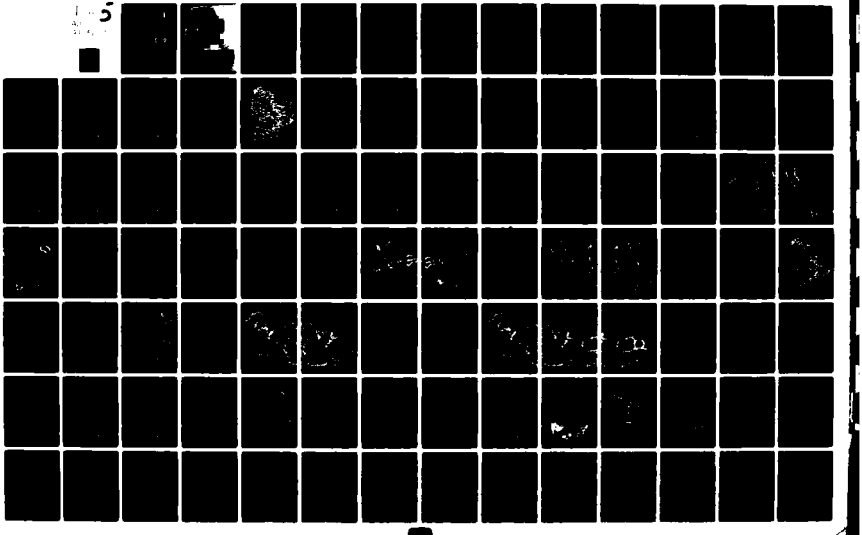
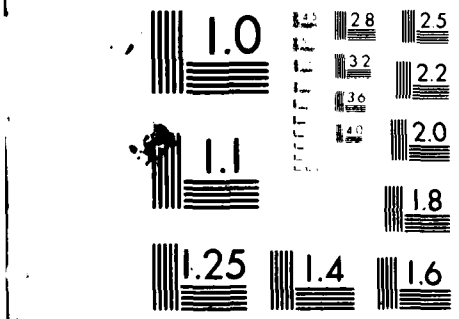
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MICROCOPY RESOLUTION TEST CHART

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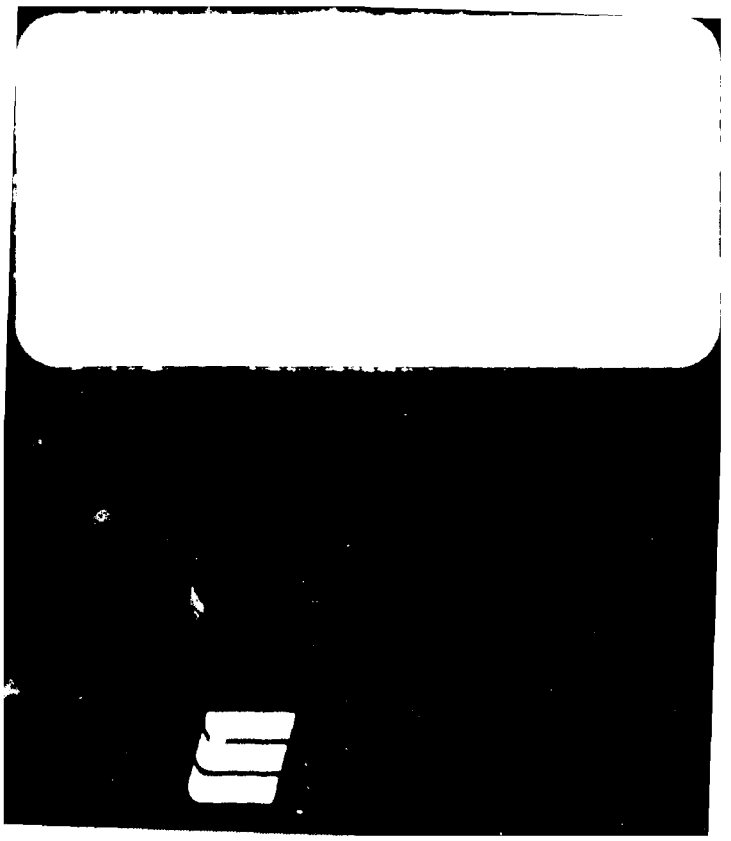
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MX SYSTEM SITING
SUMMARY REPORT

DTN/ASC SITING
VOLUME II - PART I

Prepared for:

U.S. Department of the Air Force
Ballistic Missile Office
Norton Air Force Base, California 92409

Prepared by:

Ertec Western, Inc.
3777 Long Beach Boulevard
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18 January 19

Ertec

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Results of the MX System siting study in Nevada and Utah gave the optimal routing of DTN and the preferred siting of an ASC for each MOB option. The OBS/DTA siting simulations resulted in operationally, technically, environmentally, and geographically acceptable [illegible]

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FOREWORD

This report has been prepared for the U.S. Department of the Air Force, Ballistic Missile Office, in compliance with Contract No. F04704-80-C-0006. It presents the summary of Ertec Western's investigations for siting of facilities and routing of a transportation network for the MX system in Nevada, Utah, and New Mexico. Information, results, and conclusions contained in this report are based on MX siting studies conducted during fiscal years 1980 and 1981. The major part of the study covers 37 deployment valleys and three main operating base sites in Nevada and Utah. Limited studies were also performed in the area surrounding the main operating base site in New Mexico. This report consists of three volumes.

Volume I, Part I

- o General Introduction providing brief overviews of the MX system, program schedule, and siting program which includes:
  - Introduction
  - Summary of MX System Components
  - MX Program Schedule Overview
  - Siting Program Overview

Volume I, Part II

- o Summary discussions of results, conclusions, and recommendations of the Shelter Siting Summary studies of the 37 deployment valleys which includes:
  - Introduction
  - Siting Requirements
  - Siting Methodology
  - MPS/HSS Siting Program, Nevada/Utah DDA
  - Shelter Siting Program Summary, Conclusions, and Recommendations

Volume II, Part I

- o Results and conclusions of the Designated Transportation Network/Area Support Centers (DTN/ASC) siting studies within the MX system study areas which includes:
  - Introduction
  - Objective and Scope
  - Methodology
  - Criteria
  - Field Reconnaissance and Pass Evaluation
  - Evaluation of Optimum DTN Routings and ASC Locations
  - Conclusions

Volume II, Part II

- o Results and conclusions of the Operational Base Test Site/ Designated Training Area (OBTS/DTA) siting studies near the main operating base sites in Nevada-Utah and New Mexico which includes:

  - Introduction
  - Siting Requirements
  - Methodology
  - OBTS/DTA Siting Evaluation
  - Conclusions

Volume III

- o Land Acquisition Application Package Map Sheets depicting the various preferred and alternate facility combinations for land parcel acquisition which includes:

  - Introduction

This report was being prepared prior to the President's decision on 2 October 1981 not to proceed with the MPS MX basing option. It was intended that more detailed valley siting reports would follow this general evaluation. The original objective of the report was to provide interim data to the users of MX siting data until these more detailed evaluations could be produced. As a result of the President's decision, this report represents the final summary of the MX system siting in the MPS basing mode.

It should be noted that at the beginning of FY 81, siting studies were performed under the firm name of Fugro National, Inc. at its Long Beach offices. On 25 March 1981, the corporate name was changed to The Earth Technology Corporation - Ertec. Since that date, the siting studies have been performed at the same offices under the name of Ertec Western, Inc. with support from Ertec Northwest, Inc., Seattle, Washington; Ertec Airborne Systems, Inc., Cypress, California; and Ertec Rocky Mountain, Inc., Denver, Colorado.

LIST OF ACRONYMS

ADT	Average Daily Traffic
AFRCE-MX	Air Force Regional Civil Engineer-MX
AFSC	Air Force System Command
ALCC	Airborne Launch Control Center
AOB	Auxiliary Operating Base
ASC	Area Support Center
BLM	Bureau of Land Management
BMO	Ballistic Missile Office
C^3	Command, Control, and Communication
CBR	California Bearing Ratio
CDP	Candidate Deployment Parcel
CEQ	Council on Environmental Quality
CMF	Cluster Maintenance Facility
COE	U. S. Department of the Army, Corps of Engineers
CONUS	Conterminous United States
CPT	Cone Penetrometer Test
CRN	Cluster Road Network
CSR	Candidate Siting Region
DAA	Designated Assembly Area
DDA	Designated Deployment Area
DEIS	Draft Environmental Impact Statement
DMA	Defense Mapping Agency
DOPAA	Description of Proposed Actions and Alternatives
DTA	Designated Training Area
DTN	Designated Transportation Network
EIS	Environmental Impact Statement
FLPMA	Federal Land Policy Management Act
FNI	Fugro National, Inc.
FSED	Full Scale Engineering Development
FY	Fiscal Year
GBNP	Great Basin National Park
HDR	Henningson, Durham, & Richardson, Inc.
HSS	Horizontal Shelter Site
IOC	Initial Operational Capability
KGRA	Known Geothermal Resources Area
MF	Medium Frequency
MMC	Martin Marietta Company
MOA	Military Overflight Area
MOB	Main Operating Base
MPS	Multiple Protective Structure
MPT	Mobile Patrol Teams
NCA	National Control Authorities
NEPA	National Environmental Policy Act
NH&S	Nuclear Hardness and Survivability
OB	Operational Base
OBTS	Operational Base Test Site

OSR	Operational Support Road
PLU	Preservation of Location Uncertainty
PMOA	Programmetric Memorandum of Agreement
POL	Petroleum, Oils, and Lubricants
PS	Protective Structure
QA	Quality Assurance
QD	Quantity Distance
R&D	Research and Development
REPR	Real Estate Planning Report
RES	Renewable Energy Sources
RMP	Ralph M. Parsons Company
ROW	Right-of-way
RSS	Remote Surveillance Site
SAC	Strategic Air Command
SALT	Strategic Arms Limitation Talks
SHPO	State Historic Preservation Officer
STV	Special Transport Vehicle
T&E	Threatened and Endangered
TEL	Transporter and Erector Launcher
TI	Technical Interchange
TSB	Test Support Building
USGS	United States Geological Survey
USPLS	United States Public Land Survey
UTM	Universal Transverse Mercator
V&H	Vulnerability and Hardness

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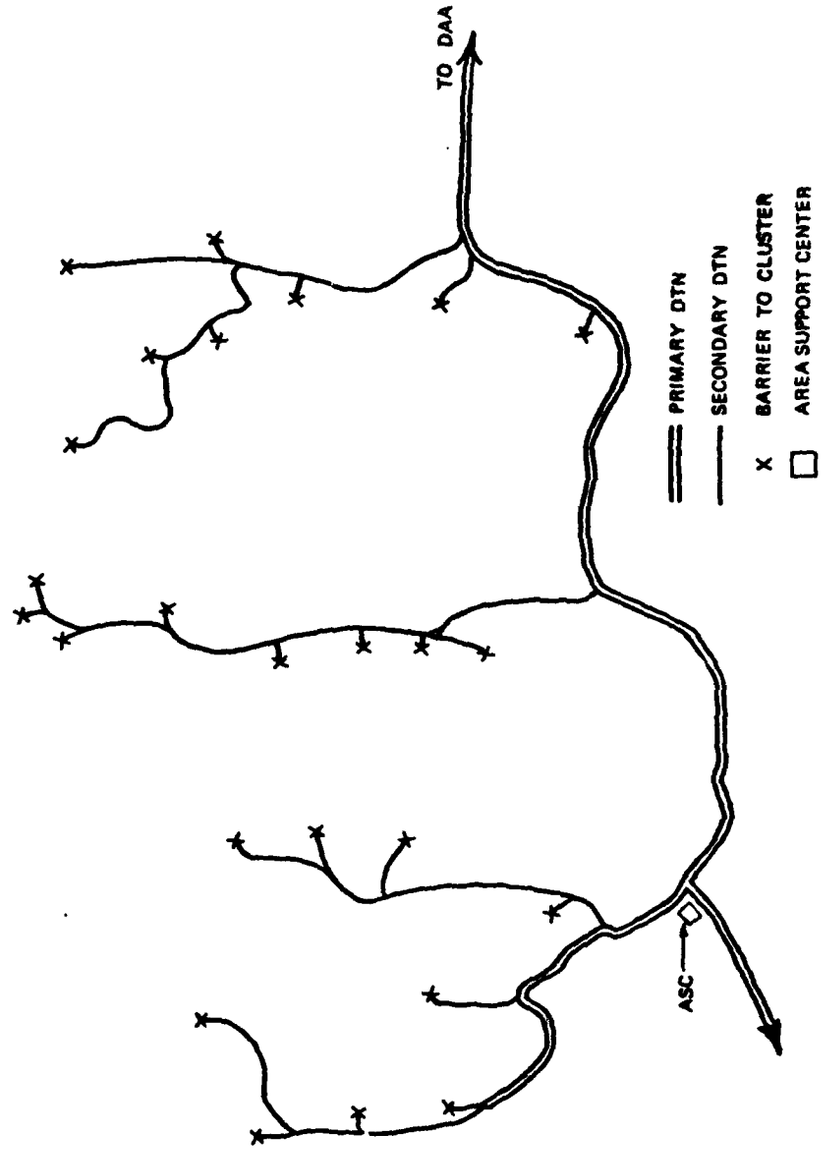
1.0 INTRODUCTION

The purpose of this report is to present the results and documentation of the studies performed by the Designated Transportation Network (DTN) working group on the routing of the DTN and preliminary siting of the Area Support Centers (ASC) in the Nevada-Utah study area.

The DTN is a road system for transporting MX missiles (Figure 1-1) between the Main Operating Base (MOB) and the 37 individual valleys which make up the Designated Deployment Area (DDA) (U. S. Department of the Air Force, BMO/AFSC, 1980).

The ASC is a 55-acre (136-hectares), fenced installation adjacent to the DTN which will provide facilities to support maintenance and security personnel and equipment (Figure 1-2) (U.S. Department of the Air Force, BMO/AFRCE-MX, 1980b). Each ASC will provide living and working accommodations for 200 to 300 people. The facilities include housing, warehouse, maintenance shops, helipads, and vehicle parking. Four ASCs would be required for a 200 cluster DDA.

The report consists of five sections. This section includes a brief description of the study area and a review of previous studies. Sections 2.0 through 5.0 summarize the scope of the study, the methodology, and criteria used as well as give a detailed description of the field reconnaissance effort and pass evaluation. Evaluations of alternative DTN and ASC locations to select the optimum DTN routing and ASC sites are



REFERENCE:
UNITED STATES DEPARTMENT OF THE AIR FORCE, BMO/AFSC, 1980

Ertec
The Earth Technology Corporation

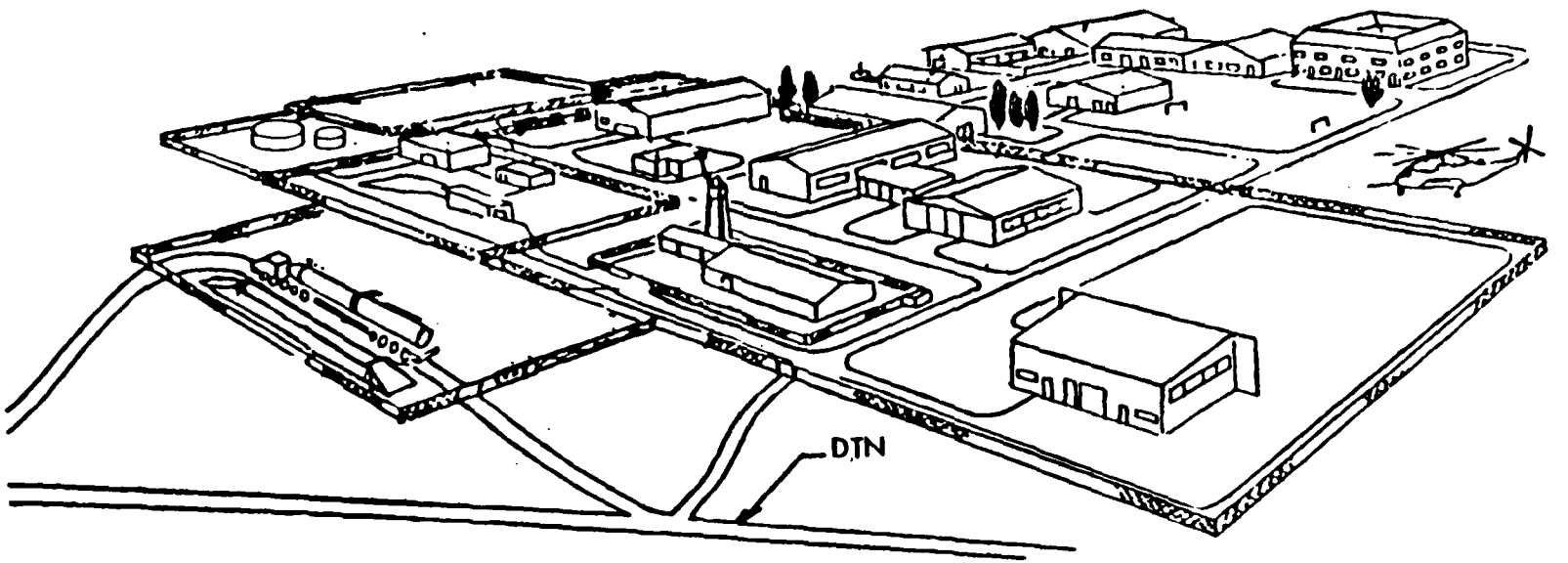
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CONCEPTUAL DTN ROADS AND ASC LAYOUT

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS

30 NOV 81

FIGURE 1-1



AREA SUPPORT CENTER PROVIDES

- SYSTEM SECURITY
- SYSTEM MAINTENANCE
- PERSONNEL SUPPORT
- MATERIAL SUPPORT
  - SPARES
  - REPAIRABLES
  - CONSUMABLES
- HELICOPTER SUPPORT
- VEHICLE SUPPORT
- EQUIPMENT SUPPORT
- COMMUNICATIONS

REFERRENCE:

UNITED STATES DEPARTMENT OF THE AIR FORCE, BMO/AFRCE–MX, 1980b

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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

CONCEPTUAL AREA SUPPORT CENTER

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS

30 NOV 81

FIGURE 1-2

presented in Section 6.0. Section 7.0 contains a description of the preferred routes and sites.

1.1 STUDY AREA

The DTN study area (Figure 1-3) is located within the Great Basin section of the Basin and Range physiographic subprovince and is comprised of central Nevada and west-central Utah. The physiography is controlled by north-south trending, elongated mountain ranges separated by alluviated valleys.

The mountain ranges in the study area average between 50 and 100 miles (80 and 161 km) in length and between 5 and 15 miles (8 and 24 km) in width. Intervening valleys are roughly the same dimensions. Mountain pass elevations generally range between 4600 and 7500 feet (1402 and 2286 m) above sea level. The highest peak in the area is Wheeler Peak at an elevation of 13,070 feet (3984 m). Valley floor elevations range from 4500 to 6000 feet (1371 to 1829 m) in the DDA.

The geology of the area is dominated by sedimentary and igneous rocks ranging in age from Precambrian to Quaternary and by unconsolidated sediments of Quaternary age. Mountain ranges are eroded remnants of uplifted fault blocks separated by downdropped basins. Almost all the valleys are closed basins with gently sloping alluvial surfaces grading toward a central playa.

Due to the aridity of the region, playas, dunes, and alluvial fans are common features in the valleys. The low rainfall

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DTN/ASC STUDY AREA

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

FIGURE 1-3

also accounts for the dearth of perennial streams, rivers, and lakes. Vegetation is at a minimum. Sage and low brush are common on valley floors while at higher elevations, where water is more plentiful, cottonwoods, juniper, and piñon pines occur.

The population in the area is sparse. Ely, Nevada, is the largest community in the vicinity with a population of about 5626 (White Pine Chamber of Commerce, 1980). Many smaller communities also exist around the study area in Utah and Nevada, thus making the area easily accessible via a number of interstate, federal, and state highways and a network of county dirt roads, both improved and unimproved.

1.2 BACKGROUND

A limited DTN routing program was initiated in September 1979. This study evaluated mountain passes and developed a conceptual routing for a railroad system throughout the DDA. The study included the following.

- A study of existing maps and aerial photos;
- A fly-over field reconnaissance to rank passes by determining the difficulty of crossing; and
- Evaluation of the field and office data.

The results and conclusions of this study were presented in the Railroad Pass Evaluation Report dated 16 November 1979 (Fugro National, Inc., 1979a).

In February 1980, a preliminary study was initiated to route a road DTN system which would permit moving the missile throughout the DDA on a rubber-tired transporter. This study was preliminary and utilized existing highway data and the pass evaluation data in the Railroad Pass Evaluation Report. Conceptual DTN routes were developed for the various MOB options at Coyote Spring Valley, Nevada, and Beryl, Utah. Coexistence with state and federal highways was evaluated in three ways: maximum use, minimum use, and nonuse. A report presenting these results was completed in June 1980 (Fugro National Inc, 1980a).

Subsequently, a series of regional maps depicting cluster layouts connected by the DTN were produced on 22 May, 27 June, 1 July, 17 July, 2 September, and 26 September 1980. The environmental contractor also produced a series of regional cluster layout maps with the DTN. The DTN presented in the Draft Environmental Impact Statement (DEIS) (U.S. Department of the Air Force, 1980) as well as the 26 September 1980 Ertec-generated DTN (Drawing 1-1) formed the baseline for the present DTN study.

Late in FY 79, an initial ASC siting study was performed to determine preliminary site locations. As part of this study, an evaluation of the four-ASC system versus a five-ASC system (one ASC at each OB option) was made. The ASC-system options with the individual site locations were depicted on 2 September 1980 regional layout maps and presented at the System Design Review meeting at Norton Air Force Base on 17 September 1980.

adjustments were made to the site locations, and on 20 October 1980, a resited four-ASC system was provided to the AFRCE-MX and to HDR. This submittal supported a SAC-sponsored field reconnaissance of the ASC sites. The four recommended ASC sites were Pioche (Muleshoe), Eureka (Newark), and Tonopah (Stone Cabin), Nevada, and Delta (Whirlwind), Utah.

During early FY 81, Boeing Aerospace Co. analyzed the sensitivity of certain proposed ASC sites. The analysis was in terms of air and road mileage considerations for a three-, four-, or five-ASC system. The four-ASC system was the least costly of the systems that satisfactorily met the air and road requirements. A BMO letter, dated 17 November 1980, documented the decision to go with a four-ASC system (U.S. Department of the Air Force BMO, 1980a).

2.0 OBJECTIVES AND SCOPE

2.1 OBJECTIVE

The primary objective of the DTN/ASC siting study was to determine the most favorable routing to the DTN and the most suitable locations for the ASCs based on office studies and field reconnaissance. The results of these limited studies provide a basis for more detailed design studies which would have been initiated if the MX-MPS system had not been terminated.

2.2 SCOPE

To meet the primary objective requires the completion of a number of tasks and subtasks which are outlined as follows.

Office Studies and Meetings

- o Develop, review, and consolidate DTN and ASC criteria and requirements;
- o Review and compare alternate DTN routings and ASC locations;
- o Evaluate passes;
- o Collect existing data (highways, land use, environmental, etc.);
- o Evaluate impacts (environmental, land use, etc.);
- o Perform cost comparisons and trade-off studies;
- o Coordinate with other MX groups (OB working group, shelter layout, etc.);
- o Participate in technical interchange meetings among DTN working group members;
- o Layout regional DTN and detailed DTN through the IOC valleys;
- o Determine ASC locations;
- o Locate service roads;
- o Verify and locate potential alternates; and
- o Evaluate passes and routes.

3.0 METHODOLOGY

The current DTN study began with the formation of the DTN working group by the AFRCE-MX on 2 October 1980. Prior to formation of this group, the DTN had been depicted on various conceptual system layout graphics by several contractors, but no organized and comprehensive alignment selection process existed. To establish this process, key contractors and AFRCE-MX personnel were brought together into a working group.

The group members included the following organizations:

1. Air Force Regional Civil Engineer-MX (AFRCE-MX);
2. Strategic Air Command (SAC);
3. TRW (TRW);
4. Ertec Western, Inc. (Ertec);
5. Martin Marietta Corporation (MMC);
6. The Ralph M. Parsons, Co., (RMP);
7. Henningson, Durham, & Richardson (HDR); and
8. U.S. Department of the Army, Corps of Engineers (COE).

Ertec Western, Inc., as the siting contractor, performed the task of group coordinator as well as DTN alignment integrator.

3.1 DTN ROUTING

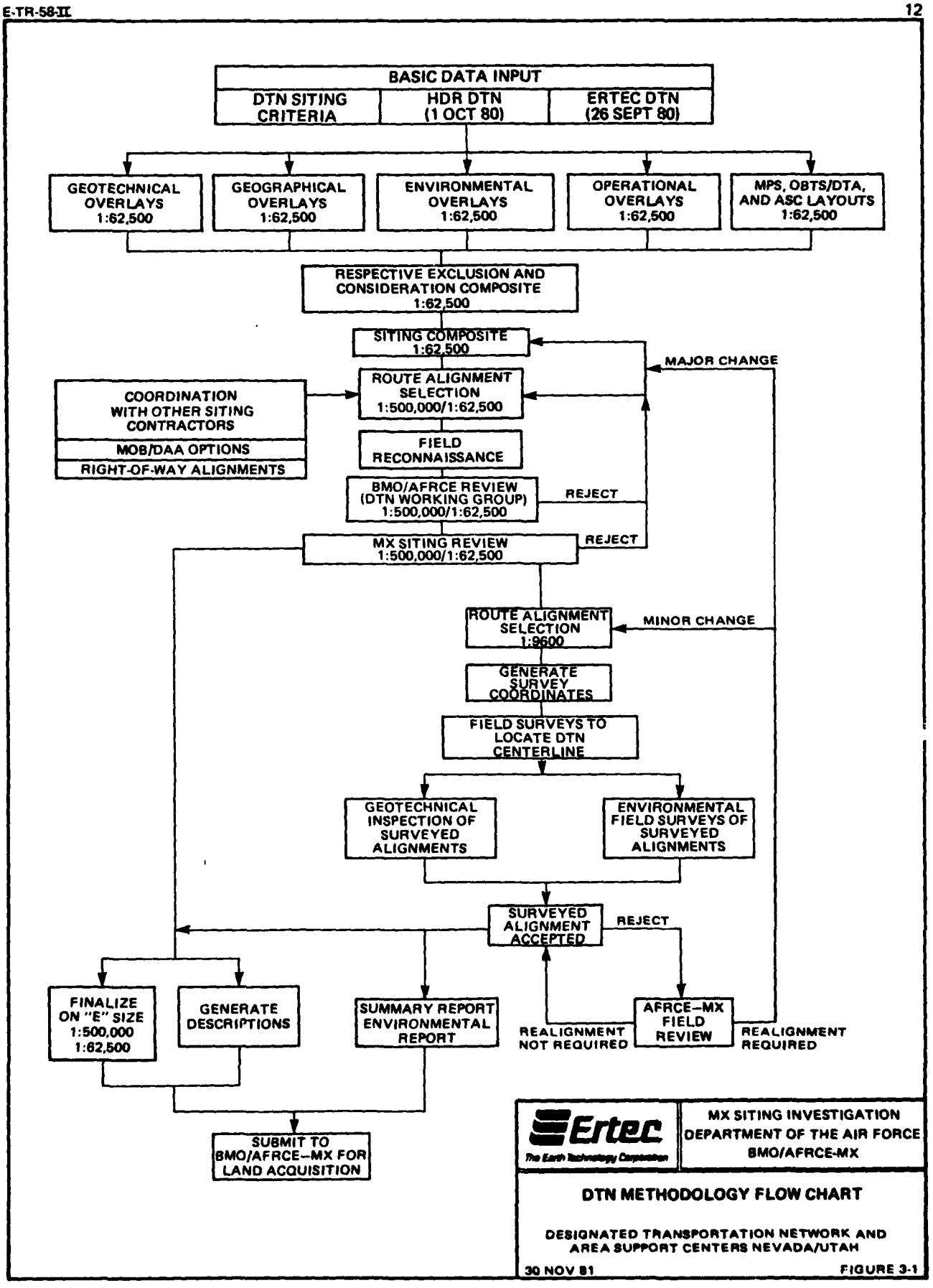
Initially, the group reviewed the preliminary criteria for DTN routing and compared the DTN developed by the Ertec shelter layout team with that appearing in the DEIS. This comparison revealed portions of the DTN that were common to both alignments and other segments where entirely different routes were used to get from one part of the DDA to another. The DTN

working group decided to focus initial efforts on those portions of the DTN which were depicted differently on the two presentations. The alternative alignments and others suggested by the ongoing shelter layout effort and by the earlier railroad pass study were evaluated through extensive field reconnaissance by the working group. On these trips, potential passes were formally evaluated and the completed evaluation sheets were collected for compilation of data. In some cases, the preferred alternate was decided upon during the course of the field trip. In others, analysis of the field data and additional data gathered in the office suggested a preferable route and the evaluation of these alternates was presented to the DTN working group with recommendations for a preferred alignment. In still other cases more detailed trade-off studies were required to identify the perferred alignment for a particular segment of DTN. The preferred alternates were then shown on a regional map of the DDA and distributed to the DTN working group members.

Preferred alignments were also shown on valley maps at 1:62,500 scale which were submitted to the Air Force and used in the state review process. Comments from state officials and other agencies were considered in the adjustment of the DTN. The process of selecting the preferred DTN is illustrated in the methodology flowchart shown in Figure 3-1.

3.2 ASC SITING

ASC siting studies paralleled those for DTN routing and were performed by the DTN working group. These studies began with


BASIC DATA INPUT
DTN SITING CRITERIA
HDR DTN (1 OCT 80)
ERTEC DTN (26 SEPT 80)
GEOTECHNICAL OVERLAYS 1:62,500
GEOGRAPHICAL OVERLAYS 1:62,500
ENVIRONMENTAL OVERLAYS 1:62,500
OPERATIONAL OVERLAYS 1:62,500
MPS, OBTS/DTA, AND ASC LAYOUTS 1:62,500
RESPECTIVE EXCLUSION AND CONSIDERATION COMPOSITE 1:62,500
SITING COMPOSITE 1:62,500
MAJOR CHANGE
COORDINATION WITH OTHER SITING CONTRACTORS
MOB/DAA OPTIONS
RIGHT-OF-WAY ALIGNMENTS
ROUTE ALIGNMENT SELECTION 1:500,000/1:62,500
FIELD RECONNAISSANCE
BMO/AFRCE REVIEW (DTN WORKING GROUP) 1:500,000/1:62,500
REJECT
MX SITING REVIEW 1:500,000/1:62,500
REJECT
ROUTE ALIGNMENT SELECTION 1:9600
MINOR CHANGE
GENERATE SURVEY COORDINATES
FIELD SURVEYS TO LOCATE DTN CENTERLINE
GEOTECHNICAL INSPECTION OF SURVEYED ALIGNMENTS
ENVIRONMENTAL FIELD SURVEYS OF SURVEYED ALIGNMENTS
SURVEYED ALIGNMENT ACCEPTED
REJECT
FINALIZE ON "E" SIZE 1:500,000 1:62,500
GENERATE DESCRIPTIONS
SUMMARY REPORT ENVIRONMENTAL REPORT
REALIGNMENT NOT REQUIRED
AFRCE-MX FIELD REVIEW
REALIGNMENT REQUIRED
SUBMIT TO BMO/AFRCE-MX FOR LAND ACQUISITION
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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
DTN METHODOLOGY FLOW CHART
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH
30 NOV 81
FIGURE 3-1

an update of the criteria and a review of the four locations recommended by SAC in November 1980. These locations, described in a BMO memorandum dated 17 November 1980 (U.S. Department of the Air Force, BMO, 1980a), were considered as baseline for the detailed study that ensued. As refinement of the DTN alignment progressed, location of the ASCs was adjusted to conform to the subsequent siting criteria.

Proposed ASC locations were shown as 1 mi^2 vicinity zones on 1:62,500 scale valley maps and field-checked on DTN reconnaissance trips.

4.0 CRITERIA

The consolidated criteria for the DTN routing and ASC siting are presented in Tables 4-1, 4-2, and 4-3.

In June 1980, the guideline for the DTN to coexist with highways was that "the DTN roads shall not coexist with interstate highways, state highways, or country roads unless terrain dictates the need to coexist (e.g., at mountain passes)" (U.S. Department of the Air Force, BMO/AFRCE-MX, 1980a). However, final policy on coexistence had not been determined at the time this report was prepared.

DESIGNATED TRANSPORTATION NETWORK (DTN)

I. EXCLUSIONS:

- Road grade greater than seven percent

II. CONSIDERATIONS:

- Should not cross railroad
- Cost effectiveness (construction cost vs. operating cost)
- Minimum grade
- Shortest road length
- Minimum elevation

AREA SUPPORT CENTER (ASC)

- Each ASC is to provide security coverage for a circular area with a radius of 65 statute miles
- Locate ASC s along the Designated Transportation Network (DTN) to efficiently provide overnight stopover accommodations for the Special Transportation Vehicle (STV)
- Locate ASC s in "suitable" terrain but without loss of shelter sites
- Arrange ASC s so that the combined service areas cover all shelter locations
- Consider proximity to major highways and local communities as being desirable

Note:
All operational siting requirements (E-TR-58-I)
are applicable unless modified above

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DTN AND ASC OPERATIONAL REQUIREMENTS

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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GEOTECHNICAL

I. EXCLUSIONS:

- Outcropping or shallow rock[1]
- Surface slope greater than 10 percent
- Adverse terrain (two or more drainages 10 feet deep within 1000 feet)[1]
- Standing water, swamps, or perennial streams
- Active playas[1]

II. CONSIDERATIONS:

- Fault-rupture hazard
- Potential sheet wash
- Surface slope greater than five percent
- Dunes
- Desiccation cracks
- Tufa
- Boulder fields

ENVIRONMENTAL

I. EXCLUSIONS:

- Designated wilderness areas
- Wilderness study areas
- Existing/proposed federal and state
  - Wildlife refuges, archaeological areas
- Existing/proposed national
  - Wildlife refuges, preserves, registered archaeological properties
- Federal threatened and endangered species
- Non-attainment air quality areas

II. CONSIDERATIONS:

- Federal and state proposed threatened and endangered species
- Locally identified "sensitive" areas
  - Environmental
  - Socio-Economical
- Visual Resources

NOTE:
1. Except DTN

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DTN AND ASC GEOTECHNICAL/ENVIRONMENTAL REQUIREMENTS

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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GEOGRAPHICAL

I EXCLUSIONS:

- Existing/proposed federal and state:
  - Parks, landmarks, refuges, monuments, forests,[1] recreational areas
- Existing/Proposed National:
  - Grasslands, Indian reservations, ranges, military ranges (training areas, proving grounds, test site), registered historic properties
- Radii from population centers:

  20 statute miles from cities of 25,000 or more
  3.5 statute miles from cities of 5000 to 25,000
  1 statute mile from cities of less than 5000
- Inhabited buildings
- Industrial complexes:
  - Active mining areas, tank farms, pipeline complexes
- "High" potential mineral areas: *
  - Oil and gas fields, active and potentially active mining areas, strippable coal, oil shale, uranium deposits, known geothermal resource areas
- COE recommended exclusions

II CONSIDERATIONS:

- Private property
- State property
- "Good" potential mineral areas: *
  - Oil and gas, active and potentially active mining areas, strippable coal, oil shale, uranium deposits, known geothermal resource areas
- Irrigated farm land
- Prime agricultural land
- Moapa Indian Expansion Area
- Duckwater Indian Expansion Area
- Ranch and grazing allotments
- Existing access roads
- Proposed utility corridors

* Mineral potential to be determined by a study as required by FLPMA

Note:

1. Except DTN

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DTN AND ASC GEOGRAPHICAL REQUIREMENTS

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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5.0 FIELD RECONNAISSANCE AND PASS EVALUATION

The purpose of the field reconnaissance was to verify the preferred DTN routes and ASC locations and to identify potential alternates. The evaluation of passes between valleys was the key element in the reconnaissance.

5.1 FIELD RECONNAISSANCE

Seven field trips were made between 24 November 1980 and 19 June 1981. The valleys and passes traversed in each trip, as well as its specific purpose, are tabulated in Appendix B. The combined routes of all trips are depicted in Drawing 5-1. The first trip covered the DTN from the Beryl and Milford OB options to the Initial Operational Capability (IOC) valleys. The following two trips traversed the majority of the DDA passes and DTN routes. Subsequent to this regional scale reconnaissance, three trips were arranged to check some local DTN routes. The last DTN field reconnaissance was to verify modifications to DTN routings resulting from the completion of revised regional map and the valley layouts at 1:62,500 scale which were presented on 15 May 1981 to AFRCE-MX. Evaluation of the ASC sites was also performed on these trips whenever the itinerary passed near a potential ASC location.

The reconnaissance was planned and arranged by Ertec with concurrence of the DTN working group. The results of the reconnaissance trips were discussed in subsequent meetings to determine any necessary adjustment in DTN routing or ASC locations.

5.2 PASS EVALUATION

Observations for the passes relevant to geotechnical, engineering, geographical, and environmental considerations were recorded on a DTN Pass Evaluation Sheet (Figure 5-1) by all participants on the trip. Tentative ranking for each pass was also assessed and entered on this form. Ranking categories similar to those of the Railroad Pass Evaluation Report (Fugro National Inc., 1979a) were used. These categories are described in Figure 5-2. The data from the completed pass evaluation sheets were compiled on the Pass Evaluation Summary Table, Appendix C. The passes are alphabetically listed along with comments on their locations, topographic data, and geotechnical and engineering considerations. Geographical and environmental considerations are also presented. The geographical locations of all the passes studied are depicted in Drawing 5-2.

In order to evaluate the mountain passes for DTN alignment for intervalley connections, the following factors were considered.

- o Geotechnical evaluation;
- o Engineering evaluation;
- o Topographic conditions;
- o Geographic and environmental considerations;
- o Operational versus construction costs; and
- o Cluster configuration.

5.2.1 Geotechnical Evaluation

The geotechnical evaluation consisted of those aspects of foundation engineering and engineering geology most critical to the

MX DTN PASS STUDY

DTN PASS EVALUATION SHEET

PASS NAME: _____ STATE _____

BETWEEN: _____ Valley and _____ Valley in _____ Mt. Range

INSPECTION: OFFICE-TOPO _____ DATE _____ FIELD _____ DATE _____
OFFICE-PHOTO _____ DATE _____

ACCESS: ☐ PAVED ROAD ☐ UNPAVED ROAD ☐ RAILROAD ☐ NONE

TOPOGRAPHY: ELEVATION _____ LENGTH _____
GRADE (%) _____ ORIENTATION _____

CONSTRICTIONS/
CONSTRUCTION WIDTH: ☐ NO CONSTRICTIONS ☐ CONSTRICTION @ PASS & LOCALLY ☐ ALONG ALIGNMENT ☐ CONSTRICTION AT PASS ☐ CONSTRICTIONS ALONG ENTIRE ALIGNMENT

ALIGNMENT: ☐ NEARLY STRAIGHT ☐ BROAD CURVES ☐ ONE OR TWO SHARP CURVES ☐ MORE THAN TWO SHARP CURVES

DISSECTION/DRAINAGE: ☐ SMOOTH, FEW CROSSINGS ☐ MINOR DISSECTION, SEVERAL OR MORE CROSSINGS ☐ NUMEROUS MOD. DISSECTED CROSSINGS ☐ ONE MAJOR DRAINAGE (REQ. SPECIAL X-ING) ☐ MORE THAN ONE MAJOR CROSSING

SIDE SLOPES: ☐ NO SIDE SLOPES WITHIN CONSTRUCTION AREA ☐ FLATTER THAN 3:1 ☐ BETWEEN 3:1 AND 2:1 ☐ BETWEEN 2:1 AND 1:1 ☐ STEEPER THAN 1:1 ☐ OTHER, _____

GEOTECHNICAL CONSIDERATIONS:

FOUNDATION MATERIALS: ☐ ALLUVIAL FAN ☐ ALLUVIUM ☐ DUNES/UNCONSOLIDATED MATERIALS ☐ ROCK ☐ ROCK TYPES _____

SLOPE STABILITY/
LANDSLIDES: ☐ NO LANDSLIDES OBSERVED ☐ EXISTING LANDSLIDES OUTSIDE ALIGNMENT ☐ EXISTING SLIDES WITHIN ALIGNMENT

EXCAVATABILITY/
HARDNESS: ☐ EASY GRADING ☐ MODERATE GRADING W/SOME DIFFICULTY ☐ DIFFICULT GRADING ☐ RESISTANT ROCK ☐ PROBABLE CALICHE IN MANY AREAS

FLOOD POTENTIAL: ☐ LOW ☐ MODERATE ☐ HIGH (SIDESTREAMS & MAIN CHANNELS)

DEPOSITION/
DUNE ACTIVITY: ☐ NO ACTIVITY ☐ ACTIVE CHANNEL DEPOSITION/EROSION ☐ ACTIVE/ POTENTIAL DUNE MIGRATION

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EXAMPLE OF DTN FIELD RECONNAISSANCE EVALUATION SHEET – SIDE 1

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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MX DTN PASS STUDY

DTN PASS EVALUATION SHEET (Cont)

GEOTECHNICAL CONSIDERATIONS (Cont):

SEISMIC CONSIDERATIONS ☐ NO EVIDENCE OR REPORT ☐ QUATERNARY FAULTING ☐ GROUND CRACKS, LURCHING

CONSTRUCTION CONSIDERATIONS:

GRADING REQ: _____

SIDESLOPE STABILITY: ☐ LITTLE OR NO POTENTIAL FOR SLIDES WITHIN ALIGNMENT FROM CONSTRUCTION ☐ POTENTIAL FOR SLIDES

ALTERNATE ALIGNMENTS _____

DRAINAGE STRUCTURES _____

CULTURAL/ENVIRONMENTAL RESTRICTIONS:

EXISTING ROADS/UTILITIES _____
FORESTS, WILDLIFE, SENSITIVE AREAS _____
LAND USE/OWNERSHIP _____

EVALUATION:

EASY _____
MODERATE _____
DIFFICULT _____
VERY DIFFICULT _____

REMARKS: _____

Reviewer (Print) _____ Date _____

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EXAMPLE OF DTN FIELD RECONNAISSANCE EVALUATION SHEET – SIDE 2

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 FIGURE B-1 2 OF 2

Ranking	Category	Description
I	Easy	Minor alignment, grade, and drainage problems; light to moderate grading, none to one major structure
II	Moderate	Some alignment, grade, and drainage problems; moderate grading, one major structure
III	Difficult	One or more major alignment, grading, and drainage problems; moderate to heavy grading; some deep cuts or fills; none to more than one major structures
IV	Very Difficult	Several severe alignment, grading, and drainage problems; heavy grading requiring deep cuts or fills over much of alignment; possible slope instability
V	Avoid if Possible	Alignment and grade unacceptable without excessively deep, long cuts and fills; major slope stability problems

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DESCRIPTION OF OVERALL PASS EVALUATION RANKING CATEGORIES

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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route feasibility. Major factors considered were constructibility, road bed performance after construction, foundation materials, slope stability, flood potential, and deposition or erosion activity.

5.2.2 Engineering Evaluation

The engineering evaluations were based on visual inspection of the specific locations, taking into consideration the amount of grading required, ease of excavation, constrictions observed, alignment, number of drainages, and any major structure required. Consideration was also given to alternate alignments.

5.2.3 Topographic Conditions

To aid in describing and evaluating the individual passes, topographic maps were studied to estimate the maximum percent grade, the length of the pass, the elevation at the summit, and the pass orientation. The maps used were the U.S. Geological Survey, 7 1/2', 15', and 2° topographic maps and some 1:62,500 scale topographic maps made by Ertec Airborne Systems, Inc.

5.2.4 Geographic and Environmental Considerations

General geographic and environmental observations were made during the field reconnaissance studies. Status and location of existing roads, utilities, national forests, wildlife preserves, sensitive areas, land use, and ownership were considered.

5.2.5 Operational Versus Construction Costs

Cases where use of a more difficult pass would shorten a segment of DTN were studied relevant to their overall cost. These evaluations were considered in the overall ranking of the passes.

5.2.6 Cluster Configuration

Cluster configuration and location has played an important role in determining DTN alignment and alternate pass selection. In many instances, field reconnaissance studies were made to check passes that may permit realigning the DTN to allow a more favorable cluster layout.

6.0 EVALUATION OF OPTIMUM DTN ROUTINGS AND ASC LOCATIONS

For this discussion, the DDA, within which the DTN will be routed and the ASCs will be sited, has been divided into four areas as follows:

Central Area: (Nevada)	Delamar, Pahroc, Dry Lake, Muleshoe, Cave, White River, Coal, Garden, Penoyer, Lake, Spring, and Hamlin valleys;
Western Area: (Nevada)	Railroad (south), Hot Creek, Reveille, Big Sand Springs, Stone Cabin, Ralston, Monitor (south), and Big Smoky valleys;
Northwestern Area: (Nevada)	Jakes, Railroad (central and north), Newark, Long, Butte, Antelope, Kobeh, Monitor (north), and Little Smoky valleys; and
Eastern Area: (Utah)	Snake, Tule, Fish Springs Flat, Dugway, Whirlwind, Sevier Desert, Sevier Lake, Wah Wah, and Pine valleys.

In each of the above areas, the majority of the valleys are either contiguous or separated by passes which provide relatively easy access. In these situations, major engineering or geotechnical factors did not govern the routing, and the DTN route was developed according to the requirements and efficiency of the shelter layouts. Environmental factors were evaluated along the proposed DTN route alternatives. Environmental exclusions were avoided and only those considerations regarded as significant will be mentioned in the evaluations. The issues of less environmental concern are not presented. When a route is said to be "selected", it refers to the selection of a "preferred alternative" over the other alternatives. The remaining alternatives then become the alternate routes. Subsequent discussion will be limited to those situations where

siting factors dictated that more than one alignment be considered.

6.1 DTN AND ASC WITH MOB AT COYOTE SPRING VALLEY, NEVADA

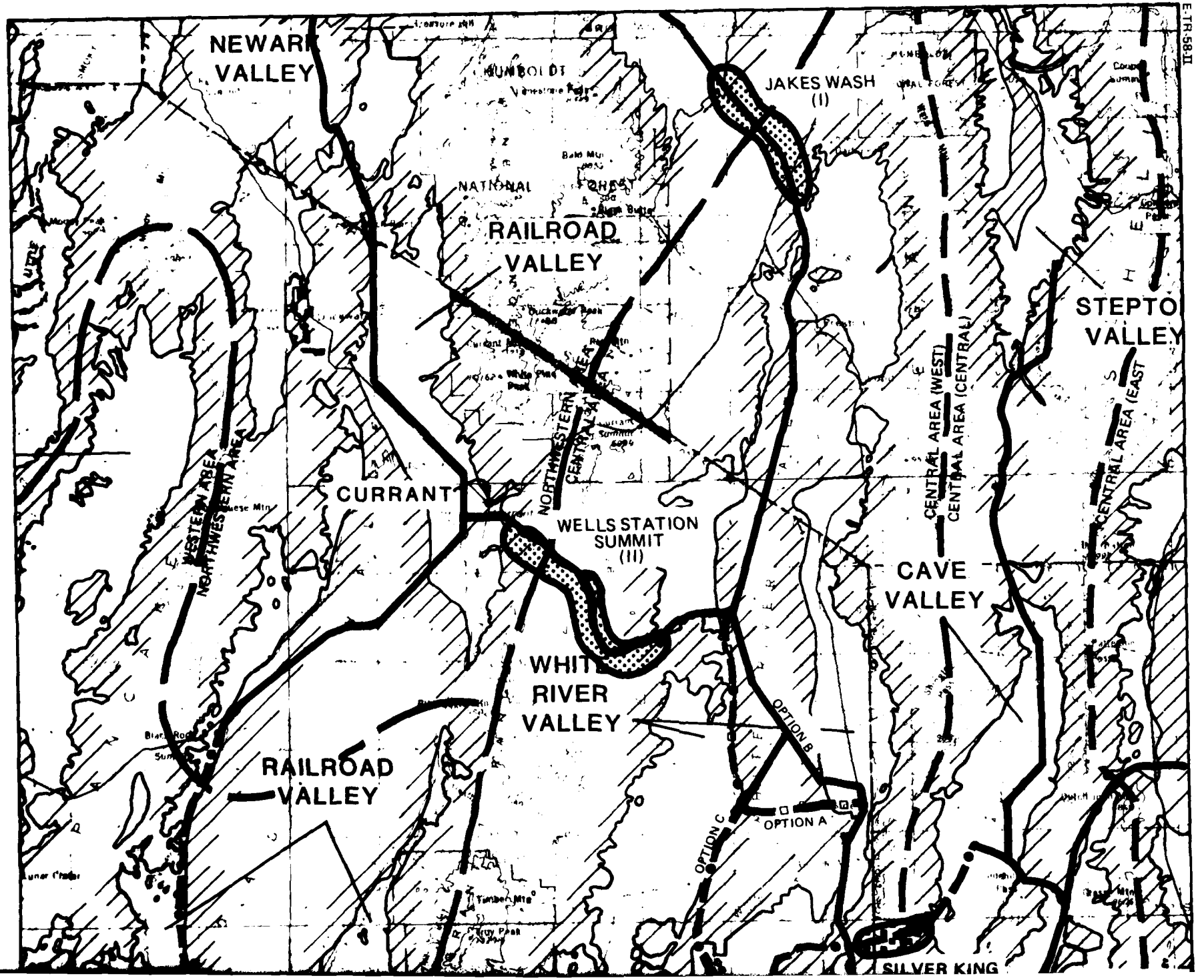
The MOB in Coyote Spring Valley is 30 miles (48 km) south of Delamar Valley along Highway 93. The Designated Assembly Area (DAA) is in the northern portion of the MOB and immediately north of the Lincoln-Clark counties line.

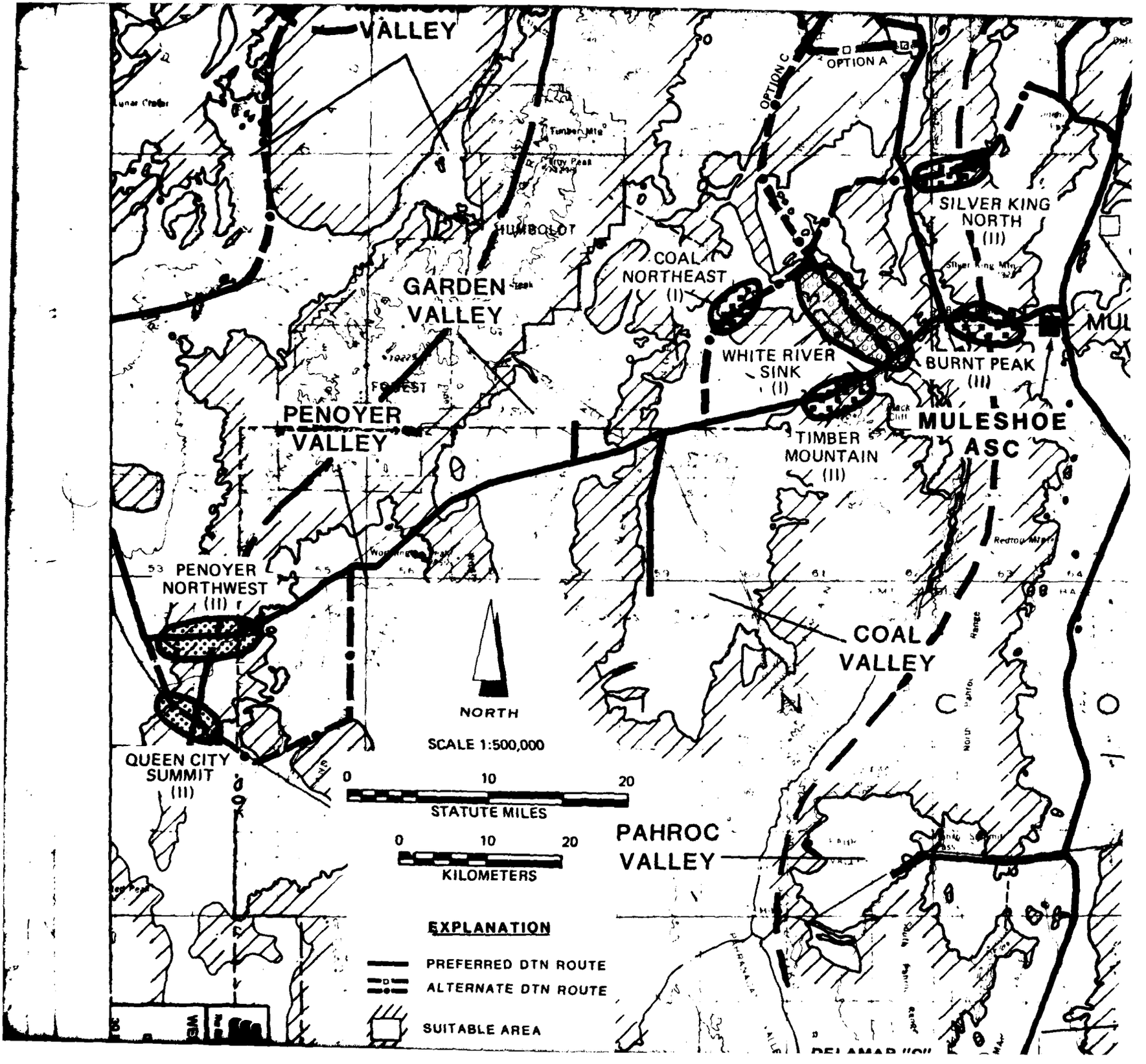
6.1.1 DTN between MOB and DDA

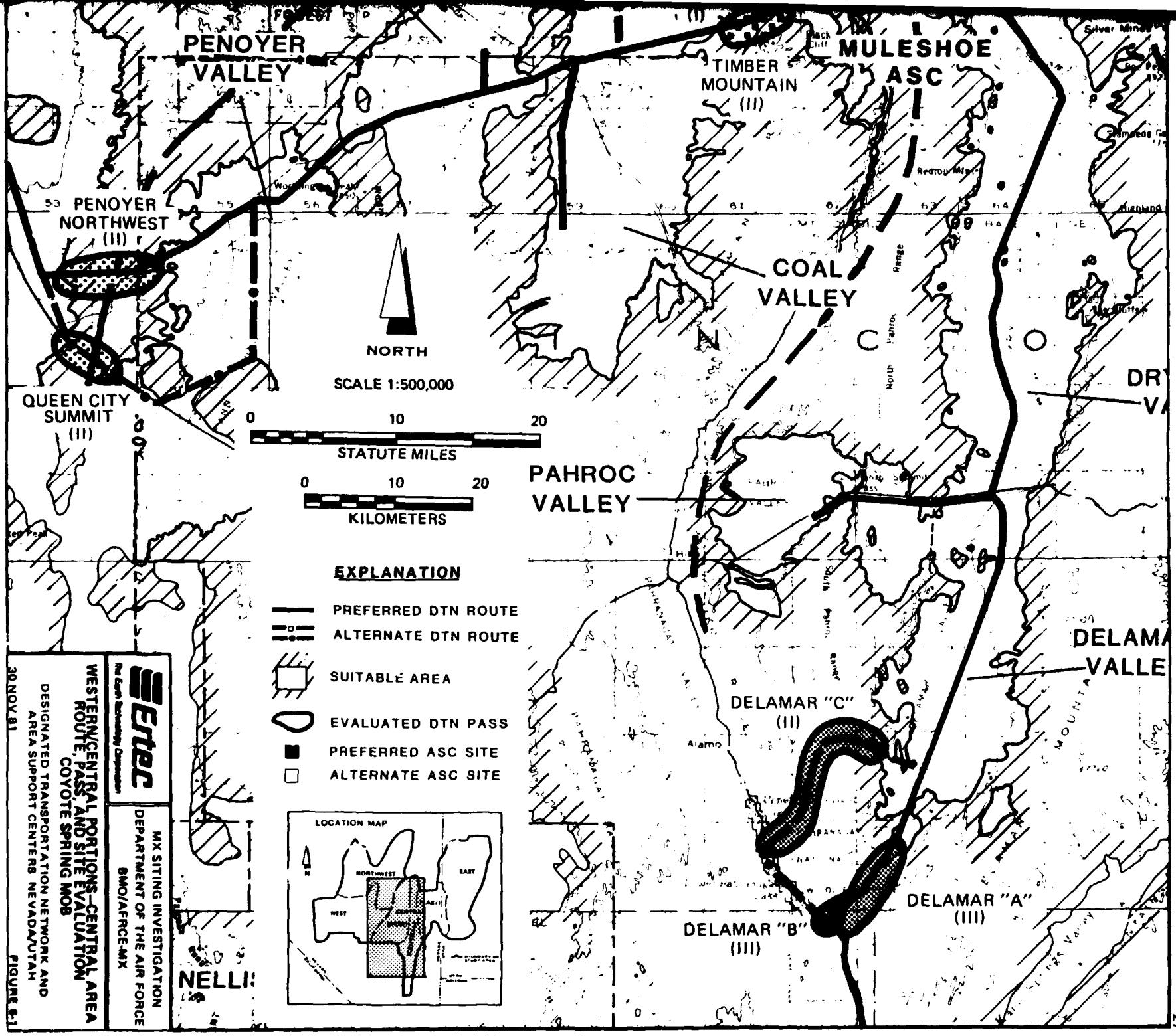
Three passes, Delamar A, B, and C (Figure 6-1), were identified and evaluated as entrances into Delamar Valley (Ertec Western, Inc., 1981a). Delamar A and B alignments are the same alignments except at the southern end. Delamar A extends further south, while Delamar B angles more to the southwest into the Pahranagat National Wildlife Refuge. Delamar A alignment is preferred over alignment B because A does not enter the wildlife refuge. Delamar C alignment is to the west of Delamar alignments A and B and represents an even longer intrusion into the Pahranagat National Wildlife Refuge.

