analysis for utilities and has during that time served more than half the nuclear utilities in the United States. Many utilities have based technical, procurement, and strategic decisions relative to nuclear fuel and fuel cycles on Stoller projections and analyses. For these

reasons, the projections are believed to represent the best estimates attainable within the limits of this study. Nevertheless, appropriate caution is advised in their use, given the uncertainties inherent in any projections extending 35 years into the future.

An analysis of the Stoller results indicates that a substantial fraction of the predicted fuel cycle cost saving is due to savings in uranium costs. The uranium price projections were made to be representative of uranium purchased by utilities under long-term contracts. The long-term contract prices used in this study are considerably higher than the current spot market price. Utilities make over 90 percent of their uranium purchases under long-term contracts, since such purchases provide them assurance of long-term supplies at stable and predictable costs. In reviewing the Stoller results, it should be kept in mind that projected savings would become smaller or larger as uranium prices paid become lower or higher than the projected values. In the Stoller report the sensitivity of fuel cycle cost savings with respect to the unit cost values selected is unclear. Any future analysis would be expected to include additional sensitivity analysis of the unit cost values.

#### Roy F. Weston Report

The purpose of this study was to examine the effects of extending fuel burnup levels on the inventory and characteristics of the spent fuel discharged from commercial reactors and the resultant impacts on the waste management system as currently envisioned. The waste management system analysis consisted of four cases of utility implementation of extended burnup. Two of these cases were based on historical data, present utility planning and future estimates for the level and rate of extended burnup. These were provided by the S. M. Stoller Corporation. One case considered no additional research and development and the other case considered additional research and development. They are defined here as the "medium" and the "high" burnup cases. No distinction was made as to the origin (federal, private or foreign) of the research and development in either case. Cumulative and annual spent fuel discharges were estimated by the Energy Information Administration using current forecasts of electricity generation under different scenarios. Spent fuel characteristics for each case were then determined. Two additional scoping cases were also considered. A hypothetical upper bound case referred to as the "peak" burnup case represented the implementation of extended burnup without any

constraint on the availability of fuel or plant operations. It assumed that all fuel entering the fuel cycle beginning in 1984 and beyond would be designed for a maximum burnup of 60,000 MWD/MTU. The other major scoping case, the "base" case, is at a constant level of 33,000 MWD/MTU and 28,000 MWD/MTU for PWR's and BWR's. The base case represents the lower bound in which the assumed burnups remain at the levels achieved to date.

All burnup levels were considered to be aggregate values and average for the discharge from commercial reactors in the U.S. In all cases the discharge burnup was assumed to be 90 percent of the design burnup. No defense waste was considered in any case.

The costs of storage, transportation and disposal for each case in the two EIA (Reference 4) forecasts of nuclear generating capacity scenarios were calculated. In addition, sensitivity studies were performed to determine the cost effect of changes in spent fuel age from 5 to 10 years, the packaging of integral assemblies versus nonintegral assemblies, the reduction of repository receipt rates from 3000 to 1800 MTU per year, and a discounted value analysis. These costs did not include fixed waste management system costs which could constitute one-third of the Total System Life Cycle Costs. The component costs are derived from the April 1984 draft Mission Plan (Reference 5) or from studies containing current estimated costs.

The studies indicate that the total waste system costs could decrease with increasing burnup. Overall cost reductions compared to the base case on the order of 500 to 600 million dollars are estimated for a two repository, salt/granite, system and reductions of the order of 500 million to 1 billion dollars are estimated for a basalt/granite system. In the basalt/granite system, it is noted that this relatively higher value compared to the salt/granite system is strongly influenced by the integral assembly constraint.

The reduction in the quantity of spent fuel results in a commensurate reduction in transportation costs because transportation cask capacities are generally not affected by extended burnup, assuming NRC criticality requirements are satisfied. Therefore, transportation costs show a downward trend with increasing burnup.

The repository costs depend mainly on the number of waste packages that must be emplaced, assuming a standard heat load. Because of this, the repository costs show no general trend as the burnup level is increased above the base case. The peak

burnup case showed a higher repository cost than the base burnup case because of the increase in the number of packages required. The peak burnup case is affected more strongly than any of the other burnup levels by the integral assembly constraint on the waste package. Repository operating costs are reduced because of the reduction in the quantity of spent fuel that must be handled, but this effect is small in comparison with that of the number of packages emplaced.

As the burnup level is increased, the total system costs show a downward trend, mainly because of the reduced transportation costs.

#### Evaluation:

Weston used a total system approach to the analysis. The study constraints and assumptions used by Weston resulted in interesting cost comparisons. These results indicate that as the burnup is increased from 33,000 to 50,000 MWD/MTU, cost trends are generally downward. As the burnup increases from 50,000 to 60,000 MWD/MTU, this trend reverses somewhat because of increased heat and radiation associated with high burnup fuel and the high waste acceptance rate used for this reduced volume of fuel. The report does acknowledge that an optimized system would tend to lower costs when adjustments are made in shipping cask design and in repository design for the specific volume and characteristics of high burnup fuel. It also acknowledges that the magnitude of these cost differences is sensitive to the number of fuel assemblies placed in the waste package.

The use of current repository designs without design adjustments for reduced receipt rates and without design adjustments for optimized package and emplacement requirements for high burnup fuel may bias results in favor of current burnup levels. Receipt rates at the repository could have been reduced for high burnup fuel to be consistent with generation rates of extended burnup spent fuel.

The quantities of spent fuel discharged decrease with increased burnup. This will free up storage space in at-reactor pools, allowing longer aging at essentially no increase in storage costs. Older wastes and reduced delivery rates to the repository will both tend to reduce costs.

The report shows trends for waste systems savings due to extended burnup. Trends that indicate increases in cost for higher burnups are uncertain because of the constraints and study assumptions.

The report also provides qualitative discussions of the quantities and characteristics of extended burnup spent fuel and their effects on the waste management system, including repository design and storage requirements.

### Battelle Memorial Institute Report

The purpose of this report was to provide an initial analysis to anticipate and bound the major design and cost implications associated with different waste ages and burnups. This was achieved by limiting the analysis to extreme cases that assume that all the waste emplaced in a repository is of a given burnup and age. This should provide an upper bound to any cost savings because it represents an ideal optimized repository loading and receipt rate.

The costs of salt repositories loaded with high burnup fuel were compared to the reference design case of 10 year old, 33,000 MWD/MTU fuel. All waste was assumed to be transported by rail and the host rock of the repository was salt. The costs were calculated using a waste disposal cost model, and the costs considered as total cost were the costs for transportation, packaging and the construction, operation and decommissioning of a repository. Fixed "development and evaluation" costs were not included in the total costs.