The advantages and disadvantages of Delamar A and C alternatives are summarized as follows.

	Advantages	Disadvantages
Delamar A	Shorter pass and overall route	Steeper grade (five to seven percent)
	Avoids wildlife refuge	More difficult construction (cuts into rock); higher per-mile costs
		Wilderness study area to southeast


NEWARK VALLEY
HUMBOLDT
JAKES WASH (I)
NATIONAL
RAILROAD VALLEY
STEPTOE VALLEY
CENTRAL AREA (WEST)
CENTRAL AREA (CENTRAL)
CENTRAL AREA (EAST
NORTHWESTERN AREA
NORTHWESTERN CENTRAL AREA
CURRANT
WELLS STATION SUMMIT (II)
CAVE VALLEY
WHITE RIVER VALLEY
OPTION B
OPTION C
OPTION A
RAILROAD VALLEY
SILVER KING
E-TR-58-II


VALLEY
OPTION C
OPTION A
SILVER KING NORTH (II)
HUMBOLDT
COAL NORTHEAST (I)
GARDEN VALLEY
WHITE RIVER SINK (I)
BURNT PEAK (II)
PENOYER VALLEY
MULESHOE ASC
TIMBER MOUNTAIN (II)
PENOYER NORTHWEST (II)
COAL VALLEY
NORTH
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
QUEEN CITY SUMMIT (II)
PAHROC VALLEY
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA


PENOYER VALLEY
TIMBER MOUNTAIN (II)
MULESHOE ASC
PENOYER NORTHWEST (II)
COAL VALLEY
NORTH
SCALE 1:500,000
QUEEN CITY SUMMIT (II)
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
PAHROC VALLEY
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE
LOCATION MAP
DELAMAR "C" (II)
DELAMAR "A" (III)
DELAMAR "B" (III)
NELLI
DELAMA VALLE
WESTERN/CENTRAL PORTIONS—CENTRAL AREA ROUTE, PASS, AND SITE EVALUATION COYOTE SPRING MOB
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH
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FIGURE E-1
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	Advantages	Disadvantages
Delamar C	Lower grade (three percent)	Route through wildlife refuge
	Less rock excavation	14 miles (23 km) longer
	Further away from wilderness study area	Routed up a wash; subsubject to flooding.

Delamar A was chosen as the DTN route access into Delamar Valley after considering the lower overall construction costs, the shorter operational distance, and the lesser amount of environmental impact.

An alternate DTN route between the MOB and Pahroc Valley, which coexisted with Highway 93, was deemed not practical. The route was determined to be unacceptable because of its environmental sensitivity. The route crosses the full north-south length of the Pahranagat National Wildlife Refuge and bisects the small communities of Alamo and Ash Springs.

6.1.2 DTN in Central Area, Nevada

Because of its contiguous nature and the relatively easy passes between the intervening valleys in the central and eastern portion of the Central Area, development of DTN routing and shelter layout progressed simultaneously. No significant engineering or geotechnical decisions other than shelter layout considerations were needed to determine the DTN.

The western portion of the Central Area can be accessed from Dry Lake, Muleshoe, and Cave valleys by using one of several passes. The passes are Burnt Peak (Rank II, between Dry Lake and White River valleys); Timber Mountain (II, White River and Coal); Silver King (II, Muleshoe and White River); Silver King

North (II, Cave and White River); and Coal Northeast (I, White River and Coal). The Burnt Peak and Timber Mountain pass combination was selected because they represent the earliest exit and shortest route from the central portion to the western portion of the Central Area without loss of a cluster.

Once into the western portion of the Central Area, the DTN diverges to the southwest into Coal and Garden valleys and north into White River Valley. Studies were performed to determine the optimal routing in both of these directions.

In White River Valley, an environmental study (HDR, 1981b) concluded that this valley is sensitive from a biological as well as archaeological perspective. Because of the proximity to sensitive areas, all potential DTN routes north and across the valley would likely cause indirect impacts on a number of resources.

Three options (Figure 6-1) were studied for crossing White River Valley from Burnt Peak. The results are summarized below:

Options	Advantages	Disadvantages
A (up east side and straight across valley (E-W)	Coexists with Hwy 38 for 21.5 miles (35 km) (less environmental impact than Option C)	Bisects valley north and adjacent to wildlife refuge
	Less dissection of central White River Valley	Primary DTN segment 6 miles (10 km) longer than Option B
B (Up east side and diagonally across valley, SSE-NNW)	Primary DTN 6 miles (10 km) shorter than Option A	Dissects central White River Valley

Options	Advantages	Disadvantages
B (Cont)	Coexists with Hwy 38 for 21.5 miles (35 km) (less environmental impact than Option C)	Longer secondary DTN
C (Up west side, S-N)	Less miles of DTN to be constructed because of diversion from common portion, 4.5 miles (7 km) closer to Timber Mountain Pass	Does not coexist with existing highway Adjacent to west side of wildlife refuge Southern 10 miles (16 km) located in wash or across numerous deep cross drainages

Option B was selected as the most optimal route after considering the potential environmental impacts and the overall construction costs.

To determine the optimal routing to the southwest into Coal and Garden valleys, a study was performed by Ertec. This study examined the option of using Coal Northeast Pass if Timber Mountain Pass was not available due to potential conflicts with existing mining rights in the pass. This was done in combination with the previously discussed three options crossing White River Valley.

It was concluded that the combination of using Timber Mountain Pass to go west into Coal Valley and using Option B to cross White River Valley (north along the highway and then diagonally across) will be the optimum route.

6.1.3 DTN Connections from Central to Western and Northwestern Areas, Nevada

Of the potential valley connections available for exit from the Central Area to the west and the northwest, only four passes were deemed acceptable.

Connections	Passes (Rank)
Between Penoyer and Railroad (south) valleys	Penoyer Northwest (II), and Queen City Summit (II)
Between White River and Railroad (central) valleys	Wells Station Summit (II)
Between White River and Jakes valleys	Jakes Wash (I)

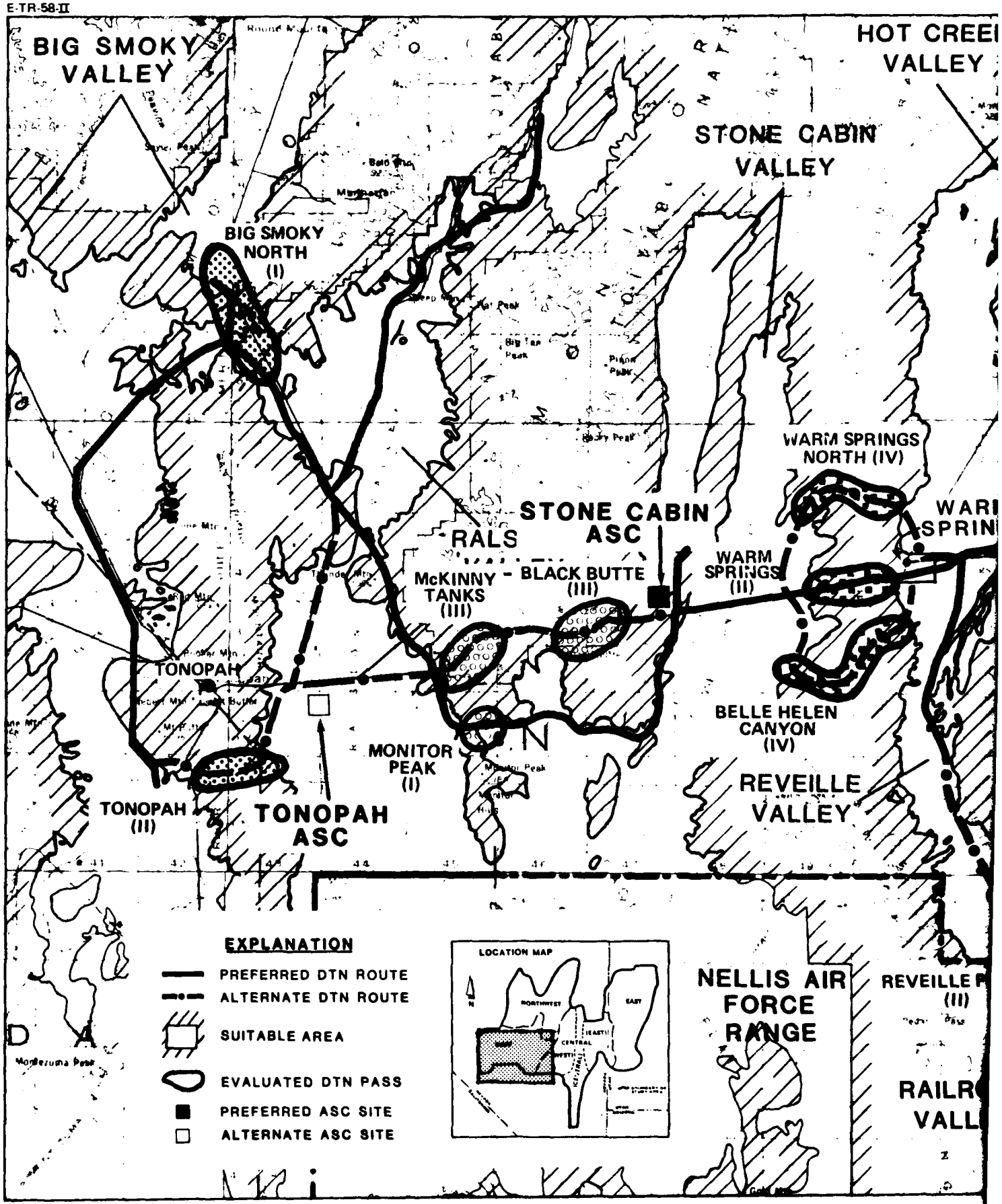
Penoyer Northwest Pass was selected as the exit to the Western Area over Queen City Summit because there will be less DTN to construct, operating distance will be shorter, and the interface with the proposed shelter layouts in the valleys will be easier, and no significant environmental issues affected the choices.

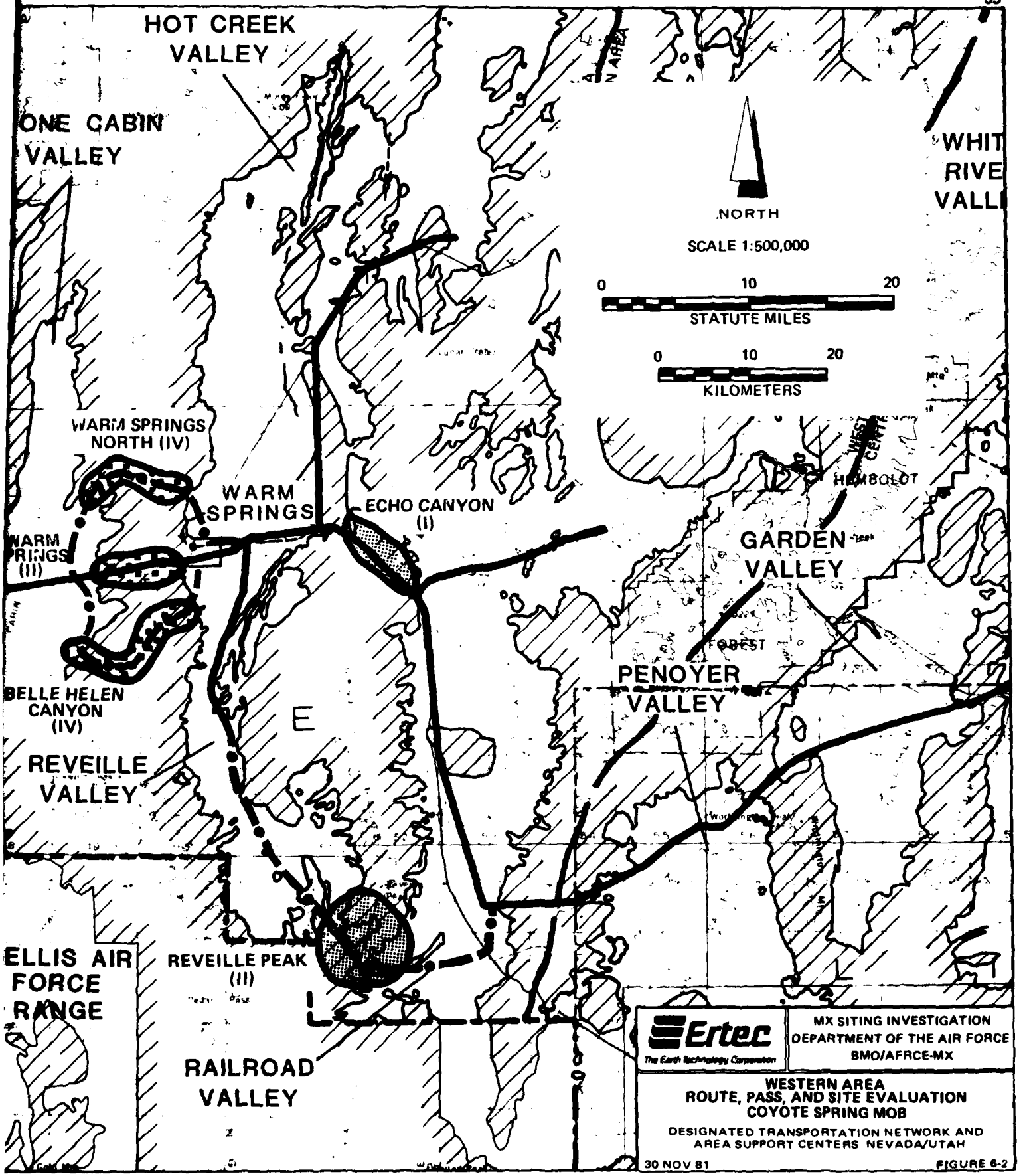
The Wells Station Summit Pass was selected as the most acceptable pass to provide direct access into the Northwestern Area and to the Newark ASC. Although it is a long pass and involves some difficult construction for portions of this route, it is preferred over any of the other alternates. Other alternatives (i.e., through Railroad [south] or Jakes valleys) would require much longer primary DTN and increased operational time to the Newark ASC. The decision to use Wells Station Summit Pass was confirmed after a field reconnaissance was performed and the road constructibility within this pass established.

6.1.4 DTN in Western Area, Nevada

After entering southern Railroad Valley through Penoyer Northwest Pass, the DTN alignment parallels state and federal highways across southern Railroad, Hot Creek, and Stone Cabin valleys (Figure 6-2). Echo Canyon Pass (I) was selected as the connection between southern Railroad and Reveille/Hot Creek valleys in all DTN studies. The use of Reveille Peak Pass would add significantly to the total DTN length. Between Reveille and Stone Cabin valleys, there are three passes. These passes are Warm Springs (II), Warm Springs North (IV), and Belle Helen Canyon (IV). Warm Springs Pass was selected because it is the most direct route and presents the least construction problems.

Access is preferred from Stone Cabin to Ralston Valley through Monitor Peak Pass (I) so as to avoid the difficult passes of Black Butte (III) and McKenney Tanks (III). The preferred DTN route through Ralston Valley is dependent on the access into Big Smoky Valley. While considering the passes to the south of Tonopah as access to Big Smoky Valley, the DTN was routed across Ralston Valley, coexisting with Highway 6. Alternative passes for access from Ralston Valley into Big Smoky Valley from both the south and north were examined. It was determined that the northern route requires less DTN construction miles and will avoid potential interference with mining claims and private properties encountered in the southern route. With the selection of Big Smoky North Pass as the connection between Ralston and Big Smoky valleys, the DTN through Ralston Valley


BIG SMOKY VALLEY
HOT CREEK VALLEY
STONE CABIN VALLEY
BIG SMOKY NORTH (I)
WARM SPRINGS NORTH (IV)
STONE CABIN ASC
RALS
McKINNY TANKS (III)
BLACK BUTTE (III)
WARM SPRINGS (II)
TONOPAH
BELLE HELEN CANYON (IV)
MONITOR PEAK (I)
REVEILLE VALLEY
TONOPAH (II)
TONOPAH ASC
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE
LOCATION MAP
NORTHWEST
EAST
NELLIS AIR FORCE RANGE


HOT CREEK VALLEY
ONE CABIN VALLEY
WHIT RIVE VALL
NORTH
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
WARM SPRINGS NORTH (IV)
WARM SPRINGS
ECHO CANYON (I)
WARM RINGS (II)
HUMBOLDT
GARDEN VALLEY
FOREST
PENOYER VALLEY
BELLE HELEN CANYON (IV)
REVEILLE VALLEY
ELLIS AIR FORCE RANGE
REVEILLE PEAK (II)
RAILROAD VALLEY
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
WESTERN AREA
ROUTE, PASS, AND SITE EVALUATION
COYOTE SPRING MOB
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH
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FIGURE 6-2

was optimized by going diagonally across the valley and to the northeast of Thunder Mountain. Once reaching the junction of Highways 82 and 8A, the DTN coexists with Highway 8A. Access into Monitor Valley from Ralston Valley is through Monitor South Pass (II).

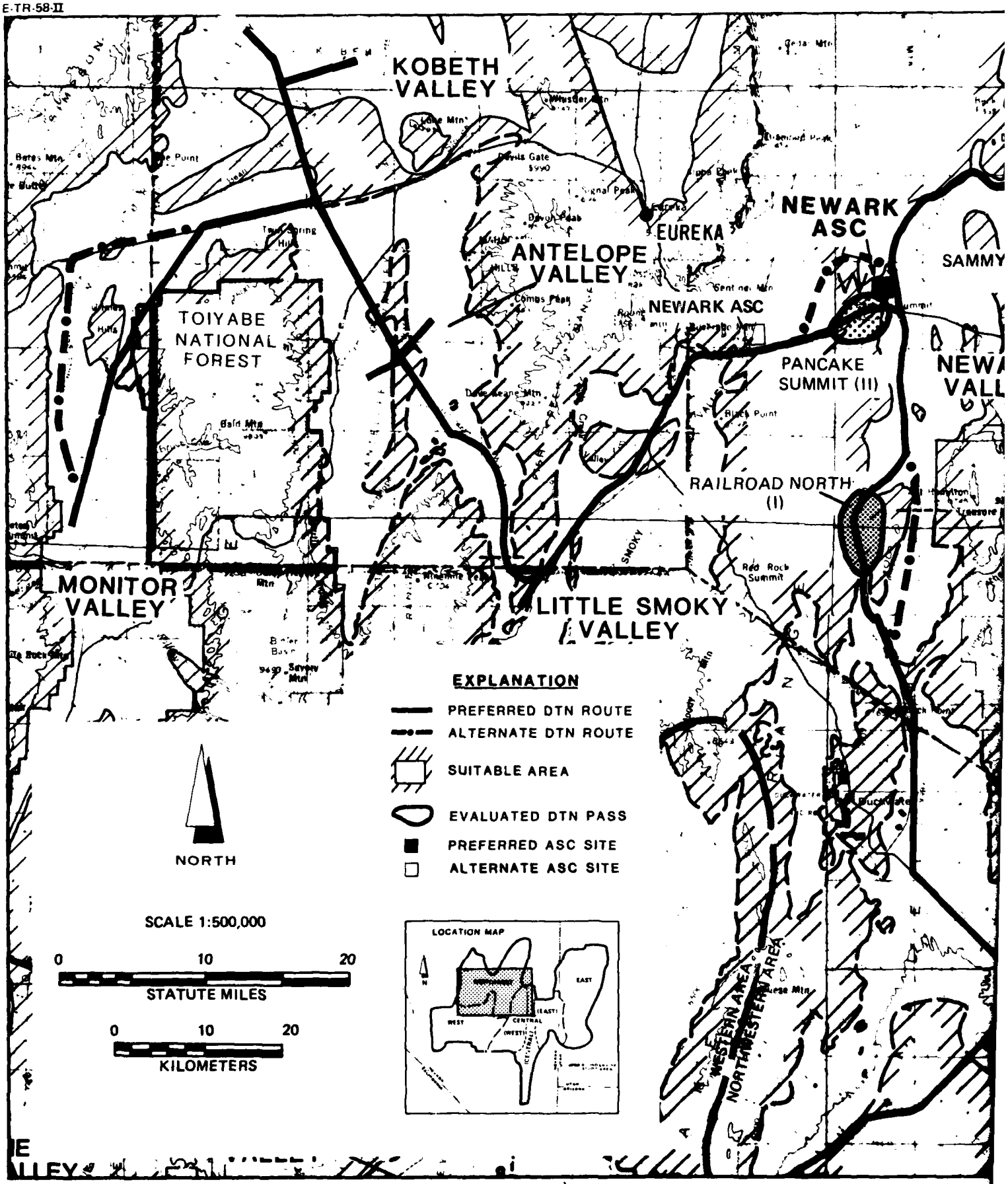
6.1.5 DTN in Northwestern Area, Nevada

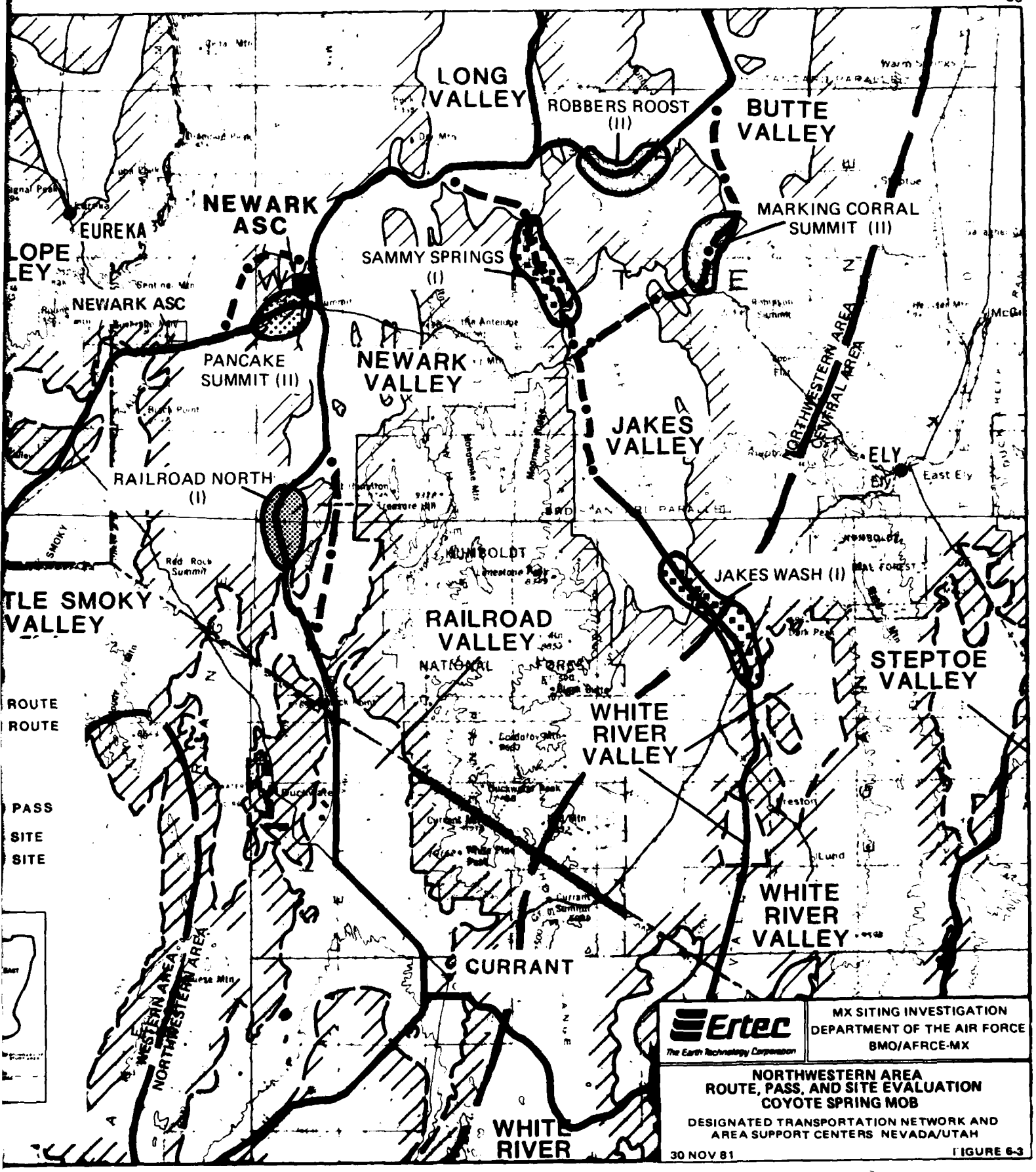
From Wells Station Summit in central Railroad Valley, the DTN turns north, avoiding the community of Currant, and traverses the Northwestern Area. Various minor DTN realignments occurred in the Northwest Area (Figure 6-3).

Railroad North Pass is divided by a north-south trending ridge. The eastern portion contains shelters and does not provide adequate clearance for both the clusters and a DTN. Thus the DTN uses the less desirable, but still acceptable western portion.

Originally, the DTN in Newark Valley used the valley floor to cross from the eastern to the western portions of the valley. After comparing the difficulty of using Pancake Summit (U.S. Highway 50) versus the additional length of DTN needed to stay on the valley floor, Pancake Summit was determined to be the more desirable route.

Numerous DTN alignments into northern Monitor Valley were proposed, each depending on the cluster layout at the time. Later stages of shelter layout in this area permitted routing the DTN along the alignment of State Highway 82 in the eastern portion


KOBETH VALLEY
EUREKA
NEWARK ASC
ANTELOPE VALLEY
NEWARK ASC
SAMMY
TOIYABE NATIONAL FOREST
PANCAKE SUMMIT (II)
RAILROAD NORTH (I)
MONITOR VALLEY
LITTLE SMOKY VALLEY
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE
NORTH
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
LOCATION MAP
EAST
WEST
CENTRAL
WESTERN AREA
NORTHWESTERN AREA



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NORTHWESTERN AREA
ROUTE, PASS, AND SITE EVALUATION
COYOTE SPRING MOB

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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FIGURE 6-3

of the valley which bisects a small portion of the Toiyabe National Forest.

For access into Butte Valley, routes were considered through both Marking Coral Summit (II) from Jakes Valley and Robbers Roost Pass (II) from Long Valley. The latter pass was selected because it provided the shorter length of DTN.

Although Jakes Valley is within the Northwestern Area, it can be accessed from the south out of White River Valley through Jakes Wash Pass (I), through Little Antelope Pass (III) along U.S. Highway 50 on the northwest from Newark Valley, or from Long Valley by way of Sammy Springs (I) on the north. All require similar length of road. Jakes Wash Pass was selected over Sammy Springs Pass because of the shorter travel time from the Muleshoe ASC. Little Antelope Pass was rejected on the grounds that it traverses much more rugged terrain than either Jakes Wash or Sammy Springs.

6.1.6 Area Support Centers in Nevada

The ASC locations recommended by SAC in November 1980 were used as the baseline at the beginning of this study. Relocation of the DTN and modification of cluster configuration within valleys in which the ASCs were sited, as well as application of updated siting criteria, prompted adjustments to ASC locations. The discussion for the relocation and description for each ASC in the Central, Western, and Northwestern areas are presented below. The relocation and description of the ASC sites in the Eastern Area (Utah) will be discussed in Section

6.1.8. The preferred ASC locations after the required adjustments are shown in Figure 6-4.

6.1.6.1 Muleshoe ASC in Central Area

A number of minor adjustments for the siting of this ASC, all within 12 miles (19 km), were due to changes in the DTN alignment and shelter layouts. The preferred ASC site is located in the extreme southern section of Muleshoe Valley just north of Dry Lake Valley. The junction of the DTN to the western and the eastern portion of the Central Area is approximately 96 miles (155 km) of DTN north of the Coyote Spring MOB. Field and office studies confirmed that the vicinity zone of this ASC is in geotechnically suitable area.

6.1.6.2 Stone Cabin ASC in Western Area

The siting of this ASC in Stone Cabin Valley was also dependent on the shelter layouts and optimization of DTN alignment. The preferred site does not differ more than 10 miles (16 km) from the original location. This general location was also selected during studies by different organizations. The ASC vicinity zone is located about 32 miles (51 km) east of Tonopah, Nevada, on U.S. Highway 6 and at the intersection of the DTN in Stone Cabin Valley. It is 128 DTN miles (206 km) from the Muleshoe ASC. The entire zone is sited in geotechnically suitable area. This location will provide additional service coverage further to the west, if required. During siting studies of the Stone Cabin ASC, a request was made by Nye County, Nevada, to relocate the ASC to county land near Tonopah Airport in Ralston

LOCATION OF MAIN OPERATING BASE OPTION
LOCATION OF ASC
COVERAGE BOUNDARY
SCALE 1:2,500,000
STATUTE MILES
KILOMETERS
NORTH
NEVADA
UTAH
ARIZONA
CALIFORNIA
DELTA
MILFORD
MILFORD CENTRAL MOB
MILFORD SOUTH MOB
BERYL MOB
CALIENTE
COYOTE SPRING MOB
ELY
AUSTIN
TONOPAH
NELLIS AIR FORCE RANGE
NEVADA TEST SITE
SEVIER DESERT
DUGWAY VALLEY
FISH SPRINGS FLAT
TULI VALLEY
SNAKE VALLEY
WHIRLWIND VALLEY
PINE VALLEY
HAMLIN VALLEY
LAKE VALLEY
MULESHOE VALLEY
DRY LAKE VALLEY
BUTTE VALLEY
SPRING VALLEY
STEPTOE VALLEY
CAVE VALLEY
WHITE RIVER VALLEY
JAKES VALLEY
LONG VALLEY
NEWARK VALLEY
ANTELOPE VALLEY
KOBEH VALLEY
LITTLE SMOKY VALLEY
BIG SAND SPRINGS VALLEY
STONE CABIN VALLEY
RAILROAD VALLEY
HOT CREEK VALLEY
PENOYER VALLEY
COAL VALLEY
GARDEN VALLEY
PAHROC VALLEY
DELAMAR VALLEY
REVEILLE VALLEY
RAILROAD VALLEY
MONITOR VALLEY
RALSTON VALLEY
BIG SMOKY VALLEY
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ASC LOCATIONS AND COVERAGE
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH
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FIGURE 6-4

Valley. A study was made, and it was concluded that this site was not preferred over the present site. The advantages and disadvantages for each site are as follows.

ASC IN STONE CABIN VALLEY

Advantages	Disadvantages
Centered on area to be serviced - Provides full coverage for present clusters in Monitor and Big Sand Springs valleys	Site is 32 miles (52 km) from population center of Tonopah and 22 miles (35 km) from commercial airport
- Provides adequate coverage west for potential expansion of clusters within EIS boundary	Stone Cabin Valley is a designated hydrologic basin
Closer to Muleshoe ASC - Provides more security coverage overlap between ASCs	Pending permits and certificates would exhaust currently available water rights; water for MX would require purchasing water rights
Land Withdrawal from BLM	
Site is on current DTN and U.S. Highway 6	
Only 16 miles (25 km) from Warm Springs	

ASC IN RALSTON VALLEY

Political Advantages on Nye County property	Not along present DTN route through Ralston Valley
Possible co-use with airport facilities	Requires 8 miles (13 km) more of constructed DTN for spur road or a total reroute of DTN to coexist with U.S. Highway 6 and State Highway 82
Facility closer to populated area - 10 miles (16 km) from Tonopah	
Opens potential areal coverage to the west	Not centered on area to be served; some clusters in Big Sand Springs and Central Monitor would need security waivers

Advantages	Disadvantages
	Increased travel time/distance between ASCs, an additional 32 miles (51 km) beyond Stone Cabin for a total of 144 miles (231 km) from Muleshoe ASC to Ralston ASC

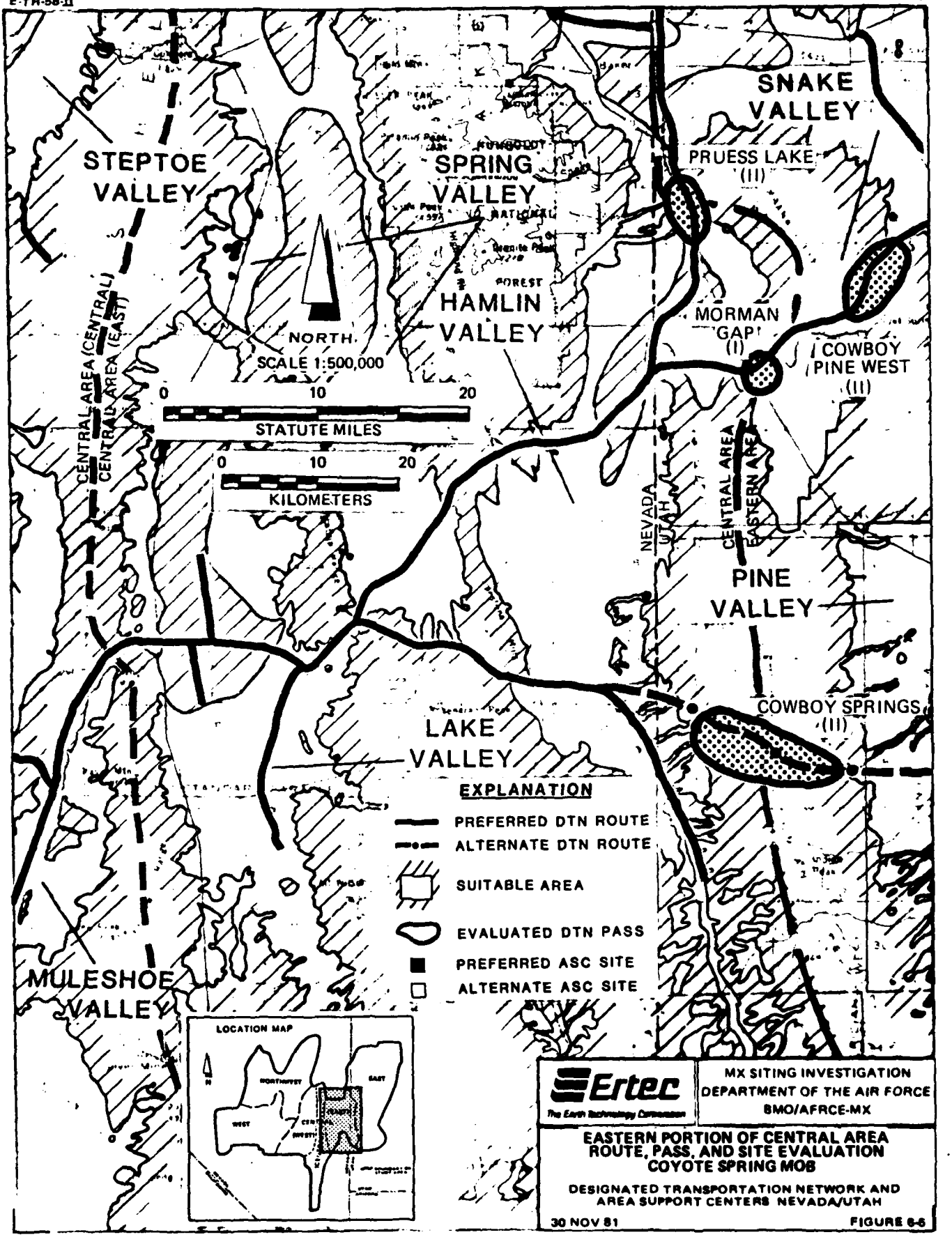
The operational features of the Stone Cabin location are so much more favorable than the Ralston Valley location that Stone Cabin remains the preferred site.

6.1.6.3 Newark ASC in Northwestern Area

For more coverage to the east (in northern Spring Valley, Nevada), the original ASC sited in western Newark Valley was relocated approximately 10 to 14 miles (16 to 23 km) to the east. The revised ASC location is on Highway 50 about 28 miles (45 km) east of Eureka, Nevada, in eastern Newark Valley. This places the ASC at a major DTN intersection and 125 DTN miles (201 km) from the Muleshoe ASC. The ASC vicinity zone is sited in geotechnically suitable area and provides more overlap with the ASC in the Eastern Area than the baseline location.

6 1.7 DTN from Central Area, Nevada, to Eastern Area, Utah

From a Coyote Spring MOB, access to the Eastern Area of the deployment area is through Hamlin Valley (Figure 6-5). Access to the northern Utah valleys (those north of Highway 50) is through both Pruess Lake Pass and the combination of Morman Gap and Cowboy Pine West passes. This latter combination also provides easy access to southern Snake Valley and Pine Valley.



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EASTERN PORTION OF CENTRAL AREA ROUTE, PASS, AND SITE EVALUATION COYOTE SPRING MOB

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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FIGURE 6-6

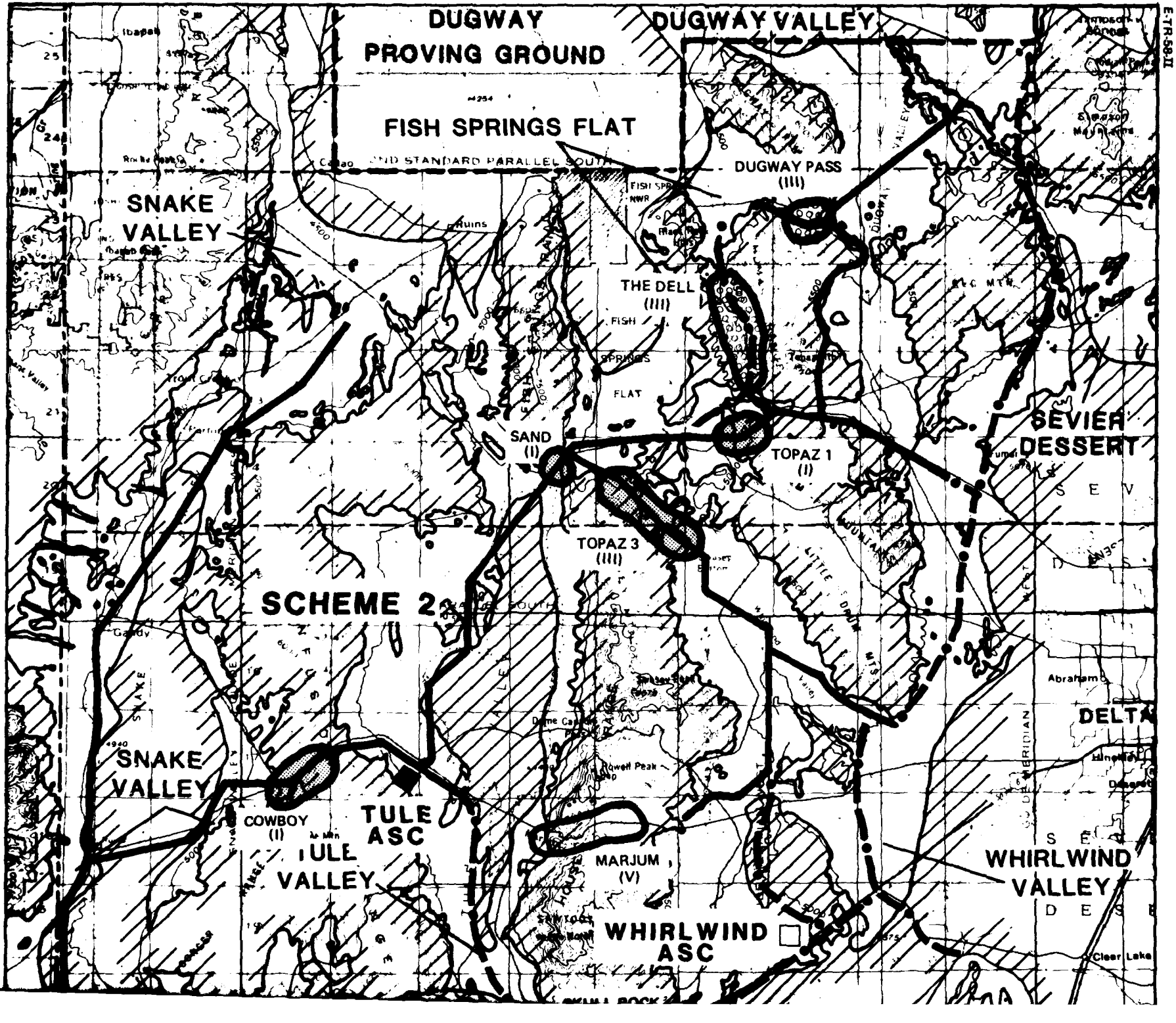
Southern Pine Valley could be accessed from Hamlin Valley through Cowboy Springs Pass. However, since access to southern Tule and Wah Wah valleys is through southern Snake Valley, it is a much shorter travel distance to use Cowboy Pine West rather than Cowboy Springs Pass.

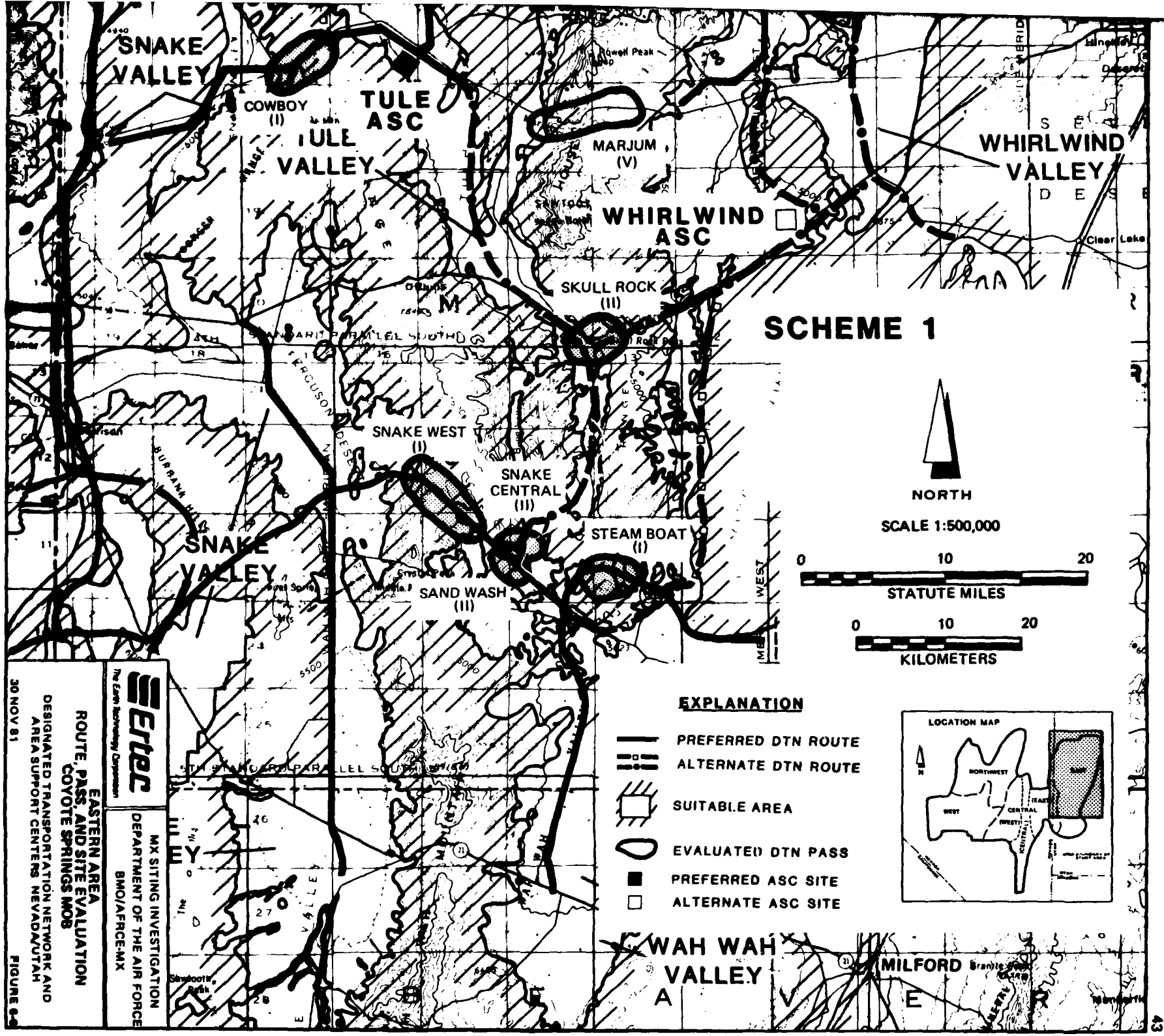
6.1.8 DTN and ASC in Eastern Area, Utah

In the Eastern Area, a DTN from Coyote Spring MOB, from west to east, must cross a series of north-south trending, contiguous valleys (Figure 6-6). Once access is made into the Eastern Area, there are various routes to connect these valleys. Two of these routes, as presented in the HDR 10 October 1980 and Ertec 26 September 1980 DTN layouts, use routes through relatively narrow parcels of land in southern Tule and Whirlwind valleys. Due to the narrowness of these parcels of suitable area, it is difficult for a DTN and a cluster to coexist. In southern Tule Valley, the DTN is further complicated by the close proximity of wilderness study areas.

After considering the problems of the DTN routes through either southern Tule or Whirlwind valleys, an alternate scheme was proposed (Ertec, 1981b).

- Scheme 1 (original): This route uses Cowboy Pine West (II) and Snake Central (II) passes from Snake Valley to southern Tule Valley. The route then divides both northward through southern Tule to Skull Rock Pass (II) or through Whirlwind Valley to the remaining northern valleys and southward into Wah Wah Valley. The ASC is situated in Whirlwind Valley about 30 miles (48 km) southwest of Delta in Utah on Highways 6 and 50.
- Scheme 2 (alternate): This route assumes a Cowboy Pass (I) access from Snake Valley into northern Tule and the other


DUGWAY PROVING GROUND
DUGWAY VALLEY
FISH SPRINGS FLAT
DUGWAY PASS (III)
SNAKE VALLEY
THE DELL (III)
SAND (I)
TOPAZ 1 (I)
SEVIER DESSERT
TOPAZ 3 (III)
SCHEME 2
SNAKE VALLEY
COWBOY (I)
TULE ASC
TULE VALLEY
MARJUM (V)
WHIRLWIND VALLEY
WHIRLWIND ASC
DELTA
E-TR-58-II


SNAKE VALLEY
COWBOY (I)
TULE ASC
TULE VALLEY
MARJUM (V)
WHIRLWIND VALLEY
WHIRLWIND ASC
SKULL ROCK (II)
SCHEME 1
SNAKE WEST (I)
SNAKE CENTRAL (II)
STEAM BOAT (I)
SAND WASH (II)
SNAKE VALLEY
NORTH
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE
LOCATION MAP
NORTHWEST
WEST
CENTRAL
WAH WAH VALLEY
MILFORD
Clear Lake
Ertec
EASTERN AREA
ROUTE, PASS, AND SITE EVALUATION
COYOTE SPRINGS MOB
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH
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FIGURE 6-9

northern valleys. Cowboy Pine West, Snake Central and Sand Wash (II) passes are used as access into southern Tule. Once in the valley, the route divides to the east into southern Whirlwind Valley (through Steamboat Pass [I]) and south into Wah Wah Valley. The ASC is situated in Tule Valley as shown in Figure 6-6.

The comparison between these schemes is outlined in Table 6-1. The route in Scheme 2 is preferred because it provides shorter travel time, less construction cost, and a more central ASC location.

The recommended ASC vicinity zone in northern Tule Valley is located on old Highway 50 at the DTN intersection. The ASC is sited in geotechnically suitable area. The Tule ASC is a preferred site over the Whirlwind ASC because it is more centrally located, will cover more potential suitable area in northern Spring Valley, and provides a better coverage overlap with Newark ASC.

6.2 DTN AND ASC WITH MOB OPTIONS AT MILFORD OR BERYL, UTAH

The MOB options, Milford South, Milford Central, and Beryl, (Figure 6-7) are sited as follows:

- Milford South: Milford South MOB is located in Escalante Desert in Iron County, Utah, about 8 miles (12 km) northeast of Lund and north of Union Pacific Railroad;
- Milford Central: Milford Central MOB is located in Escalante Desert in Beaver County, Utah, about 8 miles (12 km) northeast of Milford South MOB and 24 miles (39 km) southwest of Milford, Utah; and
- Beryl: Beryl MOB is located in Escalante Desert in Iron County, Utah, about 8 miles (12 km) west of Beryl and north of Union Pacific Railroad.

The following sections will discuss the DTN routing and ASC siting relevant to these MOBs.

COMPARISON OF DTN LENGTHS

Number of Clusters Served	Scheme 1 (miles)	Scheme 2 (miles)	Difference (miles)
20-49 clusters	57.5	64.0	+ 6.5
2-19 clusters	111.0	82.5	-28.5
1 cluster	14.4	7.0	- 7.5
TOTAL	183.0	153.5	-29.5

PRESENT AND PROPOSED DTN LAYOUT OPTION COMPARISON

	Scheme 1 Route with Whirlwind ASC	Scheme 2 Route with Tule ASC
ADVANTAGES	1. Shorter length of high-use DTN	1. Shorter overall DTN length
	2. ASC is closer to Delta	2. ASC relocation would be more centrally located to clusters
DISADVANTAGES	1. Longer overall DTN length	1. Increases length of high-use DTN
	2. ASC location does not cover all future cluster locations	2. ASC is further from Delta

REFERENCE:

ERTEC, 1981b

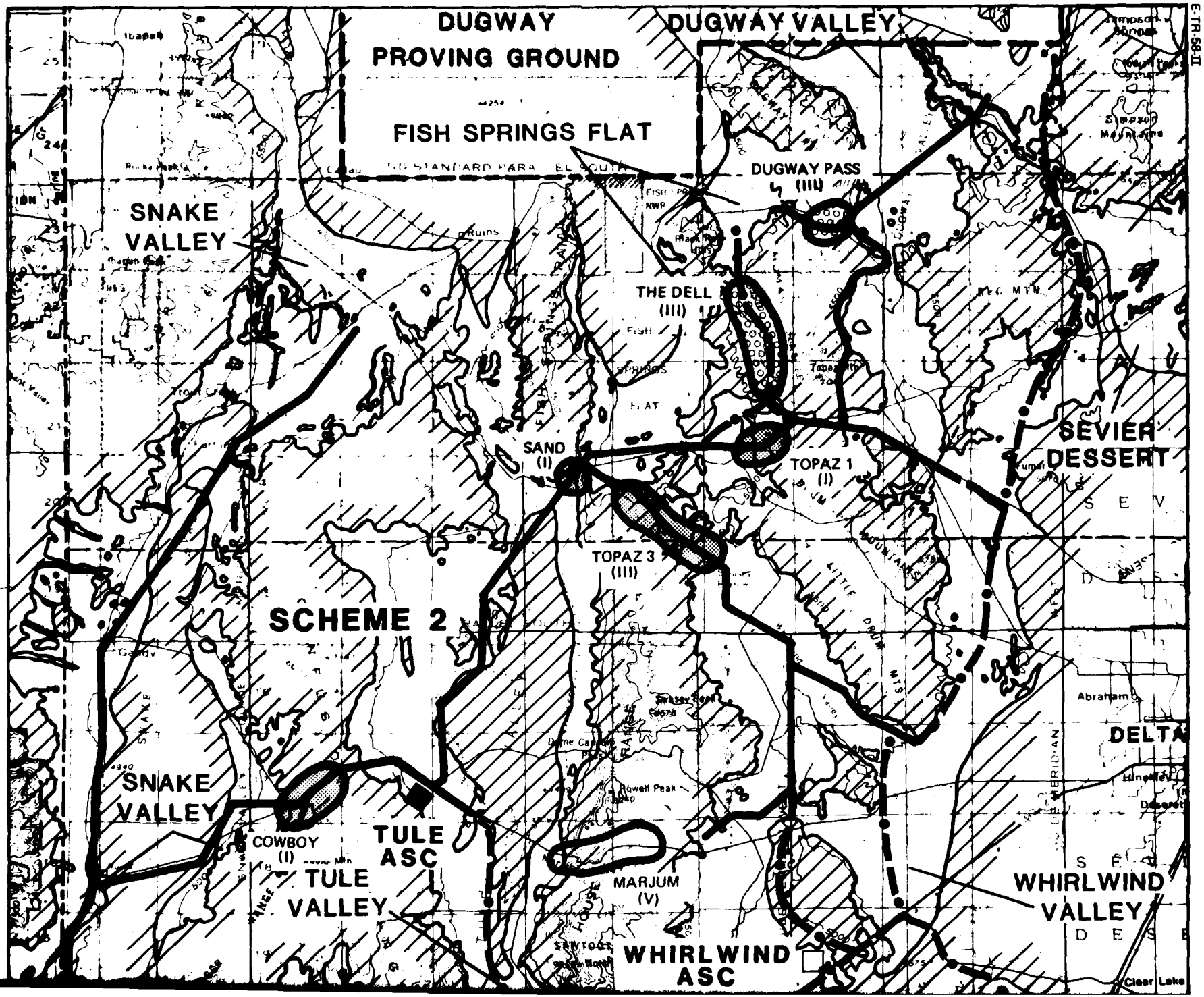
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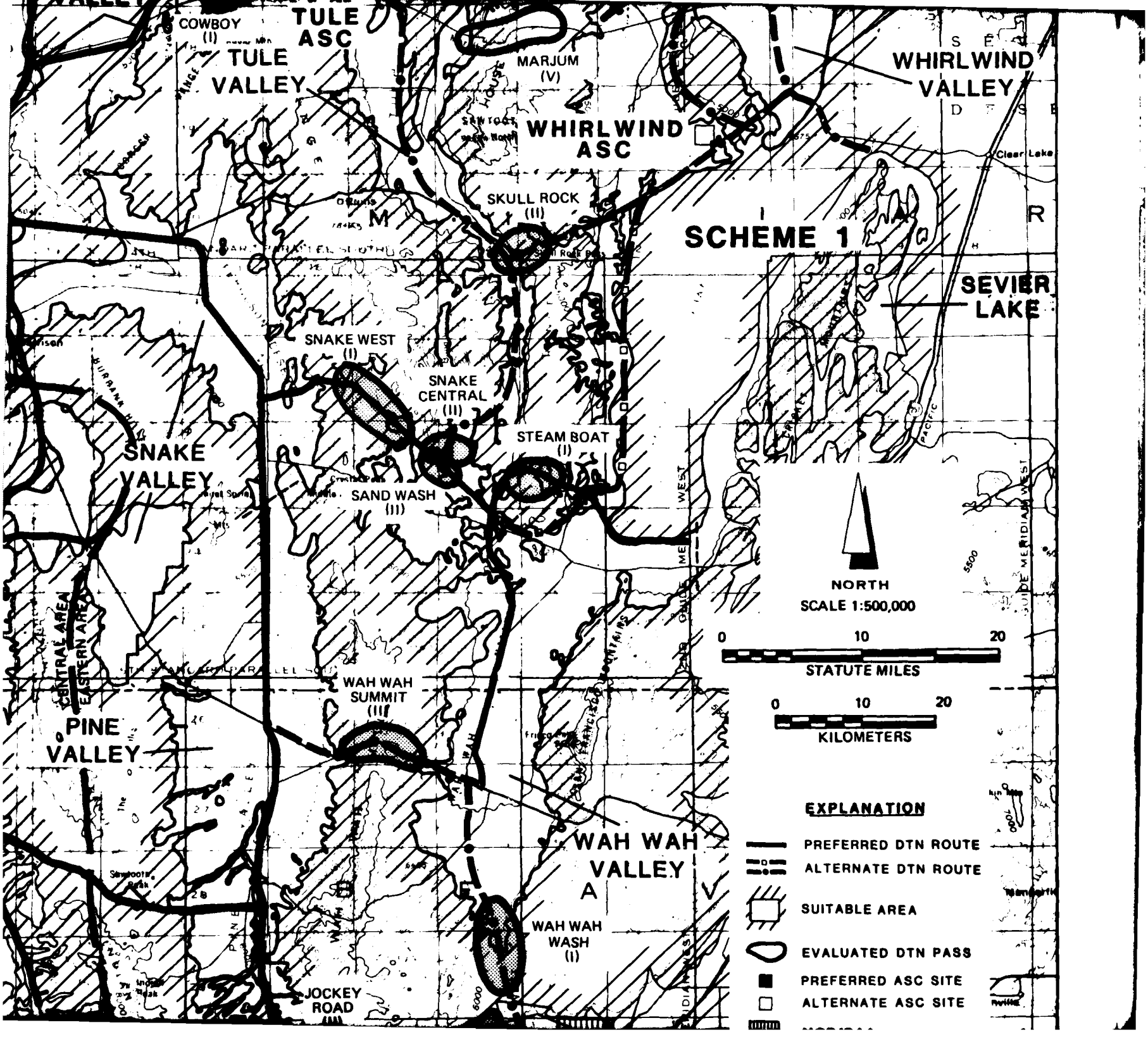
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DTN ROUTE COMPARISON, EASTERN AREA

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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DUGWAY
PROVING GROUND
DUGWAY VALLEY
FISH SPRINGS FLAT
DUGWAY PASS
(III)
SNAKE
VALLEY
THE DELL
(III)
SAND
(I)
TOPAZ 1
(I)
SEVIER
DESSERT
TOPAZ 3
(III)
SCHEME 2
SNAKE
VALLEY
COWBOY
(I)
TULE
ASC
TULE
VALLEY
MARJUM
(V)
WHIRLWIND
VALLEY
WHIRLWIND
ASC
DELTA
E-TR-58-II


COWBOY
(I)
TULE
ASC
TULE
VALLEY
MARJUM
(V)
WHIRLWIND
ASC
WHIRLWIND
VALLEY
SKULL ROCK
(II)
SCHEME 1
SEVIER
LAKE
SNAKE WEST
(I)
SNAKE
CENTRAL
(II)
STEAM BOAT
(I)
SNAKE
VALLEY
SAND WASH
(II)
NORTH
SCALE 1:500,000
0
10
20
STATUTE MILES
0
10
20
KILOMETERS
WAH WAH
SUMMIT
(II)
PINE
VALLEY
WAH WAH
VALLEY
WAH WAH
WASH
(I)
JOCKEY
ROAD
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE

NORTH
SCALE 1:500,000
STATUTE MILES
KILOMETERS
EXPLANATION
PREFERRED DTN ROUTE
ALTERNATE DTN ROUTE
SUITABLE AREA
EVALUATED DTN PASS
PREFERRED ASC SITE
ALTERNATE ASC SITE
MOB/DAA
LOCATION MAP
WAH WAH VALLEY
PINE VALLEY
SAND WASH (II)
WAH WAH SUMMIT (II)
WAH WAH WASH (I)
JOCKEY ROAD (II)
PINK KNOLLS (II)
PINE SOUTH (II)
BIBLE SPRING (I)
MILFORD MOB OPTIONS
BERYL MOB OPTIONS
CENTRAL AREA
EASTERN AREA
Avon
UNION PACIFIC
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ROUTE, PASS, AND SITE EVALUATION
BERYL/MILFORD MOB
DESIGNATED TRANSPORTATION NETWORK AND
AREA SUPPORT CENTERS NEVADA/UTAH
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FIGURE 6-7

6.2.1 DTN and ASC in Eastern Area, Utah

The concerns in determining the optimum DTN routing in the Eastern Area for a Utah MOB are the same as those discussed in Section 6.1.8. For a Coyote Spring MOB, it was concluded that the Scheme 2 approach using Cowboy Pass as access to the northern valleys from Snake Valley with a Tule ASC was the optimum route selection. Two additional studies were performed to integrate the Scheme 1 and 2 route selections with the route alternative from the Milford MOB options: 1) MMC study, dated 30 March 1981, to evaluate seven alternate routings between Milford South MOB and the DDA; and 2) MMC study, dated 20 May 1981, to evaluate six alternative regional routings in the eastern area from Milford South MOB and one routing from Milford Central with the ASC site either at Whirlwind or Tule valleys. In this latter study, three of the alternate routings used Wah Wah Wash as the entrance into the DDA (Wah Wah Valley).

An Ertec study (1981b) indicated that the Wah Wah Wash route entering Wah Wah Valley from the south could interfere with future rail and vehicular traffic from the proposed alunite mine also located in the southern portion of Wah Wah Valley. Likewise, the western exit from Wah Wah Valley through Wah Wah Summit was found to have excessive grade and would require significant cost to construct (i.e., earthwork to lower the grade and widen the road). The Wah Wah Valley issues of crossings Wah Wah Summit and higher traffic flow generated by proximity to the mining interests (i.e. Getty Oil molybdenum

mine, Alumet Co. alunite mine) were contrasted against the multiple environmental considerations in Pine Valley. The most significant concern was that of the eight prairie dog colonies. The prairie dog is on the federal list of the threatened and endangered species. To avoid their colonies a standoff from three quarters to one mile (1.2 to 1.6 km) was applied to the DTN route in the southern foothills of Pine Valley. Although the Pine Valley environmental considerations represents a focal point of concern as a whole, the individual concerns were deemed manageable and were not impacted by the DTN after the route mitigations. Without the environmental issues the Pine Valley DTN provides the least geotechnical and engineering problems. Based on these studies, alternate DTN routing from the Milford MOB through southern Wah Wah Valley were rejected and will not be discussed further in this report.

The Ertec and MMC studies of alternate routes through Pine Valley from the Milford South MOB include the following.

Option	Pass Access into Pine Valley	Pass Exit from Pine Valley used for Eastward Connection
1	Pine south using Pine Valley Road	Wah Wah Summit using Highway 21
2	Pine south using Pine Valley Road*	Snake Pass using Snake Valley Road
3	Pink Knolls using Fischers Wash Road*	Wah Wah Summit using Highway 21
4	Pink Knolls using Fischers Wash Road*	Snake Pass using Snake Valley Road

(Note: * evaluated by both MMC and Ertec)

All of these options used Cowboy Spring Pass (II) as the western access to the Central Area (east). Option 2 assumed a southern DTN exit from a Milford South MOB and is preferred over Option 4 based on lower grades (Table 6-2) and elevations. Option 4 became preferred when the base comprehensive planner relocated the DAA, and thus the DTN exit point, out of the Milford South MOB along Fischers Wash Road to the northwest. The MMC study concluded Fischers Wash Road provides lower construction cost when used with Snake Pass and represents the shortest route to both the north and the central portions of the Eastern Area. This route assumes that the impact to the endangered Utah prairie dogs will be mitigated in the final detailed routing. The comparison of these options is summarized in Table 6-3, page 1 of 2.

The MMC study (1981b) of DTN alternatives in the Eastern Area along with ASC consideration are as follows.

Option	Pass Access to Pine Valley	ASC
1	Pine south using Pine Valley Road	Whirlwind Valley
2	Pine south using Pine Valley Road	Tule Valley
3	Jockey Road using Jockey Road	Tule Valley

All these options used Snake Pass to provide eastward access within the Eastern Area and Cowboy Spring Pass as the access to the Central Area. The comparisons of the alternatives are summarized in Table 6-3, page 2 of 2. This study concluded that the DTN will be more cost effective with the ASC at Tule, and Option 3 which uses Jockey Road is less costly.

Option 2 Route	Option 4 Route
Pine South using Pine Valley Road (Snake Pass instead of Wah Wah Summit)	Pink Knolls using Fisher Wash Road (Snake Pass instead of Wah Wah Summit)
ADVANTAGES	
1. Two percent grade	1. Three-four percent grade
2. Easy grading, minimum rock	2. Easy grading, minimum rock
3. Less primary road length than Wah Wah Wash	3. Less primary and total road length than Pine South (2.5 miles)
4. Minimal additional road length to OBTS (3 miles)	4. Shortest length of primary road
5. Uses lowest elevation passes gradual climb from 5300 feet to 6280 feet in Pine Valley	
DISADVANTAGES	
1. Passes through prairie dog town (mitigated by 1-mile buffer)	1. Passes through prairie dog town (mitigated by 1-mile buffer)
2. Route through private property	2. Longer total road length than Wah Wah Wash (+14.5 miles)
3. Longest total road length Pink Knolls (+2.5 miles) and Wah Wah Wash (+17 miles)	3. Highest elevation of the passes-gradual climb from 5400 feet to 6750 feet in the east of Pine Valley
	4. Longest additional road to either OBTS option-north (14.5 miles) or south (8 miles)

REFERENCE:

ERTEC, 1981b

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DTN ROUTE COMPARISON, MILFORD SOUTH MOB

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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DTN BETWEEN MILFORD SOUTH MOB AND DDA

ROUTE OPTION / ROAD CLASS	OPTION 1		OPTION 2		OPTION 3		OPTION 4	
	PINE VALLEY (PINE VALLEY ROAD) WAH WAH SUMMIT PASS		PINE VALLEY (PINE VALLEY ROAD) SNAKE PASS ROAD		PINE VALLEY (PINK KNOLLS) WAH WAH SUMMIT PASS		PINE VALLEY (PINK KNOLLS) SNAKE PASS ROAD	
	RD MILES	COST	RD MILES	COST	RD MILES	COST	RD MILES	COST
A	62.0	76,880	91.5	113,460	60.0	74,400	89.5	110,980
B	42.5	48,832	19.0	21,831	42.5	48,832	19.0	21,831
C	28.5	30,210	–	–	28.5	30,210	–	–
D	–	–	15.5	16,074	–	–	15.5	16,074
E	–	–	–	–	–	–	–	–
TOTAL ROAD LENGTH (MILES)	133.0	–	126.0	–	131.0	–	124.0	–
ADD. COSTS FOR ROUTE THROUGH WAH WAH SUMMIT	–	8,000	–	–	–	8,000	–	–
TOTAL CONSTRUCTION COST (X $1,000)	–	163,922	–	151,365	–	161,442	–	148,885
OPERATING COSTS (X $1,000)	41,600		43,200		40,000		41,600	
TOTAL COST (X $1,000)	205,522		194,565		201,442		190,485	
TO WESTERN CLUSTERS (MILES)	40		40		38		38	

NOTE:
CLASS A ROAD SERVES 50 TO 200 CLUSTERS
CLASS B ROAD SERVES 20 TO 49 CLUSTERS
CLASS C ROAD SERVES 6 TO 19 CLUSTERS
CLASS D ROAD SERVES 3 TO 5 CLUSTERS
CLASS E ROAD SERVES 1 TO 2 CLUSTERS

REFERENCE:
MMC, 1981b

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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

COST COMPARISON

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 6-3 1of 2

DTN IN EASTERN AREA WITH ASC CONSIDERATION

ROUTE OPTION / ROAD CLASS	OPTION 1		OPTION 2		OPTION 3	
	PINE VALLEY (PINE VALLEY ROAD) WHIRLWIND ASC (1A-W)		PINE VALLEY (PINE VALLEY ROAD) TULE ASC (1A-T)		PINE VALLE' (JOCKEY RD TULE ASC (1D-T)	
	RD MILES	COST	RD MILES	COST	RD MILES	COST
A	43	53,320	43	53,320	40	49,600
B	47	54,003	45	51,705	45	51,705
C	33	34,980	65	68,900	65	68,900
D	141	146,217	91	94,367	91	94,367
E	54	54,000	37	37,000	37	37,000
TOTAL ROAD LENGTH (MILES)	318	–	281	–	278	–
ADD. COSTS FOR ROUTE THROUGH WAH WAH SUMMIT	–	–	–	–	–	–
TOTAL CONSTRUCTION COST (X $1,000)	342,520		305,292		302,572	
OPERATING COSTS (X $1,000)	53,544		55,158		52,758	
TOTAL COST (X $1,000)	396,064		360,450		355,330	
TO WESTERN CLUSTERS (MILES)	43		43		40	

NOTE:
CLASS A ROAD SERVES 50 TO 200 CLUSTERS
CLASS B ROAD SERVES 20 TO 49 CLUSTERS
CLASS C ROAD SERVES 6 TO 19 CLUSTERS
CLASS D ROAD SERVES 3 TO 5 CLUSTERS
CLASS E ROAD SERVES 1 TO 2 CLUSTERS

REFERENCE:
MMC, 1981b

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COST COMPARISON

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 6-3 2 of 2

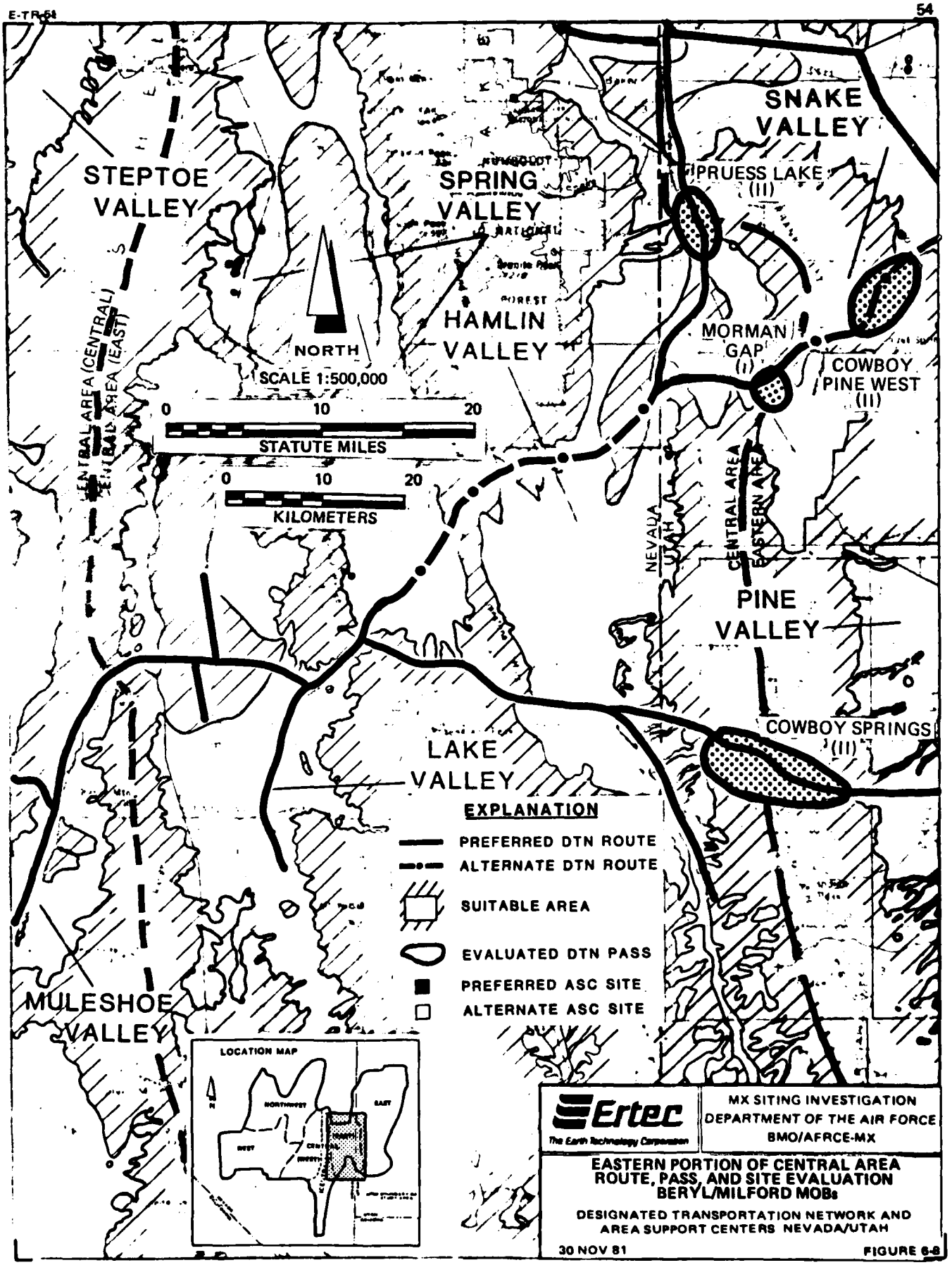
Combining the findings from these studies and other considerations, the DTN layout using the Tule ASC, Snake Pass, and either Fischer's Wash Road for Milford South MOB or Jockey Road for Milford Central were determined to be the optimum routes.

When the MOB is at Beryl, the DTN and ASC considerations will be much the same as those from the Milford South MOB except that the entrance into Pine Valley will go through Bible Spring Pass (I) into Pine Valley Road.

Independent of which Utah MOB is selected, one other DTN route evaluation within the Eastern Area was performed. This evaluation addressed the access from the southern portion of Fish Springs Flat to the northern portion. Initially, the pass used was the Dell (III) which is on the eastern side of the valley. After a field reconnaissance trip to the area, the DTN working group determined that the optimal route was by way of the Dugway Pass (III). Although both passes were ranked the same, Dugway Pass resulted in a shorter length of DTN.

6.2.2 DTN From Eastern Area, Utah, to Central Area, Nevada

Martin Marrietta Corporation presented a study (Figure 6-8) which compared the use of either Cowboy Spring Pass or Cowboy Pine West/Morman Gap Pass as access to the Central Area from the Eastern Area with a Milford or Beryl MOB. The study concluded that it is more cost effective to use Cowboy Spring Pass as this connection because it provides a much shorter route into the Central Area from the Utah MOB options. Using Cowboy



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EASTERN PORTION OF CENTRAL AREA ROUTE, PASS, AND SITE EVALUATION BERYL/MILFORD MOBs

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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FIGURE 6-8

Pine West and Morman Gap Pass would reduce construction costs but would incur higher operating costs and require longer transportation time.

6.2.3 DTN and ASC in Central, Western, and Northwestern Areas, Nevada

Except for Hamlin Valley, the DTN in the Central, Western, and Northwestern areas for the Utah MOB options will be the same as that presented earlier in Section 6.1 for a MOB in Coyote Spring Valley. One additional improvement that could be implemented would be the use of the combinations of Silver King Pass (between Cave and White River valleys) and Coal Northeast Pass (between White River and Coal valleys) in lieu of Burnt Peak and Timber Mountain passes. The former passes represent the most direct route (for the Beryl/Milford MOB options) from the central portion to the western portion of the Central Area.

The ASC locations will be unaffected by the Beryl/Milford MOB options (Figure 6-1).

7.0 CONCLUSIONS

By applying the methodology and criteria for the DTN routing and ASC siting as previously described and integrating the results of the discussions and studies performed by the DTN work group members, the optimal routing of DTN and the preferred siting of an ASC for each MOB option were determined. The preferred DTN route and the summary of the pertinent data are presented in the following sections.

7.1 PREFERRED DTN ROUTE

The preferred DTN is presented in Drawings 7-1 and 7-2. The detailed DTN routes have also been shown on shelter layout maps of 1:62,500 scale on a valley-by-valley basis. These maps are be presented in Volume I, Part II - Siting Summary Report. For the Coyote Spring MOB, Nevada, (Drawing 7-1), the DTN enters Delamar Valley in the Central Area through Delamar Pass. Exiting from White River Valley (Central Area) the DTN uses Well Station Summit to connect with Railroad Valley (central) of the Northwestern Area. Penoyer Northwest Pass is then used to connect Penoyer Valley (Central Area) and Railroad Valley (south) of the Western Area. The Central Area is connected to the Eastern Area by using Pruess Lake and Morman Gap passes (Hamlin to Snake valleys).

For the Milford South and Milford Central MOB options, Utah, the DTN enters Pine Valley through Pink Knoll and Jockey Road passes, respectively. Bible Spring and Pine South passes

provide access to Pine Valley for Beryl MOB. The DTN traverses Pine Valley into Snake Valley. Cowboy Pass provides access to the northeastern valleys and Snake West and Sand Wash passes are used to enter the southeastern valleys. All Milford and Beryl options use Cowboy Spring Pass to Hamlin Valley, connecting the Eastern and Central areas. West of Hamlin Valley, the DTN for the Central, Western, and Northwestern areas is exactly the same as that for the Coyote Spring MOB. Table 7-1 summarizes the pertinent data of road lengths and number of highway crossings and passes used for the DTN schemes.

7.2 PREFERRED ASC

The preferred ASC sites are also shown in the DTN drawings (Drawing 7-1 and 7-2). They are Muleshoe, Stone Cabin, and Newark ASCs, Nevada, and Tule ASC, Utah. Each ASC is sited at the same location for all OB options. Their detailed locations are shown in Figures 7-1 through 7-4. The pertinent descriptions for the ASCs are presented in Table 7-2 and the numbers of clusters serviced by the ASCs in Table 7-3.

7.3 SERVICE ROADS

Detailed studies of a service road network were not attempted. A limited study to determine a service road connection between Delta, Utah, and the Tule ASC was performed. It was determined that use of the old U.S. Highway 6, 50 through Marjum Pass was preferred.

MOB AT	ROAD LENGTH (MILES)			NO. OF HIGHWAY CROSSINGS	NUMBER OF PASSES			
	TOTAL	CO-EXISTING	NEW		TOTAL	RANKING		
						I	II	III
COYOTE, NEVADA	1423	250	1173	8	34	20	11	3
BERYL, UTAH	1435	242	1193	8	34	20	12	2
MILFORD SOUTH, UTAH	1431	242	1189	8	33	19	12	2
MILFORD CENTRAL, UTAH	1437	242	1195	8	34	19	13	2

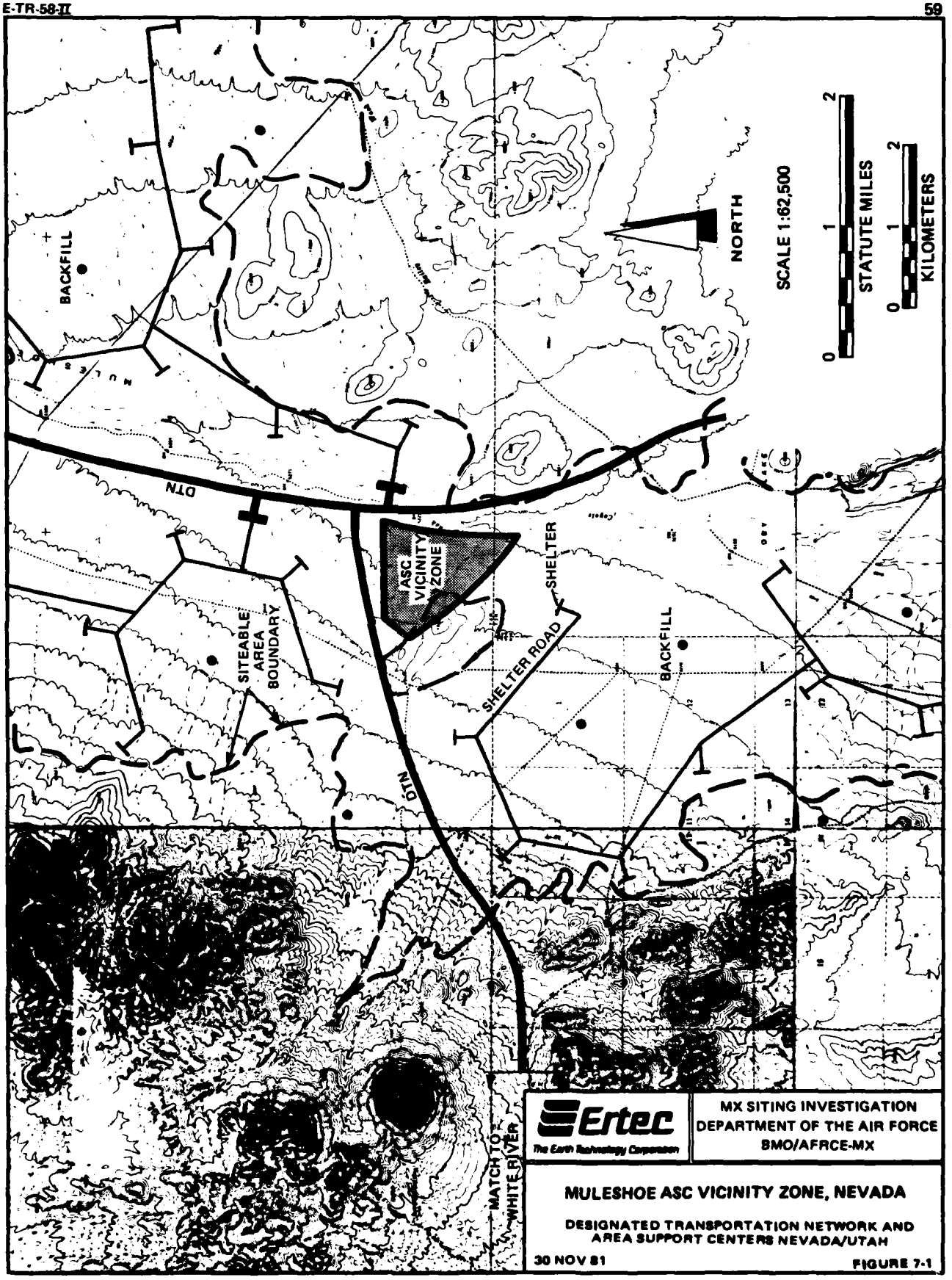
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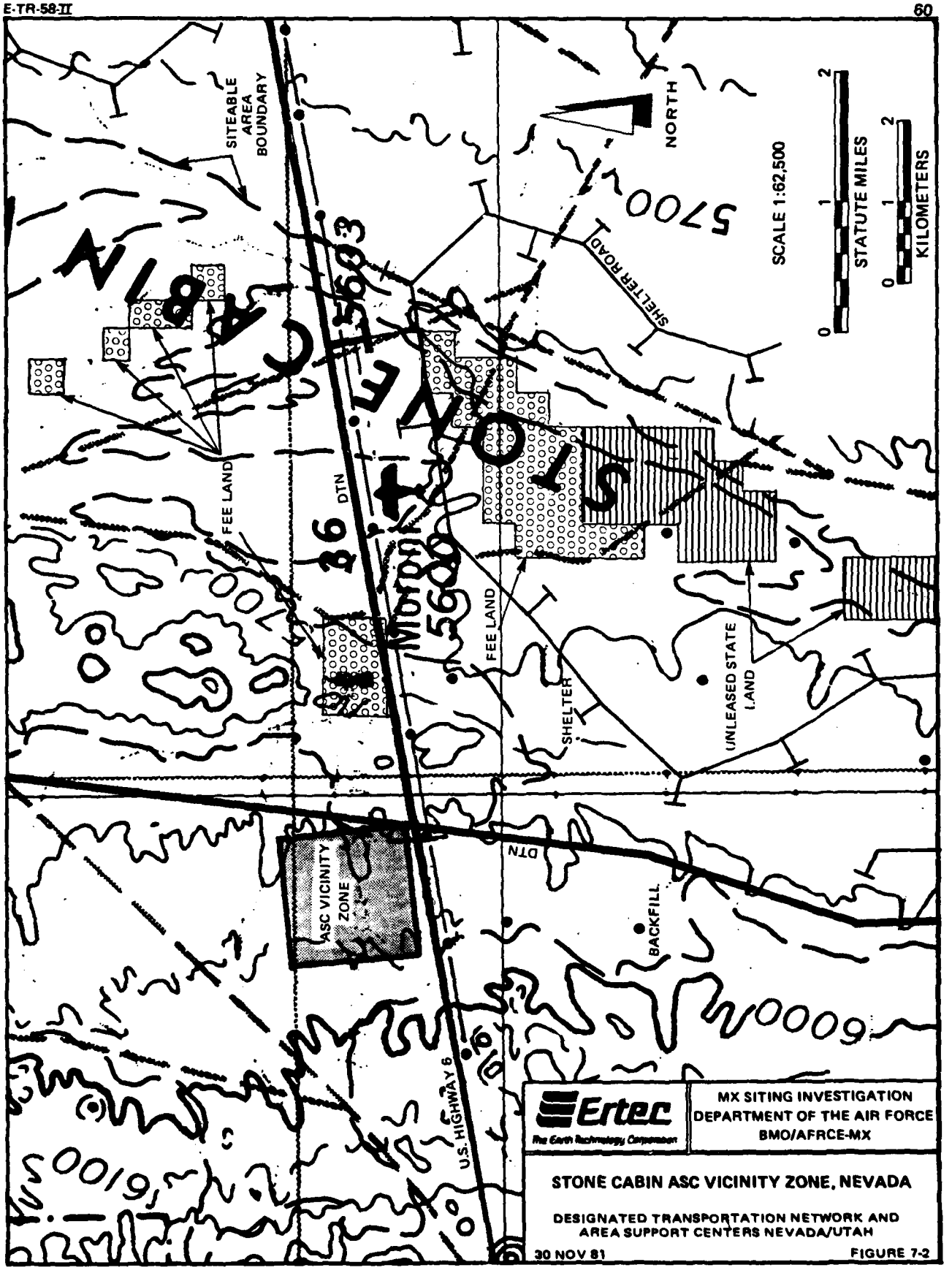
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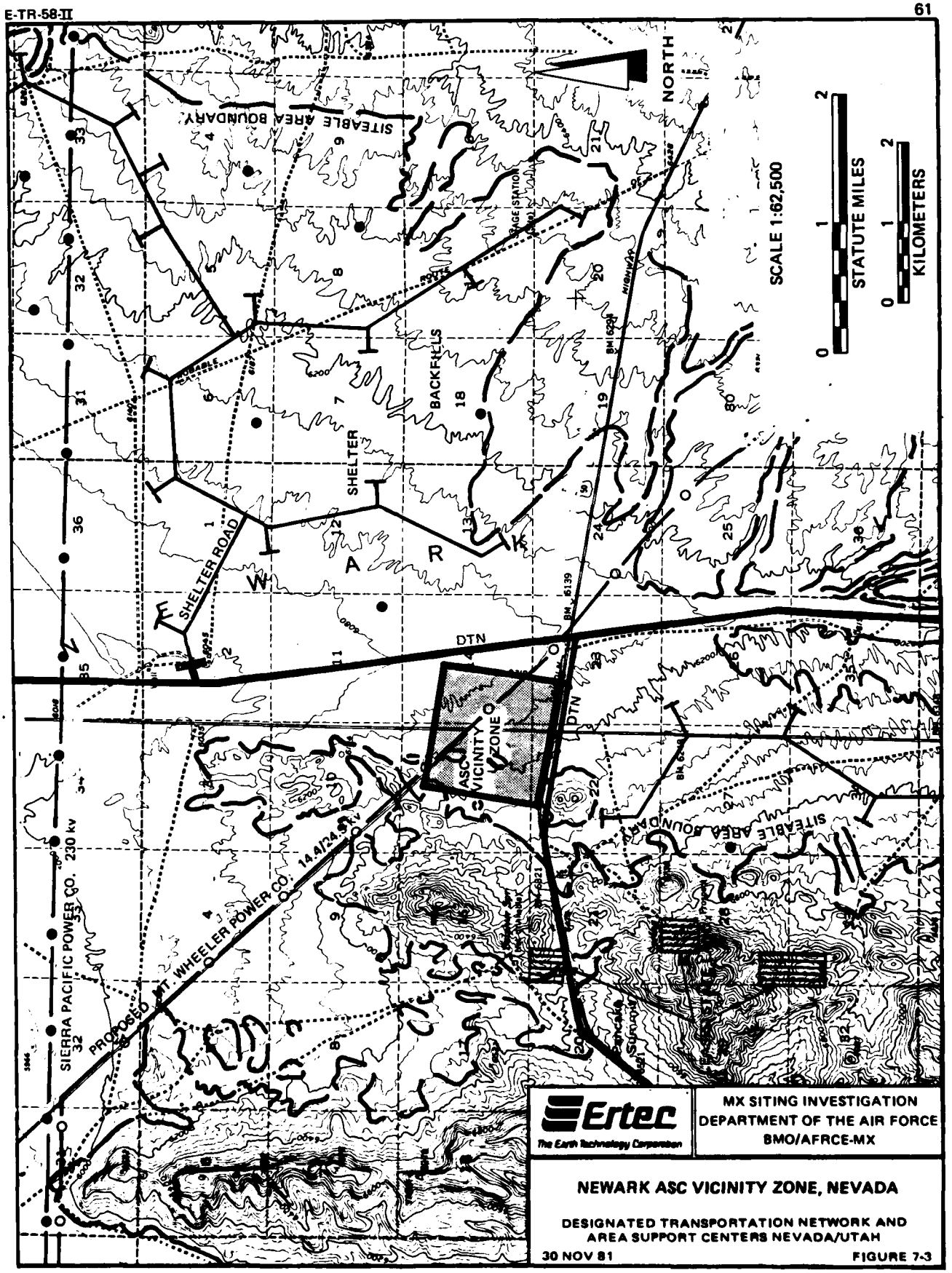
SUMMARY OF DTN DATA FOR MOB OPTIONS

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 7-1


BACKFILL
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
0
1
2
0
1
2
DTN
ASC VICINITY ZONE
SHELTER
SHELTER ROAD
BACKFILL
SITEABLE AREA BOUNDARY
DTN
MATCH TO WHITE RIVER
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MULESHOE ASC VICINITY ZONE, NEVADA
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH
30 NOV 81
FIGURE 7-1


SITEABLE AREA BOUNDARY
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
SHELTER ROAD
FEE LAND
DTN
FEE LAND
SHELTER
UNLEASED STATE LAND
ASC VICINITY ZONE
DTN
BACKFILL
U.S. HIGHWAY 6
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STONE CABIN ASC VICINITY ZONE, NEVADA
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH
30 NOV 81
FIGURE 7-2



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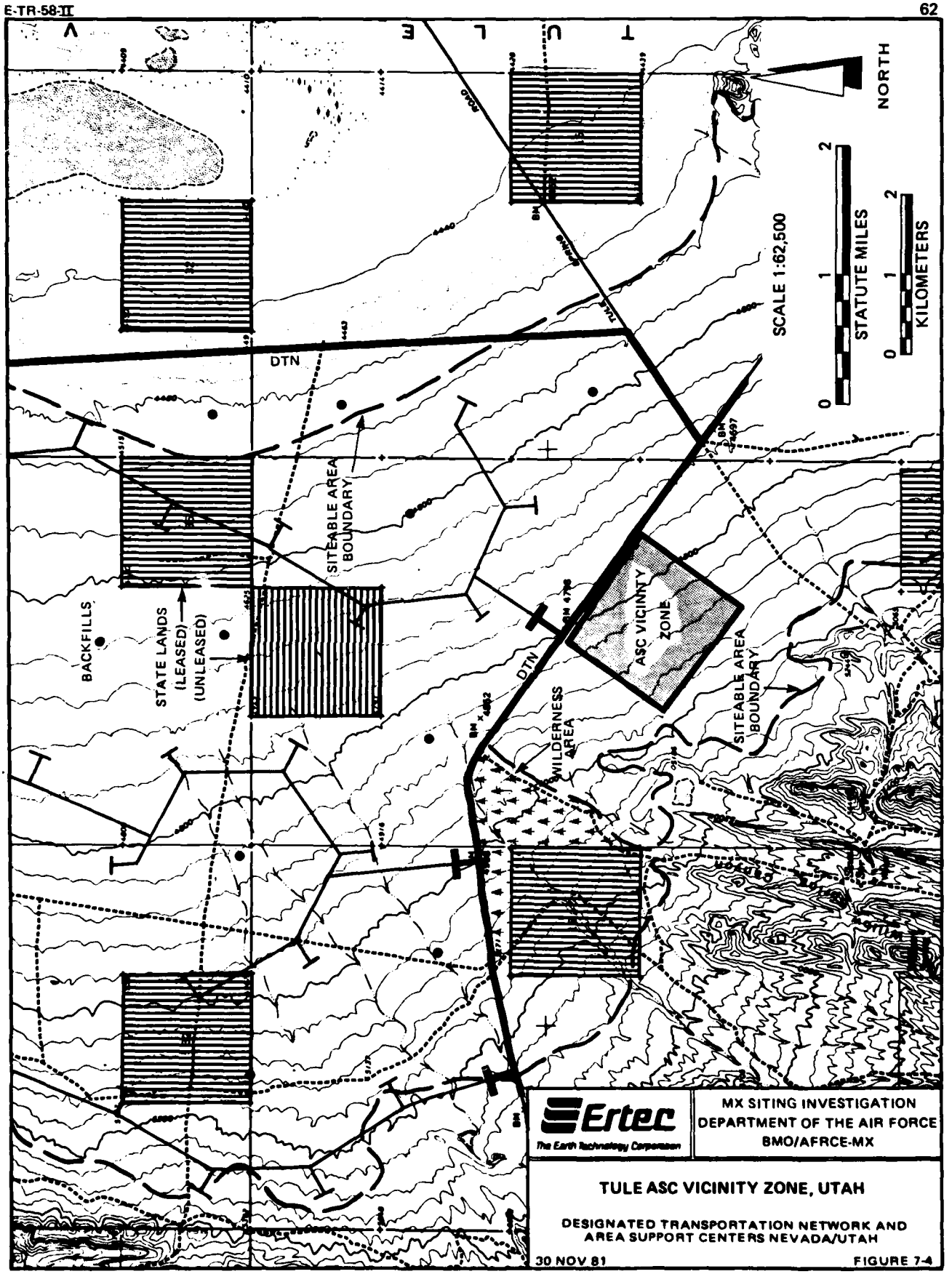
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NEWARK ASC VICINITY ZONE, NEVADA

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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FIGURE 7-3


NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
DTN
SITEABLE AREA BOUNDARY
BACKFILLS
STATE LANDS (LEASED) (UNLEASED)
ASC VICINITY ZONE
WILDERNESS AREA
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TULE ASC VICINITY ZONE, UTAH
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH
30 NOV 81
FIGURE 7-4

ASC	ROCK DEPTH	WATER DEPTH	TERRAIN		FLOOD POTENTIAL	OTHER HAZARDS LIKE FAULTS, DUNES, ETC.	SURFICIAL GEOLOGY
			SLOPE	INCISION DEPTH			
1. MULESHOE, NEVADA	> 50'	>150'	3%	≈ 3'	LOW	NONE	Mostly *intermediate* alluvial fan; coarse-grained granular soils; predominantly silty and gravelly sands with some clayey and sandy gravels
2. STONE CABIN, NEVADA	> 50'	>150'	3%	≈ 3'	LOW	FAULT IN NW	Mostly intermediate alluvial fan; coarse-grained granular soils; predominantly silty and gravelly sands with some clayey and sandy gravels
3. NEWARK, NEVADA	> 50'*	>150'	2%	≈ 5'	LOW	NONE	*Small rock outcrops in west side. Depth to rock may be less than 50' near outcrops. Mostly intermediate alluvial fan with some young alluvial fan. Soils are mostly coarse-grained and granular silty and gravelly sand with some clayey and sandy gravels
4. TULE, UTAH	> 50'	>150'	3%	≈ 3'	LOW	NONE	Mostly intermediate alluvial fan with old lacustrine deposits. Coarse-grained granular soils ranging from silty sand to sandy gravels

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ASC VICINITY ZONE GEOTECHNICAL DATA

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

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TABLE 7-2

UTAH		TOTAL** CLUSTERS IN VALLEY	MULESHOE ASC	STONE CABIN ASC	NEWARK ASC	TULE ASC	OVER-LAP
1. DUGWAY	DW	5	–	–	–	5	–
2. FISH SPRINGS FLAT	FS	2	–	–	–	2	–
3. PINE	PI	5	2	–	–	4	1
4. SEVIER DESERT	SD	2	–	–	–	2	–
5. SEVIER LAKE	SL	1	–	–	–	1	–
6. SNAKE	SV	19	1	–	–	19	1
7. TULE	TL	10	–	–	–	10	–
8. WAH WAH	WA	5	–	–	–	5	–
9. WHIRLWIND	WW	12	–	–	–	12	–
UT SUBTOTAL		61	3	–	–	60	2
NEVADA							
1. ANTELOPE	AN	4	–	–	4	–	–
2. BIG SAND SPRINGS	BG	3	–	3	1	–	1
3. BIG SMOKY	BS	10	–	10	–	–	–
4. BUTTE	BV	9	–	–	9	–	–
5. CAVE	CV	3	3	–	–	–	–
6. COAL	CL	6	6	–	–	–	–
7. DELAMAR	DM	3	3	–	–	–	–
8. DRY LAKE	DL	10	10	–	–	–	–
9. GARDEN	GN	6	6	1	–	–	1
10. HAMLIN	HV	10	9	–	–	6	5
11. HOT CREEK	HC	6	–	6	–	–	–
12. JAKES	JV	3	–	–	3	–	–
13. KOBEH	KB	5	–	–	5	–	–
14. LAKE	LV	7	7	–	–	–	–
15. LITTLE SMOKY	LS	4	–	–	4	–	–
16. LONG	LG	4	–	–	4	–	–
17. MONITOR	MV	6	–	2	4	–	–
18. MULESHOE	MS	3	3	–	–	–	–
19. NEWARK	NK	5	–	–	5	–	–
20. PAHROC	PA	3	3	–	–	–	–
21. PENOYER	PN	5	5	5	–	–	5
22. RAILROAD	RR	13	5	10	4	–	6
23. RALSTON	RV	9	–	9	–	–	–
24. REVEILLE	RE	3	–	3	–	–	–
25. SPRING	SP	4	4	–	–	1	1
26. STEPTOE	SO	2	2	–	2	2	4
27. STONE CABIN	ST	8	–	8	–	–	–
28. WHITE RIVER	WR	12	12	–	4	–	4
NV SUBTOTAL		166	78	57	49	9	27
TOTAL		227	81	57	49	69	29

*STEPTOE VALLEY DELETED FROM FURTHUR STUDIES AS OF SEPTEMBER 1981

**VALLEY CLUSTER COUNT BASED ON 15 MAY 81 REGIONAL LAYOUT MAP

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SUMMARY OF CLUSTER COVERAGE OF PREFERRED ASC SITES

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81 TABLE 7-3

8.0 REFERENCES CITED

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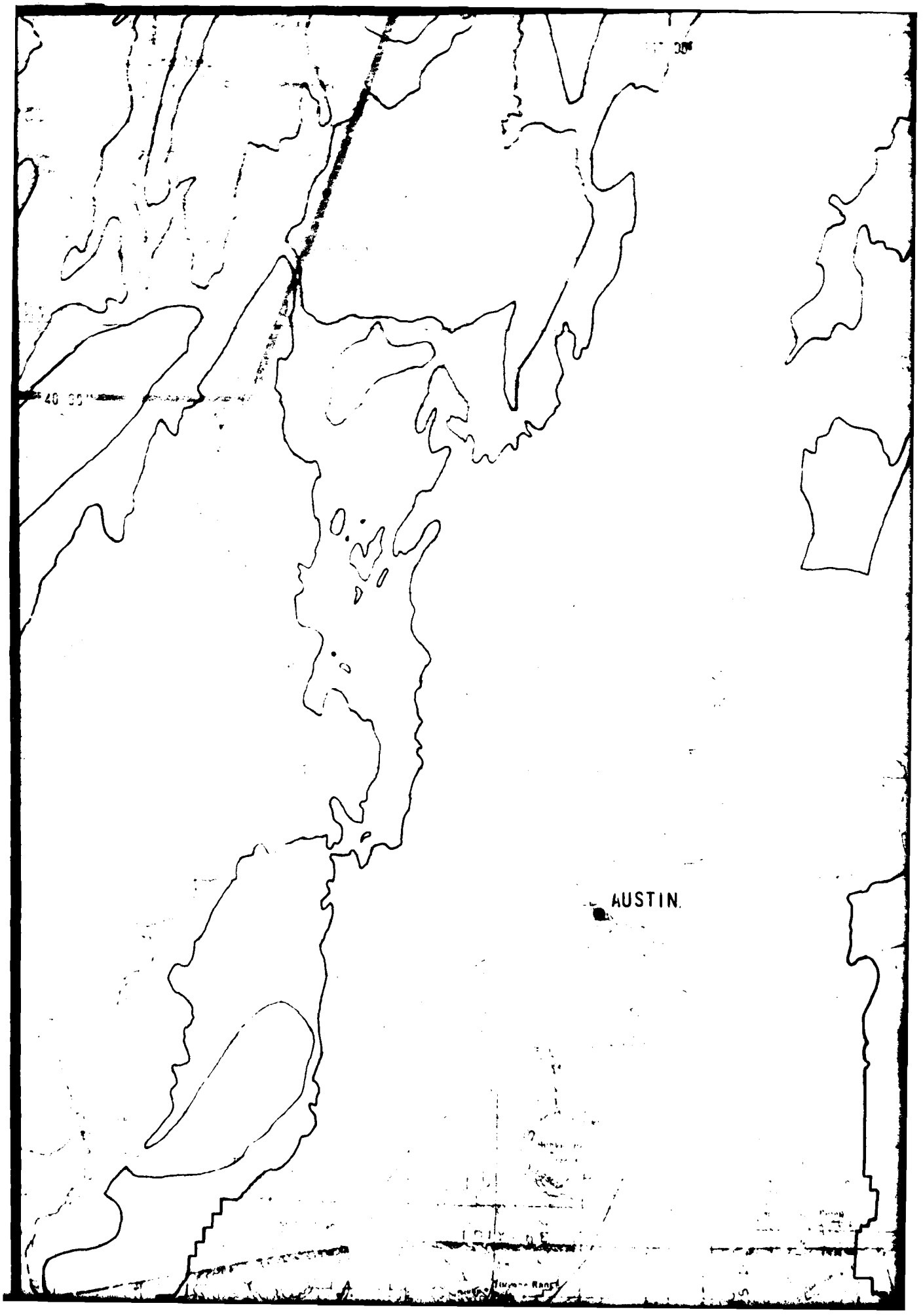
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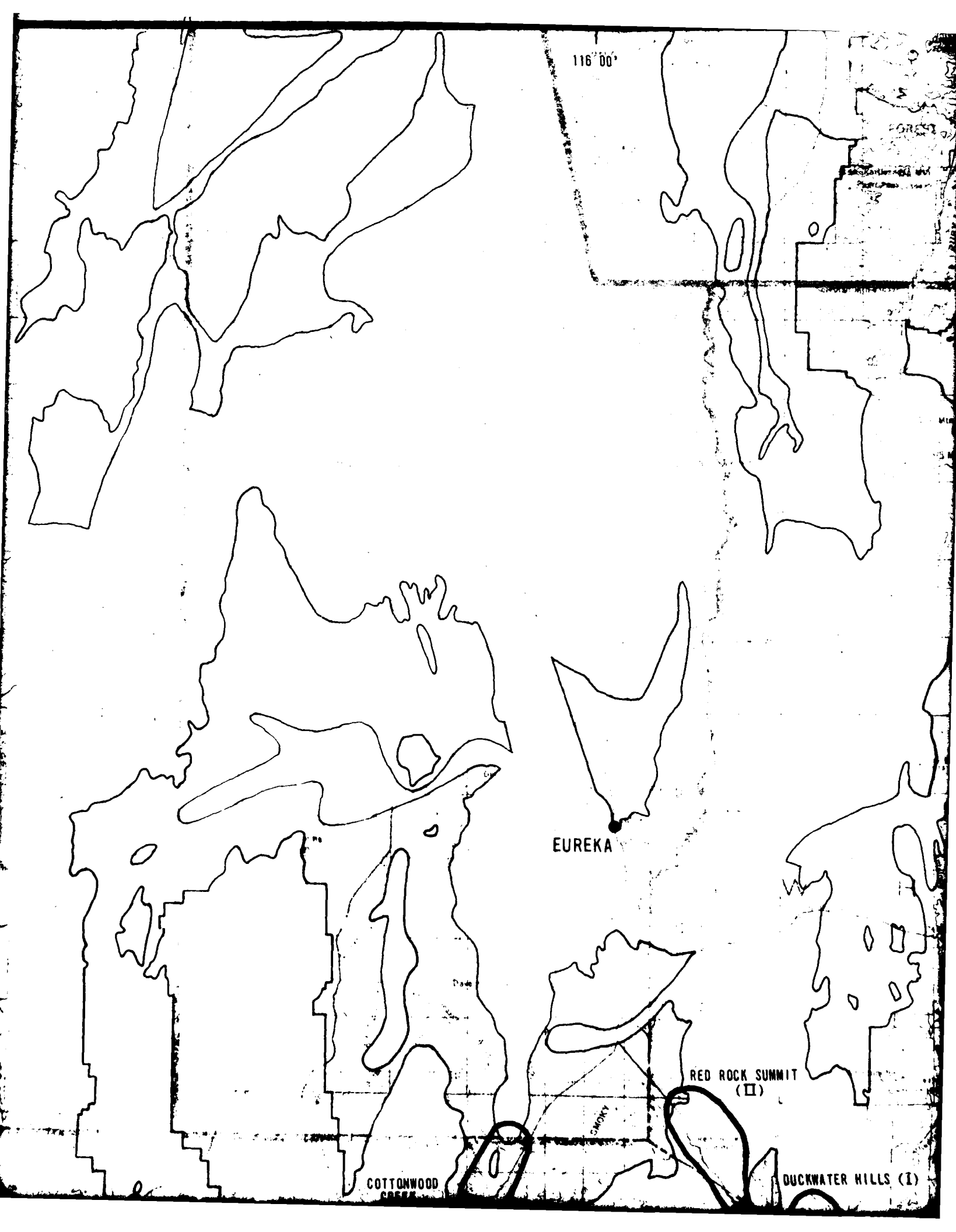
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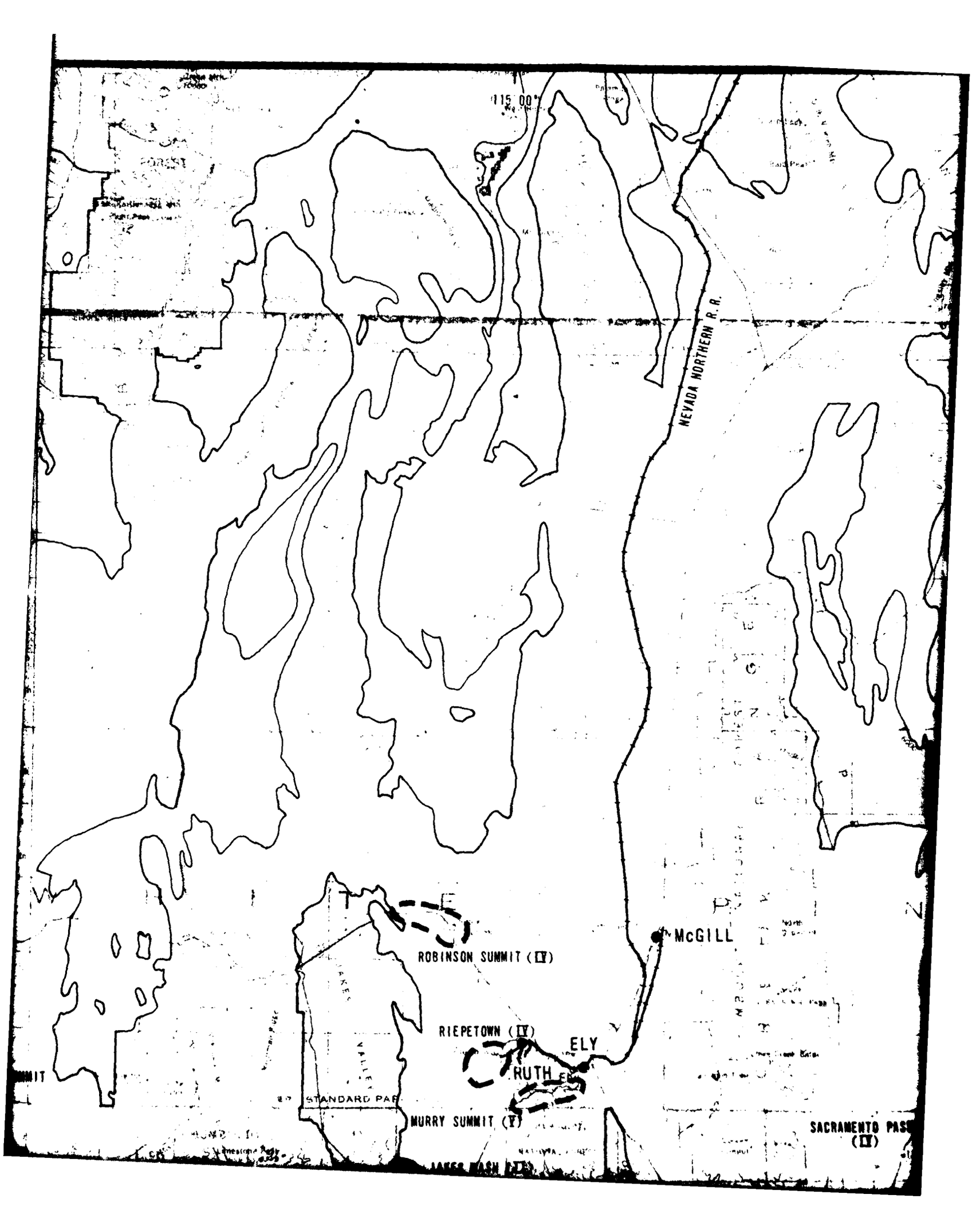
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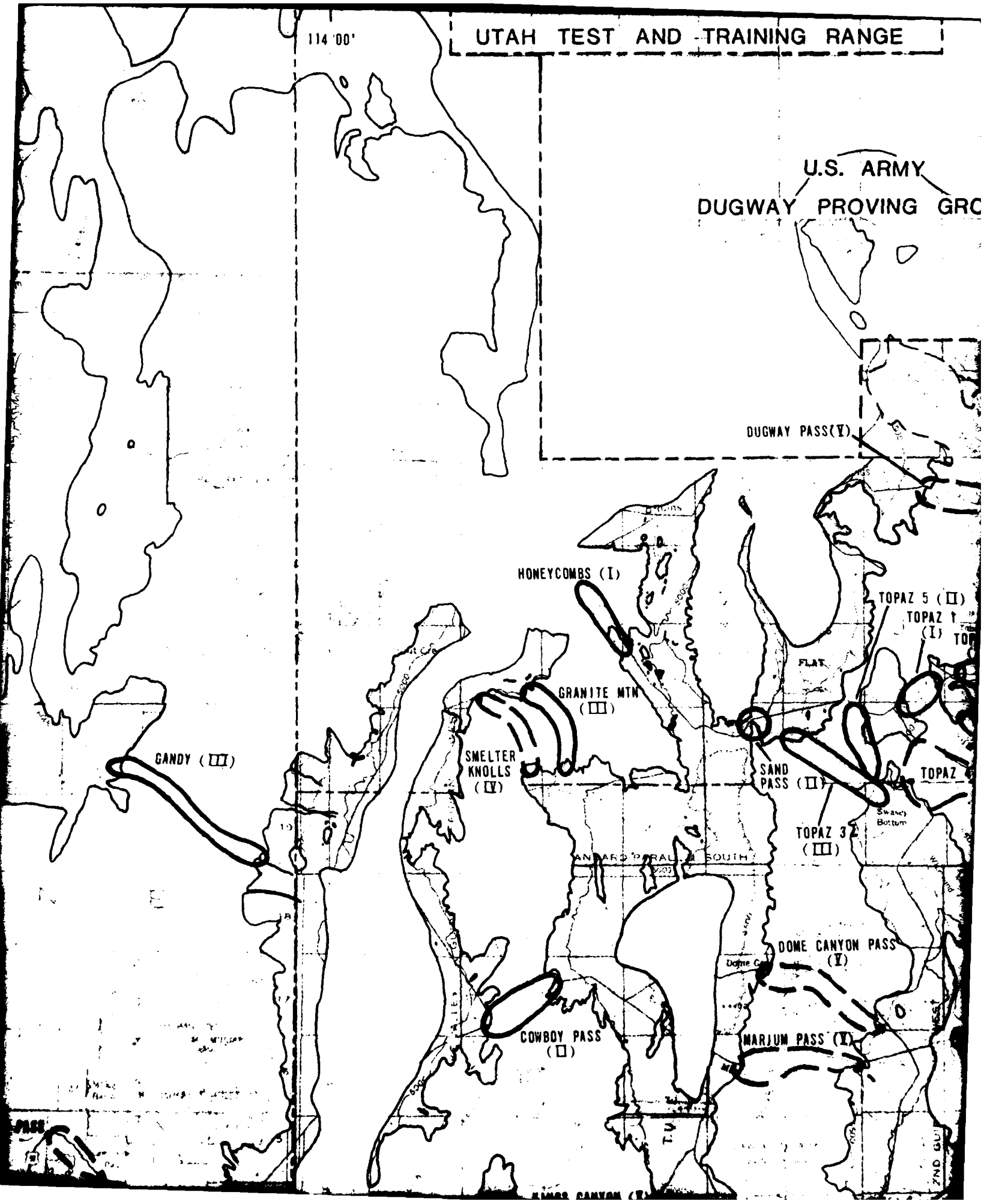
APPENDIX A