For each case, all waste was assumed to be at the same specific age and burnup level. Different annual throughputs, repository capacities, repository spacings and waste package sizes were derived for each different burnup case.

The report presents three conclusions. First, the initial repository will most likely be filled with waste at an average burnup of 33,000 MWD/MTU. Second, older and colder waste can be transported and emplaced in larger packages, resulting in cost savings. Third, as the waste becomes hotter and more difficult to handle (e.g., with extended burnup), some waste system component costs increase, but, since spent fuel discharges decrease a net reduction in disposal costs is possible.

### Evaluation

A comparison of the results of the Weston and Battelle reports with respect to system costs provides some insight into cost trends and total costs or cost savings. The reference or base

case for the Weston report was essentially the same as the one in the Battelle report. Both are based on a 33,000 MWD/MTU burnup level and a 3,000 MTU annual receipt rate, the major difference being the age of the spent fuel. In the Weston case the fuel is 5 years old. The Battelle report also has one case at 5 years, and the reported cost is 5.8 billion dollars (1983). When the Weston case is adjusted by assuming half the transportation costs are attributed to each repository, the equivalent cost for that case is 6.7 billion dollars (1985).

This difference may be attributed to the fact that, whereas the Weston report considers a waste inventory that contains a considerable amount of spent fuel at a burnup level less than 33,000 MWD/MTU, the Battelle report considers it as constant. In addition, an adjustment for different year dollars would result in comparable costs. Since both are based on similar assumptions and use essentially the same cost model, they were not expected to be drastically different. The effect of increased aging from 5 to 10 years results in a savings of 200 to 400 million dollars, depending on extended burnup level. In the Weston report this savings is 300 million dollars when adjusted to the base case.

#### Summary of Incentives Study

The approach to the study of private sector incentives for burnup extension was to consult key industry organizations to obtain perceptions of their incentives. Although discussions and meetings were conducted with many organizations, only their written statements were used in analyzing responses and formulating conclusions. The issues raised dealt both with present incentives and with possible future incentives. For the present incentives, respondents were requested to distinguish between incentives to implement the available technology in nuclear power plants and incentives to privately fund research and development to extend burnups to even higher levels. For possible future incentives, respondents were requested to discuss their preferences. The findings of the incentives study are summarized as follows:

1. The incentives for nuclear utilities to implement available extended burnup technology in their operating reactors are adequate. This is supported by many industry statements, and more importantly, by utility past actions and firm decisions to undertake future implementation actions, as shown by the results of a joint (Department of Energy and Electric Power Research Institute) survey on implementation of extended

burnup by U.S. utilities. That survey indicated that burnup extensions of 10 percent or more over the historic values prevailing several years ago are now being implemented for more than 75 percent of U.S. light water reactor power plant capacity. That trend is expected to continue. Extensions of about 35 percent have been shown to be reasonably achievable without any further research and development or major modifications to current fuel designs now being introduced.

2. The incentives for the private sector to fund extended burnup research and development to go beyond this 35 percent extension are presently perceived by the organizations that would potentially fund such work as inadequate. Again, this is supported both by industry statements and by the past and anticipated future funding of such research and development by private sector organizations, the total of which is currently very low.
3. Of the various suggested means of providing new incentives to the private sector to increase burnup, some kind of change in the net cost to utilities of spent fuel disposal to make it dependent on the volume of waste to be disposed of received the most support. Most respondents favored providing utilities direct compensation or credits against their waste management fees for burnup extension. This kind of change in the net waste disposal cost would undoubtedly be an additional incentive to utilities to implement extended burnup. However, it is doubtful whether it would elicit a much higher level of investment in extended burnup research and development from the private sector.
4. Modification of full fuel-cost passthrough clauses in utility rate regulation was also discussed and potentially could provide an additional incentive for burnup extension. However, it is not clear whether and how that approach can effectively be pursued through Federal Government actions.
5. Since the Federal waste management program and the consumers of nuclear generated electricity are perceived by the nuclear industry as the major beneficiaries of extended burnup, neither the utilities nor the fuel suppliers surveyed believe that they can be expected to fund the majority of the research and development. To the extent that such work is funded by the Federal Government, all taxpayers bear its costs.

## Evaluation:

The incentives for the private sector to fund extended burnup research and development and thereby to extend burnup levels beyond those which are currently being accepted as proven are presently perceived as inadequate by the organizations that would potentially fund such work, these perceptions may be somewhat self serving as long as the Federal Government continues to support the needed research and development. The Federal activities in the area could well displace potential activities on the part of the private sector. The likelihood of potential Federal displacement of private sector activities increases as more knowledge of the benefits and understanding of the development risks become apparent from past and ongoing research and development activities. In addition to cost benefit considerations, smaller, less readily quantifiable benefits may be possible from the implementation of extended burnup already underway. These include occupational radiation dose reduction and higher nuclear plant availability due to less frequent refueling. Also, resource conservation through lower uranium consumption would tend to maintain lower future uranium prices. These benefits may provide additional incentives for utilities to increase fuel burnup levels in the future.

The need for additional extended burnup research and development at this time is also unclear. Industry wide implementation of the higher burnup levels, already shown to be achievable with little or no additional research and development or cost, is unlikely to be completed for another 10 to 15 years. Further, the advantages and disadvantages of such very high burnup levels remain uncertain.

There also appears to be a general perception by the industry that the Federal waste management program is the major beneficiary of extended burnup and therefore industry cannot be expected to fund the majority of the research and development. Since the waste management program is a full cost recovery Government activity, the utilities and their ratepayers are the real beneficiaries of any cost savings, both at the front and at the back end of the fuel cycle. Existing perceptions must be changed by providing information on the benefits to the beneficiaries of extended burnup, so that this information can be factored into utility investment and operating decisions. As the benefits of current research and development are realized by the nuclear industry over the next decade, it is possible that they may find additional reasons to support further extended burnup research and development. If waste disposal cost savings from

burnup extension are realized, they will result in lower waste management program costs which, on an aggregate basis, will be passed back to the utilities through the annual update of the waste disposal fee, calculated to ensure full cost recovery of disposal program costs. In any event, the waste management system will be designed to receive fuel of varying burnup levels.

It would be inappropriate at this time to use the Nuclear Waste Fund to encourage increased burnup levels beyond those which would otherwise be used by utilities. In addition to the benefits of such very high levels of burnup being unclear, it is noted that the Congress elected to fund waste management by a fee on the electricity generated, and this decision was made after considering the alternative, i.e., a fee based on the quantity of spent fuel generated. To provide utilities with incentives from the Waste Fund for burnup extension would require changing this current fee structure.