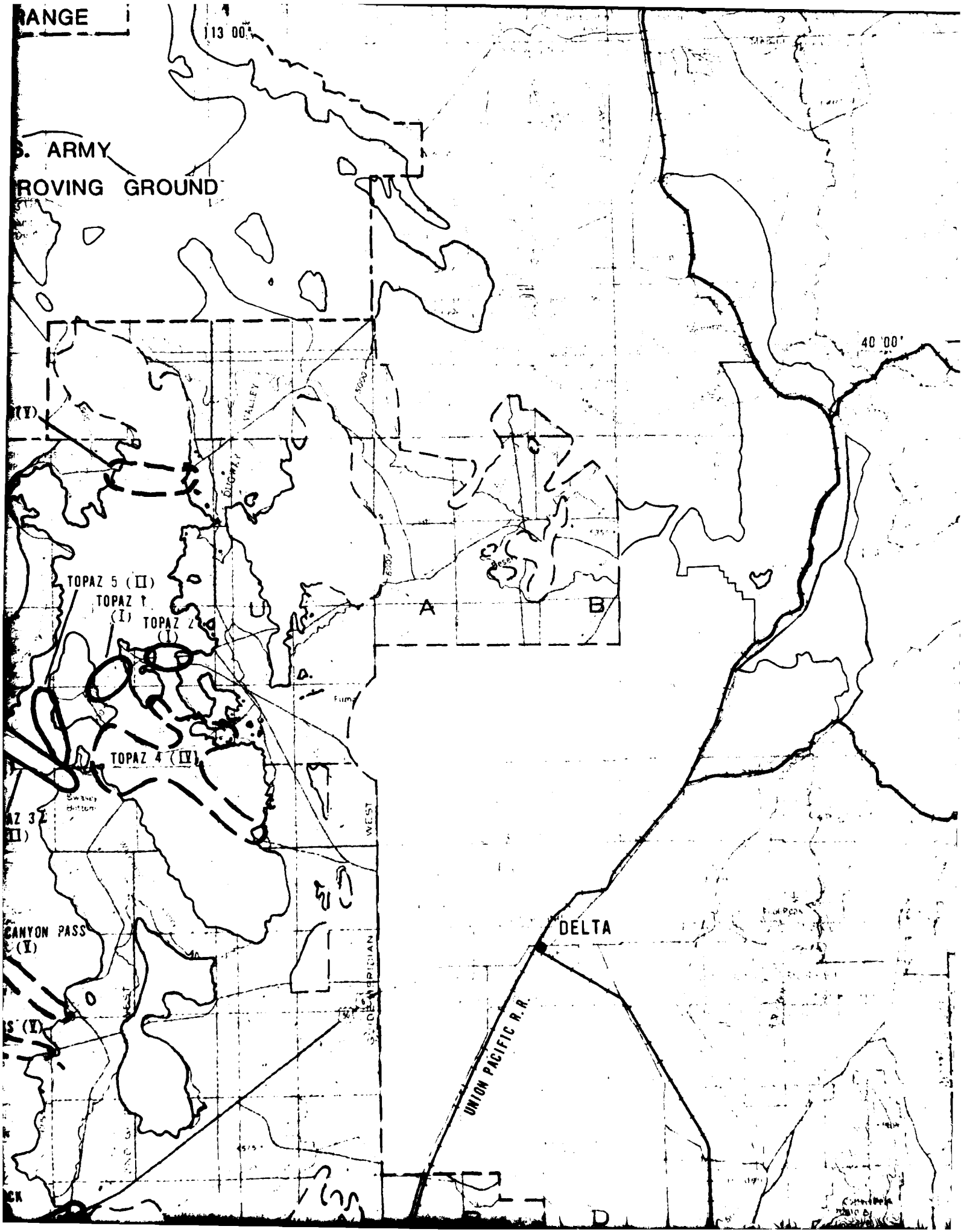
RAILROAD PASS LOCATION, NEVADA-UTAH

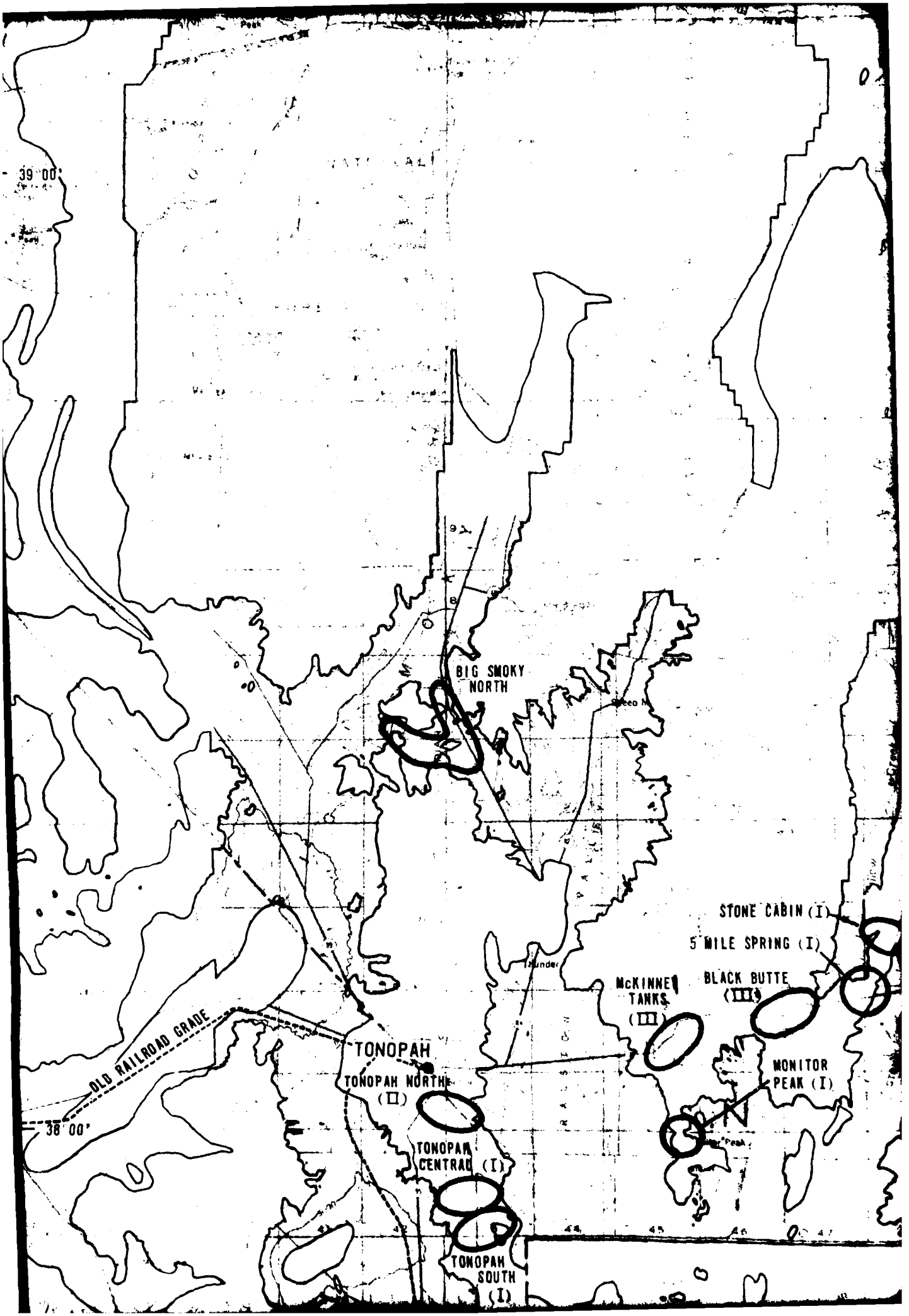

AUSTIN

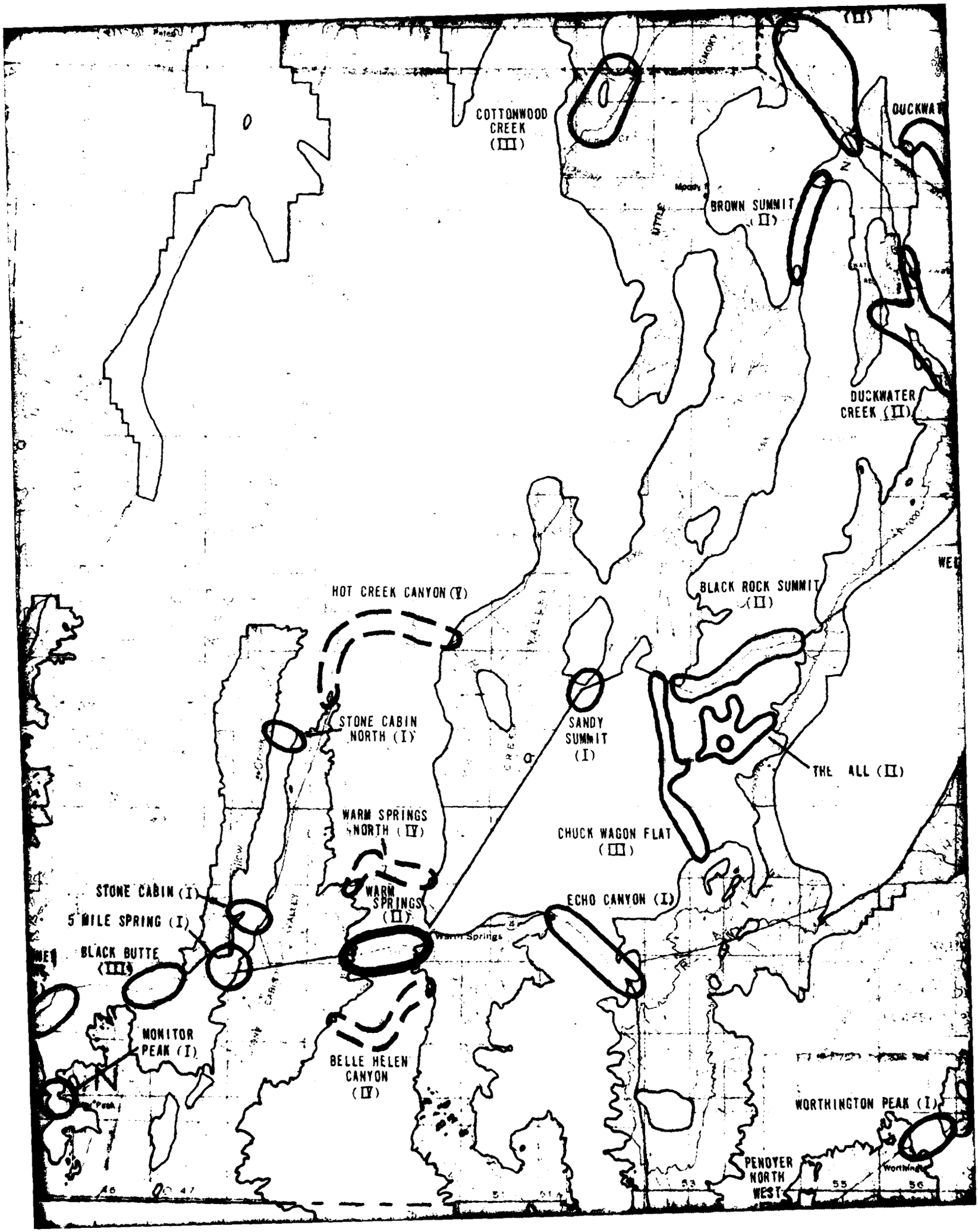

116°00'
EUREKA
RED ROCK SUMMIT
(II)
COTTONWOOD
CREEK
DUCKWATER HILLS (I)

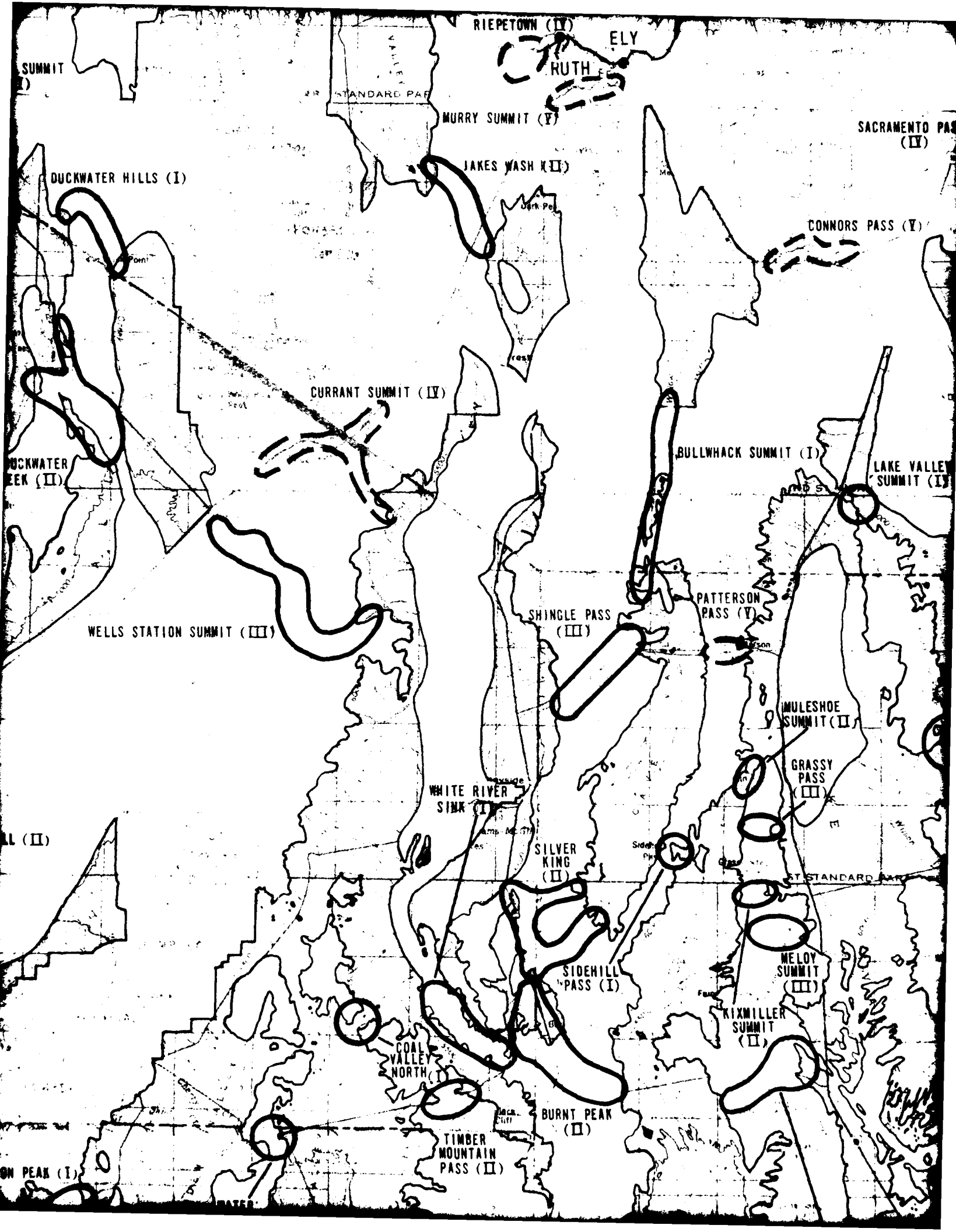

115 00'
NEVADA NORTHERN R.R.
McGILL
ROBINSON SUMMIT (IV)
RIEPETOWN (IV)
ELY
RUTH
STANDARD PAR
MURRY SUMMIT (V)
SACRAMENTO PASS
(IV)

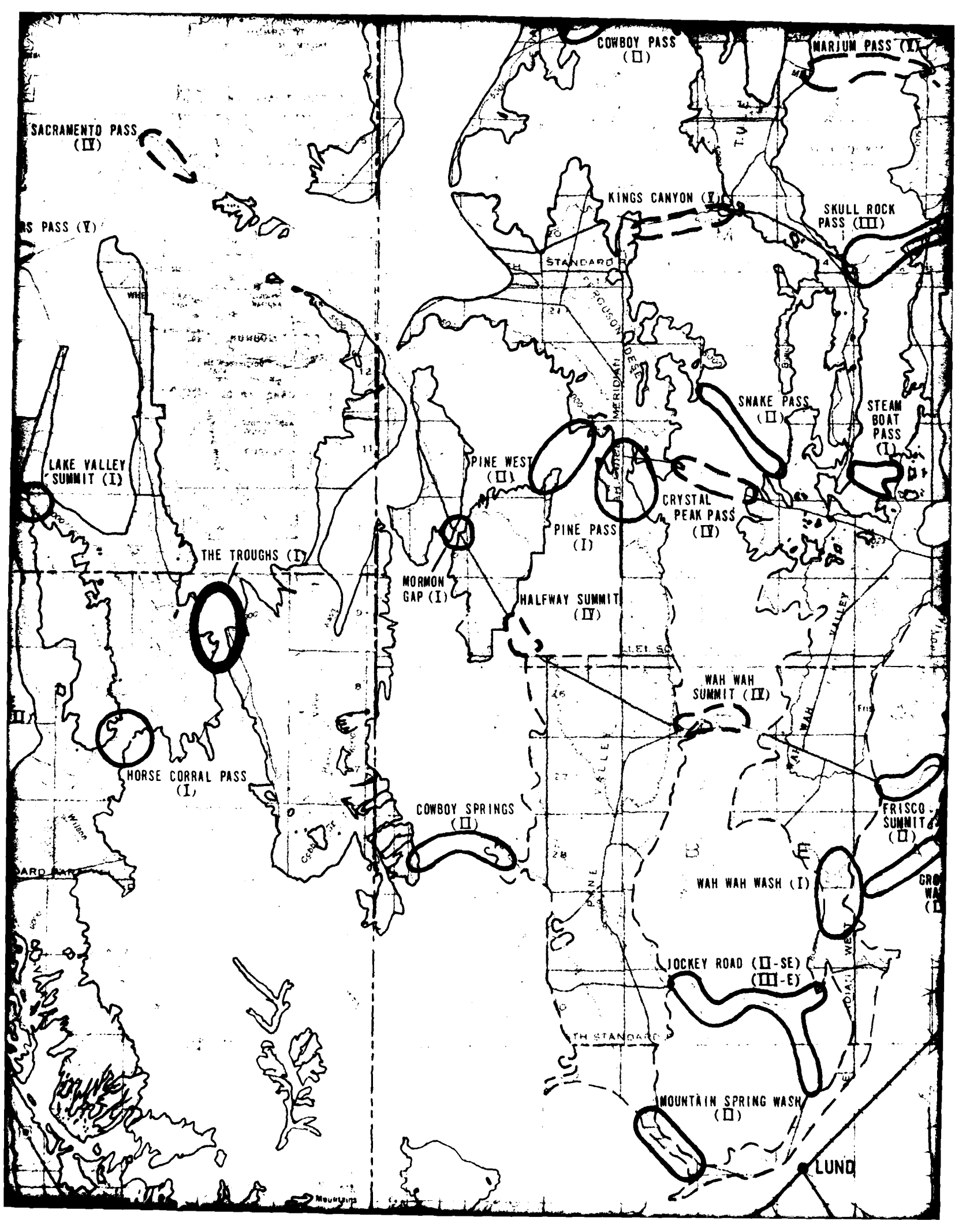

UTAH TEST AND TRAINING RANGE
114°00'
U.S. ARMY
DUGWAY PROVING GRO
DUGWAY PASS(V)
HONEYCOMBS (I)
TOPAZ 5 (II)
TOPAZ 1
(I)
GRANITE MTN
(III)
GANDY (III)
SMELTER
KNOLLS
(V)
SAND
PASS (II)
TOPAZ
TOPAZ 3
(III)
DOME CANYON PASS
(V)
COWBOY PASS
(II)
MARJUM PASS (V)

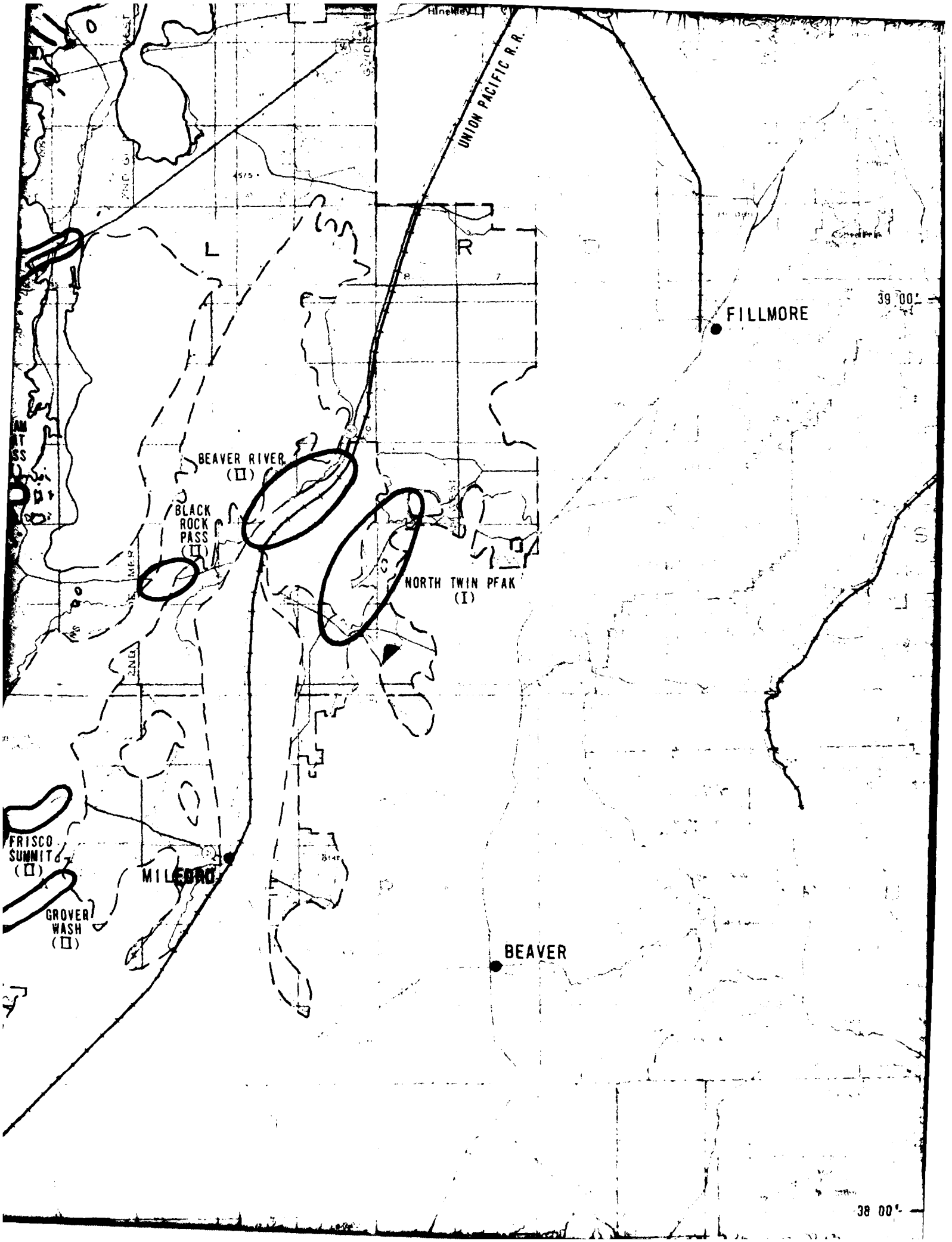

RANGE
113 00'
S. ARMY
ROVING GROUND
40 00'
TOPAZ 5 (II)
TOPAZ 1
(I)
TOPAZ 2
(I)
TOPAZ 4 (IV)
A
B
D
DELTA
UNION PACIFIC R.R.
CANYON PASS
(V)
WEST

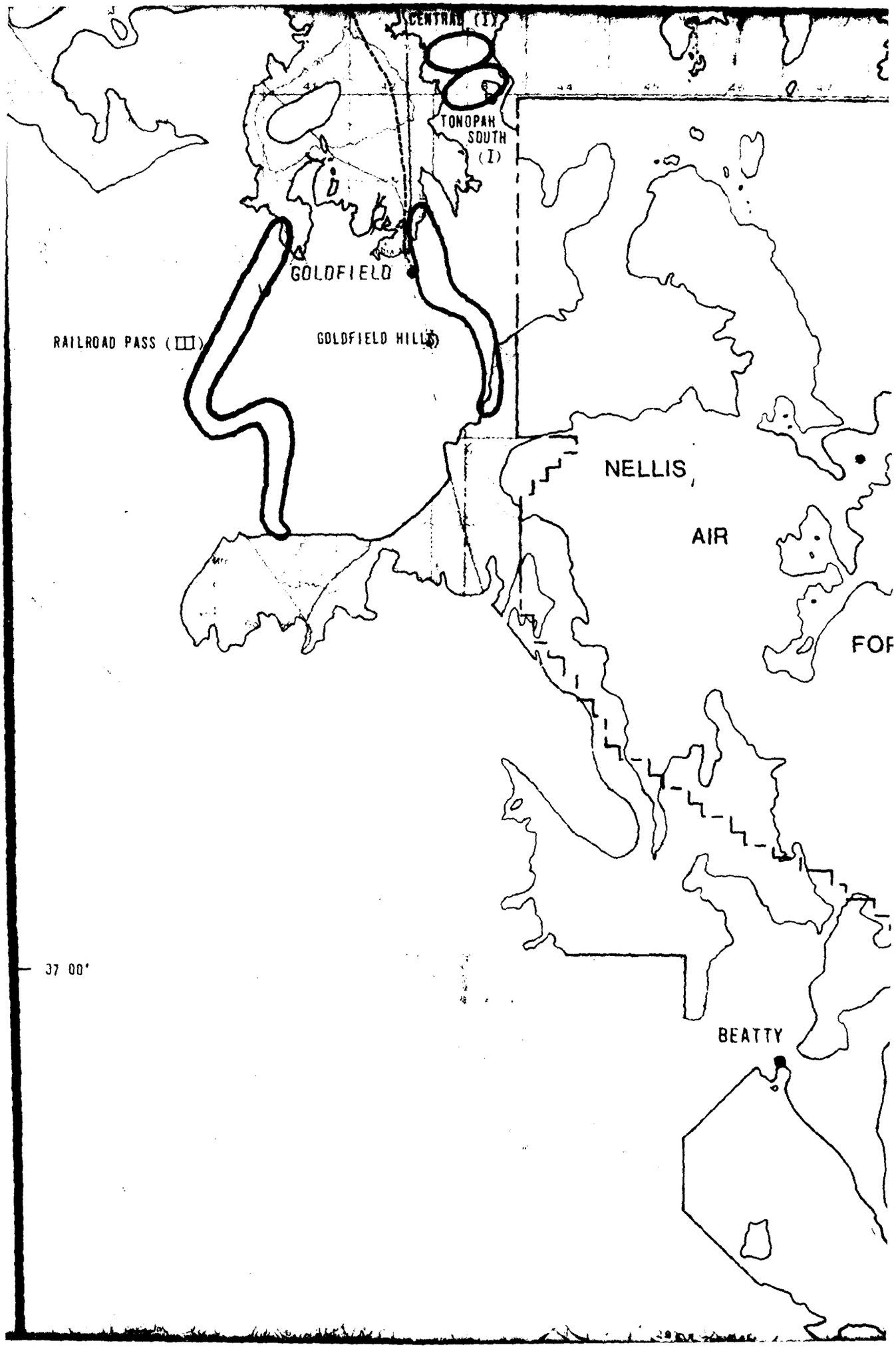

39 00'
BIG SMOKY NORTH
STONE CABIN (I)
5 MILE SPRING (I)
McKINNEY TANKS (II)
BLACK BUTTE (III)
MONITOR PEAK (I)
TONOPAH
TONOPAH NORTH (II)
OLD RAILROAD GRADE
38 00'
TONOPAH CENTRAL (I)
TONOPAH SOUTH (I)


COTTONWOOD CREEK (III)
BROWN SUMMIT (II)
DUCKWATER CREEK (II)
HOT CREEK CANYON (V)
BLACK ROCK SUMMIT (II)
STONE CABIN NORTH (I)
SANDY SUMMIT (I)
THE ALL (II)
WARM SPRINGS NORTH (IV)
CHUCK WAGON FLAT (III)
STONE CABIN (I)
5 MILE SPRING (I)
WARM SPRINGS (II)
ECHO CANYON (I)
BLACK BUTTE (III)
MONITOR PEAK (I)
BELLE HELEN CANYON (IV)
WORTHINGTON PEAK (I)
PENOYER NORTH WEST

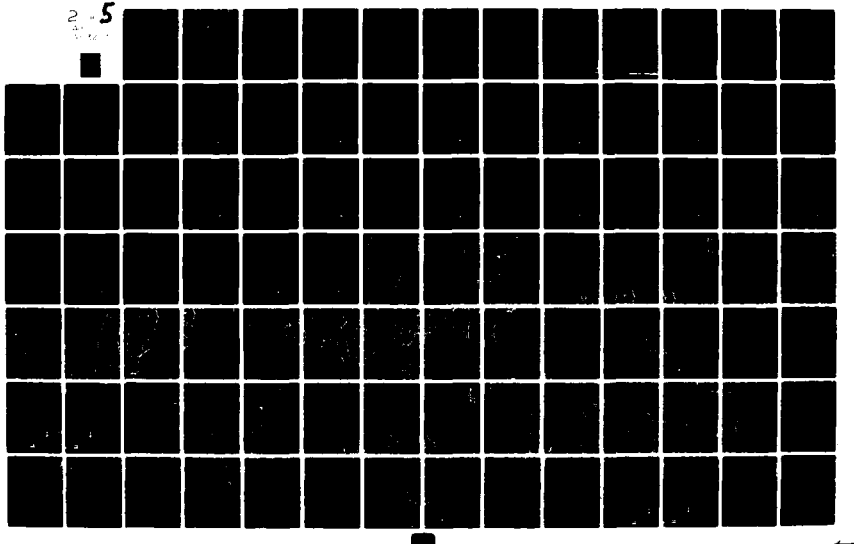

RIEPETOWN (II)
ELY
RUTH
SUMMIT
STANDARD PAR
MURRY SUMMIT (V)
SACRAMENTO PAS
(IV)
DUCKWATER HILLS (I)
JAKES WASH (II)
CONNORS PASS (V)
CURRANT SUMMIT (IV)
BULLWHACK SUMMIT (I)
LAKE VALLEY
SUMMIT (I)
WELLS STATION SUMMIT (III)
SHINGLE PASS
(III)
PATTERSON
PASS (V)
MULESHOE
SUMMIT (II)
GRASSY
PASS
(III)
WHITE RIVER
SINK (I)
SILVER
KING
(II)
SIDEHILL
PASS (I)
MELOY
SUMMIT
(III)
KIXMILLER
SUMMIT
(II)
COAL
VALLEY
NORTH (I)
BURNT PEAK
(II)
TIMBER
MOUNTAIN
PASS (II)


COWBOY PASS (II)
MARJUM PASS (V)
SACRAMENTO PASS (IV)
KINGS CANYON (V)
SKULL ROCK PASS (III)
STANDARD
SNAKE PASS (II)
STEAM BOAT PASS (I)
LAKE VALLEY SUMMIT (I)
PINE WEST (II)
CRYSTAL PEAK PASS (IV)
PINE PASS (I)
THE TROUGHS (I)
MORMON GAP (I)
HALFWAY SUMMIT (IV)
WAH WAH SUMMIT (IV)
HORSE CORRAL PASS (I)
COWBOY SPRINGS (II)
FRISCO SUMMIT (II)
WAH WAH WASH (I)
JOCKEY ROAD (II-SE) (III-E)
MOUNTAIN SPRING WASH (II)
LUND


UNION PACIFIC R.R.
L
R
FILLMORE
39 00'
BEAVER RIVER
(□)
BLACK
ROCK
PASS
(□)
NORTH TWIN PEAK
(I)
FRISCO
SUMMIT
(□)
MILFORD
GROVER
WASH
(□)
BEAVER
38 00'


CENTRAL (I)
TONOPAH SOUTH (I)
GOLDFIELD
RAILROAD PASS (III)
GOLDFIELD HILLS
NELLIS
AIR
FOR
37 00'
BEATTY

AD-A113 217 ERTEC WESTERN INC LONG BEACH CA F/G 16/1
MX SITING INVESTIGATION. MX SYSTEM SITING SUMMARY REPORT. DTN/A--ETC(U)
JAN 82 F04704-80-C-0006
UNCLASSIFIED E-TR-58-VOL-2 NL

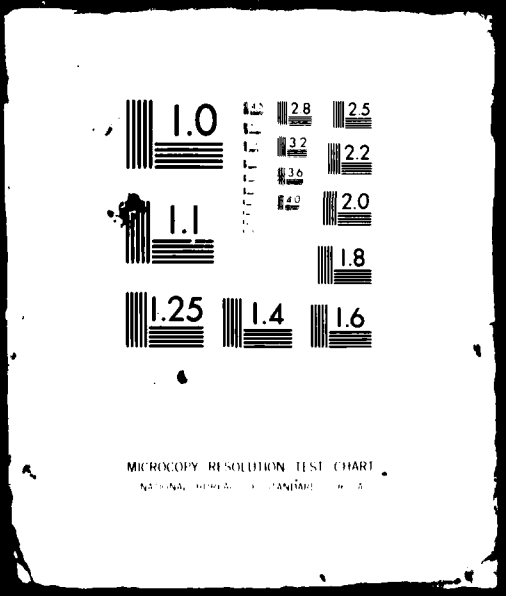


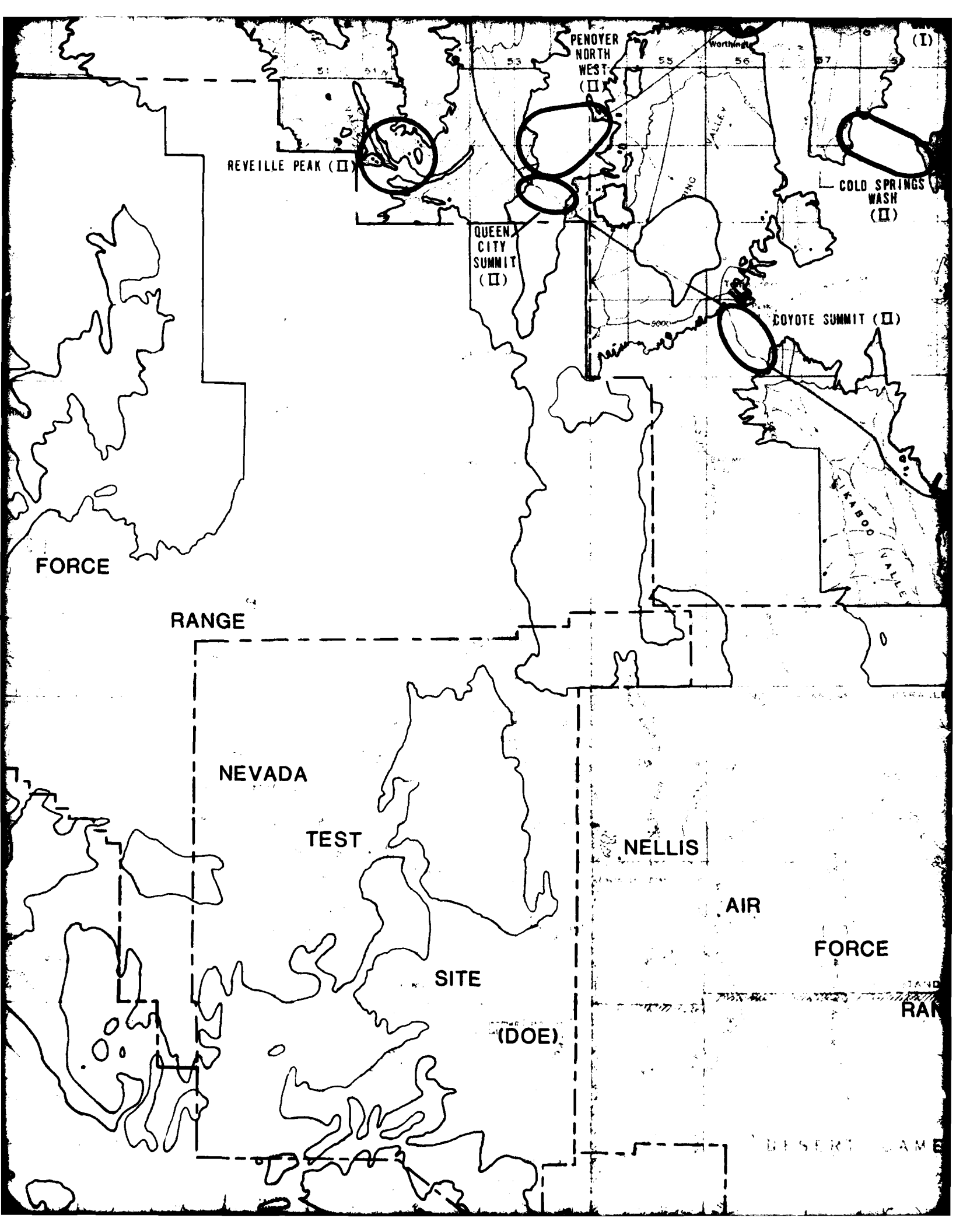
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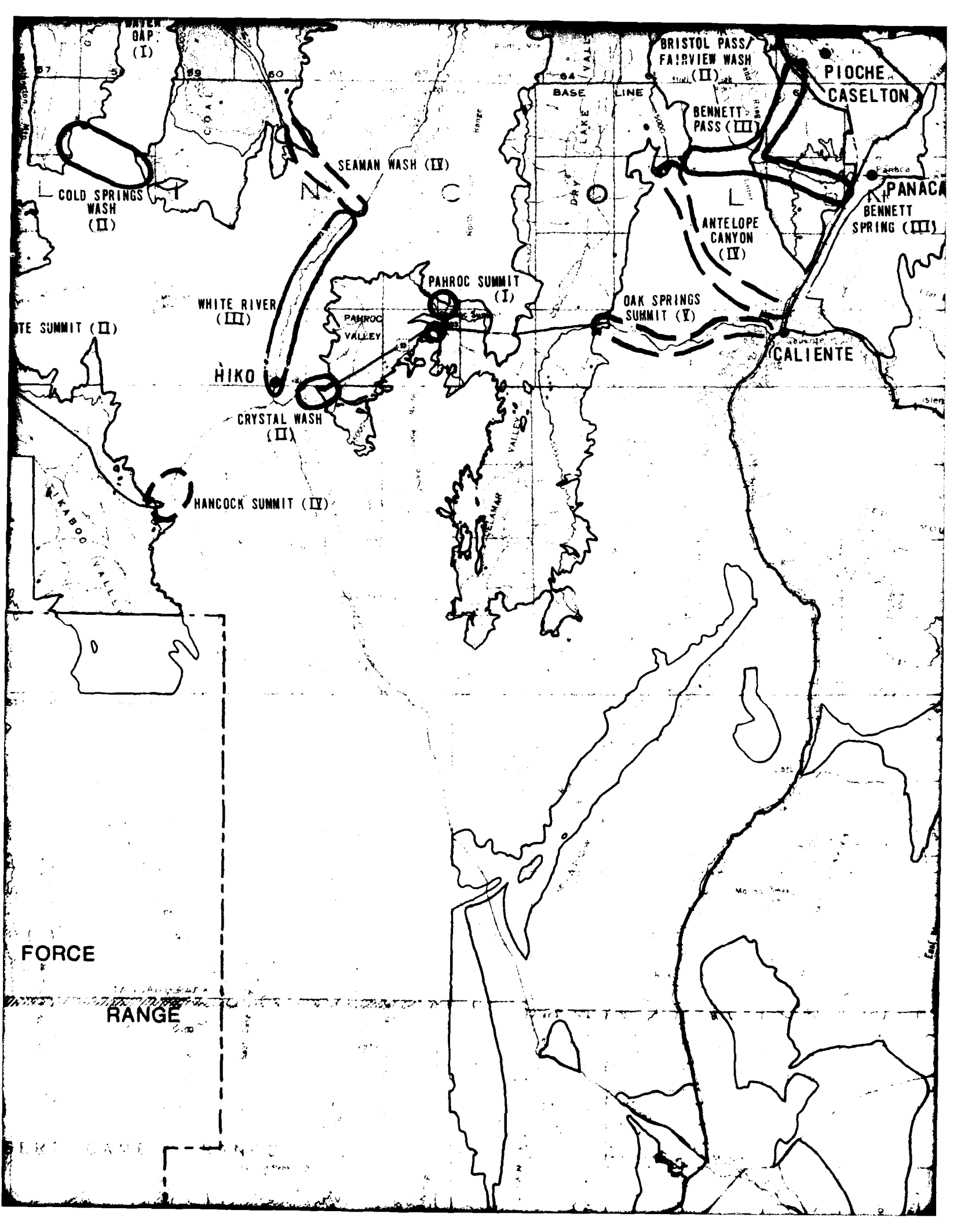
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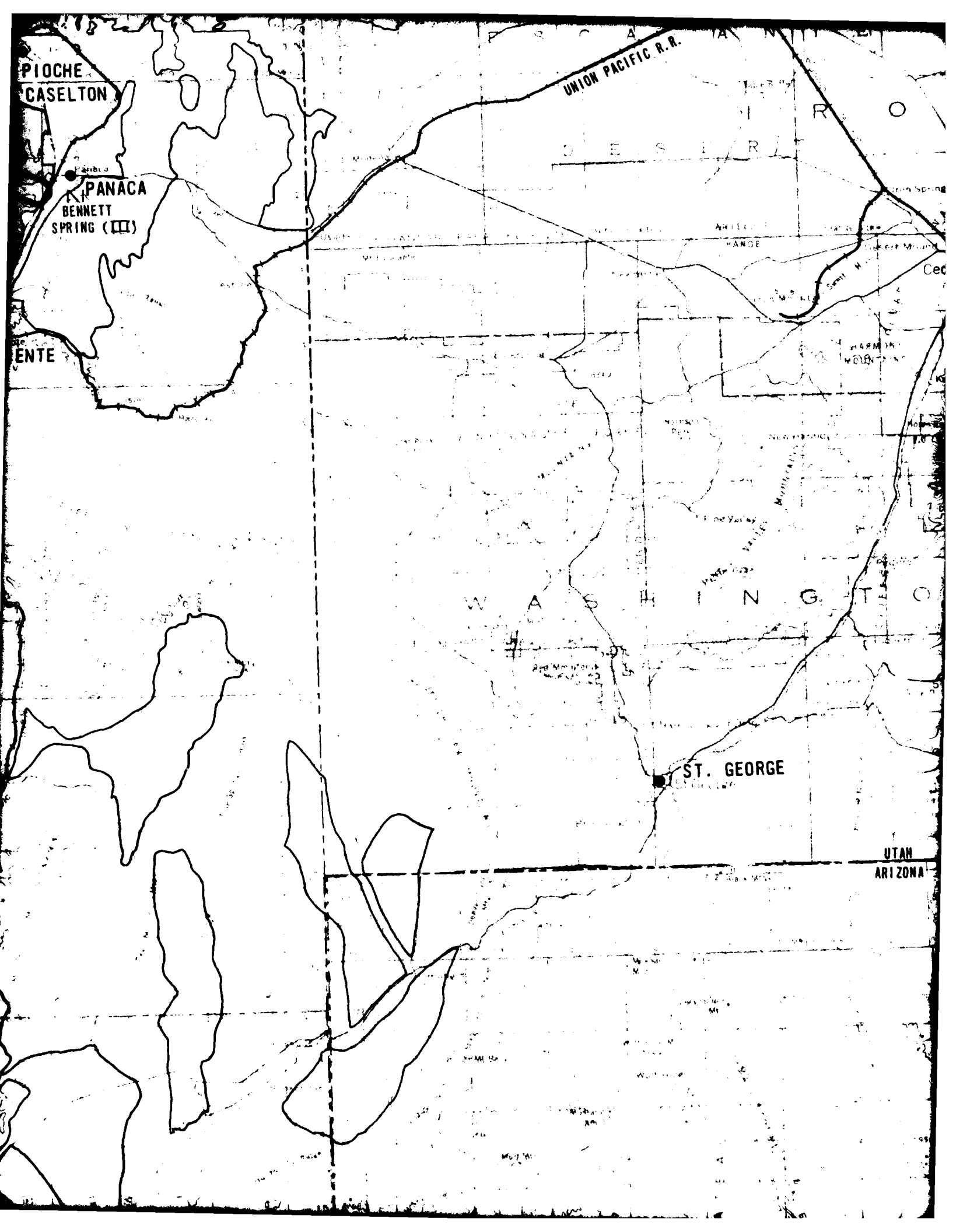
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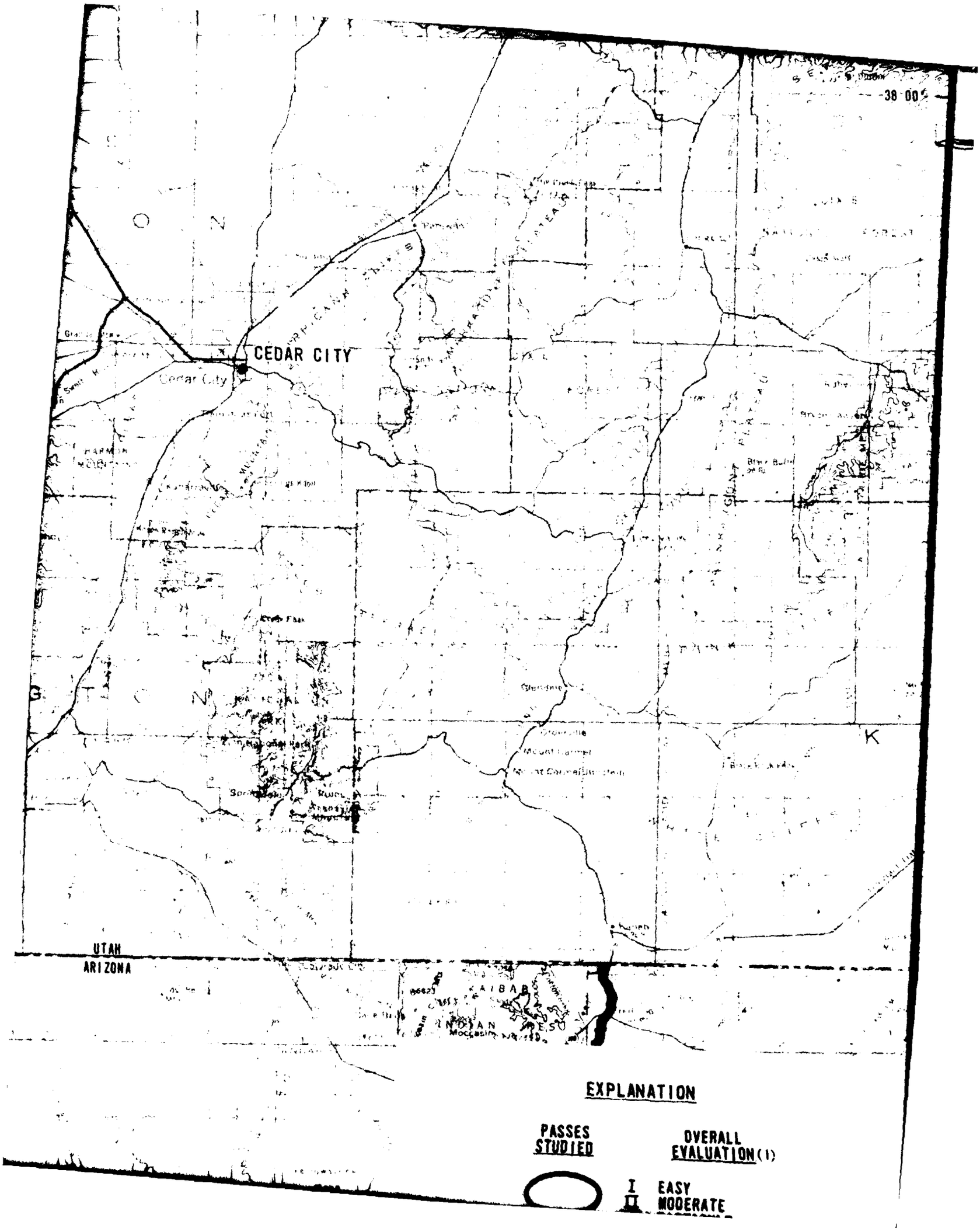
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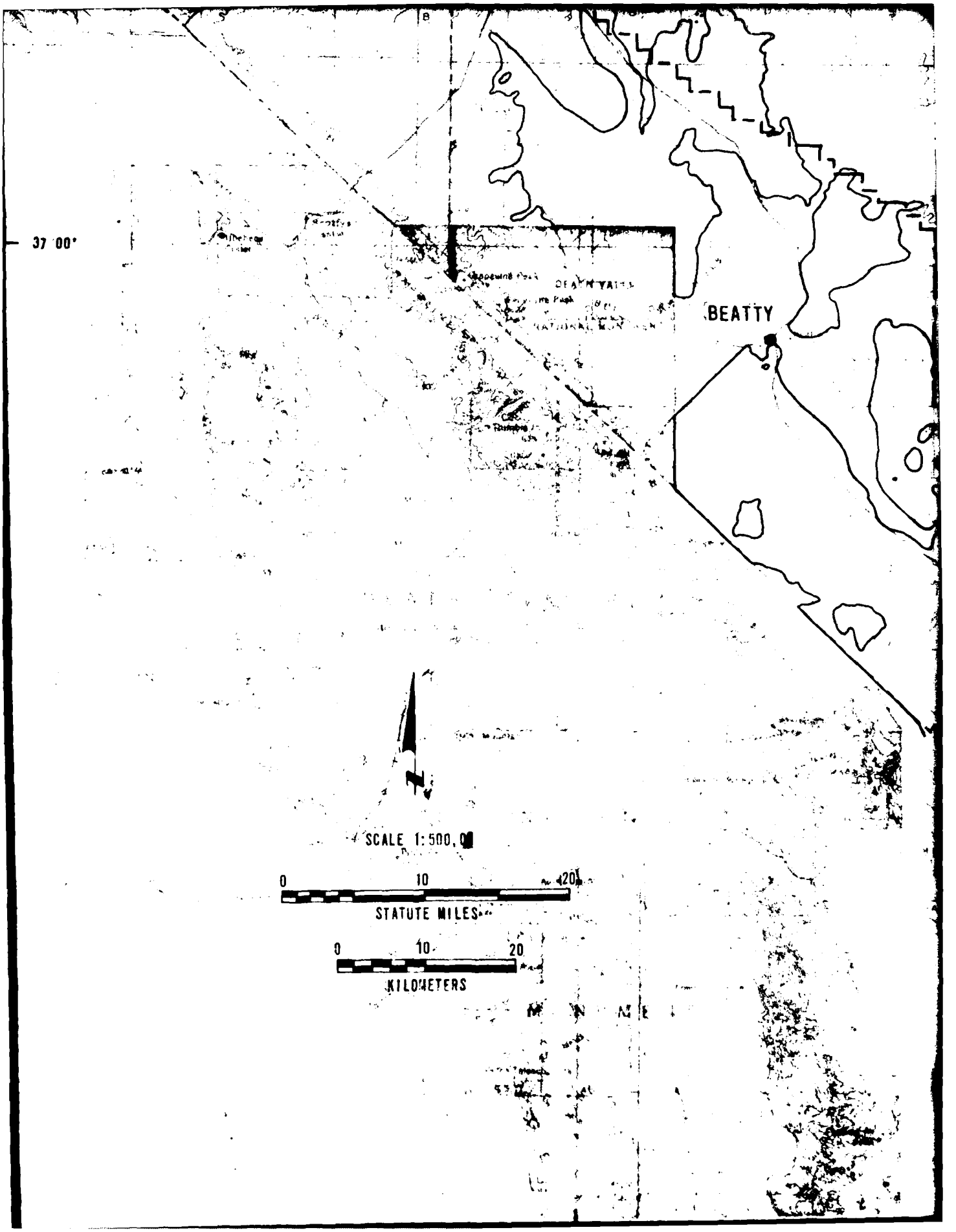