# United States Senate

WASHINGTON, DC 20510

May 8, 1986

The Honorable John S. Herrington  
Secretary  
U. S. Department of Energy  
Washington, DC

Dear Mr. Secretary:

As the nation prepares to make an investment in nuclear waste repository facilities that will cost billions of dollars, we believe that the Federal government should be taking every step possible to reduce the scope of the nuclear waste problem.

Under the Nuclear Waste Policy Act of 1982, the Department of Energy (DOE) is directed to establish a Nuclear Waste Fund to finance the costs of the repository program. Under DOE guidelines, the fund collects two types of fees from the owners and generators of high level nuclear waste. The first is a 1 mill per kilowatt hour of electricity generated by nuclear power plants beginning April 7, 1983. There was also a one-time fee for waste existing on April 7, 1983. In a recent analysis of the adequacy of the fee system, the Department concluded that the 1 mill fee will be adequate through this year, though DOE may want to consider indexing the fee in future years to account for increases in general inflation and real prices.

We are concerned that the present fee assessment system offers utilities no financial incentives to take appropriate steps to reduce waste from spent fuel, and thus reduce the overall burden to the repository program. Specifically, if utilities were to extend the time that the nuclear fuel is in the reactor, then the amount of fuel generated would be reduced in nearly proportional amounts. This technique, extended burnup, has been studied by the Department for several years, and we believe offers real potential in contributing to future reduction of waste inventories. Studies have suggested that reduction of future waste from commercial reactors could be between 15 and 50 percent. Obviously, these reductions would have important implications for future decisions that the Department and the Congress will have to take with regard to the repository program. Indeed, if future inventories of spent fuel can be reduced significantly, then the need for a second repository would be reduced, thereby saving the utilities and their ratepayers billions of dollars.

12-19

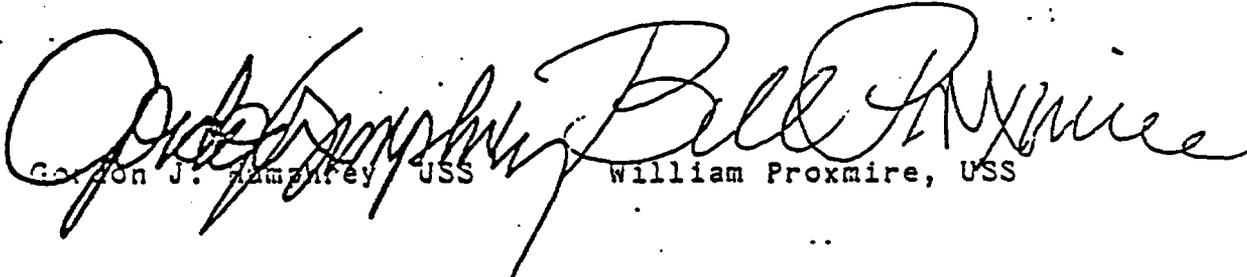
The Honorable John S. Herrington  
May 8, 1986  
Page Two

Under present regulatory regimes, utilities have no financial incentives to use nuclear fuel more efficiently. Most public utilities commissions mandate that any savings achieved through reduced fuel costs be passed directly to the ratepayers. Waste reduction through more efficient fuel use can decrease the amount of waste which must be disposed of by DOE. We feel that it would be logical and cost effective to build appropriate financial incentives into the fee assessment system under Nuclear Waste Policy Act.

The law requires the Department to recover full costs of the waste management program. The objective of reducing waste, and thus reducing overall costs to the program, is clearly complementary to full cost recovery as mandated under the law. We urge you to explore means to incorporate waste reduction incentives into the fee assessment system. One alternative would be to rebate to utilities a percentage of their contribution based the amount of waste accepted by DOE.

We look forward to hearing your views on this matter.

Sincerely yours,

  
Gordon J. Humphrey, USS      William Proxmire, USS



Department of Energy  
Washington, DC 20585

JUN 11 1986

Honorable Harry Reid  
House of Representatives  
Washington, D.C. 20515

Dear Mr. Reid:

This is in response to your letter concerning the Office of Civilian Radioactive Waste Management's Annual Report to Congress dated March 1986. Specifically, you objected to the statement on page 46 of the report that the U.S. Court of Appeals for the Ninth Circuit "rejected the State of Nevada's legal argument that, based on provisions in the Act relating to consultation and cooperation, the State was entitled to the grant funds requested."

It is our view that a careful reading of the Court's December 2, 1985, Opinion supports the accuracy of the wording in the Annual Report. Further support for this view is provided in the subsequent Order issued by the Court on February 26, 1986.

While in its Opinion of December 2, 1985, the Court found that pre-site characterization activities could be funded under certain conditions, it also rejected the State of Nevada's legal argument that, based on provisions in the Act relating to consultation and cooperation, the State was entitled to the grant funds requested. In particular, footnote 3 of the Opinion reads as follows. "Although the state relies heavily on sections 116(c) (1) (b) and 117(c) (1) and (8), which indicate that 'monitoring, testing, or evaluation activities' are eligible for funding, these provisions by their express terms are only applicable once a state has been chosen for site characterization or has entered into a written agreement with DOE. Because Nevada has not entered the site characterization stage and has not sought to enter into an agreement with DOE, it cannot invoke these provisions to fund its pre-site characterization activities."

A subsequent Order, issued by the Court on February 26, 1986, reaffirms and supports the statement in the Annual Report. The following is excerpted from that Order:

"While Nevada concedes, as it must, that it is appropriate for the Department to measure future grant proposals from potential host states against the limitations set out in our

opinion, it contends that the 'proposed activities which were the subject of this Court's review fall squarely within all of those limitations.' Nevada asserts that both the Department and this court have determined that the studies proposed by the State meet the requirements described in our opinion.

The factual questions the State apparently considers resolved were not before us when we issued our opinion of December 2, 1985. There is no evidence that the Department has been dilatory in revising its Guidelines in light of our opinion or in measuring petitioner's grant request against those Guidelines. Neither clarification nor enforcement of the mandate is warranted.

Accordingly, the motion of Petitioner State of Nevada for an order clarifying and enforcing our mandate of December 23, 1985, is hereby DENIED."

I am pleased to be able to inform you that a \$4.1 million grant was recently approved for the State of Nevada, and an additional grant of \$.5 million is under review, in response to new or revised applications filed by the State. Also, the revised guidelines for financial assistance we have prepared in response to the decision rendered by the U.S. Court of Appeals for the Ninth Circuit have been submitted to Nevada and the other affected States for review and comment.

I very much appreciate your views and welcome any questions you may have. Consultation and cooperation with the State of Nevada is of critical importance to our program, and adequate funding for the State's participation in the site characterization process is essential. I believe we are making good progress in consultation and cooperation with Nevada, and I will continue to do what I can to enhance this relationship.

Sincerely,

*for*   
Ben C. Rusche, Director  
Office of Civilian Radioactive  
Waste Management

June 18, 1986

Dear Harry:

This is to acknowledge your June 4 letter to the President calling for the resignation of Mr. Ben Rusche, Director of the Office of Civilian Radioactive Waste Management within the Department of Energy.

Your comments regarding Mr. Rusche and your concerns with respect to the selection process of nuclear waste storage sites have been brought to the attention of the appropriate Administration officials. I have asked them to respond to you directly.

With best wishes,

Sincerely,

William L. Ball, III  
Assistant to the President

The Honorable Harry Reid  
House of Representatives  
Washington, D.C. 20515

WLB:KRJ:MDB

cc: w/copy of inc to Ted Garrish, Legis  
Affairs, Dept of Energy - for DRAFT  
response  
cc: w/copy of inc to Peter Wallison - FYI

June 4, 1986

Honorable Ronald W. Reagan  
President of the United States  
The White House  
1600 Pennsylvania Avenue, NW  
Washington, D.C. 20500

405251  
Congress  
of the  
United States  
House of Representatives



HARRY REID  
NEVADA

Dear Mr. President:

I am writing you today to call for the resignation or removal of Mr. Ben Rusche, Director of the Office of Civilian Radioactive Waste Management (OCRWM) within the Department of Energy. The Governor of Nevada, Richard Bryan, supports me in this demand.

I do not believe that the future placement and storage of nuclear waste is to be taken lightly. It seems that in discussing this problem some have lost sight of the fact that real people and real places are involved, and those same people and places will be significantly impacted by the decisions that are made at OCRWM. For those reasons, an open and fair selection process is absolutely essential if the optimal storage site is to be found. This has not been the case thus far.

Mr. Rusche has pursued a process in which the site selection of the final three possible sites has preceded geologic and hydrologic characterization studies. He has been contacted numerous times about the situation and is well aware of the disagreement that exists between the State of Nevada and his interpretation of the law; yet the process has continued unabated. Now we are told that a second repository selection will be delayed for an "undetermined time period". This news not only carries with it serious implications for the first repository, but further, demonstrates the continuous disregard for a fair and equitable selection process which has become the mode of operation under Mr. Rusche. Equally disheartening is the fact that Mr. Rusche, as Director, has continued to defend this selection process; a process which has become little more than a politically motivated sham to rid the country of an unwanted problem.

Mr. Rusche has also knowingly ignored the U.S. Ninth Circuit Court of Appeals opinion in State of Nevada v. Herrington, in which the Court agreed with the State's argument that pre-site characterization activities as well as independent studies conducted during characterization could be funded through the Nuclear Waste Fund. No funding has been received despite numerous contacts by the State and myself. To make matters worse, the Department of Energy's 1986 Annual Report to Congress submitted by OCRWM blatantly misrepresented the Court's opinion by stating, "The Court rejected the State of Nevada's legal argument..." This is clearly an incorrect interpretation of the Court's opinion.

I am convinced that there is either a grave lack of communication and legal knowledge at OCRWM or an intentional misrepresenta-

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- HENDERSON/BOULDER CITY OFFICE: 201 LEAD STREET, ROOM 26, HENDERSON, NEVADA 89015, (702) 565-0057
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Honorable Ronald W. Reagan . .  
President of the United States  
June 4, 1986  
Page 2.

serious question. OCRWM and the Department of Energy have been severely discredited under his directorship. I am, therefore, forced to ask for the dismissal of Mr. Rusche and the removal of Nevada as a site characterization candidate until a fair and open selection process can proceed under new leadership.

Thank you for your attention to this very important issue of national concern.

Sincerely,



HARRY REID  
Member of Congress

HMR:mlb

REMARKS BY  
BEN C. RUSCHE  
DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
U.S. DEPARTMENT OF ENERGY  
  
BEFORE THE  
AMERICAN CHEMICAL SOCIETY  
ANAHEIM, CALIFORNIA  
SEPTEMBER 9, 1986

## THE CHALLENGES AND OPPORTUNITIES TO COME

It is a pleasure to accept your invitation to meet today in Anaheim to discuss the implementation of the Nuclear Waste Policy Act of 1982 (NWPA). Passage of that Act signified a major milestone in the nation's management of nuclear wastes. Much has been accomplished; and yet, many crucial decisions lay ahead.

It is gratifying to see so many friends who toiled over the years to forge the national consensus that led to the enactment of the NWPA. Your commitment to safe, effective and efficient waste disposal demands, in turn, the very best in dedication on our part to plan, manage and shepherd this task to a satisfactory conclusion. With that in mind, I'd like to talk about our progress, opportunities, obstacles and future plans.

My remarks will be intentionally candid. They will depart from the traditional summation of our efforts to solve the nuclear waste disposal problem so that I may give you a flavor for what I sense to be both the great challenges and the great opportunities ahead. And, as you know, the recent decisions pertaining to the pace and shape of the geologic repository program have intensified the public's scrutiny of the Federal government's plans to dispose of nuclear waste.

Let me, for a moment, describe those features of the U.S. high-level nuclear waste disposal program that help to distinguish it from other Federal programs:

- o It spans decades, which, in itself, is a formidable challenge.

- o It may become the largest public works program in the history of the United States, eclipsing even the interstate highway programs and the vast regional water projects administered by the U.S. Corps of Engineers.
- o It forges an unprecedented, obligational relationship between the Federal Government and affected States, Indian Tribes and others.
- o It establishes a rigorous and complex set of schedules and milestones that charts a course of action for success demanded by the Congress (and I believe rightly demanded.) Yet, to be frank, these schedules weigh heavily upon those of us tasked with conducting the disposal operations because of the tension between institutional responsibility and technical requirements. We have a critical obligation to both--however, the two, at times, may not be in perfect harmony.
- o This dichotomy, in turn, stretches one's ability to focus unswervingly on the basic mission--to isolate high-level nuclear waste from the accessible environment in safe and prudent manner for at least 10,000 years.
- o It requires that we meet regulatory and licensing standards that are promulgated under the preview of other Federal agencies, including the U.S. Nuclear Regulatory Commission, the U.S. Environmental Protection Agency and the U.S. Department of Transportation. Thus, we are not immune from Federal control. To the contrary,

our obligations to other Federal agencies in many ways are just as stringent as those to the affected States and Indian Tribes. And that is the way it should be.