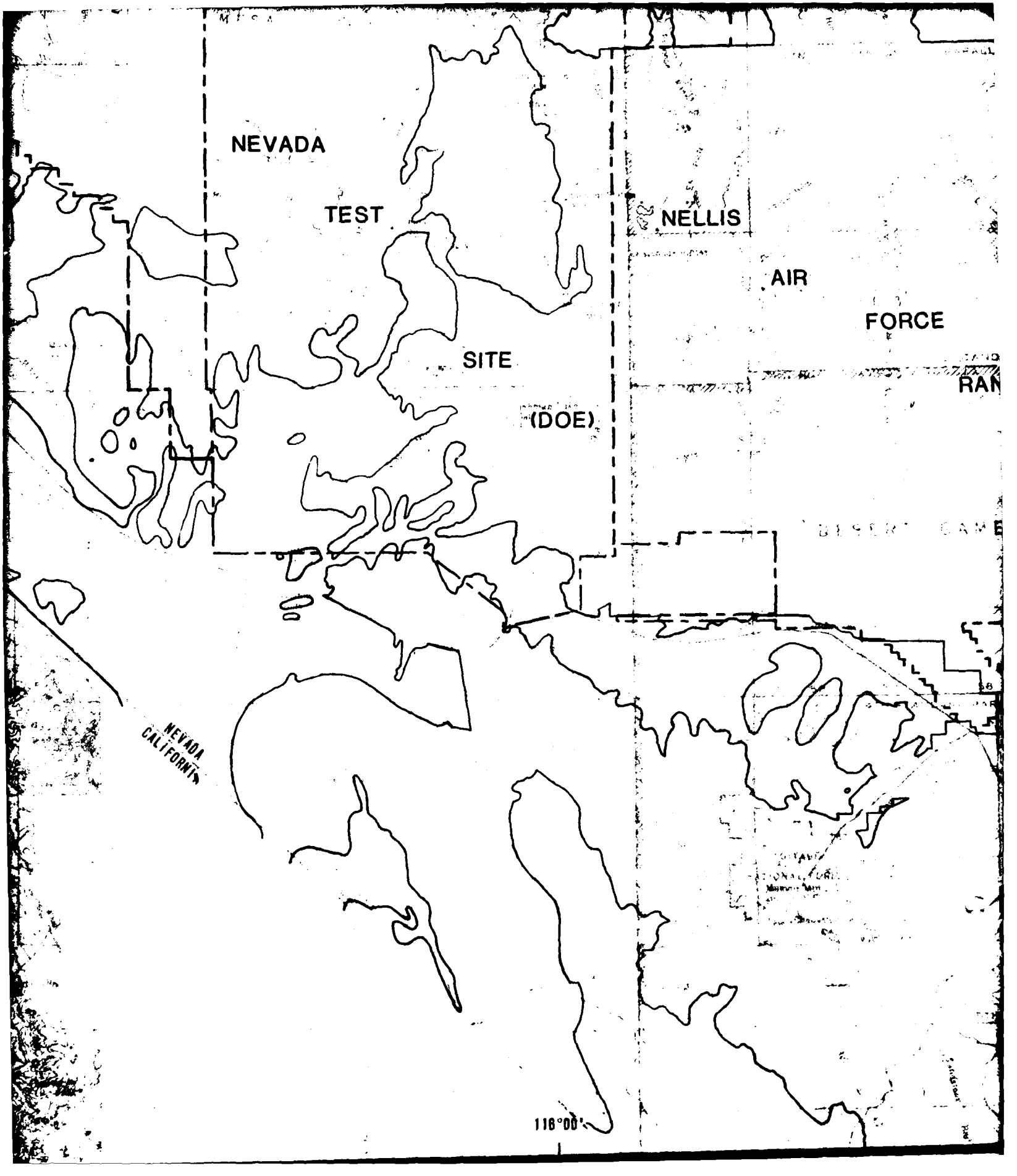

PENOYER NORTH WEST (II)
REVEILLE PEAK (II)
QUEEN CITY SUMMIT (II)
COLD SPRINGS WASH (II)
COYOTE SUMMIT (II)
(I)
FORCE
RANGE
NEVADA
TEST
SITE
(DOE)
NELLIS
AIR
FORCE

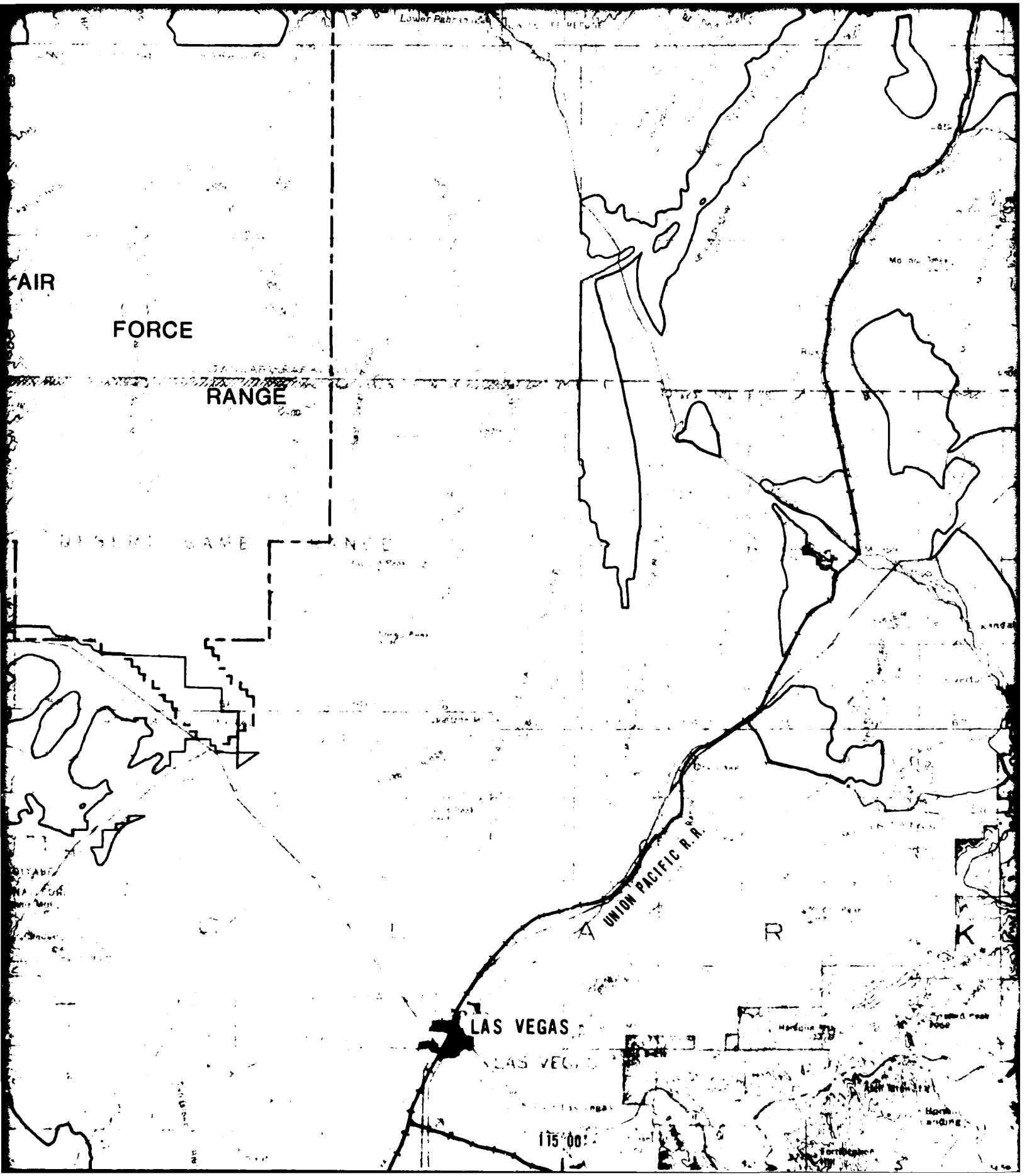

BRISTOL PASS/
FAIRVIEW WASH
(II)
PIOCHE
CASELTON
BENNETT
PASS (III)
SEAMAN WASH (IV)
COLD SPRINGS
WASH
(II)
ANTELOPE
CANYON
(IV)
PANACA
BENNETT
SPRING (III)
PAHROC SUMMIT
(I)
WHITE RIVER
(III)
OAK SPRINGS
SUMMIT (V)
CALIENTE
HIKO
CRYSTAL WASH
(II)
HANCOCK SUMMIT (IV)
FORCE
RANGE

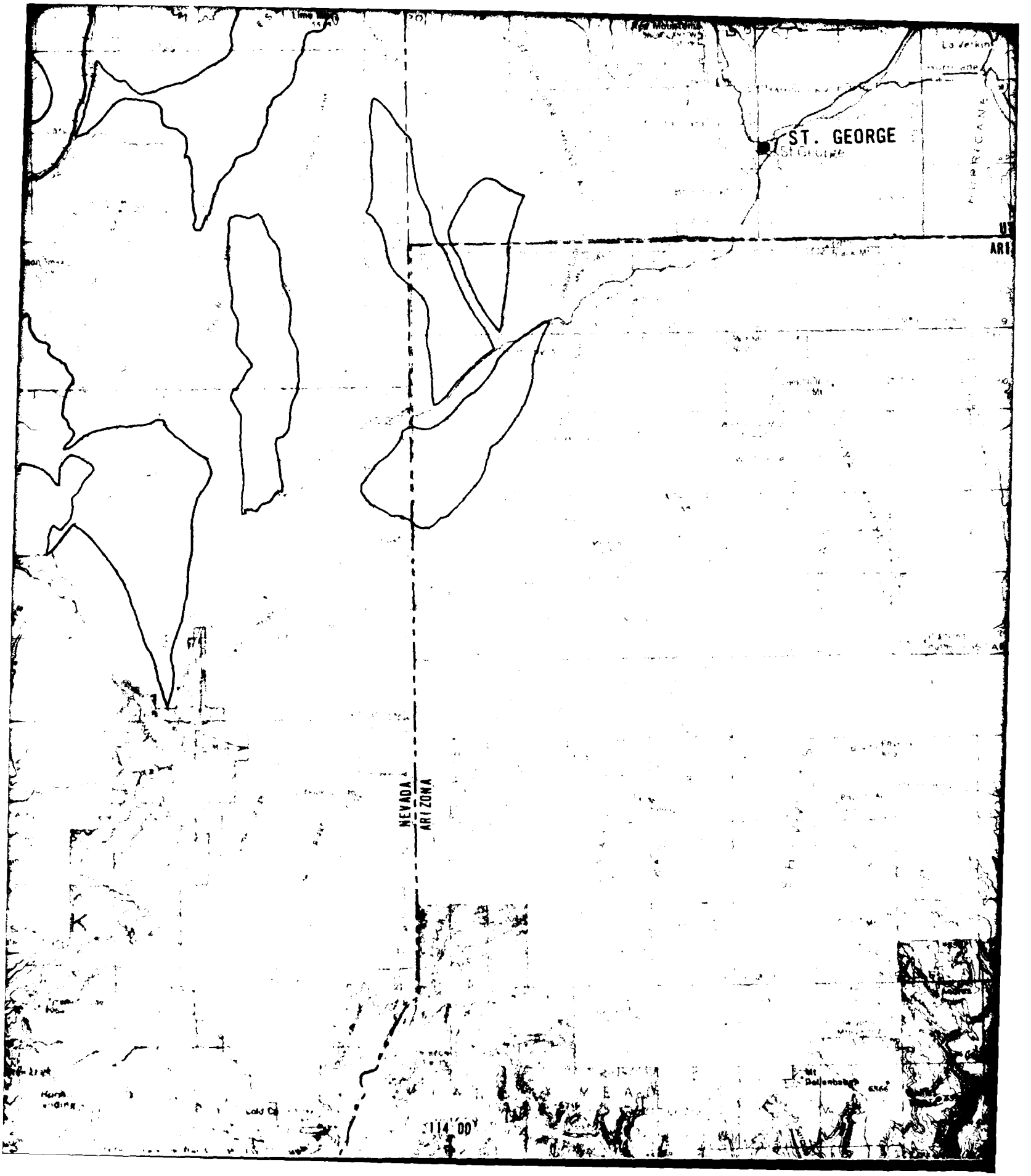

PIOCHE
CASELTON
UNION PACIFIC R.R.
PANACA
BENNETT
SPRING (III)
ENTE
W A S H I N G T O
ST. GEORGE
UTAH
ARIZONA

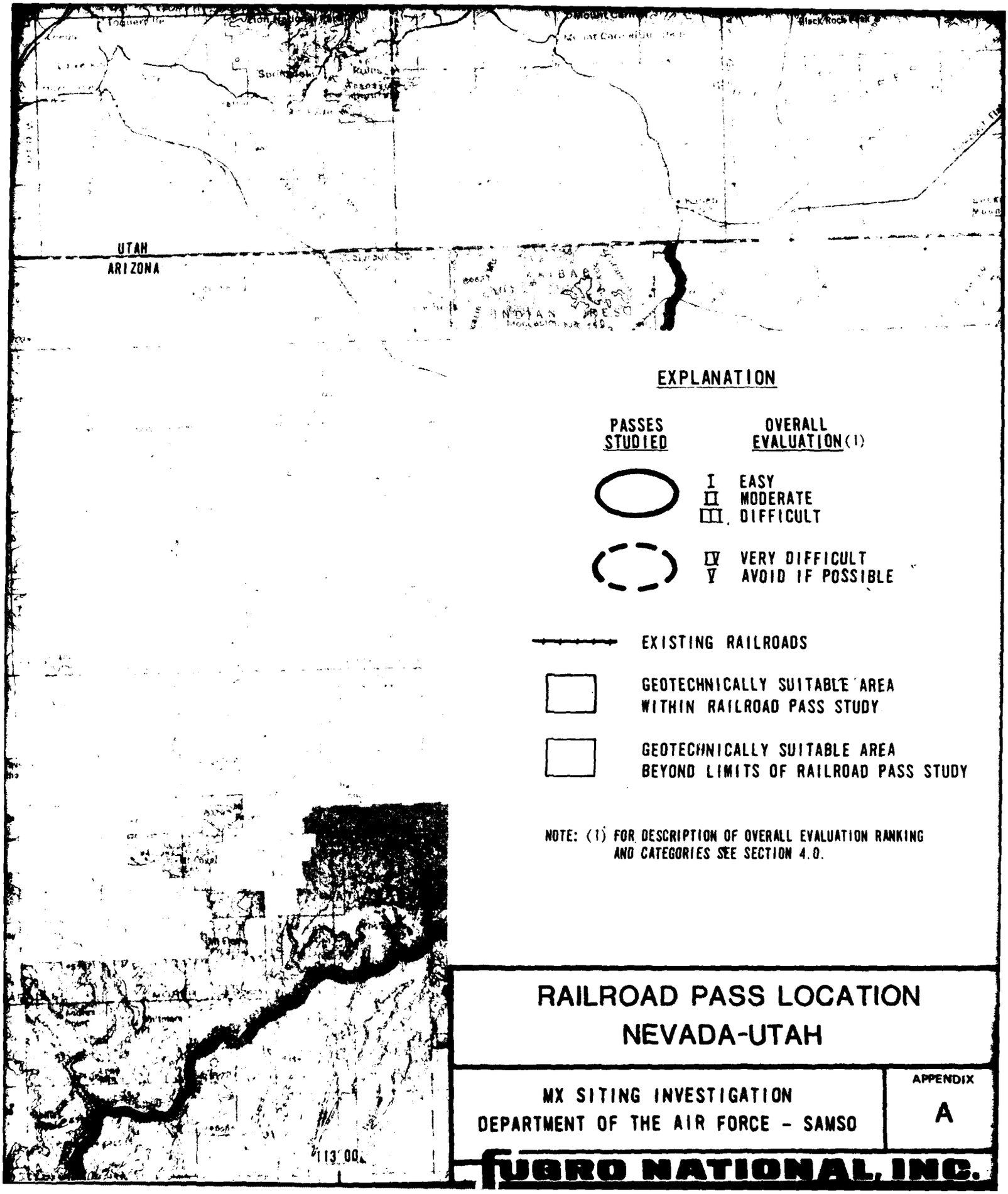

CEDAR CITY
Cedar City
UTAH
ARIZONA
EXPLANATION
PASSES STUDIED
OVERALL EVALUATION(1)
I EASY
II MODERATE


37 00'
BEATTY
SCALE 1:500,0
0
10
20
STATUTE MILES
0
10
20
KILOMETERS


NEVADA
TEST
SITE
(DOE)
NELLIS
AIR
FORCE
NEVADA
CALIFORNIA
116°00'


AIR
FORCE
RANGE
UNION PACIFIC R.R.
LAS VEGAS
115°00'


ST. GEORGE
NEVADA
ARIZONA
K
114°00'



RAILROAD PASS LOCATION NEVADA-UTAH

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE - SAMSO

APPENDIX
A

FUGRO NATIONAL, INC.

APPENDIX B

FIELD RECONNAISSANCE SUMMARY

PASSES	VALLEYS	PURPOSE	REMARKS
Field Trip No. 1			
Dates: 24-25 Nov. 1980			
1. Snake	Pine	1. Evaluate DTN Connections from Beryl/Milford OBs to IOC Valleys.	1. This field trip was made after the formation of the DTN working group. All members participated.
2. Wah Wah Summit	Snake	2. Evaluate DTN connections between Wah Wah, Pine, Snake, and Tule valleys	2. No written evaluation was made for the passes traversed on field trip #1 therefore they were not included into the Pass Evaluation Summary.
3. Sand (Pine NE)	Tule		
4. Crystal Peak (Garrison Black Rock Road)	Wah Wah		
Field Trip No. 2			
DATES: 7-12 Dec. 1980			
1 Beck	Butte	1. Gather additional field data for DTN optimization studies.	1. This field trip was one of the two to field check the railroad study passes.
2. Burnt Peak	Cave	2. Field review critical passes, proposed ASC locations, and the DTN from the DAA to the IOC.	
3. Coal NE	Coal	3. Present first 360 miles of DTN assuming a Coyote MOB BerylMOB and Milford #1 MOB.	
4. Coal NW	Dry Lake	4. Identify potential mining conflicts in Pine and Wah Wah valleys.	
5. Cowboy Pine West	Escalante	5. Evaluate Wah Wah Summit vs. Snake Pass.	
6. Cowboy Springs	Garden	6. Evaluate Pine Valley DTN vs. Wah Wah Valley DTN.	
7. Dry Mountain	Hamlin	7. Establish a route from Muleshoe to Cave Valley.	
8. Duck Water Creek	Jakes		
9. Horse Corral	Little Smoky		
10. Kixmiller Summit	Long		
11. Lt. Antelope Summit	Muleshoe		
12. Marking Corral Summit	Newark		
13. Mormon Gap	Penoyer		
14. Pancake Summit	Pine		
15. Pruess Lake	Railroad		
16. Railroad North	Snake		
17. Red Rock Summit	Spring		
18. Robbers Roost	Tule		
19. Rosencrans	Wah Wah		
20. Sammy Spring	Whirlwind		
21. Side Hill			
22. Silver King			
23. Silver King N			
24. Skull Rock			
25. Snake Central			
26. Snake West			
27. Timber Mountain			
28. Wah Wah Summit			
29. Wah Wah Wash			
30. Water Gap			
31. Wells Station Summit			
32. Worthington Peak			

Note: Passes listed on all field trips are evaluated according to the general consensus and ranked in order of difficulty.

PASSES	VALLEYS	PURPOSE	REMARKS

FIELD TRIP NO. 3
DATES: 17-19 DEC. 1980

PASSES	VALLEYS	PURPOSE	REMARKS
1. Cockalorum Wash 2. Delamar A 3. Delamar B 4. Delamar C 5. Echo Canyon 6. Five Mile Spring 7. Miners 8. Monitor Peak 9. Penoyer NW 10. Queen City Summit 11. Stone Cabin 12. Warm Springs	Antelope Coyote Spring Railroad Ralston Reveille Stone Cabin	1. Gather additional field data for DTN optimization studies. 2. Field review critical passes, proposed ASC locations, and the DTN from the DAA to the IOC. 3. Present first 360 miles of DTN assuming a Coyote MOB Beryl MOB, and Milford #1 MOB. 4. Evaluate IOC DTN from Coyote OD to Delamar Valley through Delamar A, B or C.	1. This field trip was the continuation of the first to field check the railroad study passes. RESULTS: 1. Consensus of the group on coordinated optimized first 360 miles of DTN. 2. Delamar A was chosen as preferred pass from Coyote OB to Delamar Valley. 3. Pine Valley was selected as the DTN connection from Beryl/Milford MOB to the DDA.

FIELD TRIP NO. 4
DATES: 2-6 FEB. 1981

PASSES	VALLEYS	PURPOSE	REMARKS
1. Big Smoky North 2. Gandy 3. Honeycombs 4. Monitor South 5. Sand 6. Tonopah 7. Topaz	Big Smoky Dugway Fish Springs Flat Snake Spring Tule	1. Evaluate exit to west and north from Ralston valley to Big Smoky and Monitor valleys. 2. Evaluate DTN route in NE Utah bewteen Snake, Tule, Fish Springs Flat, and Whirlwind (north) valleys.	1. This field trip is a continuation of first two regional reconnaissance.

PASSES	VALLEYS	PURPOSE	REMARKS
FIELD TRIP NO. 5			
DATES: 23-26 MAR. 1981			
1. Cowboy 2. Dome Canyon 3. Jockey Road 4. Marjum 5. Pine South (Milford 1A) 6. Pink Knolls (Milford 1B) 7. Sand Wash 8. Steam Boat	Escalante Whirlwind	1. Evaluate Snake Valley DTN routing. 2. Evaluate Tule ASC location. 3. Review DTN from Tule Valley to Whirlwind Valley. 4. Review Milford OB different DTN options. 5. Review possibility of moving DTN further away from the Indian Peaks area in Pine Valley.	1. Tule ASC location was preferred over Whirlwind ASC.
FIELD TRIP NO. 6			
DATES: 11-14 MAY 1981			
1. Bible Spring 2. Modena Draw 3. Negro Liza Wash	Pine	1. Evaluate possible DTN passes from Escalante Desert to Hamlin and Pine valleys.	1. This was a field trip evaluated possible DTN passes.
FIELD TRIP NO. 7			
DATES: 15-19 JUNE 1981			
1. Bullwhack Summit 2. Dugway 3. Jakes Wash 4. Muleshoe Summit 5. Patterson 6. The Dell 7. The Troughs	Cave Dugway Fish Springs Flat Hamlin Jakes Lake Muleshoe Spring Steptoe White River	1. Review the final DTN alignment. 2. Review new ASC locations. 3. Evaluate passes not covered during previous trips.	1. This was the last of the DTN field trips, in which the final DTN alignment shown on 15 May 1981 was reviewed. 2. Subsequent realignments were then made to the 15 May 1981 map.

APPENDIX C

DTN PASS EVALUATION SUMMARY

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA FREQUENC
BECK Newark & Long, NV.	2(b)	4	6360	NE-SW	Gradual Curves	None	Low	Few
BIBLE SPRING Pine & Escalante, UT.	5(b)	6	6100	N-S	Nearly Straight	None	Low	Several
BIG SMOKY NORTH Big Smoky & Ralston, NV.	2(b)	10	6250	NW-SE	Nearly Straight	None	Low	Several
BULLWHACK SUMMIT Steptoe & Cave, NV.	3(a)	10	7260	N-S	Nearly Straight to Gradual Curves	None	Low	Few
BURNT PEAK Dry Lake & White River, NV.	4(a)	5	5980	E-W	Gradual Curves	At Pass	Low to Moderate	Severa

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
(b) DATA ESTIMATED FROM 15' (1:62,500) TOPOGRAPHIC MAP COVERAGE
(c) DATA ESTIMATED FROM 2° (1:250,000) TOPOGRAPHIC MAP COVERAGE

(d) OVERALL EVALUAT
I - EASY
II - MODERATE
III - DIFFICULT
IV - VERY DIFFIC
V - AVOID IF PO

FLOOD OTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low	Few	None	Easy	Light	I	Unpaved road, powerline crosses through pass area. Minor constriction at summit. Good raptor and sage grouse key range, good antelope range.
Low	Several	None	Moderate	Light	I	Unpaved road. Some private property. Active ranching. Rock outcrops. Some realignment required near summit to minimize grade.
Low	Several	None	Easy	Light to Moderate	I	Hwy 8A. Utility line at north end. Several alternate alignments to south.
Low	Few	None	Easy	Light	I	Unpaved road. WSA on east side. Private property on south. Few rock outcrops. Long DTN to 2 clusters in Steptoe Valley. Sage grouse brood use area to west, and strutting grounds to north. Archaeological sites on both side.
Low to Moderate	Several	None	Moderate	Moderate	II	Unpaved road. Westside will require cutting across drainages. Rock outcrops. Potential antelope range.

OVERALL EVALUATIONS
I - EASY
I - MODERATE
I - DIFFICULT
V - VERY DIFFICULT
V - AVOID IF POSSIBLE

(e) -BUREAU OF LAND MANAGEMENT (BLM) OWNERSHIP UNLESS OTHERWISE STATED
-BLM WILDERNESS STUDY AREA (WSA)

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The Earth Technology Corporation

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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

30 NOV 81

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAI FREQU
COAL NORTHEAST Coal & White River, NV.	1(b)	3	5260	NE-SW	Nearly Straight	None	Low	Few
COAL NORTHWEST Garden & Coal, NV.	2(b)	3	5433	NW-SE	Gradual Curves	None	Low	Sever
COCKALORUM WASH Little Smoky & Antelope, NV.	4(b)	4	7050	NW-SE	Gradual Curves	None	Low	Sever
COWBOY Tule & Snake, UT.	4(b)	4	5720	NE-SW	Nearly Straight to Gradual Curves	None	Low	Few
COWBOY SPRINGS Pine & Hamlin, UT.	3(a)	10	7250	E-W	Gradual Curves	None	Moderate	Num

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
(b) DATA ESTIMATED FROM 15' (1:62,500) TOPOGRAPHIC MAP COVERAGE
(c) DATA ESTIMATED FROM 2° (1:250,000) TOPOGRAPHIC MAP COVERAGE

(d) OVERALL EVALU
I - EASY
II - MODERATE
III - DIFFICULT
IV - VERY DIFF
V - AVOID IF

NS	FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
		FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
	Low	Few	None	Easy	Light	I	Unpaved road, wide flat pass.
	Low	Several	None	Easy	Light	I	Unpaved road. Wide open pass.
	Low	Several	None	Easy	Light	I	Unpaved road. Southern approach flatter grade. Road bed in wash, should be raised to prevent flooding.
e	Low	Few	None	Easy	Light	I	Unpaved road, old Hwy. 50. Both approaches flatter grade than maximum.
e	Moderate	Numerous	None	Moderate	Moderate	II	Unpaved road. Extensive pinyon-juniper with furbearer sign, raptors. Key antelope range on both sides.

(d) OVERALL EVALUATIONS
I - EASY
II - MODERATE
III - DIFFICULT
IV - VERY DIFFICULT
V - AVOID IF POSSIBLE

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DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	
COWBOY PINE WEST Snake & Snake, UT.	4(b)	5	6760	NE-SW	More than Two Sharp Curves	None	Moderate to High	Nu
DELAMAR "A" Coyote & Delamar, NV.	7(a)	7	4650	NE-SW	Gradual Curves	At Pass	Moderate	Se
DELAMAR "B" Pahranagat & Delamar, NV.	7(a)	7	4650	NE-SW	Gradual Curves	At Pass	Moderate	Se
DELAMAR "C" Pahranagat & Delamar, NV.	3(b)	11	4750	NE-SW	One or Two Sharp Curves	None	Low to Moderate	S
DOME CANYON Whirlwind & Tule, UT.	9(a)	12	6750	E-W	One or Two Sharp Curves	At Pass & Locally	Moderate	

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
(b) DATA ESTIMATED FROM 15' (1:62,500) TOPOGRAPHIC MAP COVERAGE
(c) DATA ESTIMATED FROM 2° (1:250,000) TOPOGRAPHIC MAP COVERAGE

(d) OVERALL E
I - EASY
II - MODERA
III - DIFFIC
IV - VERY
V - AVOID

FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Moderate to High	Numerous	One	Moderate	Moderate	II	Unpaved road. Many culverts required. Rock at summit, Bald eagle and antelope year round range.
Moderate	Several	None	Difficult	Moderate to Heavy	III	Unpaved road. WSA to SE of gravel road. 10% grade for 2000' south of pass. Southern end terminates at Hwy. 93.
Moderate	Several	None	Difficult	Moderate to Heavy	III	Unpaved road. Southern end enters wildlife refuge and increases length of co-existing highway. 10% grade for 2000' south of pass.
Low to Moderate	Several	One	Moderate	Moderate	II	Unpaved road. 1/4 - 1/2 mile wildlife area. Longer distance than alt. "A" and "B."
Moderate	Numerous	None	Difficult	Moderate to Heavy	V	Poor DTN pass. Potential service road. Unpaved road. 6 - 7% grade on western approach. Minor pass at el. 6610 on eastern approach. WSA to north and south.

OVERALL EVALUATIONS
I - EASY
II - MODERATE
III - DIFFICULT
IV - VERY DIFFICULT
V - AVOID IF POSSIBLE

(e) -BUREAU OF LAND MANAGEMENT (BLM) OWNERSHIP UNLESS OTHERWISE STATED
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BMO/AFRCE-MX

DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAIN FREQUE
DRY MOUNTAIN Newark & Long, NV.	4(b)	4	6650	E-W	Gradual Curves	At Pass & Locally	Moderate	Severa
DUCKWATER CREEK Railroad & Railroad, NV.	4(b)	8	5650	NW-SE	Gradual Curves	None	Low	Few
DUGWAY Dugway & Fish Springs Flat, UT.	8(a)	2	5410	E-W	One or Two Sharp Curves	At Pass	Low	Severa
ECHO CANYON Hot Creek/Reveille & Railroad, NV	0.5(a)	7	5145	NW-SE	Nearly Straight	At Pass	Low	Few
FIVE MILE SPRING Stone Cabin East & Stone Cabin West, NV.	2(c)	2	5800	NW-SE	Nearly Straight	None	Low	Few

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
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(c) DATA ESTIMATED FROM 2° (1:250,000) TOPOGRAPHIC MAP COVERAGE

(d) OVERALL EVALU
I - EASY
II - MODERATE
III - DIFFICULT
IV - VERY DIFF
V - AVOID IF

FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Moderate	Several	One	Moderate	Moderate	II	Unpaved road. Easy approaches on east and west sides. Cut (15') thru ridge at summit. Extensive raptor and sage grouse. Some wild horses. Good antelope/deer area.
Low	Few	One	Easy	Light	I	Paved road (Hwy. 20). Indian reservation (on southwest). Must stay NE of reservation. Key antelope range.
Low	Several	None	Moderate to Difficult	Heavy	III	Unpaved road. Grade 10% for 1000 ft. About 50 ft. cut at summit. East side more difficult than west. Historical pony express route. Rock at summit.
Low	Few	None	Easy to Moderate	Light to Moderate	I	Hwy. 25. Private ranch NW end of canyon. WSA north of Hwy. 25. Reservoir at south end of pass. Constriction at lower edge of pass.
Low	Few	None	Easy	Light	I	South end of alignment terminates at Hwy. 6. Half of alignment is private property on south end and half is BLM on north. Ranch at spring.

OVERALL EVALUATIONS
- I - EASY
- II - MODERATE
- III - DIFFICULT
- IV - VERY DIFFICULT
- V - AVOID IF POSSIBLE

(e) -BUREAU OF LAND MANAGEMENT (BLM) OWNERSHIP UNLESS OTHERWISE STATED
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BMO/AFRCE-MX

DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

2

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA / FREQUEI
GANDY Snake & Spring, NV.	4(c)	14	6900	NW-SE	Gradual Curves	Locally	Low	Severa
HONEY COMBS Tule & Snake, UT.	3(b)	3	5200	NW-SE	Nearly Straight	None	Low	Few
HORSE CORRAL Spring & Lake, NV.	2(a)	4	6400	NE-SW	Gradual Curves	None	Low	Severa
JAKES WASH Jakes & White River, NV.	<2(b)	10	6440	NW-SE	Nearly Straight	None	Low	Few
JOCKEY ROAD Pine & Escalante, UT.	4(a)	16	6820	E-W	Gradual Curves	At Pass & Locally	Moderate	Severe

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
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(c) DATA ESTIMATED FROM 2° (1:250,000) TOPOGRAPHIC MAP COVERAGE

(d) OVERALL EVALUA
I - EASY
II - MODERATE
III - DIFFICULT
IV - VERY DIFFIC
V - AVOID IF PO

FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low	Several	One	Moderate	Light to Moderate	II	Unpaved road, east side steeper than west. Few rock outcrops.
Low	Few	None	Easy	Light	I	Unpaved road, steeper to NW.
Low	Several	None	Moderate	Light to Moderate	I	Unpaved road. WSA on south. Sage grouse and antelope key range. Migration route from summer range to Lake Valley.
Low	Few	None	Easy	Light	I	Unpaved road. Few rock outcrops. Crosses Hwy. 6.
Moderate	Several	One or Two	Moderate	Moderate	II	Unpaved road. Several short washes. Utah prairie dogs south of alignment near summit. Difficult grading at several short sections of rock outcrops.

OVERALL EVALUATIONS
- I - EASY
- II - MODERATE
- III - DIFFICULT
- IV - VERY DIFFICULT
- V - AVOID IF POSSIBLE

(e) -BUREAU OF LAND MANAGEMENT (BLM) OWNERSHIP UNLESS OTHERWISE STATED
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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA FREQUEN
KIXMILLER SUMMIT Lake & Muleshoe, NV.	4(a)	4	6612	E-W	Gradual Curves	None	Low to Moderate	Severa
LITTLE ANTELOPE SUMMIT Newark & Jakes, NV.	5(b)	12	7438	E-W	More than Two Sharp Curves	At Pass & Locally	Moderate	Numero
MARJUM Whirlwind & Tule, UT.	8(a)	8	6220	E-W	More than Two Sharp Curves	Entire Route West of Pass	High	Severa
MARKING CORRAL SUMMIT Butte & Jakes, NV.	2(b)	6	7050	N-S	Gradual Curves	None	Low	Severa
MINERS PASS (COCKALORUM ALT.) Little Smoky & Antelope, NV.	8(b)	4	7000	NW-SE	More than Two Sharp Curves	Entire Route	Low to Moderate	Numer

Notes: (a) DATA ESTIMATED FROM 7 1/2' (1:24,000) TOPOGRAPHIC MAP COVERAGE
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(c) DATA ESTIMATED FROM 2° (1:250,000) TOPOGRAPHIC MAP COVERAGE

(d) OVERALL EVALUA
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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low to Moderate	Several	None	Moderate	Light	II	Unpaved road. One quarter private property at east end. Good deer range.
Moderate	Numerous	One	Difficult	Heavy	III	Paved road. Private property south of east end. Much rock excavation on west side. Hwy. 50. Parallels drainage east of summit. Good deer habitat. Antelope range at periphery.
High	Several	More than One	Difficult	Moderate to Heavy	V	Poor DTN pass. Possible service road. Unpaved road. Old Hwy. 50. 230 kv line along east portion. Some resistant rock. WSA to north and south.
Low	Several	None	Moderate	Moderate	II	Unpaved road. South end has some rock. Could follow Hwy. 50 for 2 or 3 miles. Good deer and raptor area.
Low to Moderate	Numerous	None	Moderate	Heavy	III	Unpaved road halfway up pass (could not reach summit). Numerous active mines. Cockalorum alternative.

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DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAIN FREQUE
MODENA DRAW Hamlin & Escalante, UT.	3(b)	11	6625	N-S	Nearly Straight	Locally	Low to Moderate	Severe
MONITOR PEAK (N & S) Ralston & Stone Cabin, NV.	1(c)	2(N) 4(S)	5425 (S) 5600 (N)	E-W	Nearly Straight	None	Low	Few
MONITOR SOUTH Ralston & Monitor, NV.	4(b)	5	7250	E-W	Gradual Curves	At Pass & Locally	Low to Moderate	Sever
MORMAN GAP Hamlin & Snake, UT.	2(a)	1	5700	NW-SE	Nearly Straight	None	Low	Fe
MULESHOE SUMMIT Lake & Muleshoe, NV.	3(a)	4	6450	NE-SW	Nearly Straight to Gradual Curves	None	Low	F

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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low to Moderate	Several	One	Moderate	Moderate	III	Unpaved road. Some private property, active ranching. Excessive length of pass. Moderate grading throughout length of pass.
Low	Few	None	Easy	Light	I	Paved road old Hwy. 25 (south pass). Unpaved road (north pass). Traverse alluvial fan. North pass shorter distance.
Low to Moderate	Several	One	Moderate	Moderate	II	2 miles unpaved road (west), no access towards east. Alternate alignments Hunts Canyon to south and dirt road to north. Numerous mining claims in the area.
Low	Few	One	Easy	Light	I	Coexisting with Hwy. 21. Bald eagle foraging area.
Low	Few	None	Easy	Light	I	Unpaved road. Good DTN pass.

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PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DR FRE
NEGRO LIZA WASH Hamlin & Escalante, UT.	6(a)	6	6750	NW-SE	Gradual Curves	At Pass & Locally	Low	F
PANCAKE SUMMIT Newark West & Newark East, NV.	4(b)	4	6520	NE-SW	Nearly Straight	None	Low	Sev
PATTERSON Cave & Lake, NV.	10(a)	4	7400	E-W	One or Two Sharp Curves	At Pass & Locally	Low	Sev
PENOYER NORTHWEST Penoyer & Railroad, NV.	3(b)	8	5750	E-W	Gradual Curves	None	Low to Moderate	Num
PINE SOUTH (MILFORD 1A) Pine & Escalante, UT.	4(a)	22	6350	NS-E	Gradual Curves	Locally	Low to Moderate	Sev

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	FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
		FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
	Low	Few	One	Moderate	Moderate	II	Unpaved road. Portions no road. Stream bed running parallel may need channeling and a major structure. Preferred over Modena Draw-difficult grading for 1 mile vs. moderate for 11 miles. 6% grade for only 1 1/2 miles.
	Low	Several	None	Moderate	Light to Moderate	II	Hwy. 50. Rock west of summit. Steep local grades. Good raptor and deer area.
	Low	Several	None	Difficult	Moderate to Heavy	IV	Unpaved road. Rock outcrops. WSA at west side and to north. Grade >8% entire length. Poor DTN pass. Possible service road.
	Low to Moderate	Numerous	None	Moderate	Moderate	II	Unpaved road. East side in badlands requires 2 to 3' cut and fill.
lly	Low to Moderate	Several	One	Moderate	Light	II	Unpaved road. Some private property. Route DTN to east near Meadow Spring. Rock outcrops at places. Prairie dog on north.

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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA / FREQUEN
PINK KNOLLS (MILFORD 1B) Pine & Escalante, UT.	4(a)	14	6450	SW-W	Gradual Curves	At Pass & Locally	Moderate	Numero
PRUESS LAKE Hamlin & Hamlin, UT.	1(b)	4	5400	N-S	Gradual Curves	At Pass & Locally	Low to Moderate	Severa
QUEEN CITY SUMMIT Railroad & Penoyer, NV.	5(b)	4	5959	NW-SE	Gradual Curves	None	Low	Severe
RAILROAD NORTH Railroad & Newark, NV.	4(b)	4	6580	N-S	Gradual Curves	None	Low	Numer
RED ROCK SUMMIT Railroad & Little Smoky, NV.	4(b)	11	6650	NW-SE	One or Two Sharp Curves	At Pass	Low to Moderate	Seve

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ONS	FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
		FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
	Moderate	Numerous	None	Moderate	Light to Moderate	II	Unpaved road. Joins Jocky Road Pass at west end.
s y	Low to Moderate	Several	None	Moderate	Moderate to Heavy	II	Hwy. 21. Private land in area. Cut slope and fill on bend. Recommended use of existing road-adding one more lane.
	Low	Several	None	Moderate	Moderate	II	Hwy. 25. Mines in area. Nellis Boundary 1 mile to south. Top mile will require 3 to 4' cut and fill to cross drainage.
e	Low	Numerous	None	Moderate	Light to Moderate	I	Unpaved road. Mining claims on both sides of road. Minor constriction at pass.
ss	Low to Moderate	Several	One	Moderate	Moderate	II	Unpaved Hwy. 20. Pass is relatively easy except at summit. Heavy cuts to 15'.

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DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRAINA FREQUEN
ROBBERS ROOST Long & Butte, NV.	4(c)	6	7100	E-W Horse-Shoe Curve	Gradual Curves	At Pass & Locally	Low to Moderate	Severa
ROSENCRANS Hamlin & Spring, NV.	3(b)	3	6725	NW-SE	Gradual Curves	None	Low	Few
SAMMY SPRINGS Jakes & Long, NV.	4(b)	8	7000	N-S	Gradual Curves	None	Low	Severa
SAND Tule & Fish Springs Flat, UT.	5(a)	1	4750	E-W	Nearly Straight	None	Low	Few
SAND WASH Tule & Tule, UT.	2(b)	3	5700	NW-SE	Gradual Curves	Locally	Moderate	Few

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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low to Moderate	Several	One	Moderate	Moderate	II	Unpaved road. Ranch at summit. Fill required in swale. Shallow rock. Good deer and raptor area. Antelope range at each end.
Low	Few	None	Easy	Light	I	Unpaved road. Wilderness area on south. Key sage grouse and year long antelope range.
Low	Several	None	Easy	Light	I	Unpaved road. 230 KV line parallels road. Minor benching near summit. Deer range.
Low	Few	None	Easy	Light to Moderate	I	Unpaved road. WSA to north. Requires cut - 20' at summit.
Moderate	Few	One	Moderate	Moderate	II	Unpaved road in SE half. Raise road bed above stream channel. Enough room for future road and drainage.

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SIDEHILL Cave & Muleshoe, NV.	3(a)	2	6140	E-W	Gradual Curves	None	Low	Seve
SILVER KING White River & Muleshoe, NV.	5(a)	4	6400	E-NW	More than Two Sharp Curves	At Pass	Moderate	Nume
SILVER KING NORTH White River & Cave, NV.	4(a)	6	6340	E-W	More than Two Sharp Curves	At Pass	Moderate	Nume
SKULL ROCK Whirlwind & Tule, UT.	4(b)	3	5240	E-W	Gradual Curves	At Pass & Locally	Low	F
SNAKE CENTRAL Tule & Tule, UT.	5(b)	3	5700	E-W	More than Two Sharp Curves	At Pass	Moderate	Sev

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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low	Several	None	Easy	Light	I	Unpaved road. Potential for shallow rock. Deer habitat with open pinyon juniper and shrub.
Moderate	Numerous	One	Moderate	Moderate	II	Unpaved road. Steep grade east side. May require benching.
Moderate	Numerous	One	Difficult	Moderate	II	Unpaved road. Milderness borders west side and 2 miles from pass on north. Campground in the pass area. Raptor, sage grouse, and deer area. High potential antelope designated by state.
Low	Few	One	Moderate	Light	II	Hwy. 6 & 50. Wilderness area north of road. Heavy ripping Tule side.
Moderate	Several	One	Moderate	Moderate	II	Unpaved road. WSA 1 mile along north side of road. Antelope year long range in and around the pass. Good raptor area.

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SNAKE WEST Tule & Snake, UT	4(b)	6	5980	NW-SE	Gradual Curves	None	Low	
STEAMBOAT Whirlwind & Tule, UT.	2(b)	5	5250	E-W	Nearly Straight to Gradual Curves	None	Low	
STONE CABIN Stone Cabin East & Stone Cabin West, NV.	1(c)	1.5	5700	E-W	Nearly Straight	None	Low	
THE DELL Fish Springs Flat North & South, UT.	4(b)	8	5650	N-S	Gradual Curves	At Pass & Locally	Moderate	Nu...
THE TROUGHS Hamlin & Spring, NV.	<1(a)	2	6050	E-W	Nearly Straight	None	Low	S...

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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low	Few	None	Easy to Moderate	Light	I	Unpaved road. Wilderness area to NE, one short, steep grade at summit. Inside key antelope range.
Low	Few	None	Easy	Light	I	Unpaved road. Long connection for one cluster in Whirlwind Valley.
Low	Few	None	Easy	Light	I	Unpaved road. East half of alignment is BLM, west half is private property.
Moderate	Numerous	One	Moderate	Moderate	III	Unpaved road. Rock outcrops. High mining activity. Dugway pass appears better.
Low	Several	None	Easy	Light	I	Unpaved road. Good pass.

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TIMBER MOUNTAIN White River & Coal, NV.	4(a)	5	6080	E-W	Gradual Curves	None	Low to Moderate	Se
TONOPAH Ralston & Big Smoky, NV.	3(b)	6	5800	E-W	Gradual Curves	At Pass & Locally	Low	Nu
TOPAZ Fish Springs Flat & Dugway, UT.	3(b)	3	5360	E-W	Nearly Straight	None	Low	
WAH WAH SUMMIT Wah Wah & Pine, UT.	5(b)	5	6445	E-W	Gradual Curves	At Pass	Low to Moderate	Nu
WAH WAH WASH Wah Wah & Escalante, UT.	2(b)	6	5635	N-S	Nearly Straight	None	Low to Moderate	Se

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FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
	FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
Low to Moderate	Several	None	Moderate	Moderate	II	Unpaved road. Wilderness area to south, cut & fill to east. One section of steep grade, loose gravel. Mining claims in the area.
Low	Numerous	One	Moderate	Light to Moderate	II	Unpaved road in the western half, no access road in the eastern half. Numerous mining claims. Rock outcrops.
Low	Few	None	Easy	Light	I	Paved road east end. Unpaved road west end. Mining area to north.
Low to Moderate	Numerous	One	Moderate	Moderate to Heavy	III	Hwy. 21. Some private land. Wilderness area 1 mile north of pass. Resistant rock. 8% grade to east. Antelope year long range and bald eagle area around pass.
Low to Moderate	Several	One	Easy	Light	I	Unpaved road. Potential site for alunite mine and processing plant. Use alignment out of wash (west side). Bald eagle roost and forage area. Antelope key range to west and southeast approach.

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E-TR-58-D

PASS NAME _____ BETWEEN _____ VALLEY AND _____ VALLEY, STATE	ESTIMATED GRADE (MAXIMUM PERCENT)	LENGTH (MILES)	SUMMIT ELEVATION (FEET)	ORIENTATION	ALIGNMENT	CONSTRICTIONS	FLOOD POTENTIAL	DRA FREQ
WARM SPRINGS Reveille & Stone Cabin, NV.	3(a)	5	6280	E-W	Gradual Curves	At Pass & East Side	Low	Nume
WATER GAP Garden & Coal, NV.	2(b,	3	5190	E-W	Nearly Straight	None	Moderate	Fe
WELLS STATION SUMMIT White River & Railroad, NV.	4(b)	15	6510	NE-NW	Gradual Curves	At Pass & NW End	Moderate	Seve Num
WORTHINGTON PEAK Garden & Penoyer, NV.	3(b)	6	5870	NE-SW	Gradual Curves	None	Low	

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ONS	FLOOD POTENTIAL	DRAINAGE CROSSINGS		EXCAVATIONS		OVERALL EVALUATIONS	REMARKS
		FREQUENCY	MAJOR STRUCTURES	DIFFICULTY	GRADING		
ide	Low	Numerous	None	Moderate	Moderate	II	Hwy. 6. Transmission line. Some private property on east side. Cut & fill east end.
e	Moderate	Few	One	Easy	Light	I	Unpaved road. Minor culverts-large amount of fill required across major drainage.
ss d	Moderate	Several to Numerous	More than One	Moderate to Difficult	Moderate	II	Unpaved road. Private property near east and west end. Extensive cut and fill at places. Rock outcrops, WSA to south. Good deer and year long antelope range.
ne	Low	Few	One	Easy	Light	I	Unpaved road. Mining and wilderness area to south. Minor cut & fill.

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DTN PASS EVALUATION SUMMARY

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

APPENDIX D

DTN/ASC STUDY CHRONOLOGICAL SUMMARY

#	DATE	Nature of Event	PURPOSE	CONTENTS	REMARKS
1.	10-2-80	Meeting	Shelter layout and DTN review.	- Formalized need for an organized and comprehensive study of DTN that is integrated with the shelter layout program.	- DTN working group formed. - Determined members: SAC, AFRCE, TRW, Ertec, HDR, MMC, RMP, and COE.
2.	10-30-80	Meeting	OB sites and DTN review	- Defined near term and long term objectives.	- Kickoff meeting.
3.	11-19-80	Meeting	DTN Field Reconnaissance planning		
4.	11-24/25 1980	Field Recon.	Evaluate IOC-DTN	- Reconnoitered IOC DTN, also evaluated passes in Utah.	
5.	12-2-80	Meeting	Review DTN requirements	- Reviewed the results of previous DTN field trip and planned the next DTN field trip. Reviewed DTN requirements.	
6.	12-7/12 1980	Field Recon.	Review critical passes and proposed ASC locations, gather additional field data.	- Reconnoitered Nevada-Utah study area, evaluated 32 passes, mostly in eastern, central and northwestern part of the study area.	-A representative from each member DTN working group participated in field recon.
7.	12-17/19 1980	Field Recon.	Review critical passes and proposed ASC locations, gather additional field data.	- Reconnoitered mostly central, and portions of northwestern part of the study area, evaluated 12 passes.	
8.	1-20-81	Meeting	DTN Routing	- Reviewed the results of DTN field reconnaissance trips made in December 1980. - Reviewed the first 360 miles of DTN routing resulting from the field trips.	- Delamar "A" Pass was agreed as connection from Coyote OB to DDA. - Pine Valley road was the agreed Beryl/Milford (south) OB to DD. connection. - All planned field work completed for first 360 miles.
9.	2-2/6-81	Field Recon.	Review the east-west legs of DTN.	- Reconnoitered northeastern and western part of the study area. Evaluated 7 passes.	