- o It is a crucible that sways the passions, anxieties and concerns of a public who often view nuclear power with distrust and alarm. I need not lecture this audience on public perceptions and surveys--we all know that few issues excite the public as much as nuclear power. The public's perception of risk and our efforts to build trust and credibility, at times, threaten to eclipse the technical aspects of the program.

Next, let me comment on the leadership role this country has taken in solving the problems associated with the storage and disposal of high-level nuclear wastes. This program is exemplary in its commitment to find a national solution to a national problem. No other country has, in either absolute or relative terms, devoted the resources to solving the nuclear waste problems as the United States. Truly, the crafters of the Nuclear Waste Policy Act of 1982 transformed a national concern about the potential hazards of nuclear waste into a resolute plan of action that is unequalled in the world. We will neither depart nor stray from the commitment, for too much is at stake.

Now, let me address some of the issues surrounding the Department's recent announcement concerning its geologic repository program activities.

The President's decision of May 28, 1986 to approve the Secretary of Energy's recommendation that sites in Nevada, Texas and Washington undergo detailed on-site characterization as candidates for the nation's first geologic repository for the permanent disposal of high-level nuclear wastes signaled a new phase of the government's plan to dispose of such wastes in a safe and environmentally acceptable manner. That decision, which complied with Section 112 of the Act, was based on the development, analysis and public review of extensive geologic and environmental data gained from site studies that were initiated years before the enactment of the NWSA. It was not a hastily conceived decision, as some people charge.

As early as 1957, the National Academy of Sciences concluded that geologic disposal would be the most desirable method for the permanent disposal of high-level nuclear wastes. That scientific judgment formed the basis for further investigations of deep, mined geologic repositories as potential sites for nuclear wastes. Those who launched such investigations were mindful of the country's desire for the safe disposal of nuclear waste as a precondition to accepting nuclear power. They further believed that the necessary technical and engineering expertise was available to accomplish that goal. The program strategy that was formulated in the late 1970s by the U.S. Department of Energy (DOE) called for a progressively more stringent step-by-step process of identifying potentially acceptable repository sites. In fact, the repository site screening process that is an integral part of the NWSA evolved from DOE's previous efforts to devise a

logical and reasoned method for the selection of repository sites that could meet the provisions of the National Environmental Policy Act of 1969 (NEPA), as amended, and the regulations promulgated by the Council on Environmental Quality. Since then, studies have been conducted in different geologic media, and voluminous data have been collected, analyzed and compared as a consequence of the national regional and other surveys sponsored by the DOE. To place this effort in perspective, it should be noted that, prior to 1982, over \$600 million in Federal funds had been committed to programs designed to identify and evaluate methods for the safe, permanent disposal of high-level radioactive wastes.

As part of this endeavor, the Department examined alternatives to geologic disposal, including such alternatives as subseabed disposal, space disposal, ice sheet disposal and deep-well injection. In October 1980, the Department published the results of its assessments in the Environmental Impact Statement entitled the The Management of Commercially Generated Radioactive Waste. Based on its evaluations, the DOE concluded that geologic disposal was the preferred method of permanent isolation for high-level nuclear wastes.

Progress engenders controversy; and it exacts a telling price, I may add. This program, as we all know, is being buffeted by controversy and clamor as the Department implements the provisions of the Act. DOE is reaching beyond the surveys and analyses used to narrow the search for suitable repository sites--it is striving to launch an expansive and competent site characterization program at the three specified sites:

- Yucca Mountain in Nevada,
- Deaf Smith County in Texas, and
- DOE's Hanford Reservation in Washington

DOE will concentrate its efforts on continued successful progress on the development of the disposal system that includes the first geologic repository, the associated transportation system and implementation of the Monitored Retrievable storage (MRS) program. DOE believes a centralized MRS to receive, consolidate and package spent fuel for bulk transport to the repository will enhance the overall disposal system. Under contracts with utilities, DOE is obligated to begin receipt of spent fuel for disposal by 1998.

The Department has reached an important milestone and has taken a significant step forward. Our decision to pursue site characterization activities is a clear affirmation of the nation's commitment, as embodied in the NWPA, to dispose of high-level nuclear wastes in a safe and environmentally acceptable manner.

Our decisions were made on the basis of the best available programmatic information. We were, for example, aware of scheduling problems with the second repository program and so changed the schedule in the Project Decision Schedule document published in March 1986. And we examined a wide range of options in deciding to concentrate on the first repository program.

But I'm not surprised by the wide range of views on the subject of nuclear waste disposal. As I mentioned at the outset of my talk, few topics enflame public passions as much as that of nuclear power. I am constantly reminded of this as I travel

about the country and speak before assemblies and meet with individuals.

The job must proceed, however, since the consequences for society of doing nothing, or doing very little, about the waste disposal problem because of parochialism and intransigence are potentially severe.

A great challenge confronts us. For the first time in the country's history, the Congress and the executive arm of government have devised policies and programs to solve a problem that spans many, many centuries. We have advanced far beyond the modest steps of the 1960s to isolate high-level nuclear wastes from the environment. Our Nation--through its elected representatives--has decided to act today to preserve a quality of life we so much cherish. In the truest sense of the word, government is becoming a "steward" of the country's environment by preventing its degradation. It is a task calling forth the highest form of technical and social challenge.

The foresight and social consciousness reflected in the NWPA are as significant as the ideals that inspired the laws which established our national parklands--a sobering and humbling thought. I'll keep this though uppermost in mind as we face adversities and predictable day-to-day challenges.

I close on a note of hope and optimism. We have chartered a steady course. Our faith has never flagged. But we are candid enough to acknowledge that at times our actions have made life difficult for others. We know the turbulence that lays ahead. However, we believe we can steer around that turbulence with your help. A safe and effective system of waste disposal will be implemented--one that our children and our grandchildren will hold in esteem.

REMARKS BY  
BEN C. RUSCHE  
DIRECTOR  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
U. S. DEPARTMENT OF ENERGY  
BEFORE THE  
AMERICAN NUCLEAR SOCIETY TOPICAL MEETING  
NIAGARA FALLS, NEW YORK  
SEPTEMBER, 14, 1986

I appreciate the opportunity to meet with you today to bring you up to date on the activities associated with siting the Nation's first geologic repository for spent fuel and high-level waste. I am certain most, if not all, of you have been involved in varying degrees in following our progress in this highly controversial and publicized program. Perhaps today I can confirm or further clarify the information you already have.

We have made considerable progress in implementing the Nuclear Waste Policy Act of 1982. This is evidenced by the President's approval of the Department of Energy's recommendation to characterize three sites as candidates for the first repository. Those three sites are Yucca Mountain in Nevada, Deaf Smith in Texas and Hanford in Washington.

The determination by the President and the selection of these three sites for detailed work culminates years of studies that have gone on in this country toward the objective of safe and environmentally acceptable disposal of such waste. Reaching this stage of development permits us the opportunity to look ahead now in a mode of operation that will be aimed at carrying out investigation, evaluation and comparison of geologic, environmental and safety factors at the candidate sites. We have finally passed beyond the crucial decisions of which sites to focus our attention on.

To reach the conclusions of which sites to characterize, we published environmental assessments on five sites which the Secretary nominated as suitable for characterization and from which we made the determination of the preferred three. These documents alone consisted of more than 10,000 pages.

Characterization activities at each of the three candidate sites will result in the expenditure of somewhere in the neighborhood of \$1 billion per site over the next five or so years. And the purpose of characterization is to put people and equipment below surface -- 1,000 to 4,000 feet -- to collect and analyze information upon which to make a judgment on the acceptability of those sites in meeting strict environmental standards and geologic requirements to adequately protect the public health, safety and environment.

During this period of characterization, we will be working very closely with the affected States and Indian Tribes to provide essentially the same information that we will eventually include in a construction authorization application to the Nuclear Regulatory Commission.

The work that is currently being done relates first to the completion of the development of a Site Characterization Plan for each of the three candidate sites. These plans will be a major document that will detail what questions there are that we believe need to be answered and, to a certain degree, how we plan to go about seeking those answers.

We will hold public hearings on each of those plans after which we will begin construction of exploratory shafts at the sites. Construction of these shafts will be in addition to additional detailed surface investigation which will be done.

The exploratory shaft construction will not begin until sometime next year. In the meantime, we are working with the States and Indian Tribes in developing the Site Characterization Plans. And, as one might guess, there is intense interest in this subject.

Under the Nuclear Waste Policy Act, we are obligated to seek within 60 days of the approval of sites for characterization to enter into negotiations with the affected States and Indian Tribes to reach a consultation and cooperation agreement. We have had some discussions underway with one of the States and two of the Indian Tribes.

We would hope that we can reach agreement with the States and Indian Tribes, but this will depend on a number of factors. We have, however, taken the initiative and have invited all the affected States and Indian Tribes to join us in such discussions over the next several months.

In the meantime, we will be developing detailed schedules, continue progress on the development of the site characterization plans and will be developing the approaches that will allow us to proceed with Consultation and Cooperation Agreement discussions.

Turning to the second repository effort, on May 28, when the Secretary announced the President's approval of our recommendation to characterize the three sites as candidates for the first repository, he also announced that we had reached the conclusion that based on a number of factors, it was timely and good management judgment to defer indefinitely the site-specific activity related to a second repository. Unfortunately, some have taken that statement and that action to mean that we have deferred all activity toward a second repository. And some have even suggested that we may have abandoned the idea of a second repository.

Let me make it perfectly clear: We have not abandoned a second repository. On the contrary, the Secretary and I have on several occasions since then reiterated our view that the Nuclear Waste Policy as it stands, and which requires that a second repository be considered under a certain set of conditions and that we proceed to the definition of a site, ought to remain.

What we have done, however, is in evaluating the circumstances, we have concluded that it is too early for us to be spending hundreds of millions of dollars now for activities which don't need to be done until much later and even later circumstances may dictate some different course of action. We determined that in our best judgment, there is adequate latitude and timing, given the many factors in the Act, for us to consider site-specific work later -- the mid-nineties perhaps when we know more about the spent fuel projections into the twenty-first century.

In the meantime, we will continue what we would call a technology development program in crystalline rock, which was the primary activity we had underway at the time of the decision.

We issued in January a draft Area Recommendation Report, whose purpose was to identify 12 areas in seven States, at which we had proposed to do some preliminary field investigation leading perhaps in the early nineties to their identification as potentially acceptable sites for characterization for a second repository. We shall not do that field work at this time. We are cataloging the more than 60,000 comments received on that draft report and will put the draft and the cataloged comments on the shelf. Those 12 identified areas are no longer under active consideration and in the mid-nineties or later, should circumstances regarding need and timing of a second repository dictate, we shall begin again with national surveys and see what geologic and environmental data is available at that time. We will not just pick up where we left off.

We will continue the development of the technical data on crystalline rock as we get it from generic studies and of other rock types such as perhaps clay, and we are particularly interested in what our international partners are doing in crystalline rock and in other geologic media.

We are expanding our international involvement and cooperative studies to do this. We, in fact, met only a few weeks ago with the Radioactive Waste Management Committee of the Nuclear Energy Agency in Paris. We reached a tentative understanding that sets in motion some planning activities which we believe before the end of the year will clearly establish a crystalline rock management group for gathering information and reviewing that information in the international environment that will be extremely beneficial to us as well as to our partners through the world.

In addition, two weeks ago I met with our Canadian partners and visited their underground laboratory, URL. I believe our continued collaborative activities will have major mutual information benefits.

With regard to Monitored Retrievable Storage, which the Act requires DOE to determine the need for and feasibility of, as well as its place in a disposal system, we are still legally enjoined from formally submitting the proposal we prepared some time ago. In that proposal, which was made available to interested parties in draft form before legal action was taken, we stated our position that an MRS centrally located to the majority of the spent fuel generation would enhance the disposal system by receiving and consolidating the spent fuel prior to shipping to the repository.

Oral argument was heard in the Sixth Circuit Court on July 24 and we are hopeful that a favorable and speedy decision will be made so that we may submit the formal proposal to the Congress as the Act directs.

We are moving ahead on the development of the many facets of a transportation system. Last month we issued the transportation Institutional plan. We consider this plan a foundation for our projected interactions in establishing a system for transporting the spent fuel and high-level waste. I believe the plan represents a truly cooperative effort that has benefited significantly from early and continuing participation by many interested parties.

In summary, we believe the actions on characterizing three sites for the first repository, adjustment in our focus on second repository studies and progress in the legal system on the MRS are important steps in the best interest of the American people. This progress, we believe, will permit us to have a disposal system in place by 1998, to have the first repository begin operation and to have a second repository, if needed, operational before the first repository exceeds the statutory, limit of 70,000 metric tons disposal capacity.