Ertec
The Earth Technology Corporation

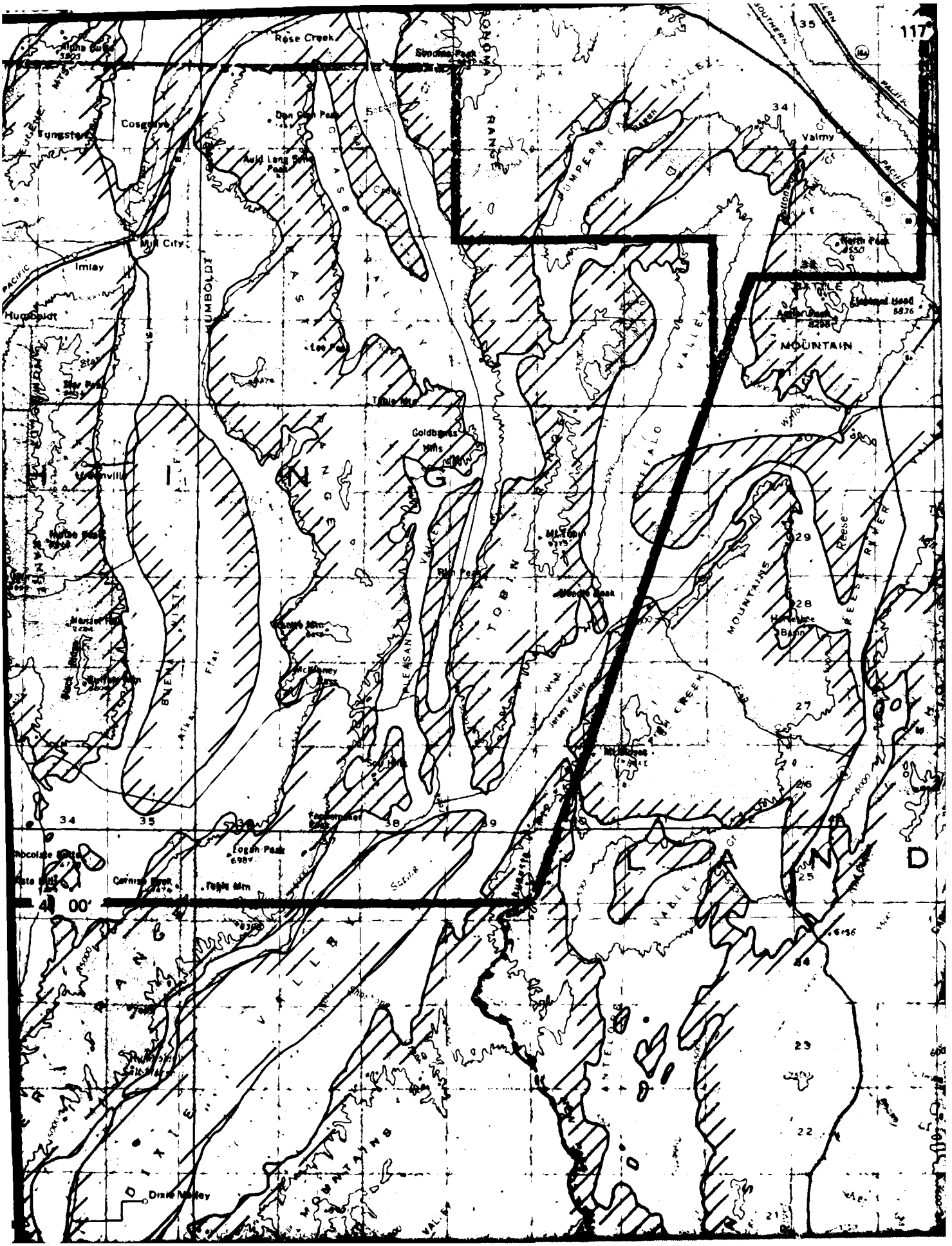
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

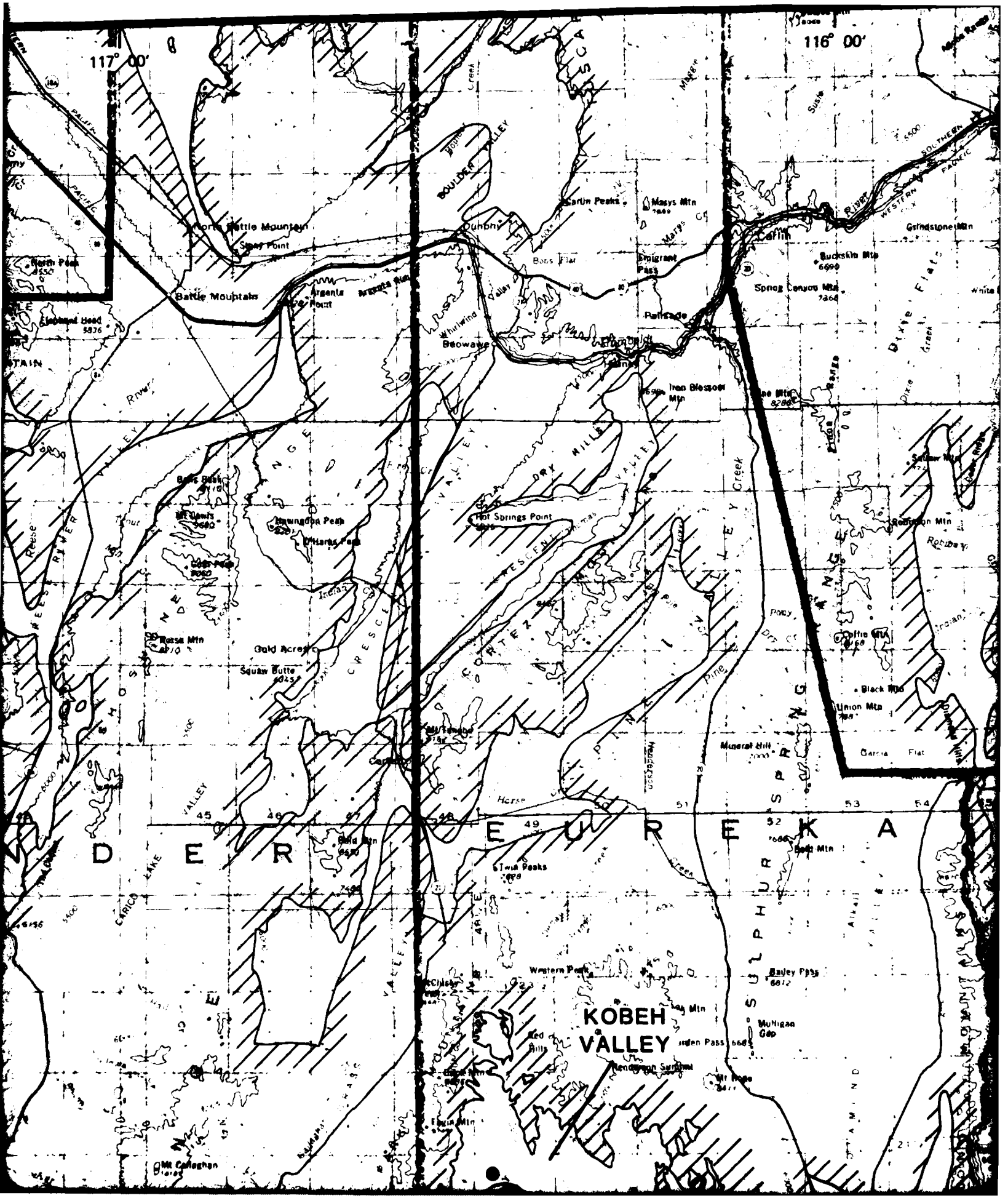
DTN/ASC STUDY CHRONOLOGICAL SUMMARY

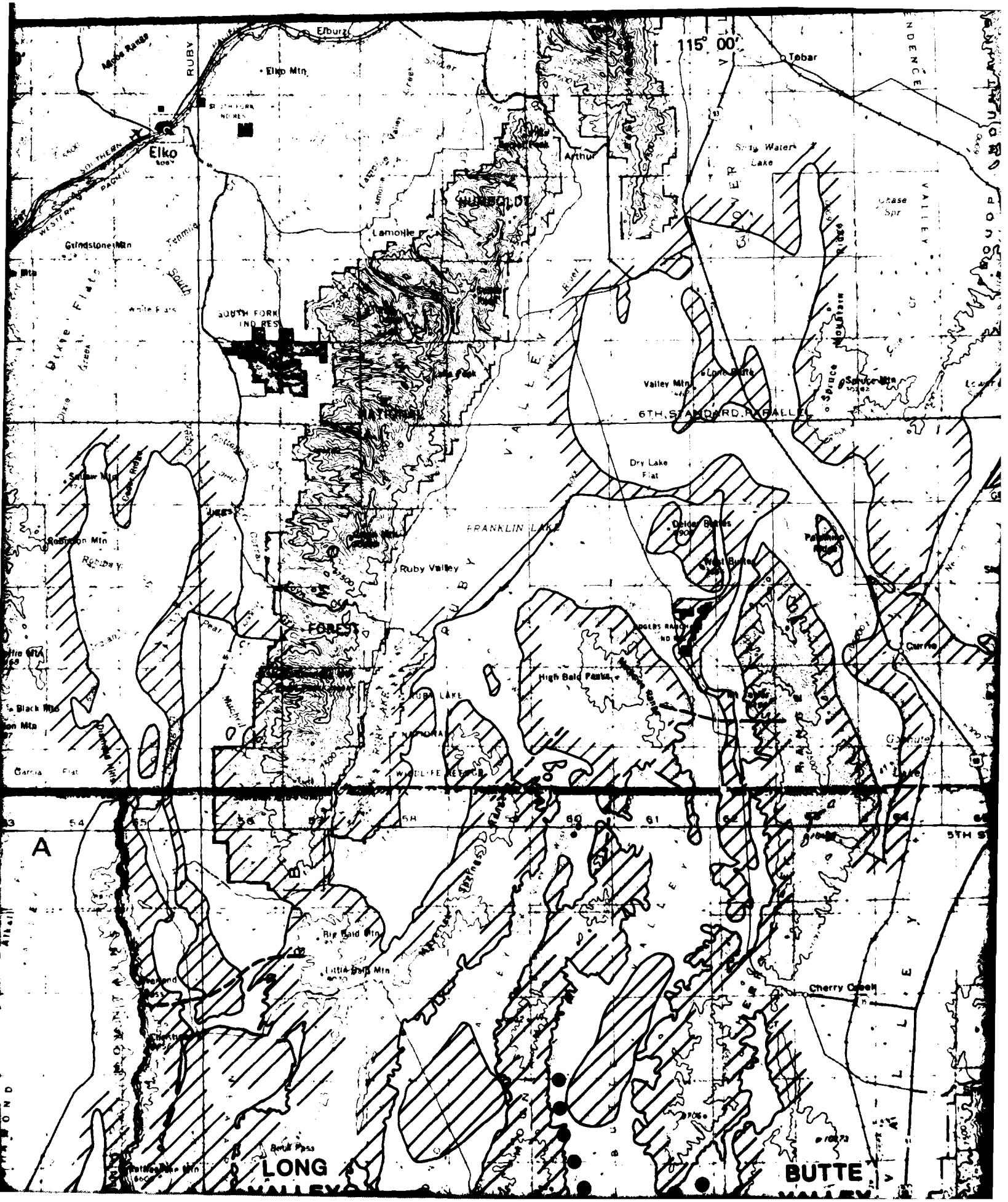
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

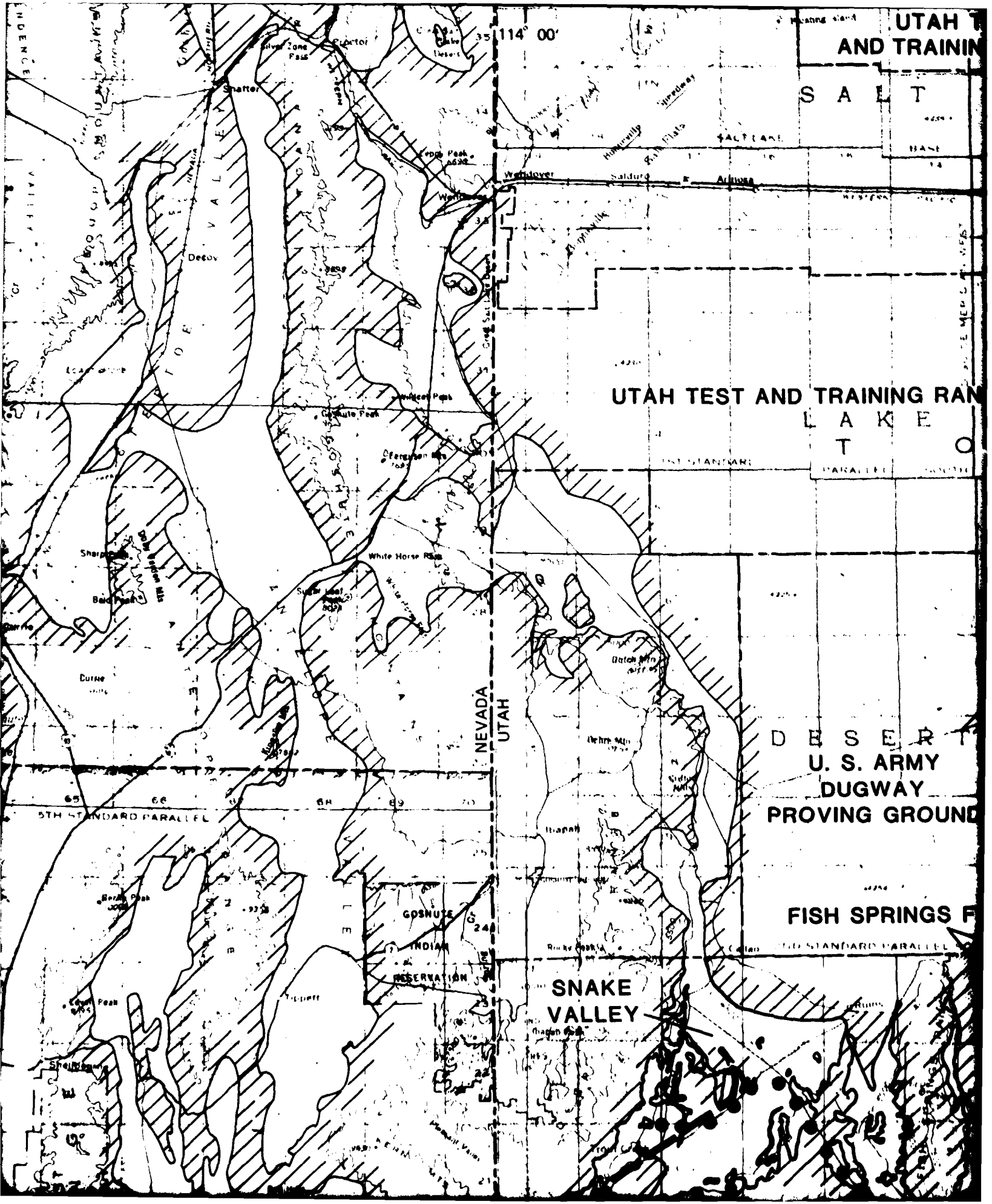
#	DATE	Nature of Event	PURPOSE	CONTENTS	REMARKS
10.	2-9-81	Meeting	DTN Siting	- Reviewed and approved first 360 miles of DTN routing with corridor widths.	
11.	2-16-81		DTN routing maps	Submitted first 360 miles of DTN routing maps (1:62,500-21 sheets) to AFRCE	
12.	3-10-81	Meeting	Review the action items from previous meetings.		- Timber mountain pass preferred as DTN connection from White River to Coal Valley. - Three of the four ASC locations were finalized i.e. ASCs in Muleshoe, Stone Cabin, and Newark Valleys. - Land withdrawal drawings to be submitted on "E" size drawings.
13.	3-23/26 1981	Field Recon.	Review Utah deployment area.	- Reconnoitered Snake, Tule and Whirlwind Valleys DTN, evaluated proposed Tule ASC location and different DTN options for Milford (south) MOB #1.	
14.	4-8-81	Meeting	Review of past action items.	- Outlined final DTN siting report requirements. Presented Snake and Tule DTN and Tule and Whirlwind ASCs.	- Milford option 1B was dropped from consideration.
15.	5-11/14 1981	Field Recon.	OBTS siting field studies.	- Evaluated possible DTN passes from Escalante Desert to Pine and Hamlin valleys.	
16.	5-19-81	Final Map		- Submitted optimized DTN routing and four ASC locations on 1:500,000 and 1:62,500 maps dated 5-15-81	
17.	5-27-81	Meeting	Final DTN alignment and ASC sites review	- Presented the realignments of DTN and ASC locations as shown on 15 May 1981 maps. - Also presented the revised regional map and requested comment from the group.	

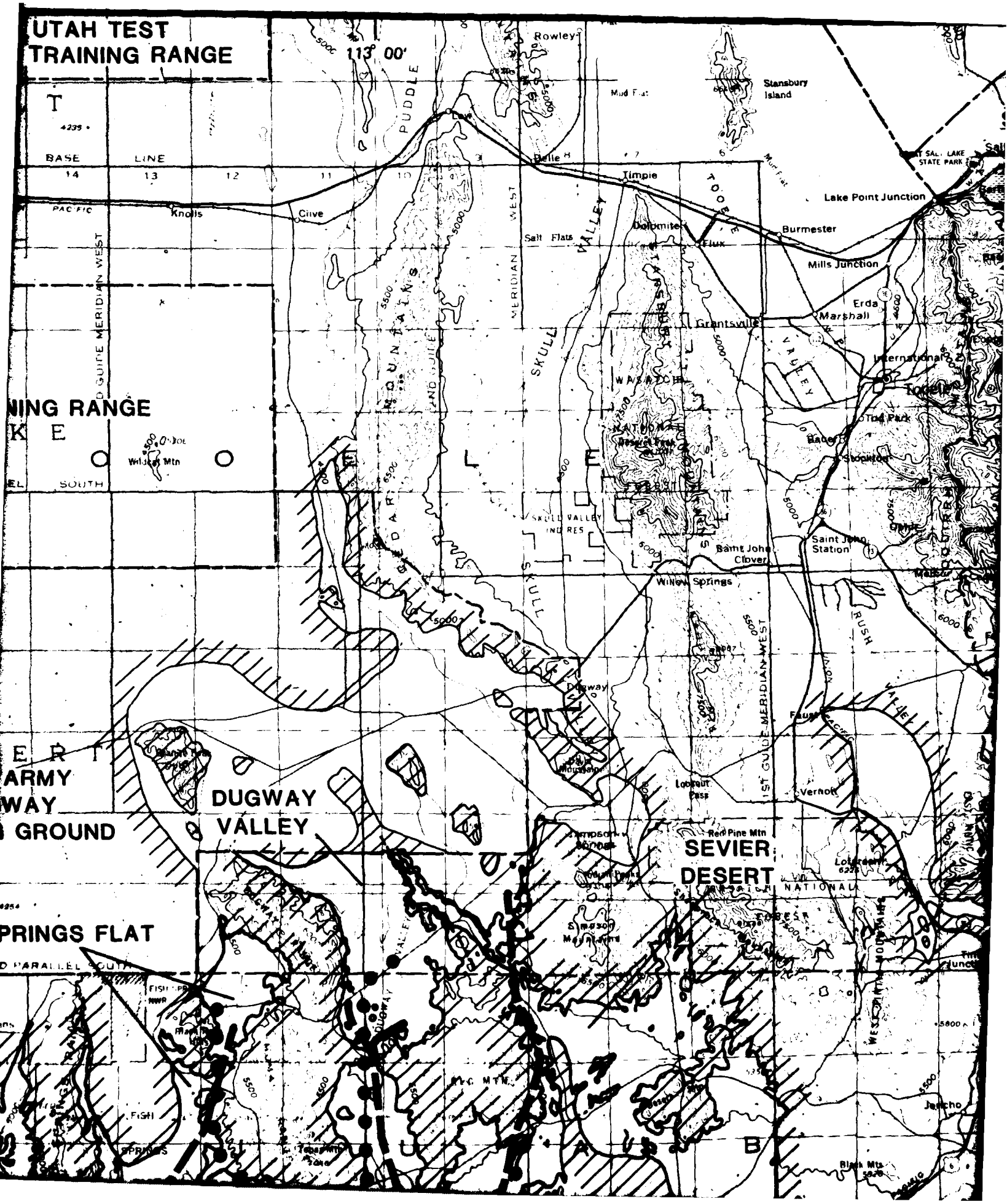
No.		Nature of Event	PURPOSE	COMMENTS	REMARKS
18.	6-15/19 1981	Field Recon.	Review final DTN alignment.	- Field checked the final alignments to DTN and the ASC locations, also evaluated 7 more passes not covered before.	
19.	8-16-81	Deliverable	DTN alignment in support of Tier IIA	- Provided 1:62,500 maps of DTN between MOB options and through the IOC valleys.	
20.	8-10-81	Map Revision		- Modified DTN alignment in northeastern part of study area. - Added Milford Central OB option and OBTS locations.	
21.	9-1-81	Map Revision		- Revised DTN alignment in Pine valley for Utah OBs options.	
22.	9-13-81	Meeting	Land Acquisition "E" size drawings delivery	- Presented final results of DTN/ASC working group for total system as well as IOC and all MOB options - DTN was revised in the area of Pine/Wah Wah valleys as per comments received during State process.	- Marks formal end to 5200 ft MPS/ DTN/ASC layout activity. Any additional work represents revision to the basic system. Revision will be forthcoming during the state siting review process.

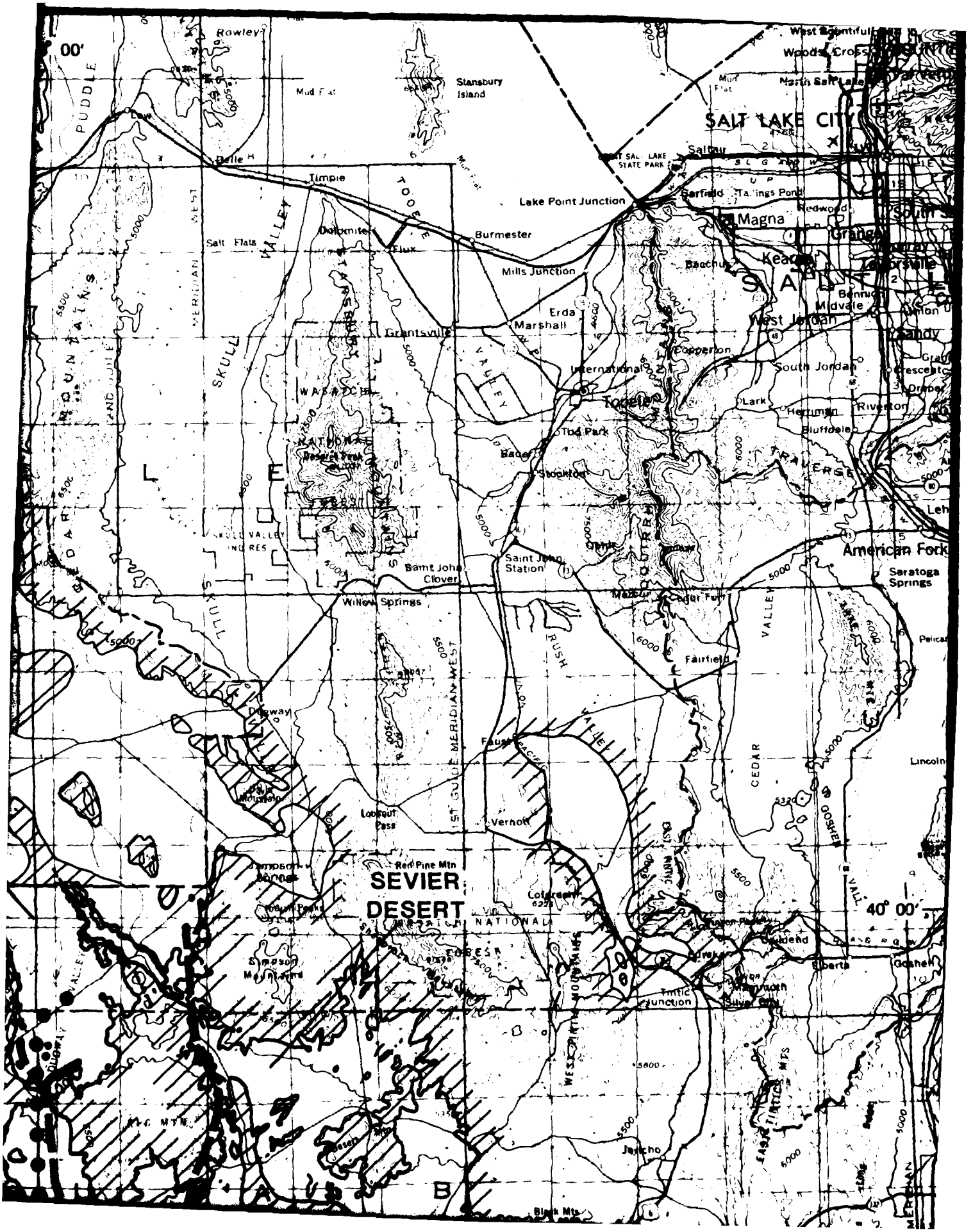

Rose Creek
Cosgrove
Valmy
Imlay
Humboldt
Lee Peak
Goldbanks Hills
Mt. Tobin
Reese River
Mountains
Basin
Jersey Valley
Pleasant Valley
Buffalo Valley
Dixie Valley
Eagan Peak
Fairview Peak
Carrico Peak
Pahute Mesa
Humboldt Range
Sonoma Range
Pumpernickel Valley
Antelope Valley
Mountain
Southern Pacific
Western Pacific
40 00'
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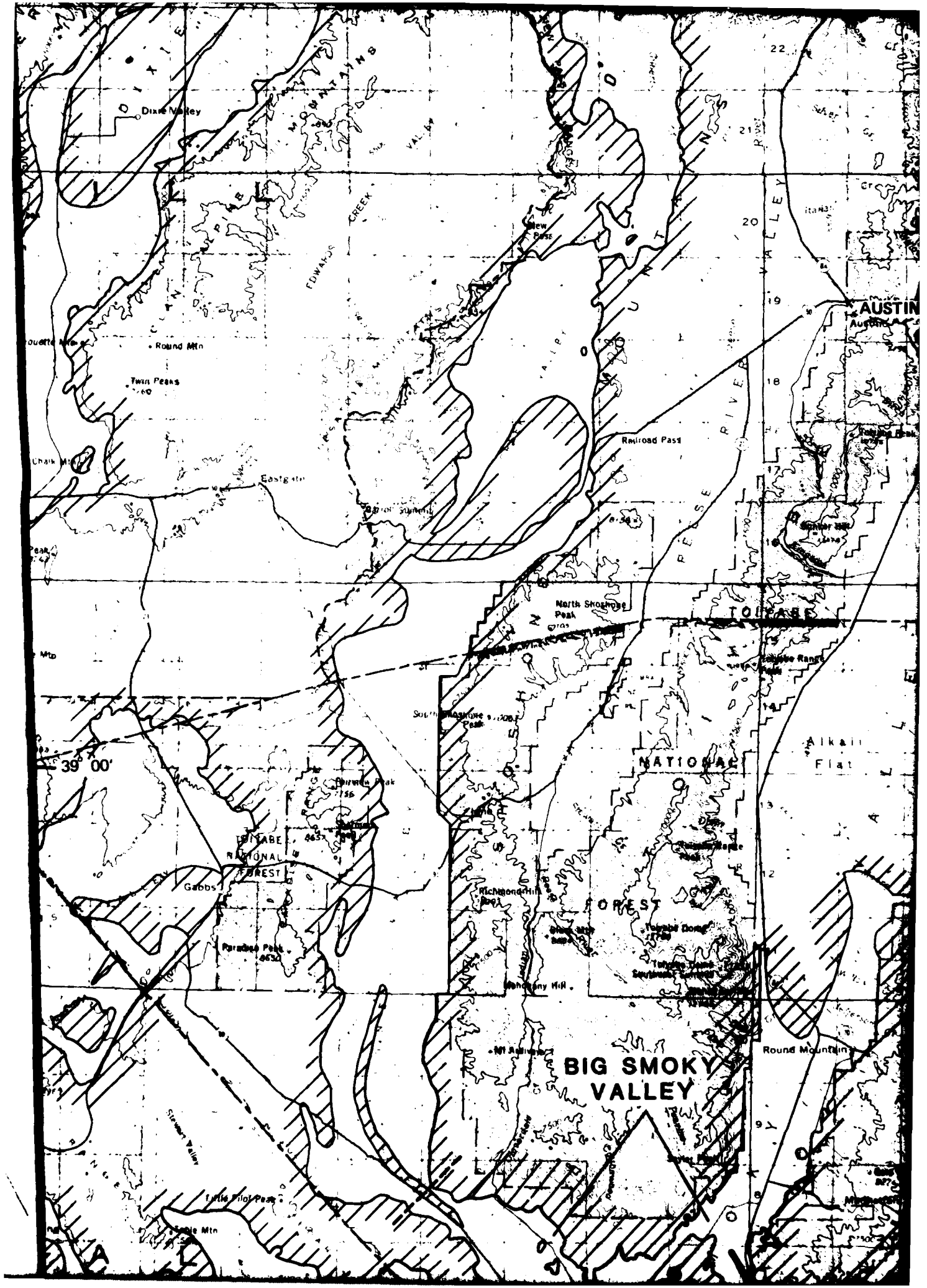

117° 00'
116° 00'
KOBEH VALLEY
DIAMOND MOUNTAINS
SULPHUR SPRINGS RANGE
DIAMOND VALLEY
EUREKA
DERBY
Battle Mountain
Argenta
Whirlwind
Beowawe
Dunphy
Carlin
Palisade
Boys Flat
Emigrant Pass
Masys Mtn
Carlin Peaks
Buckskin Mtn
Spring Canyon Mts
Grindstone Mtn
Iron Blossom Mtn
Dixie Flats
Dixie Creek
Boulder Valley
Whirlwind Valley
Dry Hills
Dry Hills Valley
Hot Springs Point
Mt Lewis
Shawnadoa Peak
Diamond Peak
Rose Creek
Rose River Valley
Indian Creek
Rose Mtn
Gold Acres
Squaw Butte
Cortez Valley
Pine Valley
Pine Creek
Henderson Creek
Mineral Hill
Garcia Flat
Union Mtn
Black Mtn
Coffin Mtn
Robinson Mtn
Roberts Creek Mtns
Roberts Creek
Carico Lake Valley
Bald Mtn
Twin Peaks
Western Peak
Bailey Pass
Mulligan Gap
Red Hills
Hendersonn Summit
Mt Callaghan
Elevation Head
North Peak
Sheep Point
Battle Mountain
Argenta Rim
Pinon Range
Toiyabe Range
Shoshone Mountains
Simpson Park Mountains
Roberts Mountains
Sulphur Springs Range
Diamond Mountains
Southern Pacific
Western Pacific
Southern Pacific Railroad
Humboldt River
Susie Creek
Maggie Creek
Marys Creek
Horse Creek
Indian Creek
Pony Creek
Dry Creek
Alkali
Ruby Valley
Southern Pacific Railroad
Western Pacific Railroad

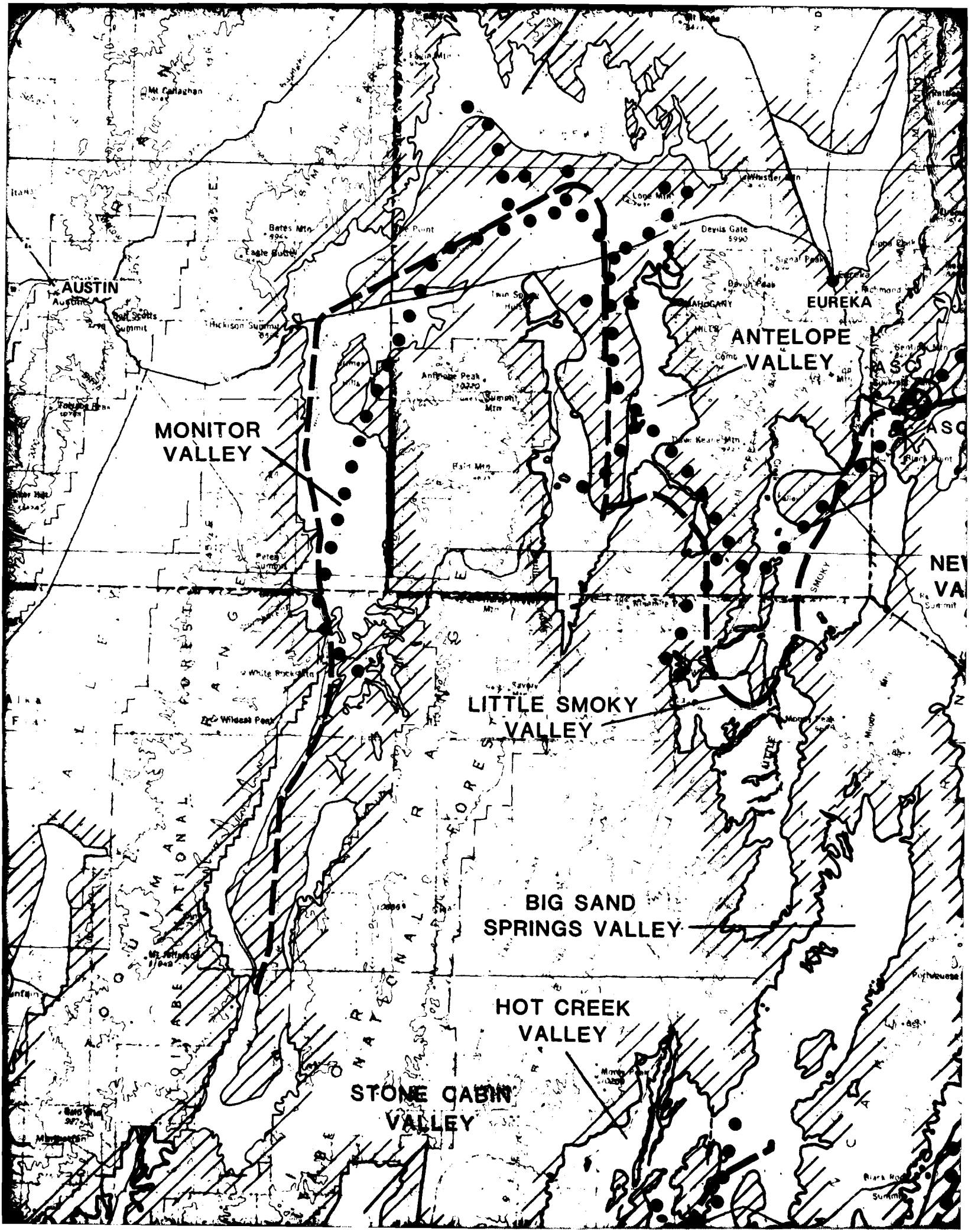

115° 00'
Elburz
Elko Mtn
Elko
Tobar
Snake Mountains
RUBY
Lamoille
Arthur
Smith Creek Valley
Spring Valley
Grindstone Mtn
Dixie Flats
Dixie Creek
South Fork
White Pine
SOUTH FORK IND. RES.
Lamoille Canyon
Lamoille Creek
Valley Mtn
Lone Pine
Spruce Mountain
Service Mtn
6TH STANDARD PARALLEL
Dry Lake Flat
Cottonwood Creek
Cedar Ridge
Robinson Mtn
Ruby Valley
FRANKLIN LAKE
Diamond Peak
Diamond Peak Ranch
Overlook
Pole Canyon
FOREST
High Bald Peaks
RUBY LAKE
NATIONAL
WILDLIFE REFUGE
Garcia Flat
Big Bald Mtn
Little Bald Mtn
Cherry Creek
Cherry Creek Mtns
Bull Pass
LONG
BUTTE
A

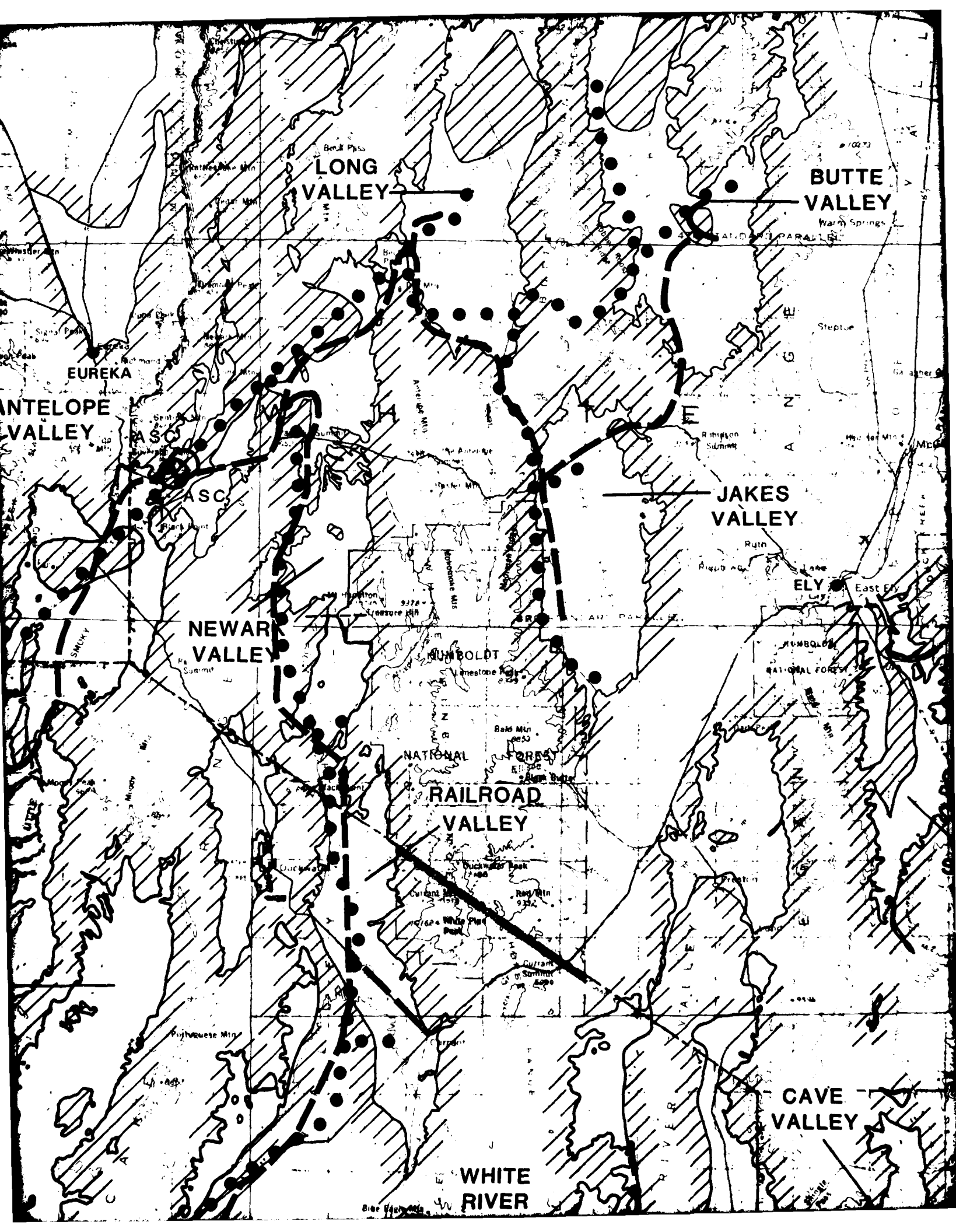

114° 00'
UTAH T
AND TRAININ
SALT
UTAH TEST AND TRAINING RAN
LAKE
T O
DESERT
U. S. ARMY
DUGWAY
PROVING GROUND
FISH SPRINGS F
SNAKE
VALLEY
NEVADA
UTAH
GOSHUTE
INDIAN
RESERVATION
Shafter
Decoy
Curlew
Baldy Peak
White Horse Peak
Sharp Peak
Cedar Peak
Ferguson Mtn
Dugway Mts
Dugway Range
Cedar Mts
Simpson Mts
Pilot Range
Silver Zone Pass
Crater
Crater Peak
Wendover
Salduro
Arizona
Hinckley
Redlands
Salt Lake Base
Meridian
5TH STANDARD PARALLEL
65
66
67
68
69
70
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30
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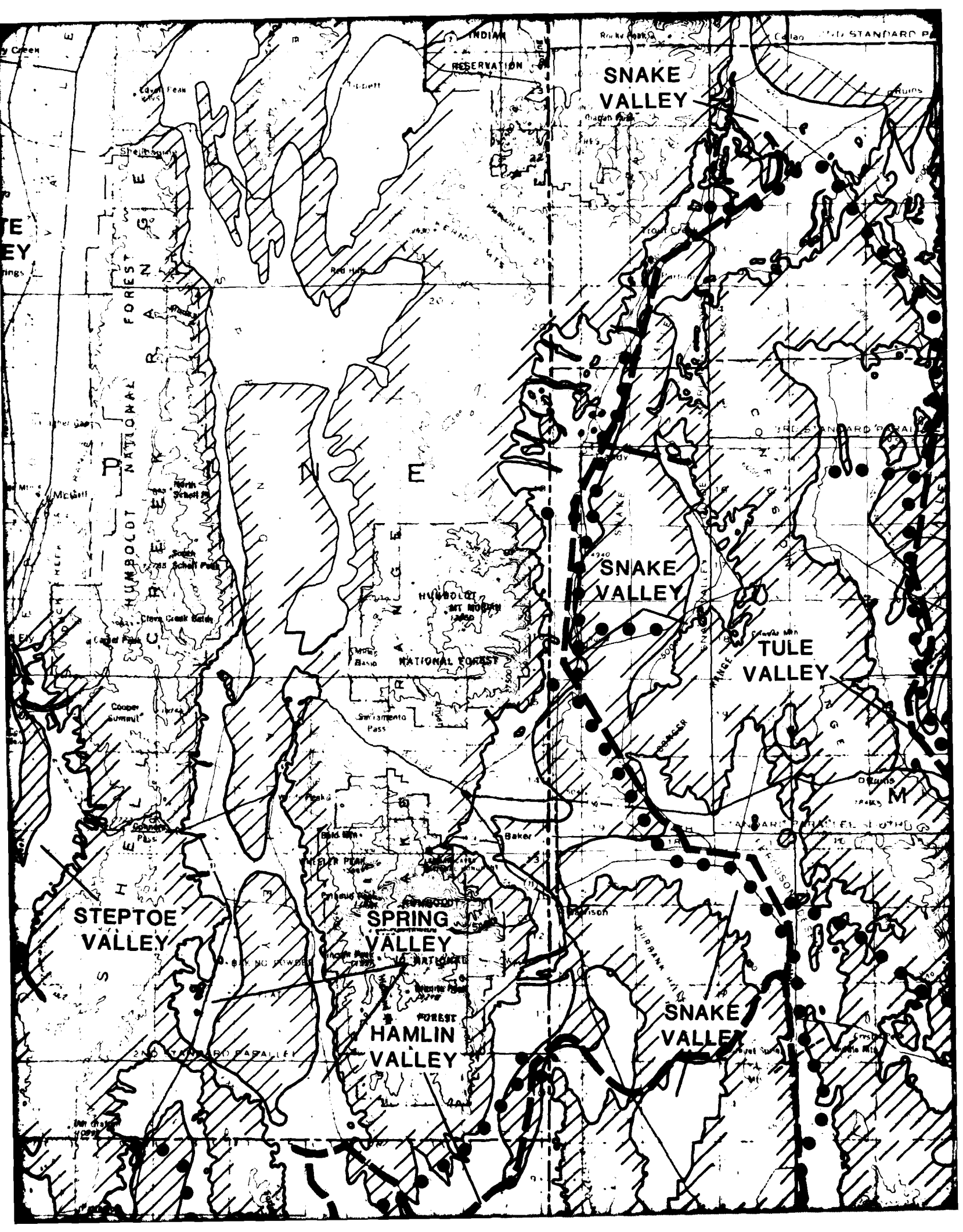

UTAH TEST
TRAINING RANGE
113° 00'
Rowley
Stansbury
Island
Mud Flat
Belle
Timpie
Lake Point Junction
Knolls
Clive
Dolomite
Flux
Burmester
Salt Flats
Mills Junction
Erda
Marshall
Grantsville
International
Center
Tooele
Tom Park
Baker
Stockton
Saint John
Station
Saint John
Clover
Willow Springs
Dugway
Fausett
Lookout
Pass
Vernon
Red Pine Mtn
SEVIER
DESERT
DUGWAY
VALLEY
DUGWAY
MOUNTAINS
SKULL
VALLEY
SKULL VALLEY
IND RES
WASATCH
NATIONAL
FOREST
ST GUIDE MERIDIAN WEST
BASE LINE
PACIFIC
Whitehorse Mtn
Jericho
Black Mts
ARMY
WAY
GROUND
PRINGS FLAT
SOUTH

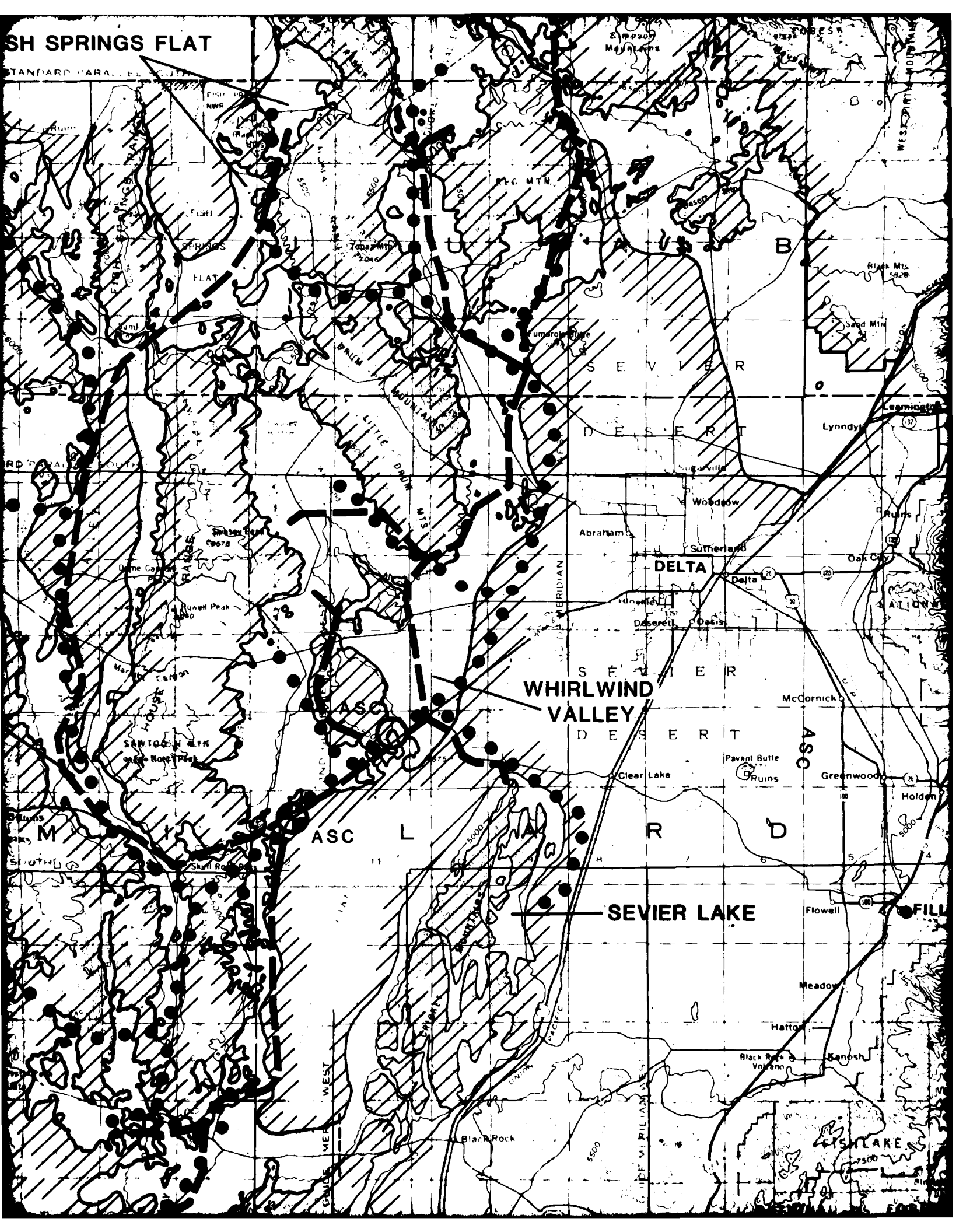

00'
Rowley
PUDDLE
Stansbury Island
Mud Flat
SALT LAKE CITY
Saltair
Belle H
Timpie
Lake Point Junction
Garfield
Magna
Salt Flats
Dolomite
Flux
Burmester
Mills Junction
Bacchus
Kearns
Erda
Marshall
Grantsville
West Jordan
Copperton
International
South Jordan
Tooele
Lark
Herriman
Riverton
Bluffdale
Tabb Park
Bacer
Stockton
Saint John Station
Clover
American Fork
Saratoga Springs
Willow Springs
Fairfield
Dugway
Lookout Pass
Verhoff
Red Pine Mtn
SEVIER DESERT
Simpson Mountains
Lincoln
Goshen
Eureka
Juntic Junction
Silver City
Jericho
Black Mts
40° 00'
SKULL VALLEY INDIAN RES
WASATCH
TRAVERSE
OQUIRRH
CEDAR
GOSHEN
1ST GUIDE MERIDIAN WEST
SKULL VALLEY
RUSH VALLEY
CEDAR VALLEY
WESTERN
EASTERN
TINTIC MTS
L
E
A
B

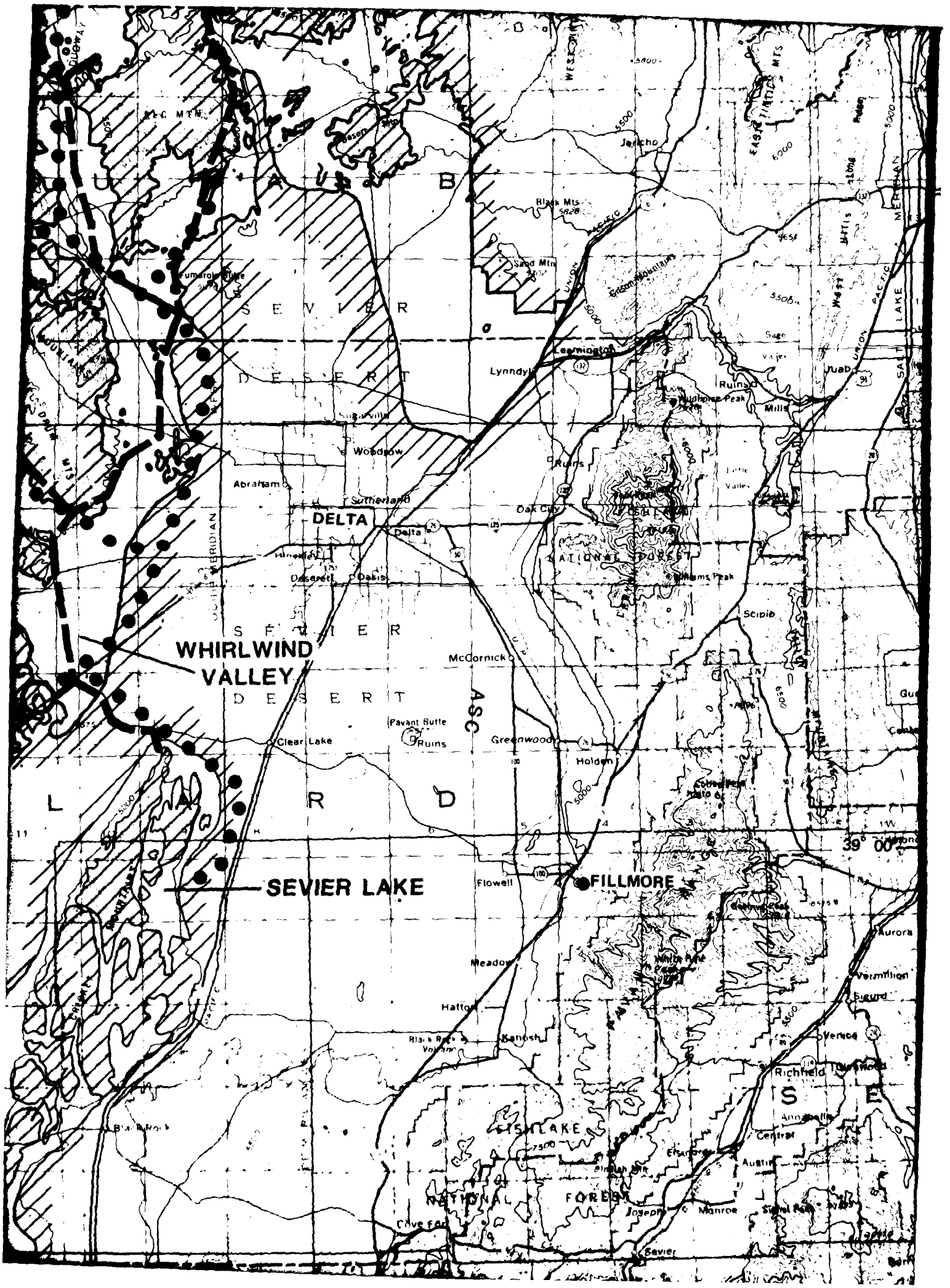

Dixie Valley
Round Mtn
Twin Peaks
Chalk Mtn
Eastgate
Fowlers Creek
Railroad Pass
AUSTIN
North Shoshone Peak
TOIYABE
NATIONAL
FOREST
Alkali Flat
39° 00'
Fairview Peak
Gabbs
Paradise Peak
Mahogany Hill
Round Mountain
BIG SMOKY VALLEY
Stewart Valley
Table Mtn

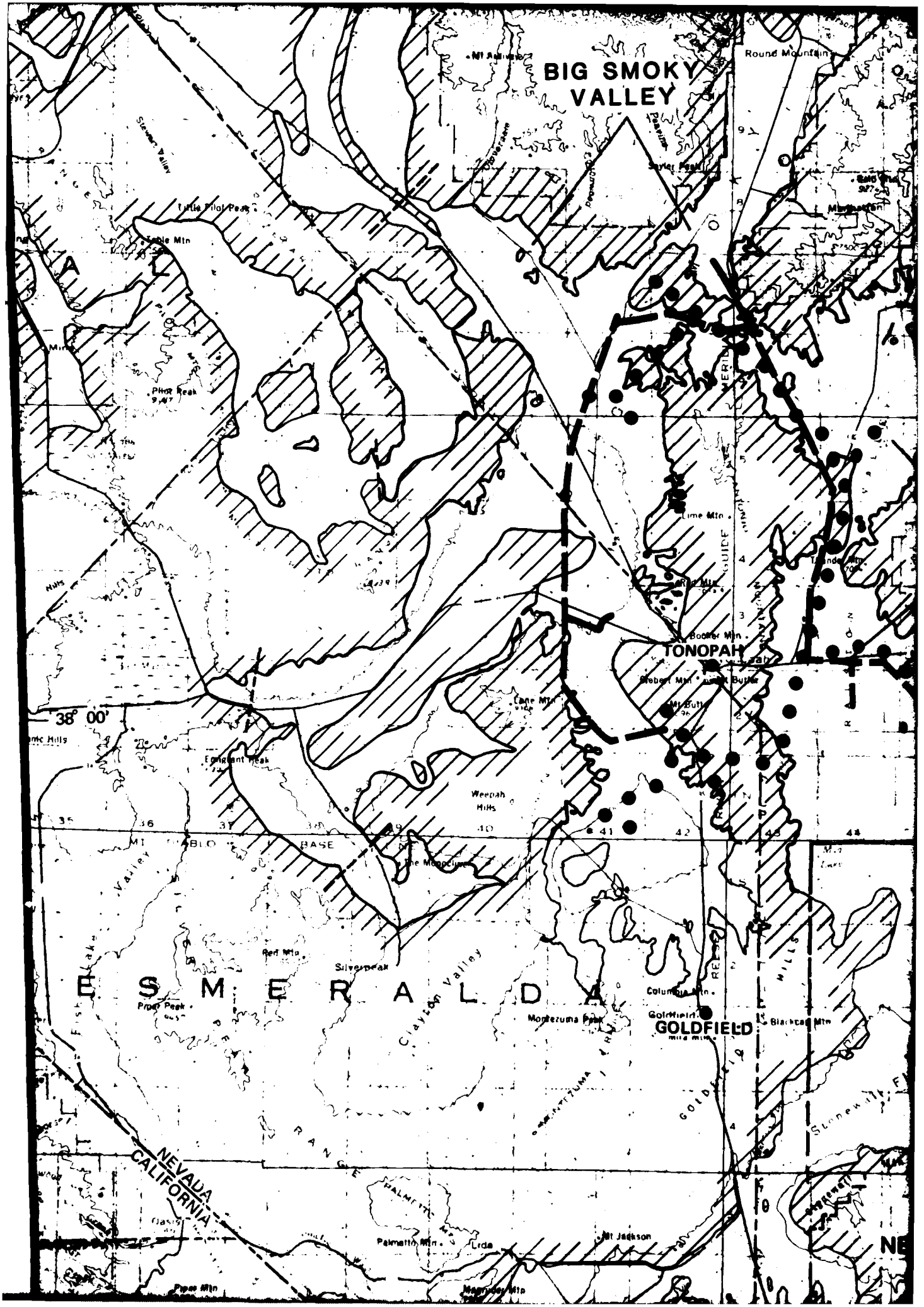

AUSTIN
EUREKA
ANTELOPE VALLEY
MONITOR VALLEY
LITTLE SMOKY VALLEY
BIG SAND SPRINGS VALLEY
HOT CREEK VALLEY
STONE CABIN VALLEY

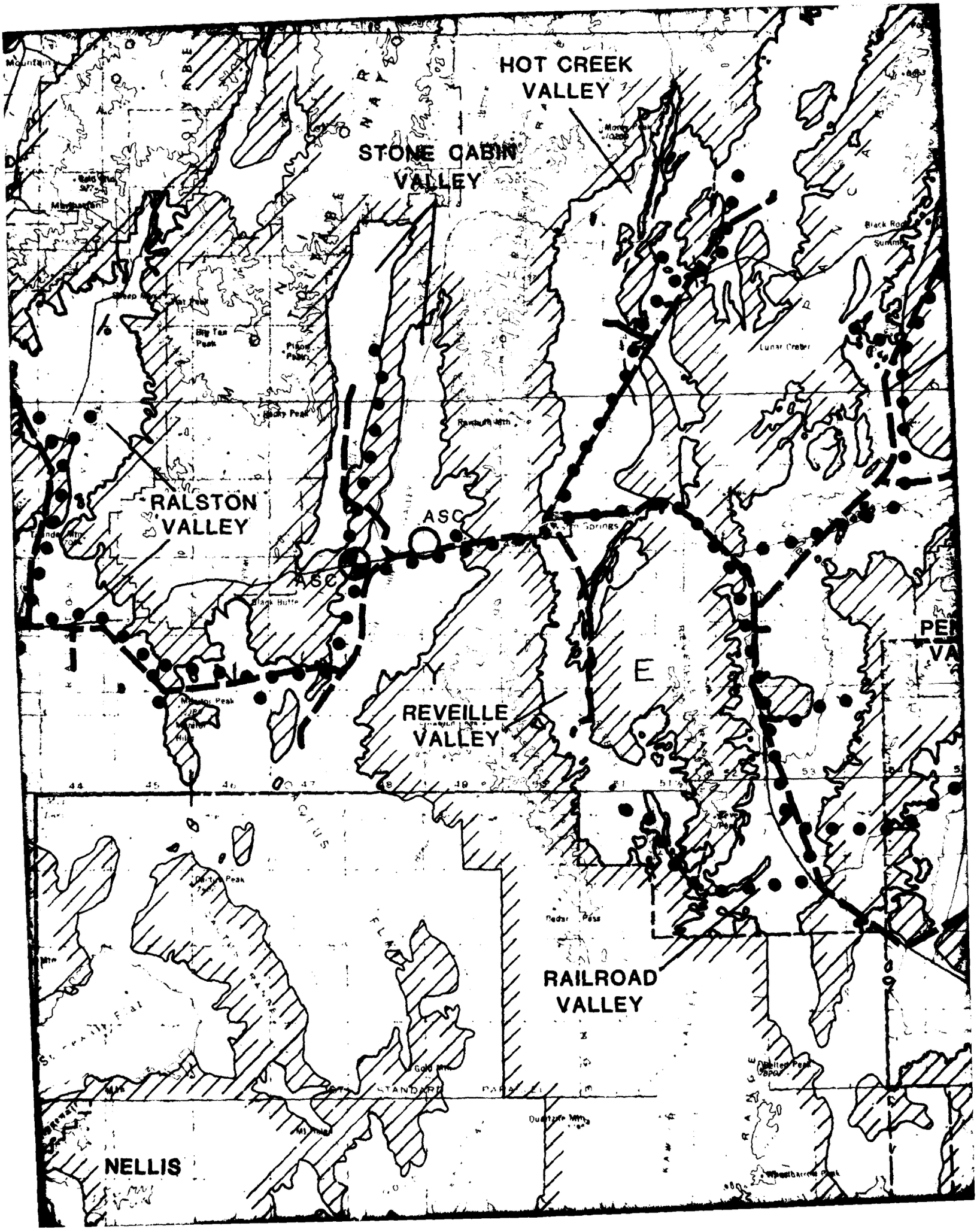

LONG VALLEY
BUTTE VALLEY
EUREKA
ANTELOPE VALLEY
JAKES VALLEY
ELY
NEWARK VALLEY
HUMBOLDT NATIONAL FOREST
RAILROAD VALLEY
CAVE VALLEY
WHITE RIVER