Our priorities in implementing the Act, then, are:

First: To site, construct and put into operation the first geologic repository and the associated transportation systems;

Second: To transmit to Congress, a Monitored Retrievable Storage proposal because of its potential for improving the overall disposal system; and,

Third: To carry out necessary activities regarding consideration of a second repository so that when and if in the future we need to request Congressional authorization to proceed with construction, we will have a firm basis upon which to make that request.

This country has taken a leadership role in solving the problem of determining how, when and by what means spent fuel and high-level radioactive waste will be permanently disposed of for the protection of the public health, safety and the environment. It is our responsibility -- your and mine, this generation's -- to see that it is done and done safely and efficiently.

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REMARKS BY  
BEN C. RUSCHE  
DIRECTOR  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
U. S. DEPARTMENT OF ENERGY  
BEFORE THE  
43RD ANNUAL CONVENTION  
OF THE  
NATIONAL CONGRESS OF AMERICAN INDIANS  
PHOENIX, ARIZONA  
SEPTEMBER 24, 1986

I am honored to share the platform today with the distinguished leaders and guests of the National Congress of American Indians. And I want to make particular note of the theme of this, the 43rd Annual Convention of the NCAI: "Beyond Survival: The Next Step is Ours." As government-to-government, let me begin by saying that the "next step is ours.

The responsibilities of the NCAI being the oldest and largest national Indian and Native organization and the responsibilities of the Federal Government are to protect the public health and safety of this generation and future generations; to protect the environment we live in and to protect our fish and wildlife.

Most people would not view my role as environmentalist. But the objective of our job designed under that law is just that -- the responsibility of the Federal Government, working with States and Indian Tribes and local affected and interested parties to provide for long-term protection of people and the environment.

I, therefore, appreciate the opportunity to meet with you today to bring you up to date on the activities associated with siting the Nation's first geologic repository for spent fuel and high-level waste.

Many of you have been involved in varying degrees in participating in and following our progress in this highly controversial and publicized program. The NCAI and the National Indian Nuclear Waste Policy Committee are actively involved in and follow our activities. We interact regularly with the three affected Indian Tribes -- the Nez Perce Tribe, the Confederated Tribes and Bands of the Yakima Indian Nation and the Confederated Tribes of the Umatilla Reservation -- and the three affected States -- Nevada, Texas and Washington.

We have made major progress toward developing a nuclear waste disposal system. Perhaps today I can confirm or further clarify the information you already have.

In 1982, technical confidence and the convergence of political views reached the stage so that the Nuclear Waste Policy Act -- a national policy -- became a reality. Some of us think of it as a miracle. Not only does it serve the national interests, I believe it serves the interests of each of our citizens.

After several decades of attempting to proceed with deep, geologic disposal as scientifically recommended by the National Academy of Sciences in 1957 as the most appropriate long-term means for disposing of spent fuel and high-level waste, finally

the 1982 law established the method, the process, the funding and a timetable to get on with it.

We have made considerable progress in implementing the Act. This is evidenced by the President's approval of the Department of Energy's recommendation to characterize three sites as candidates for the first repository. Those three sites are Yucca Mountain in Nevada, Deaf Smith in Texas and Hanford in Washington.

The determination by the President and the selection of these three sites for detailed work culminates years of studies that have gone on in this country toward the objective of safe and environmentally acceptable disposal of such waste. Reaching this stage of development permits us the opportunity to look ahead now in a mode of operation that will be aimed at carrying out investigation, evaluation and comparison of geologic, environmental and safety factors at the candidate sites. We have finally passed beyond the crucial decisions of which sites to focus our attention on.

To reach the conclusions of which sites to characterize, we published environmental assessments on five sites which the Secretary nominated as suitable for characterization and from which we made the determination of the preferred three. These documents contained extensive geological and environmental data.

The site characterization phase, which we have now entered, includes two kinds of activities:

(1) a program of extensive field and laboratory testing and studies to collect and evaluate geologic, hydrologic and geochemical information; and,

(2) environmental and socioeconomic studies that assess the potential impacts of repository development and operation.

Characterization activities at each of the three candidate sites will result in the expenditure of somewhere in the neighborhood of \$1 billion per site and take about five years. During site characterization, as many as 200-to-500 people will be employed at each site at the peak of site characterization activity. The purpose of characterization is to put people and equipment below surface -- 1,000 to 4,000 feet -- to collect and analyze information upon which to make a judgment on the acceptability of those sites in meeting strict environmental standards and geologic requirements to adequately protect the public health, safety and environment.

Although site characterization activities related to repository siting are somewhat comparable to site evaluation studies for large construction projects such as dams and powerplants, site characterization for a repository departs from those studies in that it requires the construction of deep, exploratory shafts to conduct tests in the candidate repository host rock.

Deep shaft construction is not a new technology. There is considerable experience with deep shaft construction. For example, the mining industry frequently constructs deep shafts to extract minerals. At the Climax Test Facility, near the Nevada Test Site, DOE constructed a shaft to a depth of 1400 feet.

During site characterization, we are planning to construct two exploratory shafts at each of the three candidate sites. The second shaft is necessary for the safety of operating personnel. The exploratory shafts will be incorporated into the repository design after a site is found suitable and is selected for development as the repository. If a site is not selected for further development, the shafts will be filled and sealed, and the site will be restored as nearly as possible to its original condition.

Prior to exploratory shaft construction at each candidate site, the Secretary of Energy will submit a Site Characterization Plan to the Nuclear Regulatory Commission, the candidate State's Governor and legislature, the governing body of each affected Indian Tribe and the public. The first of these plans is expected to be issued early next year. Following issuance of each of the plans, a public comment period will be held and public hearings will take place. These plans will be a major document that will detail what questions there are that we believe need to be answered and, to a certain degree, how we plan to go about seeking those answers. And, as one might guess, there is intense interest in this subject.

During this period of characterization, we will be working very closely with the affected States and Indian Tribes to provide the same information that we will eventually include in a construction authorization application to the Nuclear Regulatory Commission.

Under the Nuclear Waste Policy Act, we are obligated to seek within 60 days of the approval of sites for characterization to enter into negotiations with the affected States and Indian Tribes to reach a consultation and cooperation agreement. We have had some discussions underway with one of the States and two of the Indian Tribes.

A consultation and cooperation agreement can be a very effective means for States and Indian Tribes to regularize our interactions. We would hope that we can reach agreement with the States and Indian Tribes, but this will depend on a number of factors. We have, however, taken the initiative and have invited all the affected States and Indian Tribes to join us in such discussions over the next several months.