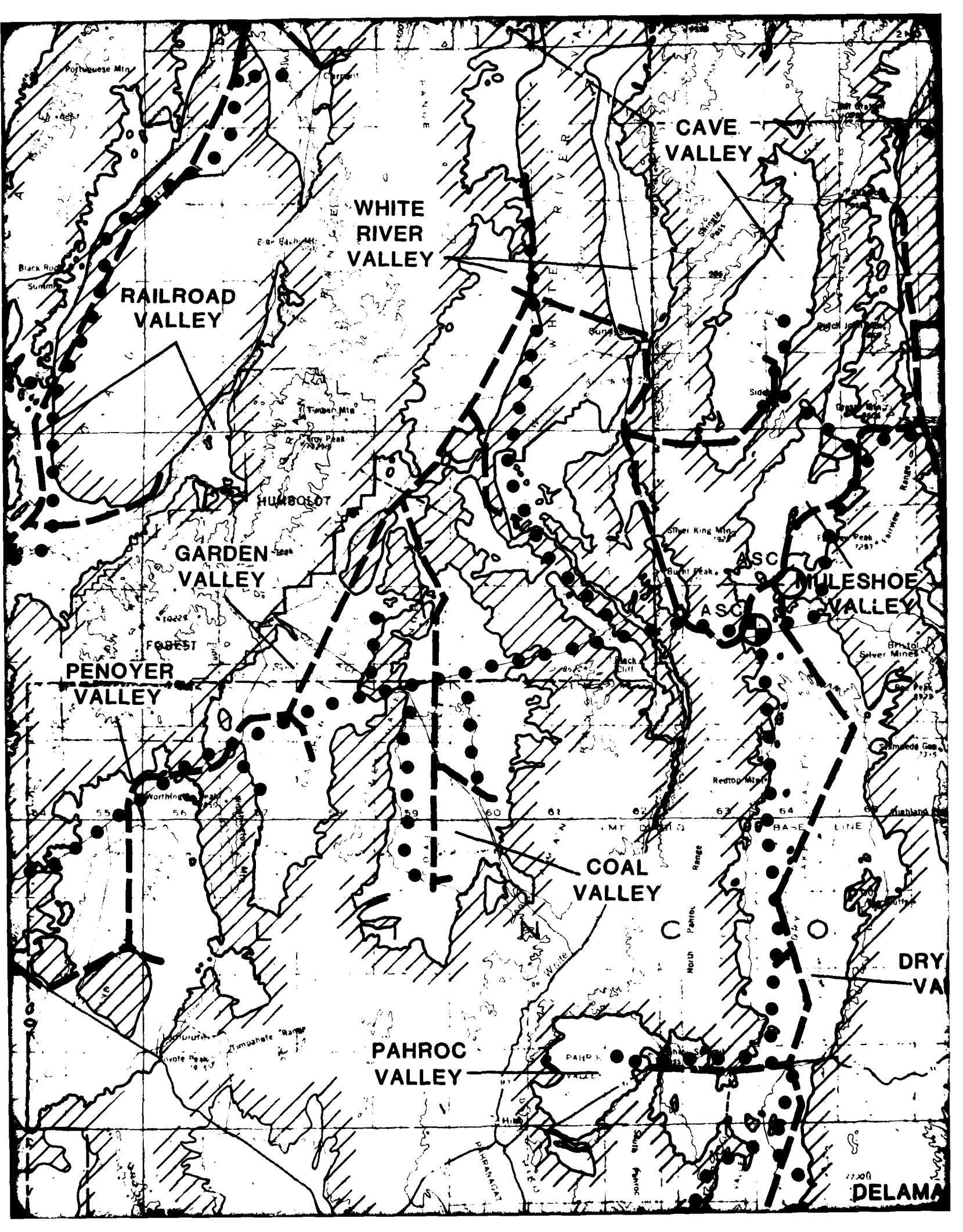

SNAKE VALLEY
SNAKE VALLEY
TULE VALLEY
STEPTOE VALLEY
SPRING VALLEY
HAMLIN VALLEY
SNAKE VALLEY
HUMBOLDT NATIONAL FOREST
INDIAN RESERVATION
Schell Peak
Cooper Summit
Sacramento Pass
Baker
Wheeler Peak
Pyramid Peak
Jefferson
Burbank Hills
Red Hills
Mt. North
Mt. Moriah
Osceola
Ely
McGill

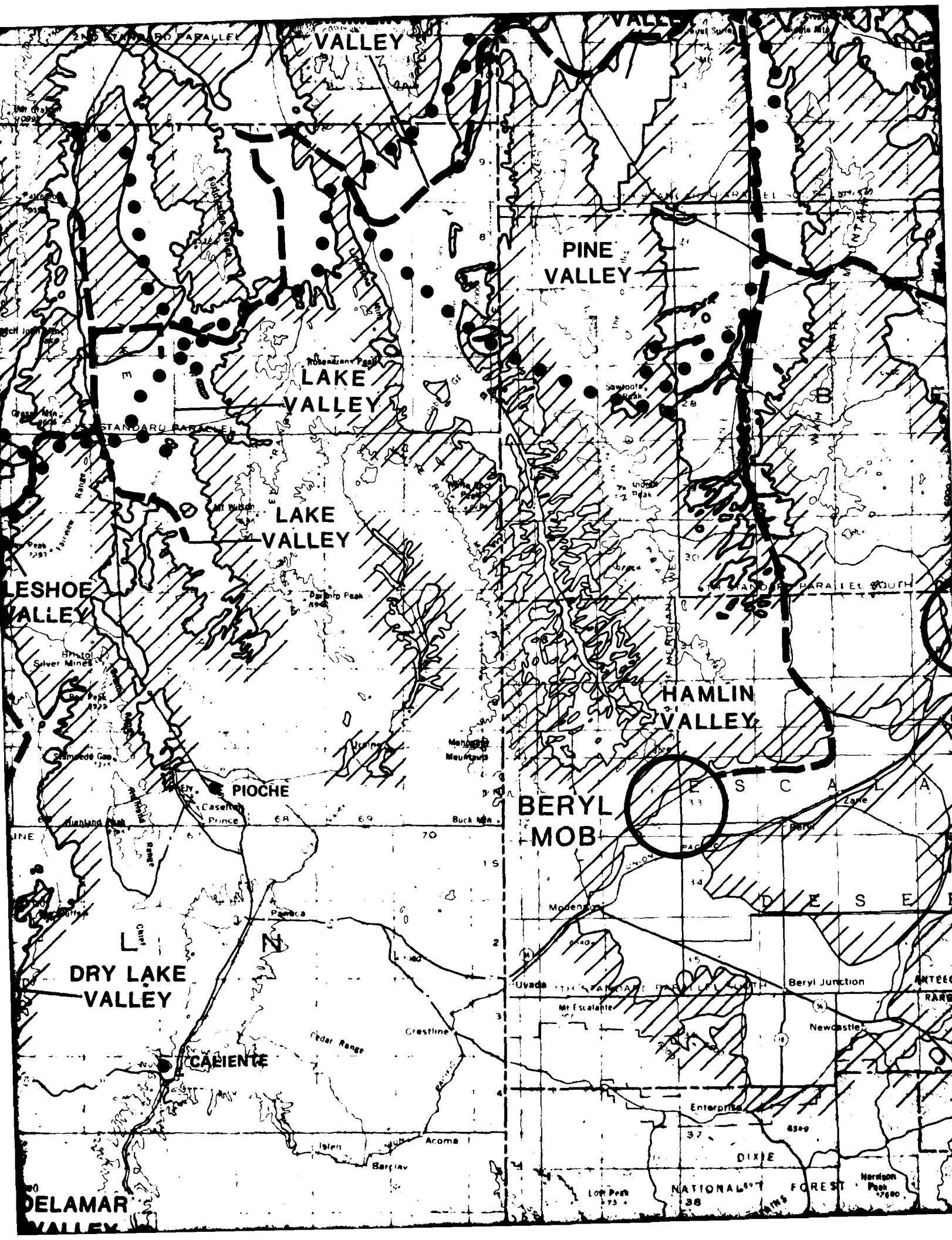

SH SPRINGS FLAT
WHIRLWIND VALLEY
SEVIER LAKE
DELTA
Simpson Mountains
Black Mts
Sand Mtn
Lynndyl
Abraham
Sutherland
Oak City
Deseret
Oasis
McCornick
Pavant Butte
Ruins
Clear Lake
Greenwood
Holden
Flowell
Meadow
Hatton
Kanosh
Black Rock
FISH LAKE
DESERT
SEVIER
Wood Cr
Wdw
Ruins
Delta
Skull Rock
Volcano
Tabernacle Hill
Drum Mountains
Little Drum Mts
Dome Canyon
Marine Canyon
Quail Peak
Skull Rock
Black Rock Volcano
Fillmore
Holden
Greenwood
Oak City
Meadow
Hatton
Kanosh
Flowell
Lynndyl
Sand Mtn
Black Mts
Simpson Mountains

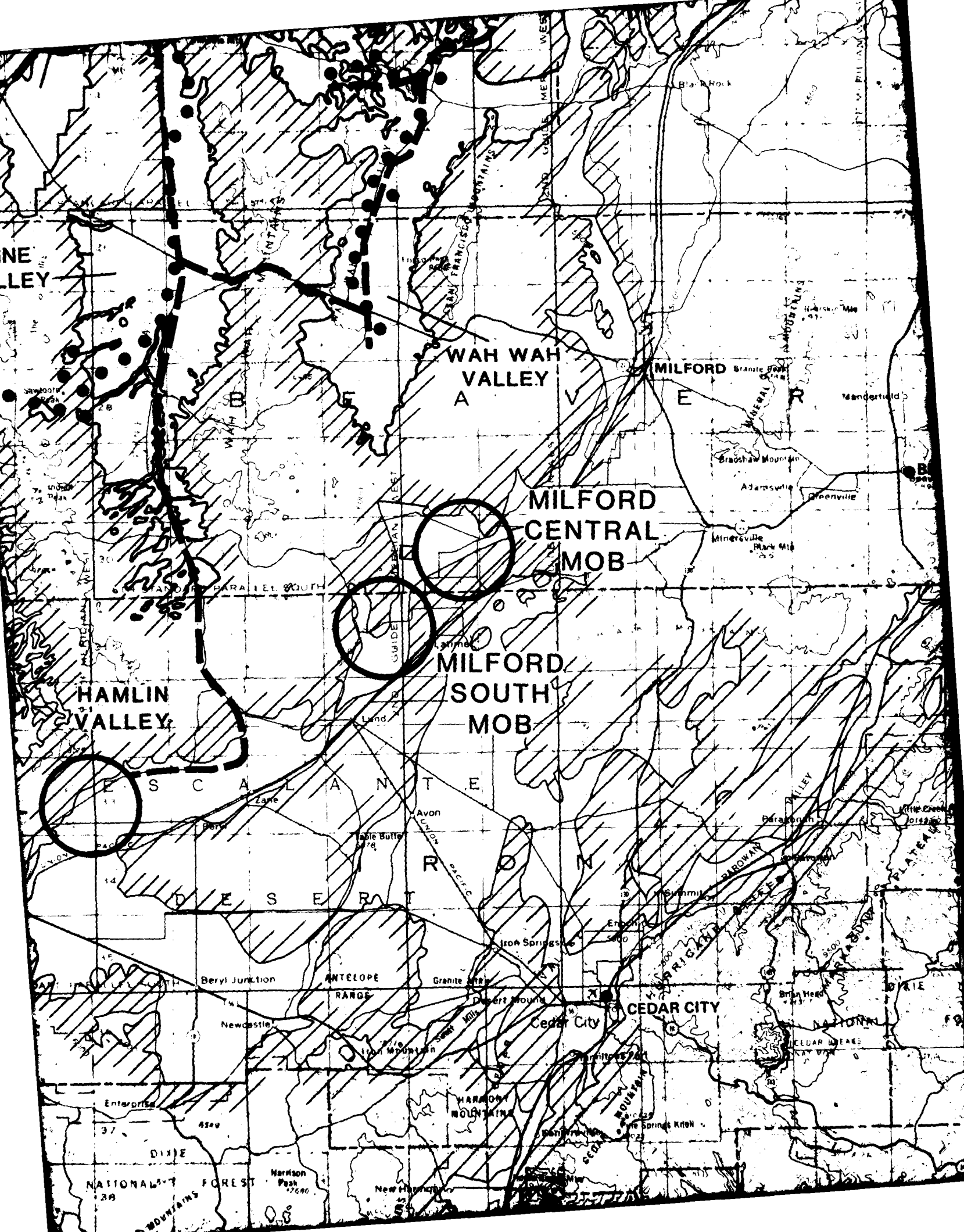

WHIRLWIND VALLEY
DESERT
SEVIER LAKE
DELTA
FILLMORE
Lynndyl
Leamington
Oak City
Scipio
Holden
Greenwood
Clear Lake
Flowell
McCornick
Meadow
Hatton
Kanosh
Abraham
Sutherland
Woodrow
Delta
Black Mts
Jericho
Juab
Ruins
Mills
Richfield
Aurora
Vermilion
Sigurd
Venice
Central
Austin
Monroe
Joseph
Sevier
Pavant Butte
Ruins
Desert
Oasis
Hinckley
Fumarole Butte
Sand Mtn
Deseret
Canyon Mountains
Little Valley
Williams Peak
Mudhorse Peak
Cove Fort
Elsinore
Annabella
Black Rock
Volcano
Fish Lake
National Forest
SEVIER
DESERT
SEVIER
LAKE
FILLMORE
39° 00'
11
5
4
1W
5500
6000
6500
7000
7500
5000

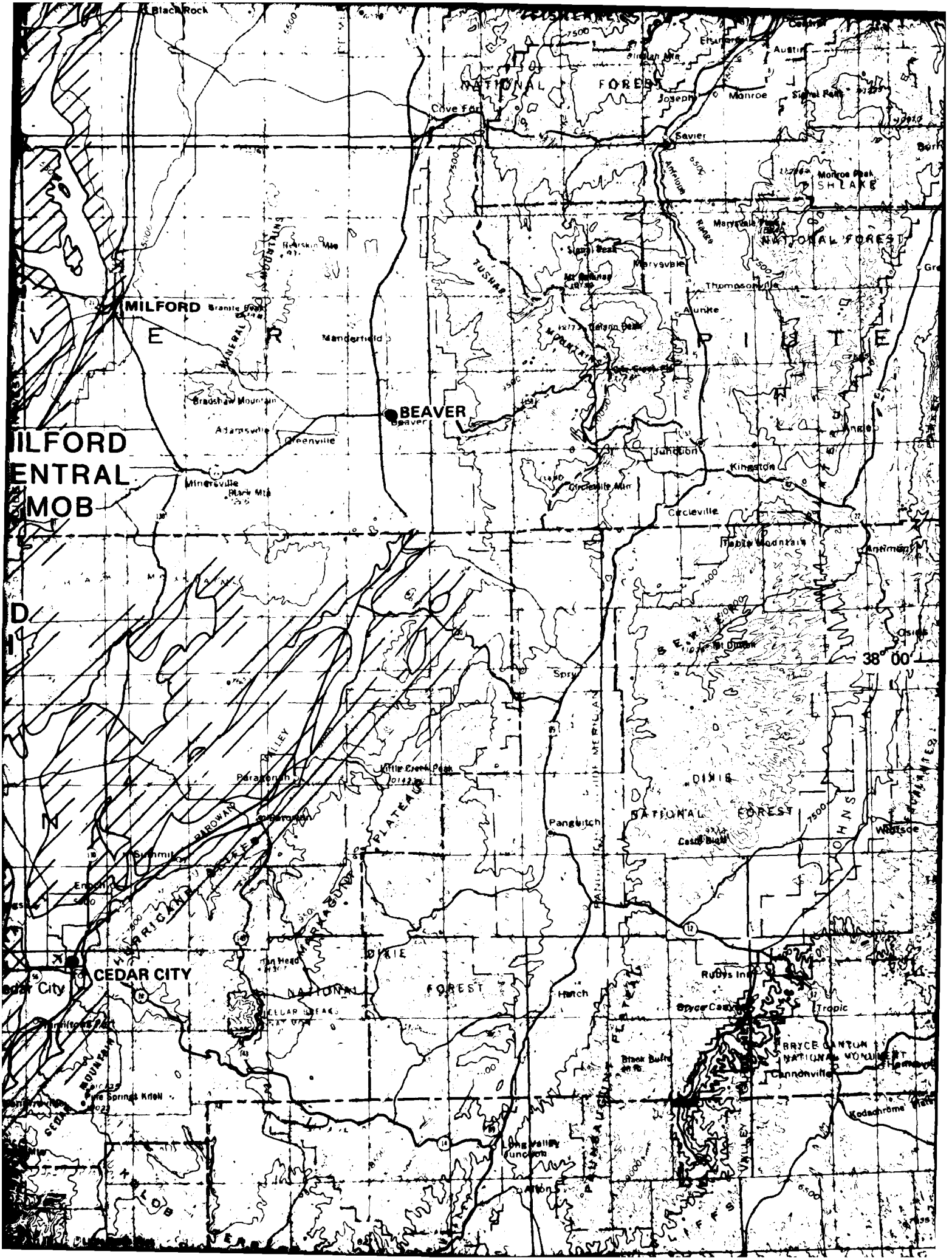

BIG SMOKY VALLEY
Round Mountain
Mt Airy
Stewart Valley
Little Pilot Peak
Eagle Mtn
Pilot Peak
Lime Mtn
Booker Mtn
TONOPAH
Gilbert Mtn
Mt Butler
Lone Mtn
38° 00'
Emigrant Peak
Weepah Hills
The Monument
Silverpeak
Red Mtn
Proof Peak
E S M E R A L D A
Clayton Valley
Columbia Mtn
Montezuma Peak
GOLDFIELD
Blackcap Mtn
NEVADA
CALIFORNIA
Palmetto Mtn
Mt Jackson
Pipes Mtn
Magruder Mtn

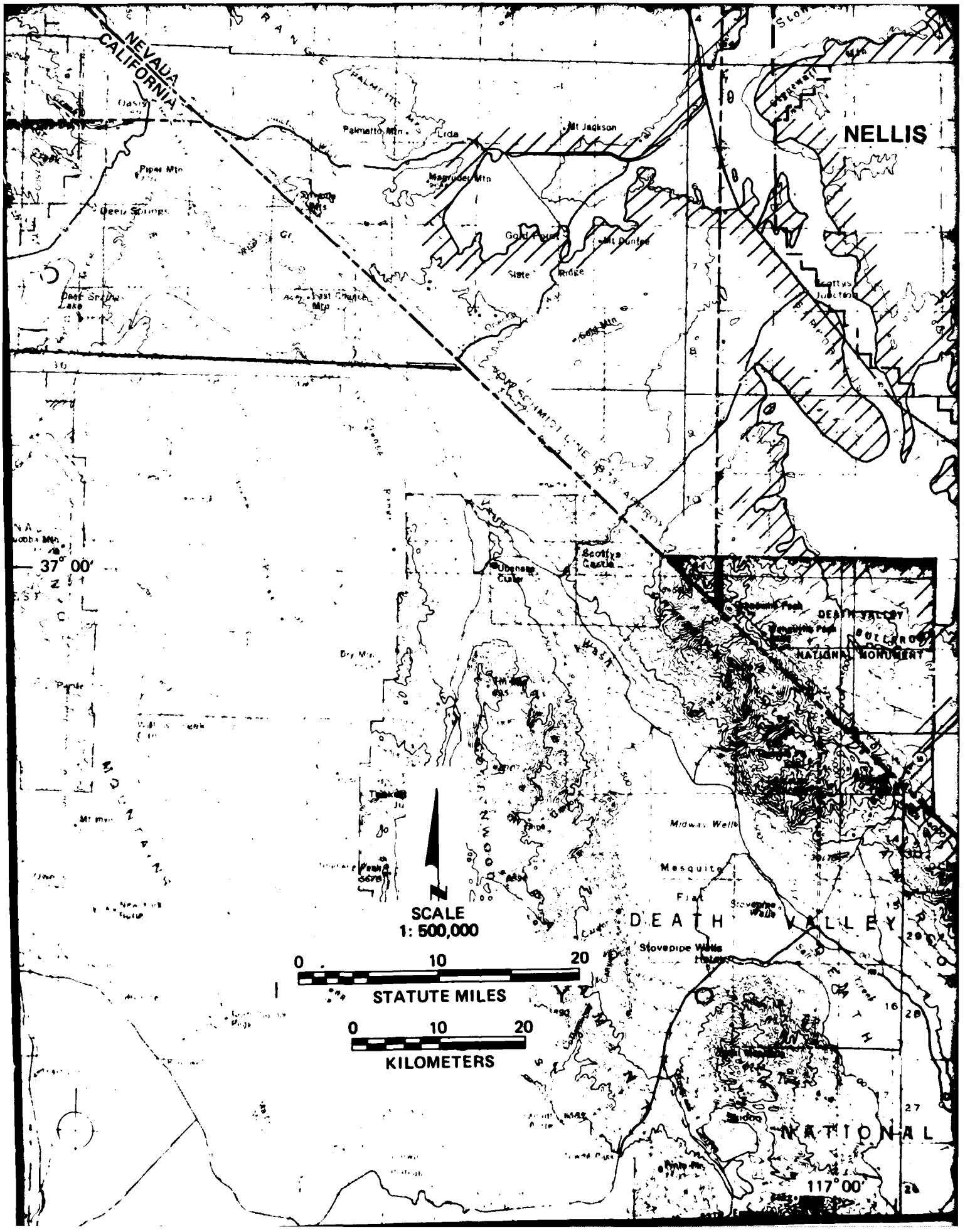

HOT CREEK VALLEY
STONE CABIN VALLEY
RALSTON VALLEY
REVEILLE VALLEY
RAILROAD VALLEY
NELLIS
ASC
ASC

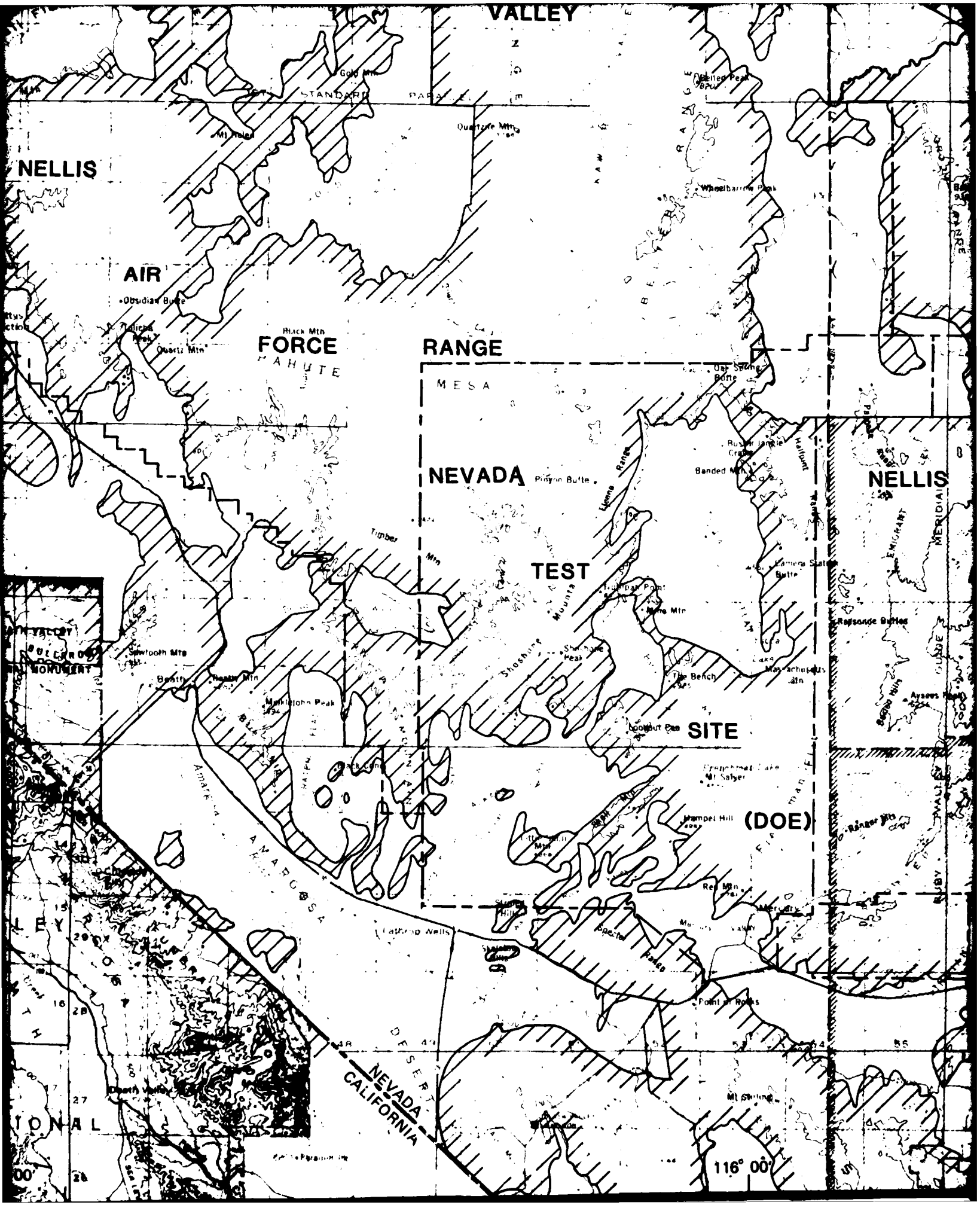

CAVE VALLEY
WHITE RIVER VALLEY
RAILROAD VALLEY
GARDEN VALLEY
MULESHOE VALLEY
PENOYER VALLEY
COAL VALLEY
PAHROC VALLEY
DRY VA
DELAMA
HUMBOLDT
FOREST
ASC
ASC
BASE LINE
MT DIABLO
Range
North Pahroc
Pahranagat
Pahroc
White
Redtop Mine
Bristol Silver Mines
Black Cliff
Burial Peak
Silver King Mtn
Timber Mts
Pahranagat Valley
Hiko
Coyote Peak
Tempahute Range
Worthington Peak
Pahroc Summit
Black Rock Summit
Pohakuese Mtn
Bear Track Mt
Sunnyside
Shingle Pass
Side
Kumberland
Schmeede Gap
Range

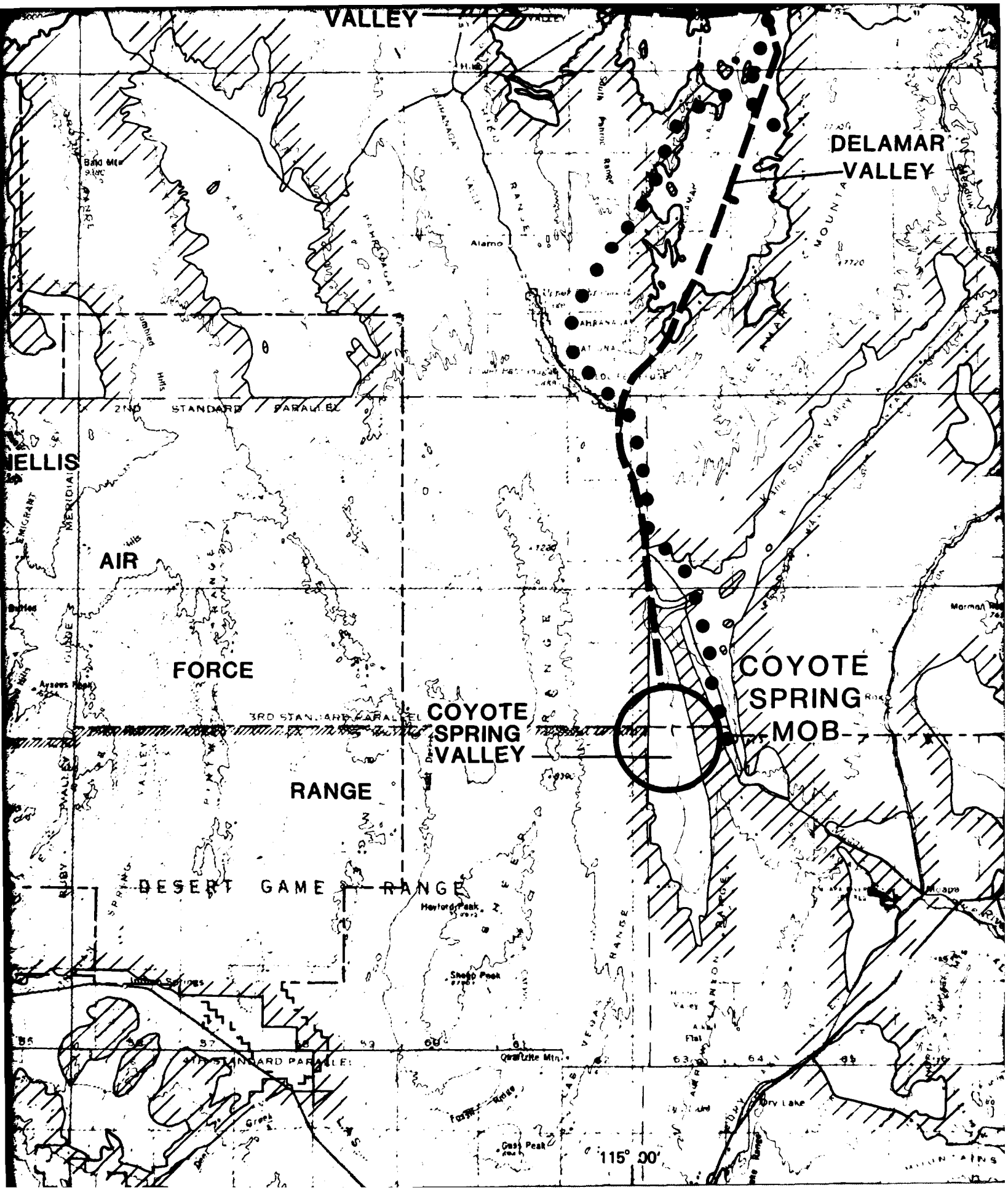

VALLEY
PINE
VALLEY
LAKE
VALLEY
LAKE
VALLEY
LESHOE
VALLEY
HAMLIN
VALLEY
PIOCHE
BERYL
MOB
DRY LAKE
VALLEY
CALIENTE
DELAMAR
VALLEY
Beryl Junction
Newcastle
Enterprise
Modena
Uvada
Crestline
Acoma
DIXIE
NATIONAL
FOREST

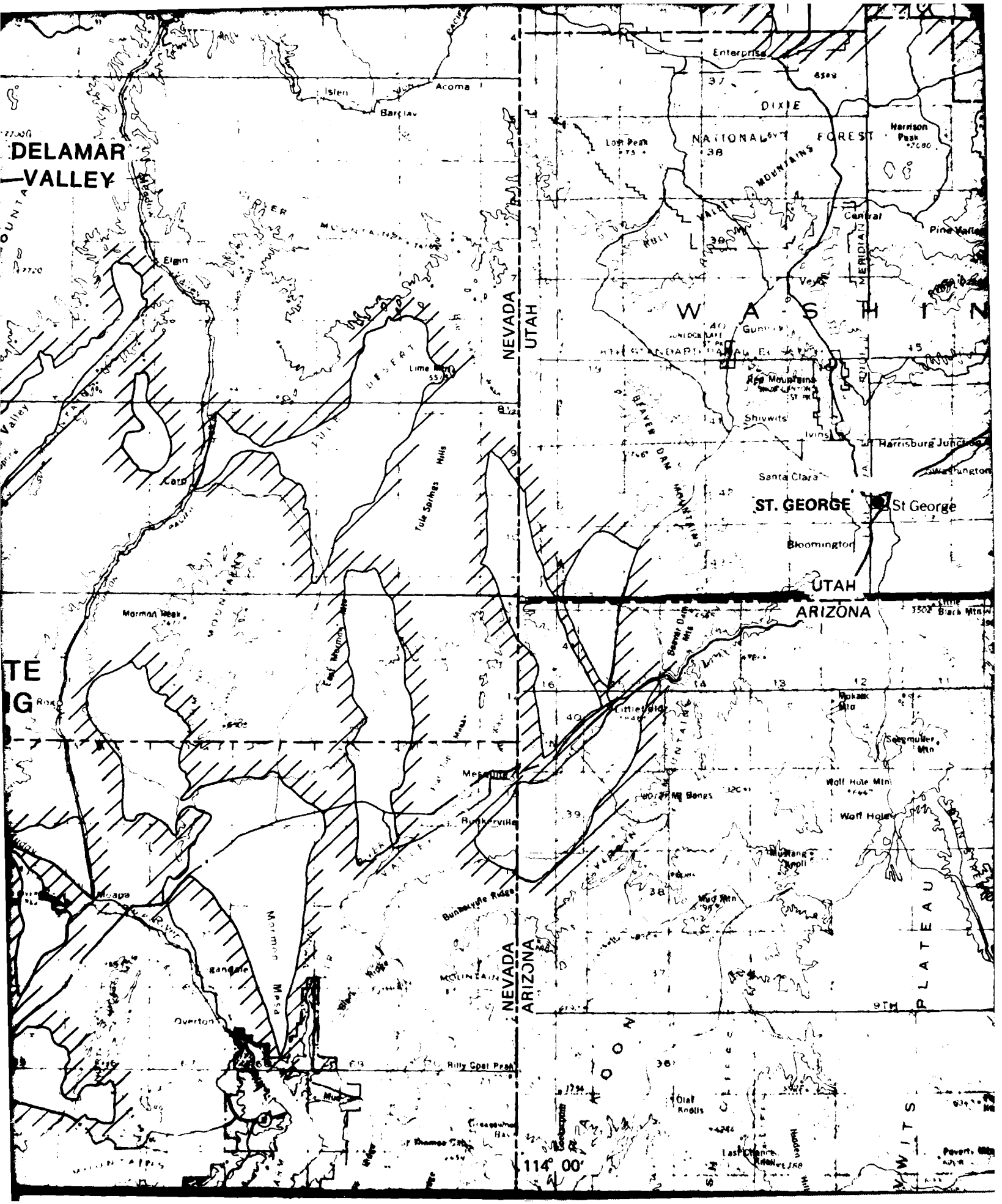

WAH WAH VALLEY
MILFORD
MILFORD CENTRAL MOB
MILFORD SOUTH MOB
HAMLIN VALLEY
BEAVER
ESCALANTE DESERT
CEDAR CITY
Beryl Junction
Newcastle
Enterprise
Cedar City
Iron Springs
Parowan
Minersville
Greenville
Adamsville
Lund
Zane
Avon
Table Butte
Antelope Range
Desert Mound
Iron Mountain
Summit
Paragonah
Brian Head
Hamilton's Fort
Harmon Mountains
Dixie National Forest
Harrison Peak
New Harmony
Pine Valley Mountains
Kanarraville
Black Rock
Mineral Mountains
Bradshaw Mountain
Mountain Meadows
Pacific
Union Pacific
Guide Meridian West
Base and Meridian
Parowan Valley
Parowan Creek
Cedar Breaks National Monument
Kolob Plateau
Markagunt Plateau
Pine Valley
Dixie

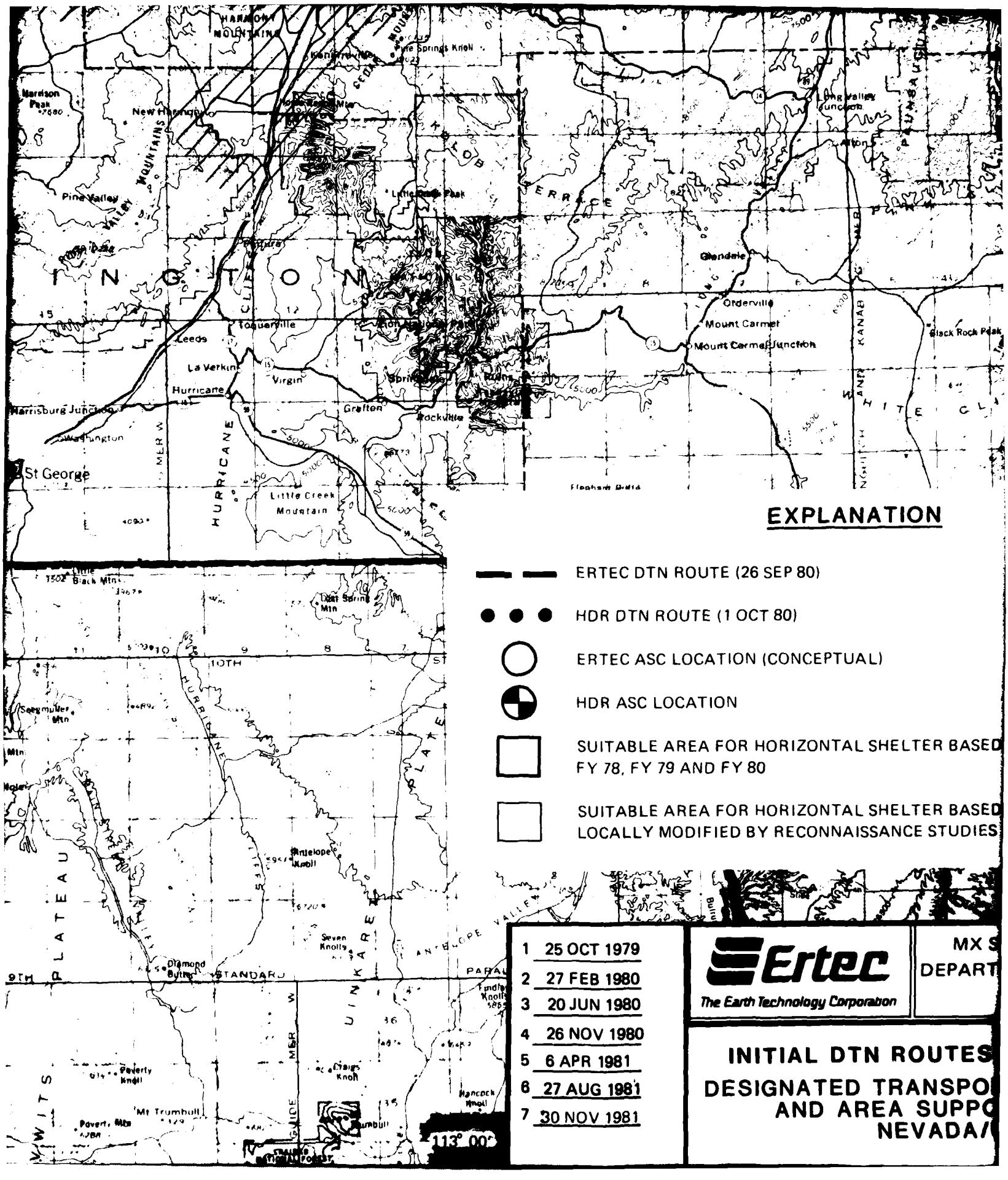

Black Rock
NATIONAL FOREST
Cove Fort
Joseph
Monroe
Sevier
Elsinore
Austin
Monroe Peak
DIXIE NATIONAL FOREST
Marysvale Peaks
Marysvale
Thompsonville
Junction
Kingston
Circleville
Circleville Mtn
Table Mountain
Antimony
Osiris
Alunite
Tushar Mts
Mineral Mts
MILFORD
Granite Peak
Manderfield
Bradshaw Mountain
BEAVER
Adamsville
Greenville
Minersville
Black Mts
ILFORD
ENTRAL
MOB
Spry
Paragonah
Little Creek Peak
Parowan
Parowan Valley
Parowan Plateau
Parowan Range
Sidney Peak
Pangultch
Castle Dale
Johnson Mountains
Sidney Mts
Enoch
Cedar Mts
CEDAR CITY
Cedar City
Iron Head
Iron Springs
Iron Springs Knoll
Cedar Breaks
Ruby's Inn
Bryce Canyon
Tropic
Hatch
Black Butte
Cannonville
Kodachrome
Long Valley Junction
Long Valley
Markagunt Plateau
Sevier Plateau
38° 00'

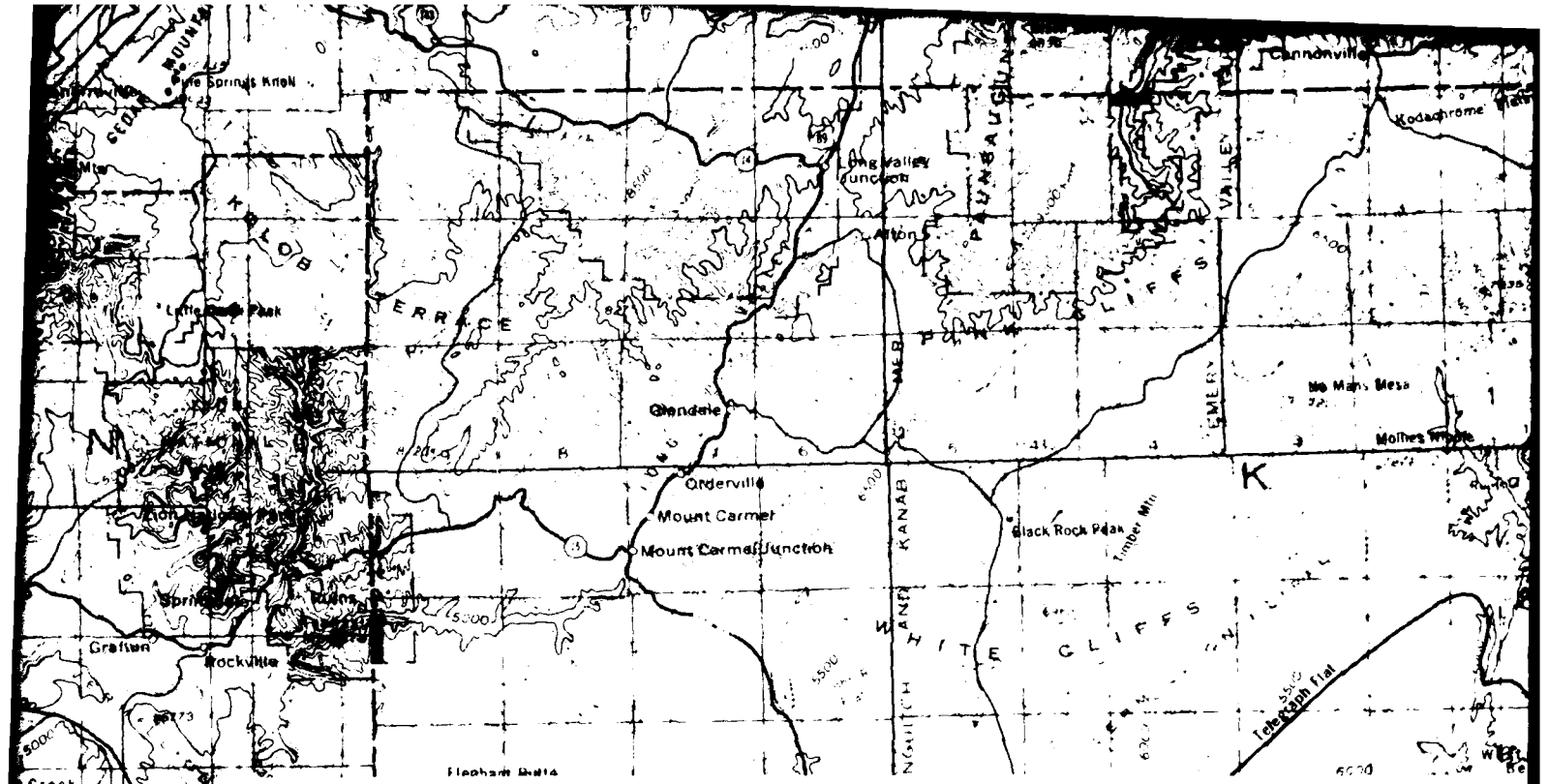

NEVADA
CALIFORNIA
NELLIS
Palmetto Mts
Mt Jackson
Piper Mtn
Magruder Mtn
Gold Point
Mt Dunfee
State Ridge
Deep Springs Lake
Gold Mtn
NORTH SCHMICH LINE 10 APPROX
37° 00'
Scotty's Castle
Ubehebe Crater
DEATH VALLEY
NATIONAL MONUMENT
Dry Mtn
Midway Wells
Mesquite Flat
Stovepipe Wells
Stovepipe Wells Hotel
DEATH VALLEY
NATIONAL
117° 00'
SCALE
1: 500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS


VALLEY
NELLIS
AIR
FORCE
RANGE
MESA
NEVADA
TEST
SITE
(DOE)
NELLIS
Gold Mtn
Quartzite Mtn
Wheelbarrow Peak
Obsidian Butte
Quartz Mtn
Oak Spring Butte
Pinyon Butte
Timber Mtn
Shoshone Mountains
Sawtooth Mts
Beatty
Rainier Mesa
Rainier Mtn
Rainier Ridge
Rainier Wash
Rainier Mtn
Rainier Mesa


VALLEY
DELAMAR
VALLEY
Alamo
2ND STANDARD PARALLEL
ELLIS
AIR
FORCE
COYOTE
SPRING
VALLEY
COYOTE
SPRING
MOB
3RD STANDARD PARALLEL
RANGE
DESERT GAME RANGE
Shoop Peak
Quartzite Mtn.
Dry Lake
Cass Peak
115° 00'


DELAMAR
VALLEY
NEVADA
UTAH
ARIZONA
ST. GEORGE
St George
Enterprise
Harrison Peak
DIXIE
NATIONAL FOREST
Central
Pine Valley
Veyo
Gunlock
Shivwits
Ivins
Harrisburg Junction
Santa Clara
Bloomington
Elgin
Acoma
Barclay
Lime Ridge
Tule Springs Hills
Mormon Mesa
Overton
Moapa
Rangeline
Bunkerville
Mesquite
Littlefield
Seegmiller Mtn
Wolf Hole Mtn
Wolf Hole
Mud Mtn
Billy Goat Peak
Clay Knolls
Paiute Canyon
114° 00'
9TM
PLATEAU


St George
Hurricane
La Verkin
Virginia
Leeds
Toquerville
Harrisburg Junction
Washington
Grafton
Rockville
Springdale
Zion National Park
Orderville
Mount Carmel
Mount Carmel Junction
Glendale
Long Valley Junction
Alton
Pine Valley
New Harmony
Harrison Peak
Little Creek Mountain
Elephant Butte
Black Rock Peak
HURRICANE CLIFFS
HARMONY MOUNTAINS
PINE VALLEY MOUNTAINS
MARKAGUNT PLATEAU
UINKARET PLATEAU
HURRICANE FAULT
LAKE MEAD
ANTELOPE VALLEY
Antelope Knoll
Seven Knolls
Diamond Butte
Poverty Knoll
Poverty Mtn
Craigs Knoll
Mt Trumbull
Trumbull
Hancock Knoll
Seegmuller Mtn
Dust Spring Mtn
Little Black Mtn
10TH
9TH
STANDARD
113° 00'
EXPLANATION
ERTEC DTN ROUTE (26 SEP 80)
HDR DTN ROUTE (1 OCT 80)
ERTEC ASC LOCATION (CONCEPTUAL)
HDR ASC LOCATION
SUITABLE AREA FOR HORIZONTAL SHELTER BASED FY 78, FY 79 AND FY 80
SUITABLE AREA FOR HORIZONTAL SHELTER BASED LOCALLY MODIFIED BY RECONNAISSANCE STUDIES
1 25 OCT 1979
2 27 FEB 1980
3 20 JUN 1980
4 26 NOV 1980
5 6 APR 1981
6 27 AUG 1981
7 30 NOV 1981
Ertec
The Earth Technology Corporation
MX S
DEPART
INITIAL DTN ROUTES
DESIGNATED TRANSPO
AND AREA SUPPO
NEVADA/



EXPLANATION

- ERTEC DTN ROUTE (26 SEP 80)
- HDR DTN ROUTE (1 OCT 80)
- ERTEC ASC LOCATION (CONCEPTUAL)
- HDR ASC LOCATION
- SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON VERIFICATION STUDIES FY 78, FY 79 AND FY 80
- SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON SCREENING STUDIES, LOCALLY MODIFIED BY RECONNAISSANCE STUDIES

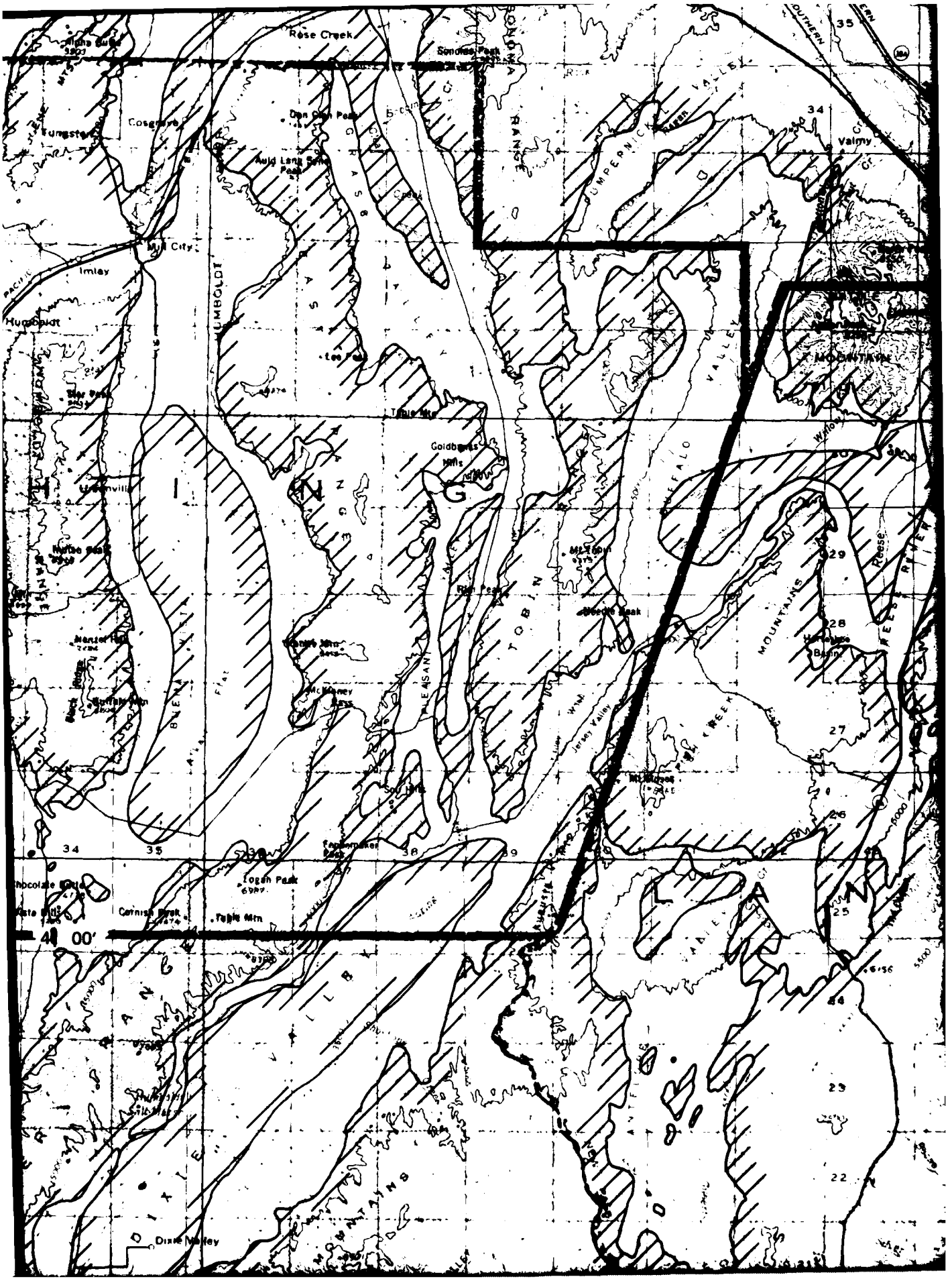
1	25 OCT 1979
2	27 FEB 1980
3	20 JUN 1980
4	26 NOV 1980
5	6 APR 1981
6	27 AUG 1981
7	30 NOV 1981