In the meantime, we will be developing detailed schedules, continue progress on the development of the site characterization plans and will be developing the approaches that will allow us to proceed with Consultation and Cooperation Agreement discussions.

Turning to the second repository effort, on May 28, when the Secretary announced the President's approval of our recommendation to characterize the three sites as candidates for the first repository, he also announced that we had reached the conclusion that based on a number of factors, it was timely and good management judgment to defer indefinitely the site-specific activity related to a second repository. Unfortunately, some have taken that statement and that action to mean that we have deferred all activity toward a second repository. And some have even suggested that we may have abandoned the idea of a second repository.

We have not abandoned a second repository. On the contrary, the Secretary and I have on several occasions since then reiterated our view that the Nuclear Waste Policy Act as it stands, and which requires that a second repository be considered under a certain set of conditions and that we proceed to the definition of a site, ought to remain.

In evaluating the circumstances, we have concluded that it is too early for us to be spending hundreds of millions of dollars now for site-specific activities which don't need to be done until much later, and even later circumstances may dictate some different course of action. We determined that in our best judgment, there is adequate timing for us to consider site-specific work later -- the mid-nineties perhaps when we know more about the spent fuel projections into the twenty-first century.

In the meantime, we will continue what we would call a technology development program in crystalline rock and possibly other candidate geologic media, which was the primary activity we had underway at the time of the decision.

We issued in January a draft Area Recommendation Report, whose purpose was to identify 12 areas in seven States, at which we had proposed to do some preliminary field investigation leading perhaps in the early nineties to their identification as potentially acceptable sites for characterization for a second repository. We shall not do that field work at this time unless Congress provides new direction.

We are cataloging the more than 60,000 comments received on that draft report and will put the draft and the cataloged comments on the shelf. Those 12 identified areas are no longer under active consideration and in the mid-nineties or later, should circumstances regarding need and timing of a second repository dictate, we shall begin again with national surveys and see what geologic and environmental data is available at that time. We will not just pick up where we left off.

We will continue the development of the technical data on crystalline rock and other rock types, and we are enhancing our international cooperation in crystalline rock and in other geologic media.

We are expanding our international involvement and cooperative studies to do this. We, in fact, met only a few weeks ago with the Radioactive Waste Management Committee of the Nuclear Energy Agency in Paris. We reached a tentative understanding that sets in motion some planning activities which we believe before the end of the year will clearly establish a crystalline rock management group for gathering information and reviewing that information in the international environment that will be extremely beneficial to us as well as to our partners throughout the world. I believe our continued collaborative activities will have major mutual information benefits.

With regard to Monitored Retrievable Storage, which the Act requires DOE to determine the need for and feasibility of, as well as its place in a disposal system, we are still legally enjoined from formally submitting the proposal we prepared some time ago. In that proposal, which was made available to interested parties in draft form before legal action was taken, we stated our position that an MRS centrally located to the majority of the spent fuel generation would enhance the disposal system by receiving and consolidating the spent fuel prior to shipping to the repository.

Oral argument was heard in the Sixth Circuit Court on July 24 and we are hopeful that a favorable and speedy decision will be made so that we may submit the formal proposal to the Congress as the Act directs.

We are moving ahead on the development of the many facets of a transportation system. Last month we issued the transportation Institutional plan. We consider this plan a foundation for our projected interactions in establishing a system for transporting the spent fuel and high-level waste. I believe the plan represents a truly cooperative effort that has benefited significantly from early and continuing participation by many interested parties.

While three States and three Indian Tribes are specifically affected by the candidate sites and may be impacted should a repository site be selected for construction near any of them, other States and Indian Tribes may be impacted by shipment of spent fuel and high-level waste near or across their lands. These shipments in large quantities are more than a decade away. However, participation in the development of a transportation system is essential to ensure that safe and efficient systems do result.

We believe the actions on characterizing three sites for the first repository, adjustment in our focus on second repository studies and progress in the legal system on the MRS are important steps in the best interest of all Americans. This progress, we believe, will permit us to have a disposal system in place by 1998, to have the first repository begin operation and to have a second repository, if needed, operational before the first repository exceeds the statutory, limit of 70,000 metric tons.

Our priorities in implementing the Act, then, are:

First: To site, construct and put into operation the first geologic repository and the associated transportation systems;

Second: To transmit to Congress, a Monitored Retrievable Storage proposal because of its potential for improving the overall disposal system; and,

Third: To carry out necessary activities regarding consideration of a second repository so that when and if in the future we need to request Congressional authorization to proceed with construction, we will have a firm basis upon which to make that request.

Over the last couple of years, DOE has provided grant funding not only to the States and affected Indian Tribes, but to the NCAI. The purpose of the grant to NCAI has been to improve the flow of information between DOE and the Indian Tribes. While the grant, which has equalled nearly a quarter of a million dollars annually, expires very shortly, we will continue to provide funding to NCAI to enhance information flow. Those details are now being worked out.

In addition, in the years ahead, funding to affected Indian Tribes will increase as we move into site characterization activities.

Our specific statutory duties and responsibilities under the Nuclear Waste Policy Act are clearly to be carried out through extensive interaction with all affected parties. The three States and the three Indian Tribes have special status and, thereby must be afforded an extensive role. With that special role, however, comes special responsibilities. National issues are Indian issues and Indian issues are national issues.

As a Federal agency of the United States, the Department of Energy shares in the trust relationship between the United States government and the Indian governments. The general public, and many people in the Federal government, are often under the impression that only the Bureau of Indian Affairs is involved with Indian issues, and that Indian people relate only to one Federal agency.

The Federal administrative structure is established by and along the lines of Congress. In Congress, there is no one committee which addresses all Indian matters. Indian issues cross all Congressional jurisdictional lines. In the Executive Branch, as well, there are Indian-related programs, services and responsibilities within virtually every Federal agency. In keeping with our statutory obligations, the trust relationship and the Indian policy articulated by the President in his formal Indian Policy Statement, our interactions with Indian governments are direct and on a government-to-government basis.

The Department of Energy takes seriously our statutory trust relationships with the Nation's Native American populace. We do not have extensive experience in working with Indian Tribes. We need and want your assistance; we welcome your suggestions and ask for your participation in strengthening our future ties and working relationships.

This country has moved ahead to determine how, when and by what means spent fuel and high-level radioactive waste will be permanently disposed of for the protection of the public health, safety and the environment. It is our responsibility -- this generation's -- to see that it is done and done safely and efficiently.

The "next step is ours" -- together.

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