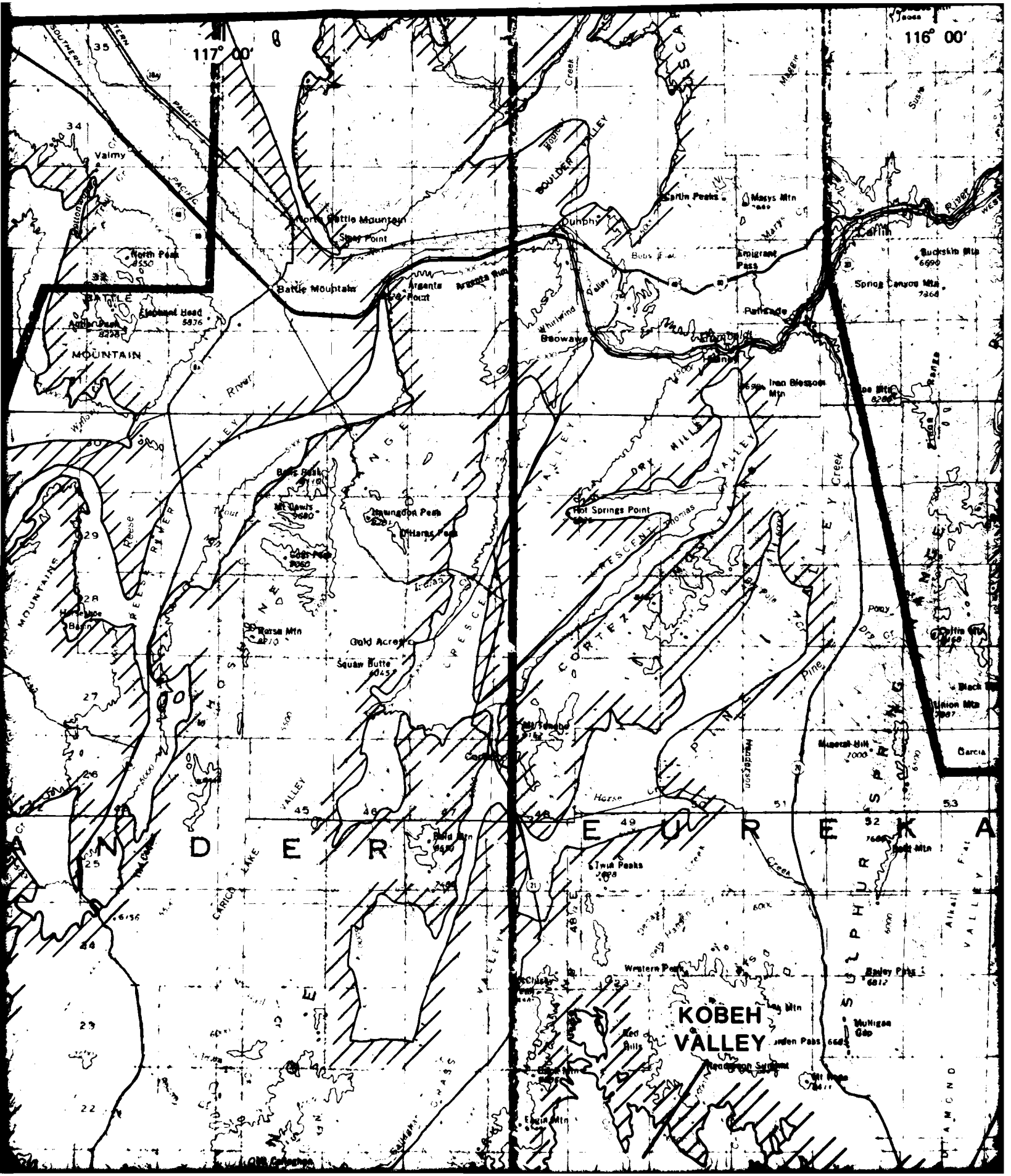
Ertec
The Earth Technology Corporation

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

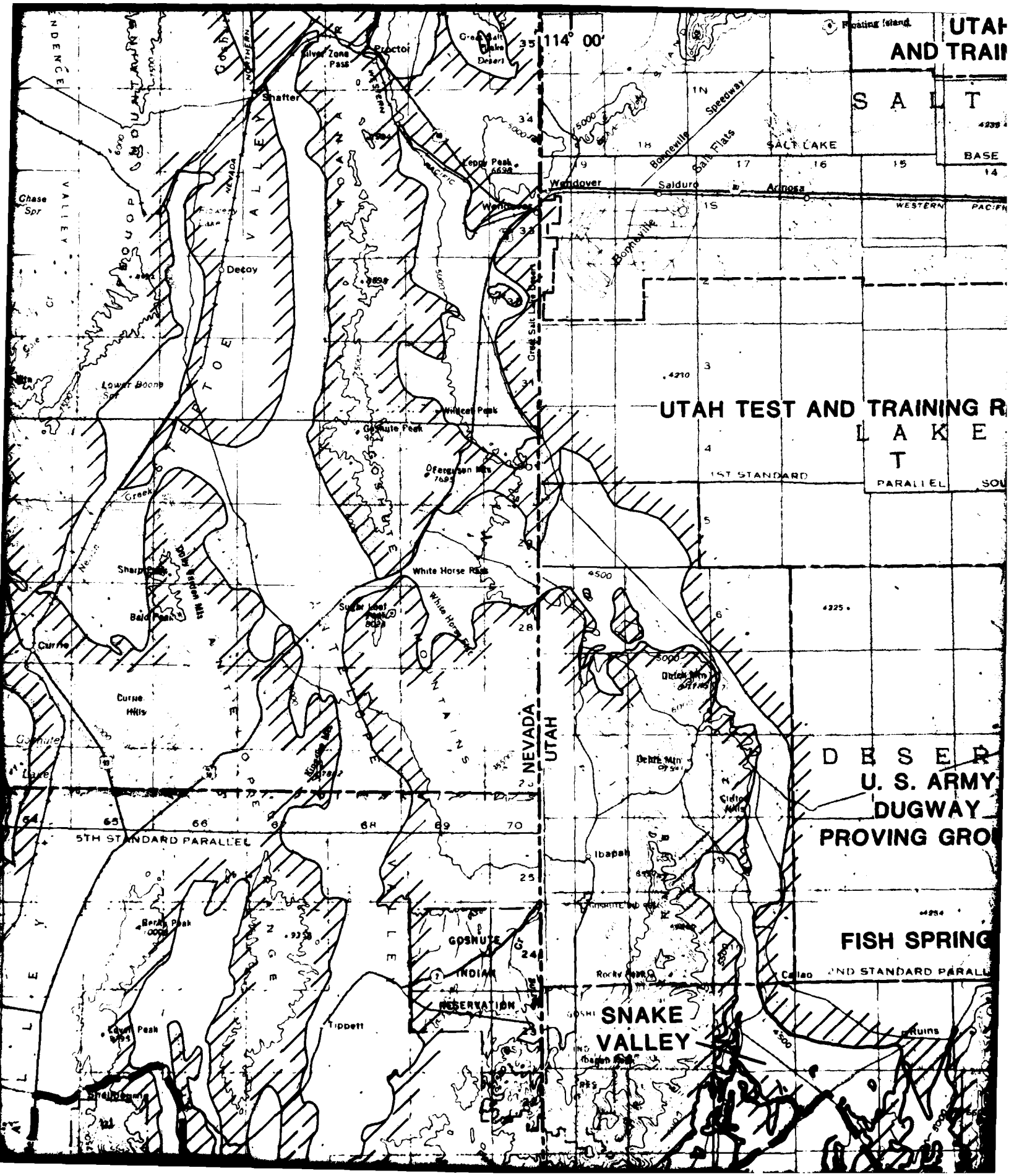
INITIAL DTN ROUTES AND ASC SITES
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS
NEVADA/UTAH

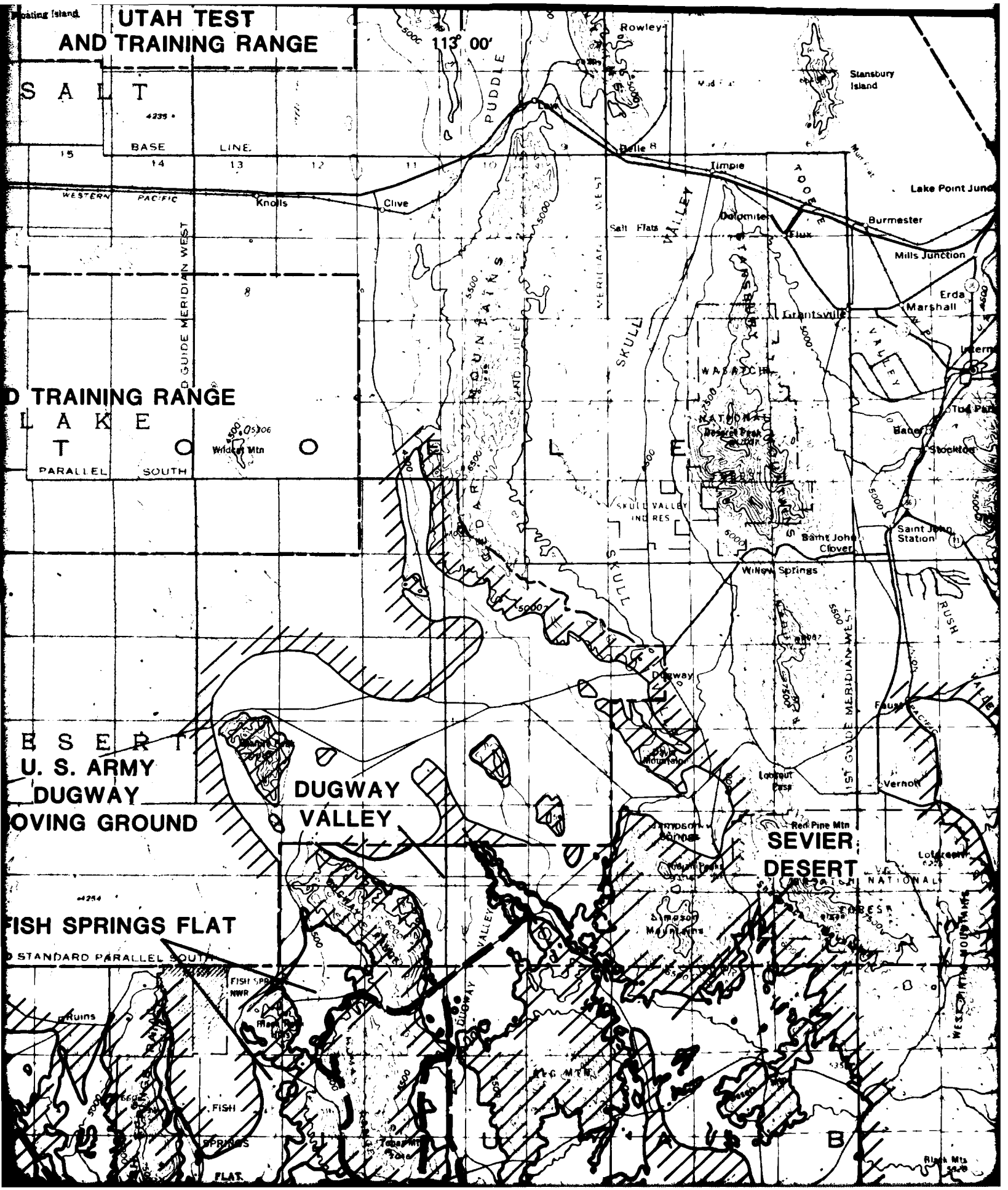
VOLUME II PART I
DRAWING 1-1

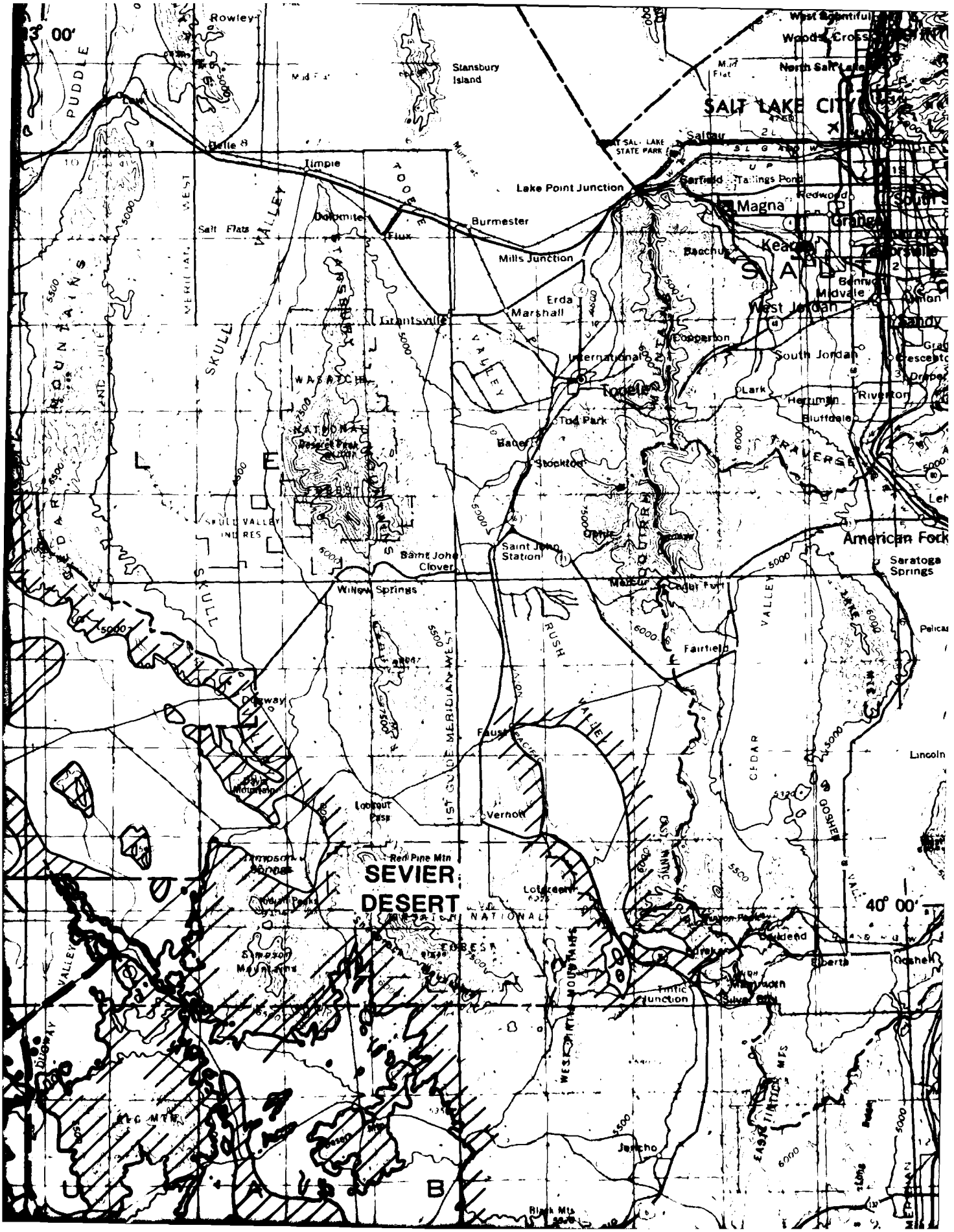

Rose Creek
Sonoma Peak
Cosgrave
Dan Clark Peak
Auld Lang Syne Peak
Mill City
Imlay
Humboldt
Lee Peak
Table Mtn
Goldbanks Hills
Lovelock
Mt Tobin
Rio Peak
Bloody Peak
Mt McKinney
Jersey Valley
Mt Blitzen
Fencemaker
Logan Peak
Cornish Peak
Table Mtn
Dixie Valley
Sonoma Range
Pumpernickel Valley
Valmy
Humboldt Range
Tobin Range
Reese River Valley
Mountains
Reese River
Basin
Fish Creek
Mountains
Basin
Range
Humboldt
Lumboldt
Pacific
Southern
40° 00'
34
35
36
37
38
39
25
26
27
28
29
22

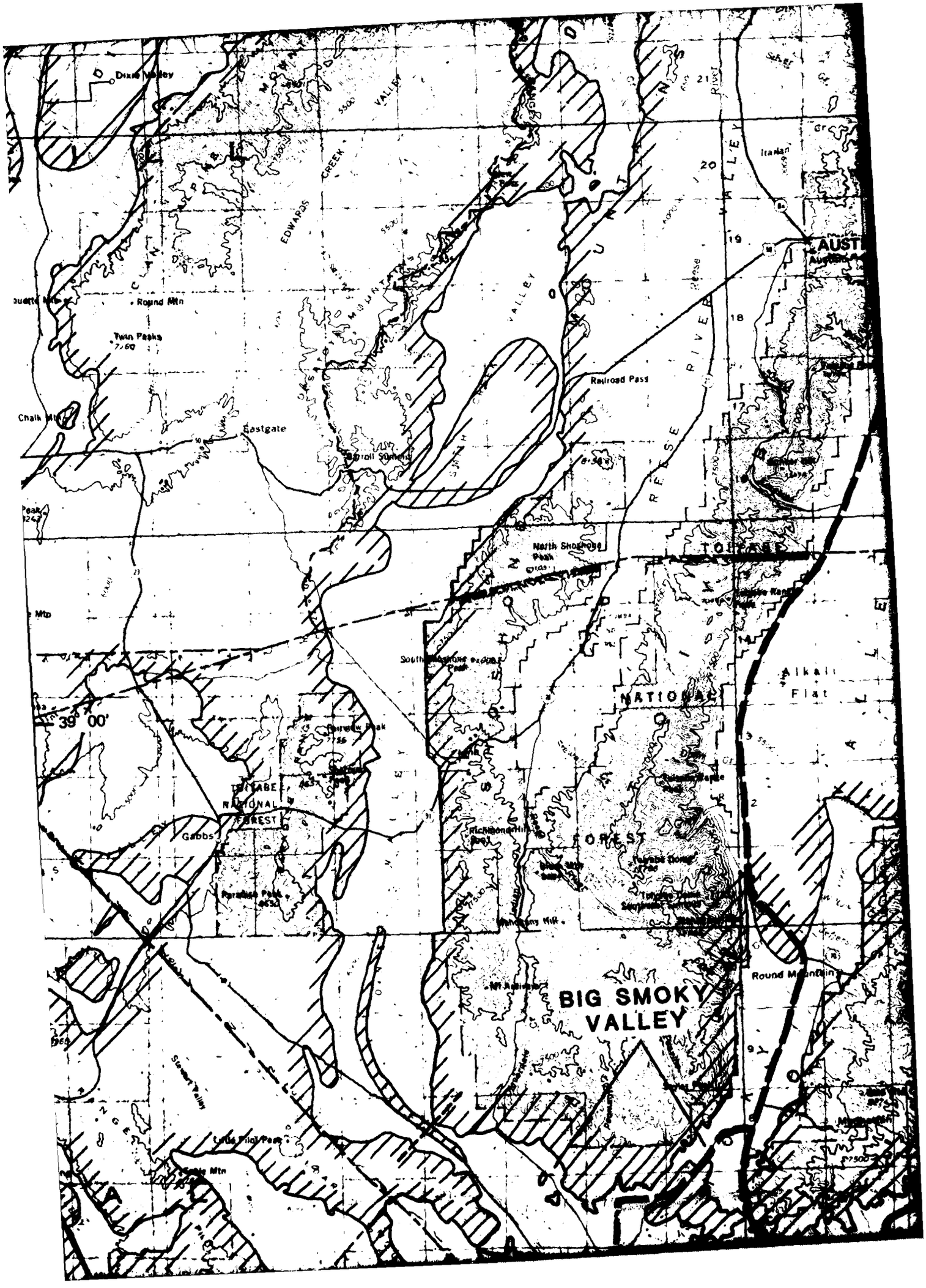

117° 00'
116° 00'
Valmy
North Battle Mountain
Stony Point
North Peak
8550
BATTLE
MOUNTAIN
Elephant Head
5876
Battle Mountain
Argenta
Argenta Rim
Whirlwind Valley
Boowata
Duhphy
Boulder Creek
Boulder Valley
Martin Peaks
Masys Mtn
Emigrant Pass
Buckskin Mtn
6690
Spring Canyon Mts
7364
Iron Blossom Mtn
Dry Mills Valley
Hot Springs Point
Thomas
Crescent Valley
Cortez Mountains
Reese River Valley
Horse Canyon
Gold Acres
Squaw Butte
6045
Horse Mtn
Pine Valley
Pony
Union Mtn
Garcia
Museum Hill
7000
Twin Peaks
Western Peaks
Bailey Peak
6812
KOBEH
VALLEY
Red Hills
Sulphurs
Diamond Valley
Antelope Valley
Carico Lake Valley
Newark Valley
Grass Valley
Sulphur Creek
Maggie Creek
Susie Creek
Pine Creek
Horse Creek
Dry Hungry Creek
Pony Creek
Whirlwind Valley
Boulder Creek
Bobs Flat
Mary's Creek
Reese River
Humboldt River
Southern Pacific
Western Pacific
Battle Mountain Trail
Argenta Rim
Argenta Point
Iron Blossom Mtn
Spring Canyon Mts
Buckskin Mtn
Union Mtn
Garcia
Museum Hill
Bailey Peak
Western Peaks
Twin Peaks
Red Hills
Elkhorn Mtn
Mt Hamilton
Hot Springs Point
Thomas
Gold Acres
Squaw Butte
Horse Mtn
Pony
Pine
Horse
Pony Creek
Pine Creek
Horse Creek
Dry Hungry Creek
Sulphur Creek
Maggie Creek
Susie Creek

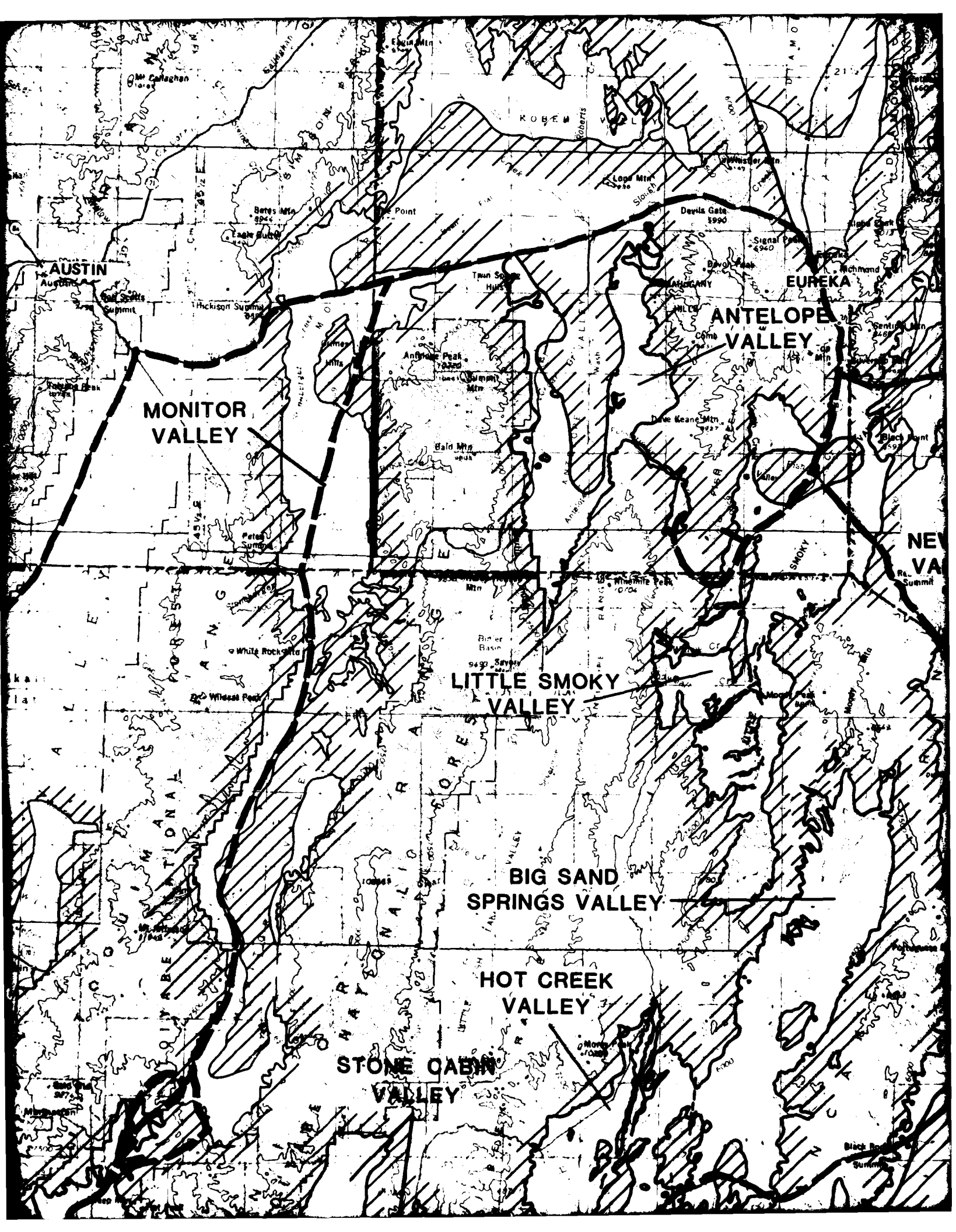

116° 00'
115° 00'
Elko
Elko Mtn
Tobar
Lamoille
Arthur
Snow Water Lake
Grindstone Mtn
Buckskin Mtn
6690
White Flats
Dixie Flats
Dixie Creek
SOUTH FORK IND. RES.
Valley Mtn
Lone Mtn
Spruce Mtn
6TH STANDARD PARALLEL
Dry Lake Flat
Robinson Mtn
Ruby Valley
FRANKLIN LAKE
Dolder Buttes
West Butte
Pattimino Ridge
FOREST
Currie
Black Rock
Union Mtn
Currie Flat
High Bald Peaks
RUBY LAKE
NATIONAL
WILDLIFE REFUGE
Big Bald Mtn
Little Bald Mtn
Cherry Creek
Secret Pass
Berull Pass
LONG
A

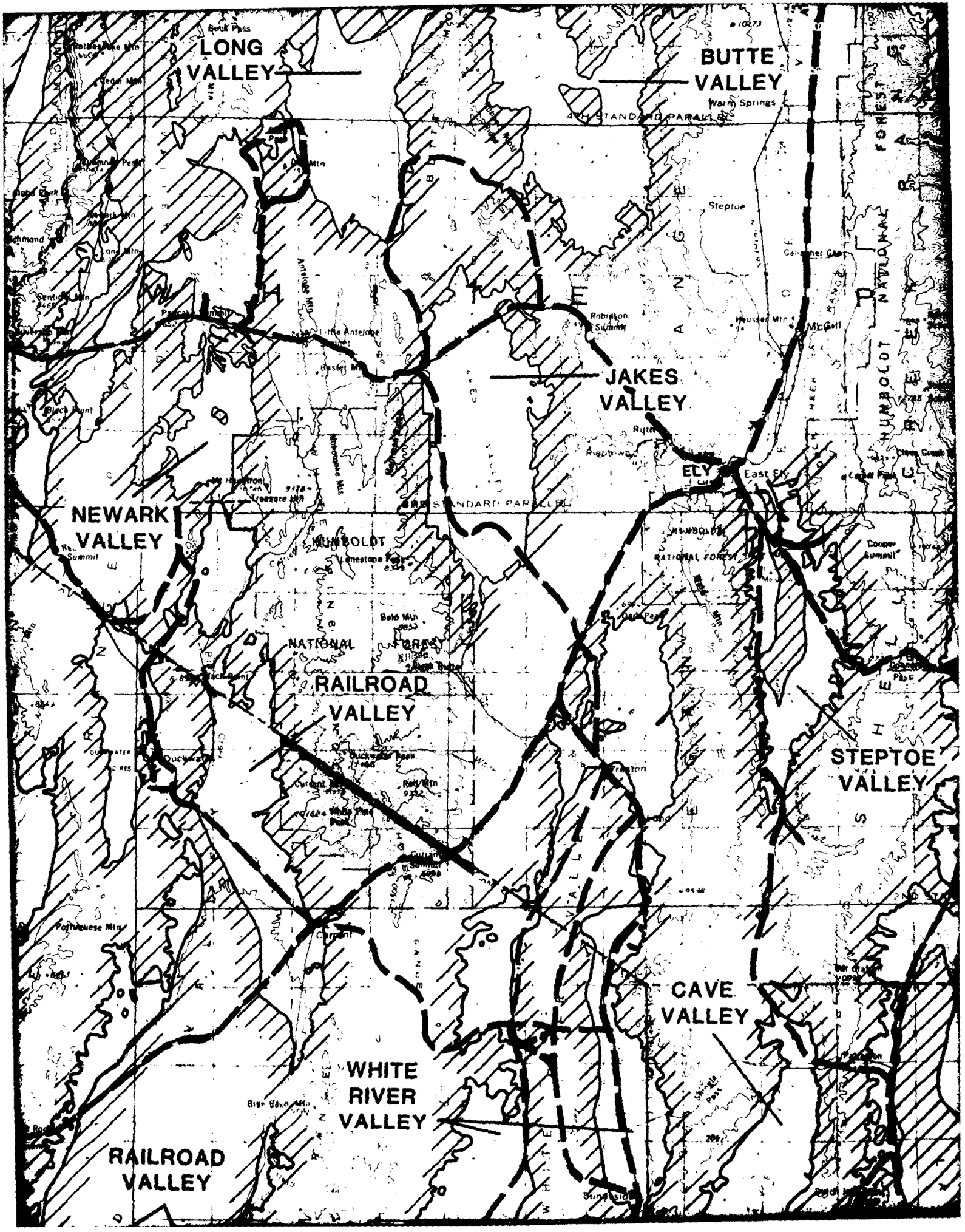

114° 00'
UTAH TEST AND TRAINING R
L A K E
T
DESER
U. S. ARMY
DUGWAY
PROVING GRO
FISH SPRING
SNAKE VALLEY
NEVADA
UTAH
GOSHUTE INDIAN RESERVATION
5TH STANDARD PARALLEL
1ST STANDARD PARALLEL
SALT LAKE
Bonneville Salt Flats Speedway
Wendover
Salduro
Arinosa
Shafter
Silver Zone Pass
Proctor
Decoy
Lower Boone Spr
Willcox Peak
Goshute Peak
Sharp Peak
White Horse Peak
Bald Peak
Curlew Hills
Ibapah
Tippett
Berry Peak
Cedar Peak
Rocky Point
Callao
Ruins
Chase Spr
Lake
Desert
Floating Island
BASE
WESTERN
PACIFIC
NORTHERN
NEVADA
SOUTHERN
PACIFIC

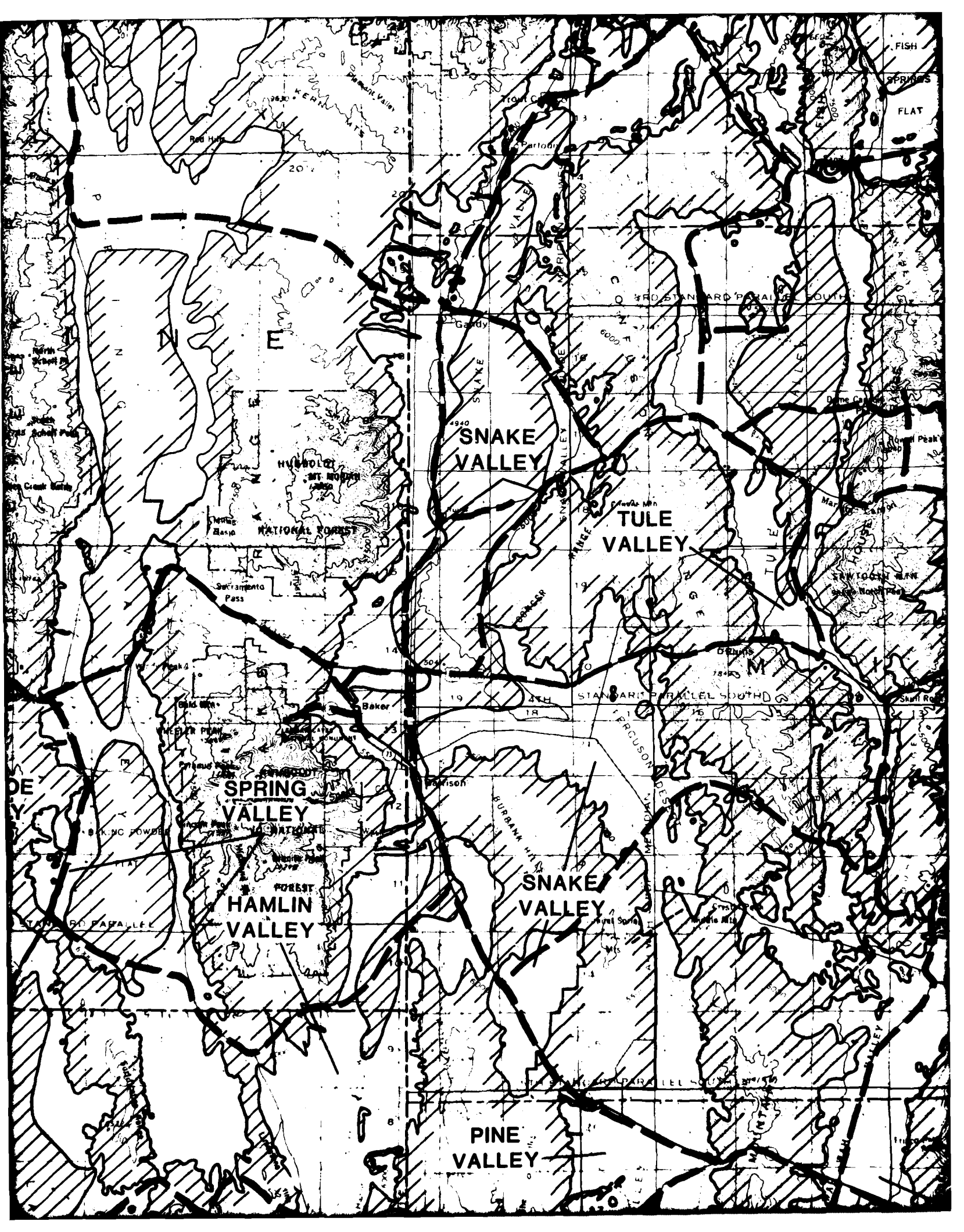

UTAH TEST AND TRAINING RANGE
113° 00'
SALT
BASE LINE
WESTERN PACIFIC
Knolls
Clive
Rowley
Stansbury Island
Timpie
Lake Point Junc
Dolomite
Flux
Burmester
Mills Junction
Erda
Marshall
Grantsville
Tooele
Tooele Valley
Skull Valley
Skull Valle
Skull Valley Mountains
Salt Flats
Wildcat Mtn
Baker
Stockton
Saint John
Saint John Station
Clover
Willow Springs
Dugway
Dugway Mountains
Lookout Pass
Vernon
Red Pine Mtn
Simpson Springs
Simpson Mountains
SEVIER DESERT
U. S. ARMY DUGWAY PROVING GROUND
DUGWAY VALLEY
FISH SPRINGS FLAT
Fish Springs NWR
Ruins
Fish Springs
Fish Springs Flat
Rig Mtn
Topaz Mtn
Rush Valley
Faust
Lakeside Mtns
1st Guide Meridian West
2nd Guide Meridian West
Standard Parallel South
Wasatch National Forest

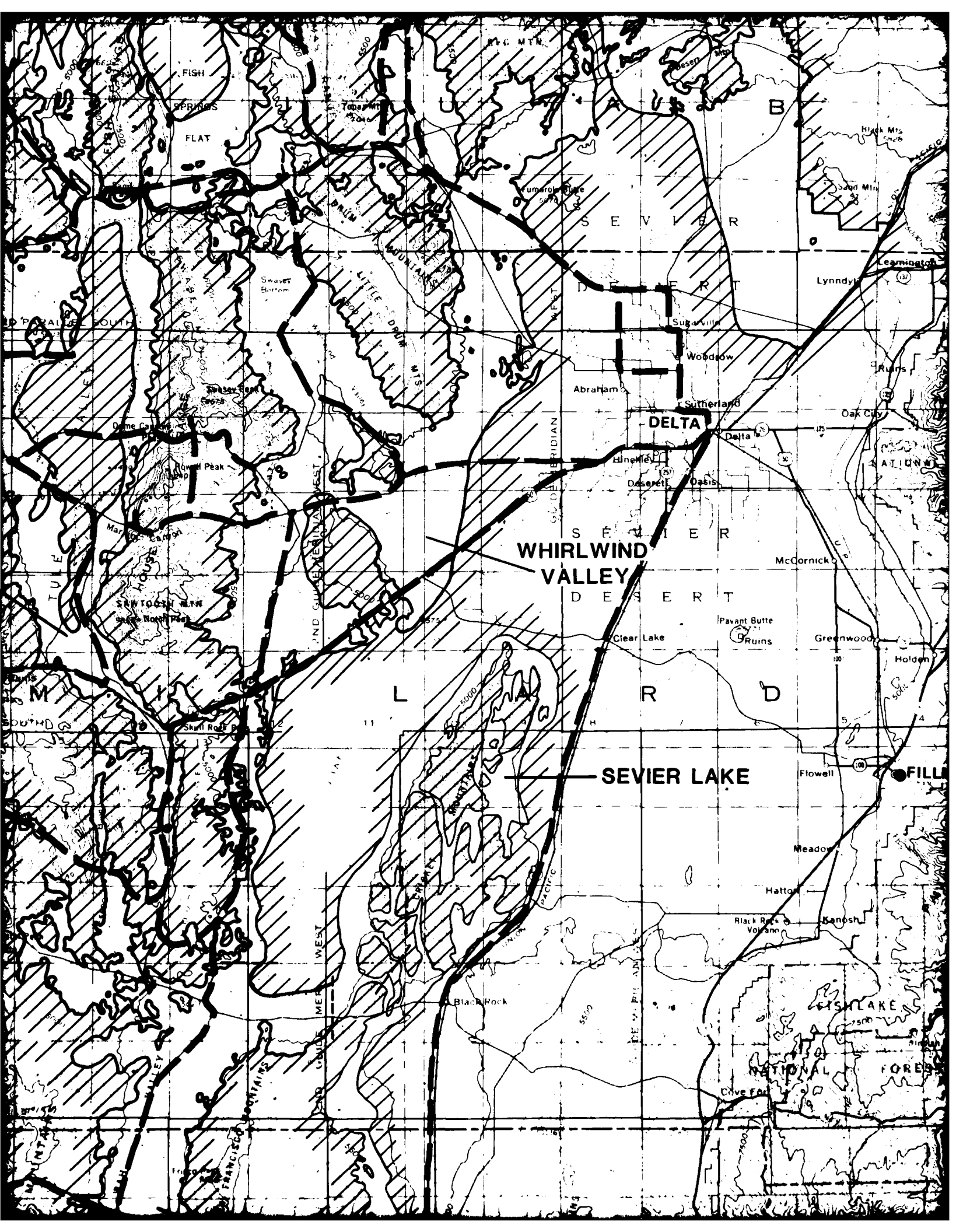

SEVIER DESERT
SALT LAKE CITY
Rowley
Stansbury Island
Timpie
Lake Point Junction
Magna
Burmester
Dolomite
Flux
Mills Junction
Erda
Marshall
Grantsville
West Jordan
South Jordan
Tooele
Tod Park
Stockton
Saint John
Clover
Willow Springs
American Fork
Saratoga Springs
Fairfield
Dugway
Faust
Vernon
Lookout Pass
Red Pine Mtn
Simpson Mountains
Jericho
Black Mts
Goshen
Lincoln
40° 00'
113° 00'
SKULL VALLEY
TOOELE VALLEY
CEDAR MOUNTAINS
STANSBURY MTS
OQUIRRH MTS
WEST TRAVERSE MTS
EAST TINTIC MTS
SKULL VALLEY INDIANS
Salt Flats
Mud Flat
Bacchus
Keaton
Cooperton
Lark
Herriman
Riverton
Bluffdale
Midvale
Sandy
Union
Granger
Redwood
Garfield
Tailings Pond
North Salt Lake
Woods Cross
West Bountiful
Saltair
GREAT SALT LAKE STATE PARK
Baker
Ophir
Cedar Fort
Mercur
Eureka
Goldsmith
Jericho
Black Mts

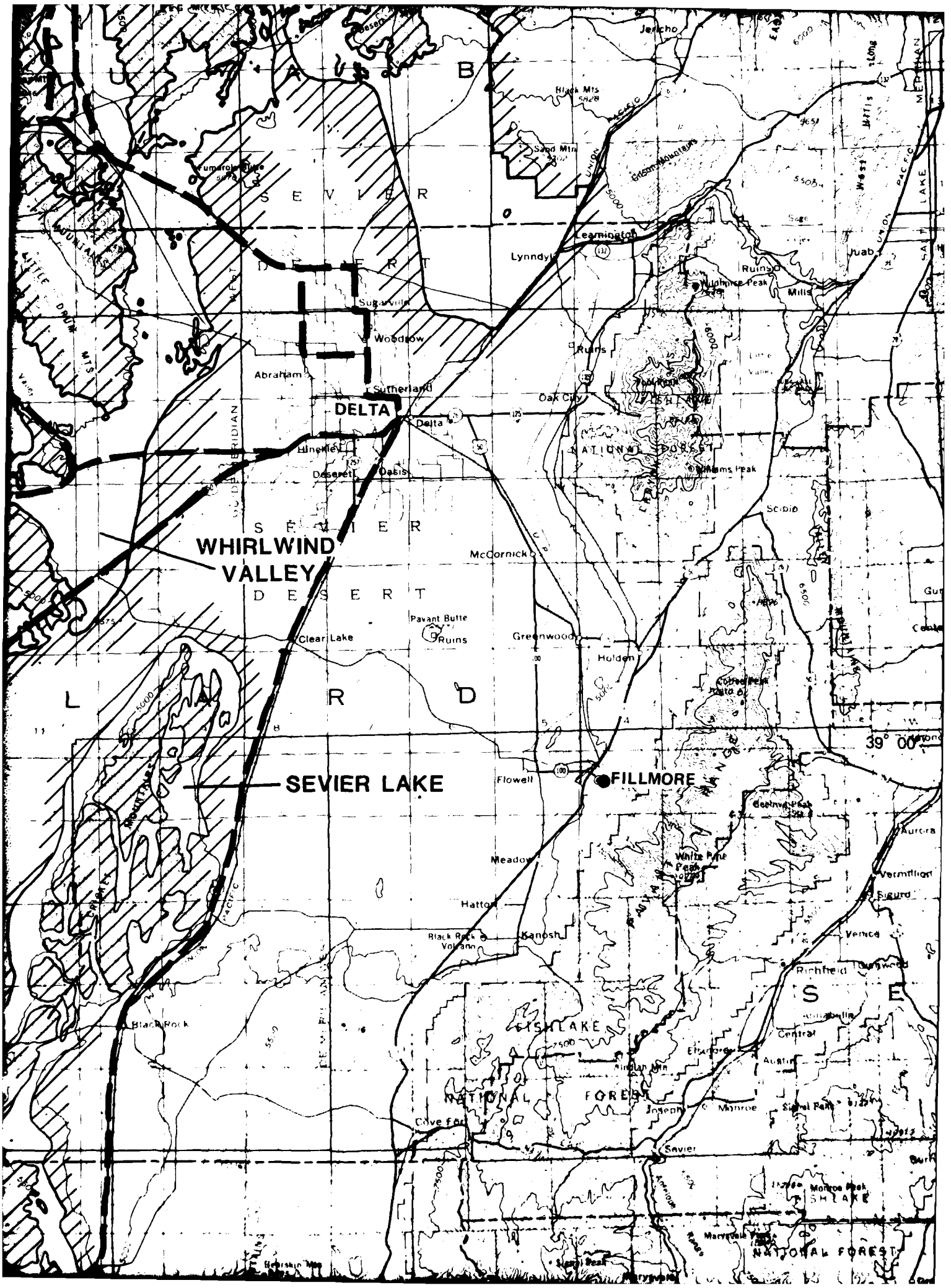

Dixie Valley
Round Mtn
Twin Peaks
7760
Chalk Mtn
Eastgate
Carroll Summit
EDWARDS CREEK VALLEY
CLAN ALPINE MOUNTAINS
SAGEHEN CREEK
Railroad Pass
REESE RIVER VALLEY
Italian Gr.
AUSTI
Austin
North Shoshone Peak
TOIYABE
NATIONAL
FOREST
Alkali Flat
39° 00'
Gabbs
Paradise Peak
9632
Mt Jefferson
BIG SMOKY VALLEY
Round Mountain
Stewart Valley
Little Fish Peak
Sodic Mtn

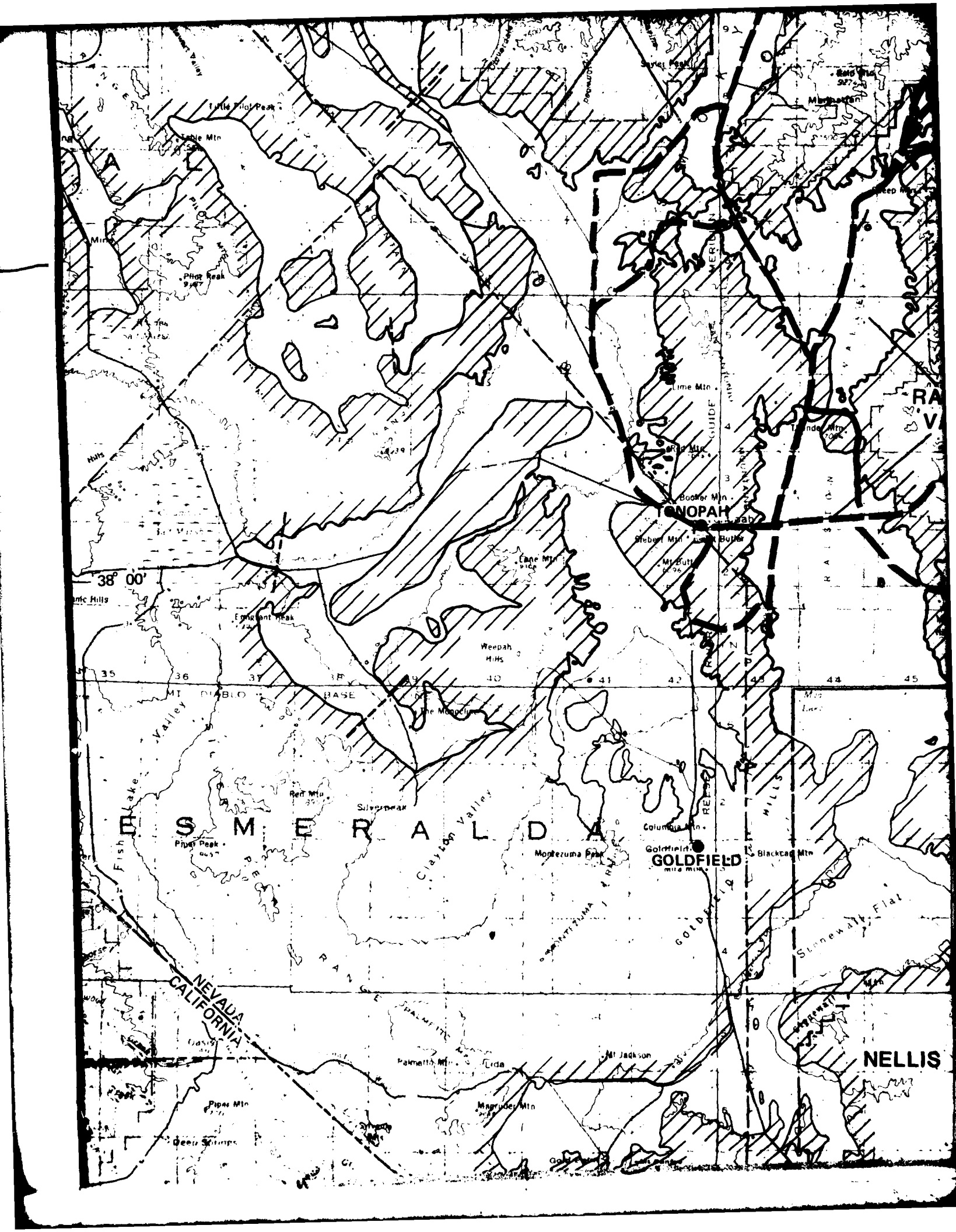

AUSTIN
MONITOR VALLEY
ANTELOPE VALLEY
EUREKA
LITTLE SMOKY VALLEY
BIG SAND SPRINGS VALLEY
HOT CREEK VALLEY
STONE CABIN VALLEY

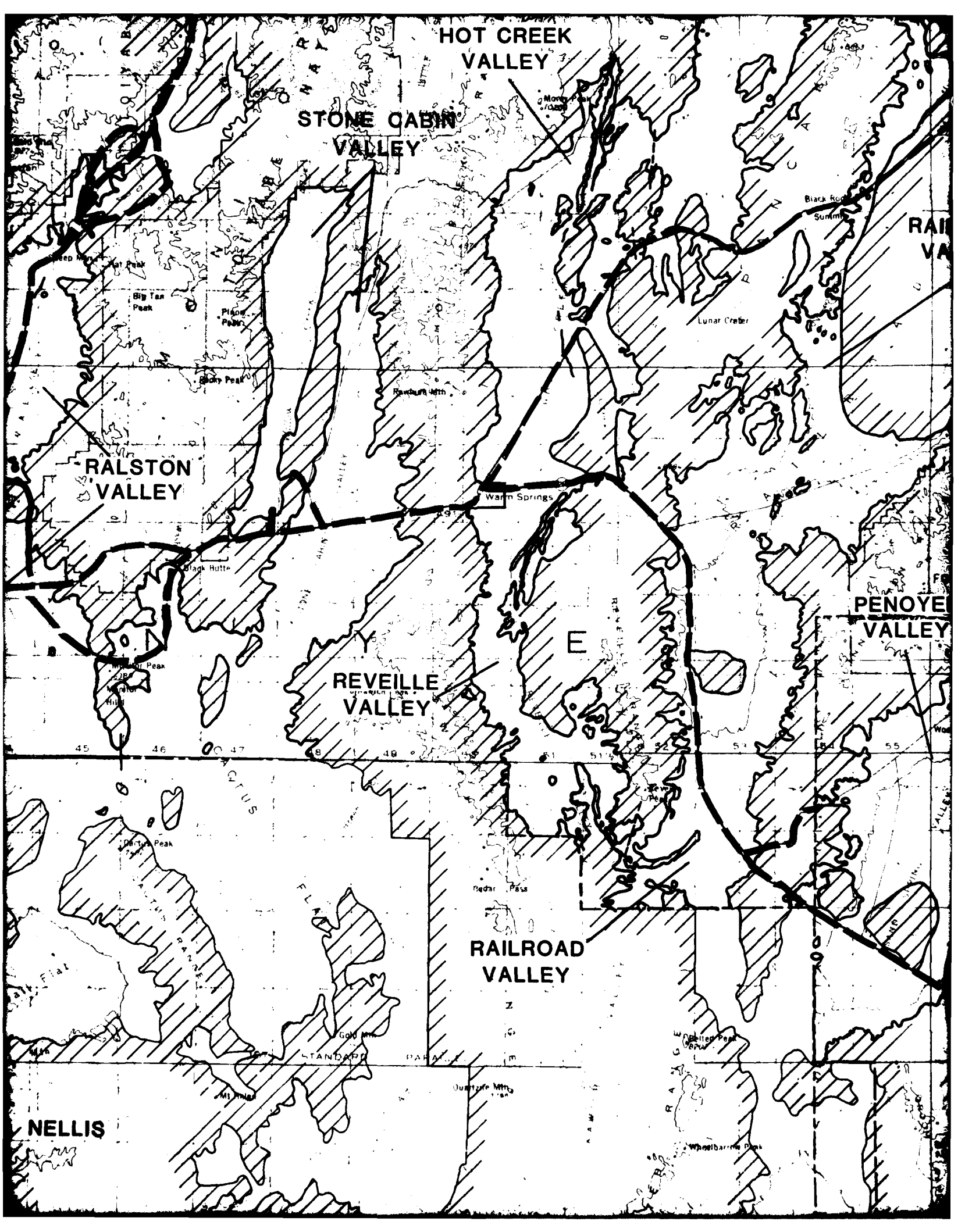

LONG VALLEY
BUTTE VALLEY
JAKES VALLEY
NEWARK VALLEY
RAILROAD VALLEY
STEPTOE VALLEY
CAVE VALLEY
WHITE RIVER VALLEY
RAILROAD VALLEY
ELY
HUMBOLDT NATIONAL FOREST
Steptoe
Warm Springs
Currant
Duckwater
Bald Mtn
Treasure Hill
Limestone Peak
Cooper Summit
Robinson Summit
McGill
East Ely

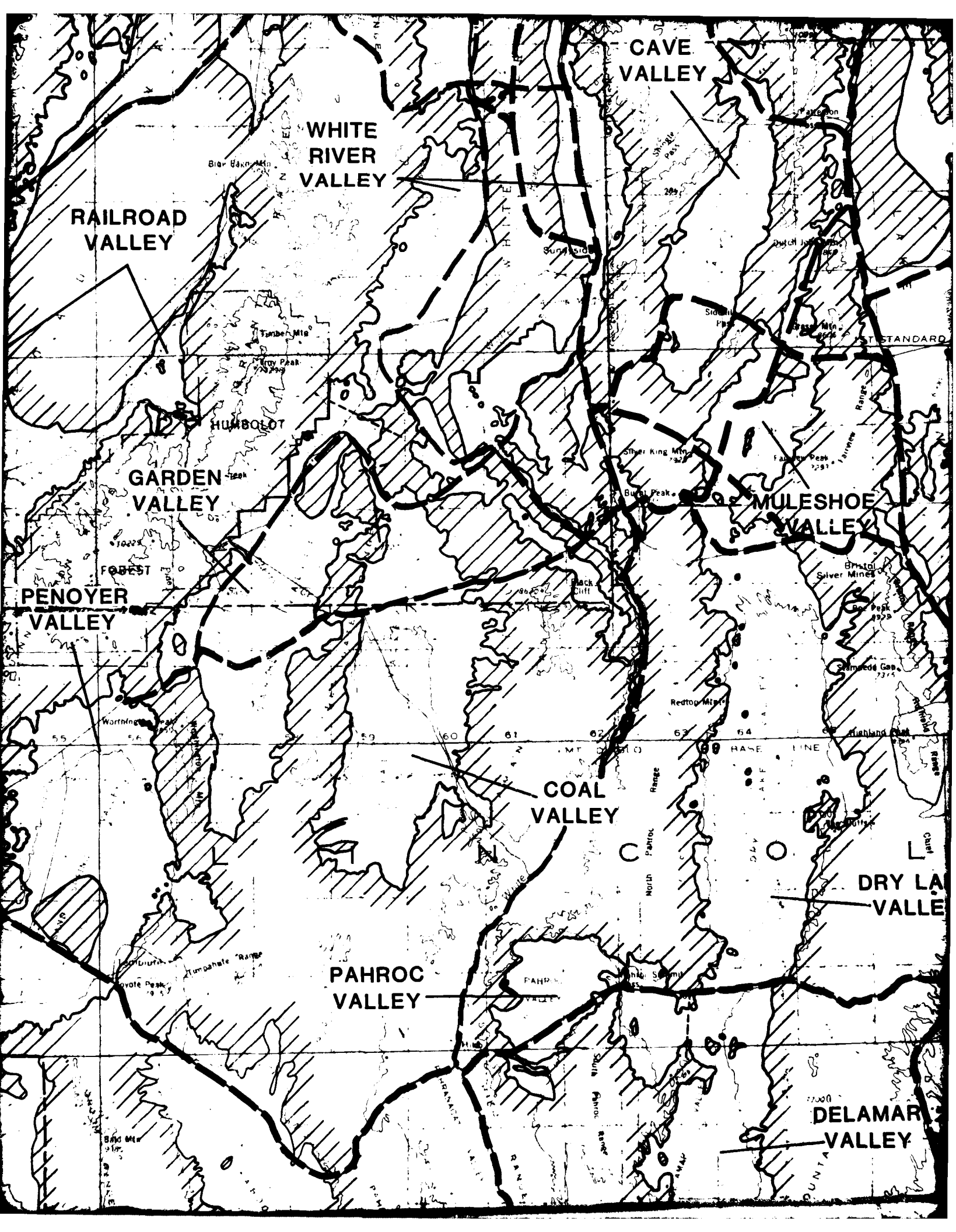

SNAKE VALLEY
TULE VALLEY
SPRING VALLEY
HAMLIN VALLEY
SNAKE VALLEY
PINE VALLEY
NEVADA
UTAH
FISH SPRINGS FLAT
Red Hills
Partoun
Gandy
Baker
Garrison
Sacramento Pass
Wheeler Peak
Mount Moriah
Shell Rock
Kern Mts.
Snake Valley
Tule Valley
Spring Valley
Hamlin Valley
Pine Valley
Burbank Hills
Ferguson Desert
Confusion Range
Deep Creek Range
Schell Creek Range
Snake Range
Wah Wah Mts.
Great Basin National Park
Humboldt-Toiyabe National Forest
Humboldt National Forest
Wheeler Peak Scenic Area
Bristlecone Pine Forest
Lehman Caves National Monument
Baker Archaeological Site
Standard Parallel South
Standard Parallel South
Standard Parallel South
Meridian
Base Line
Base Line
Base Line

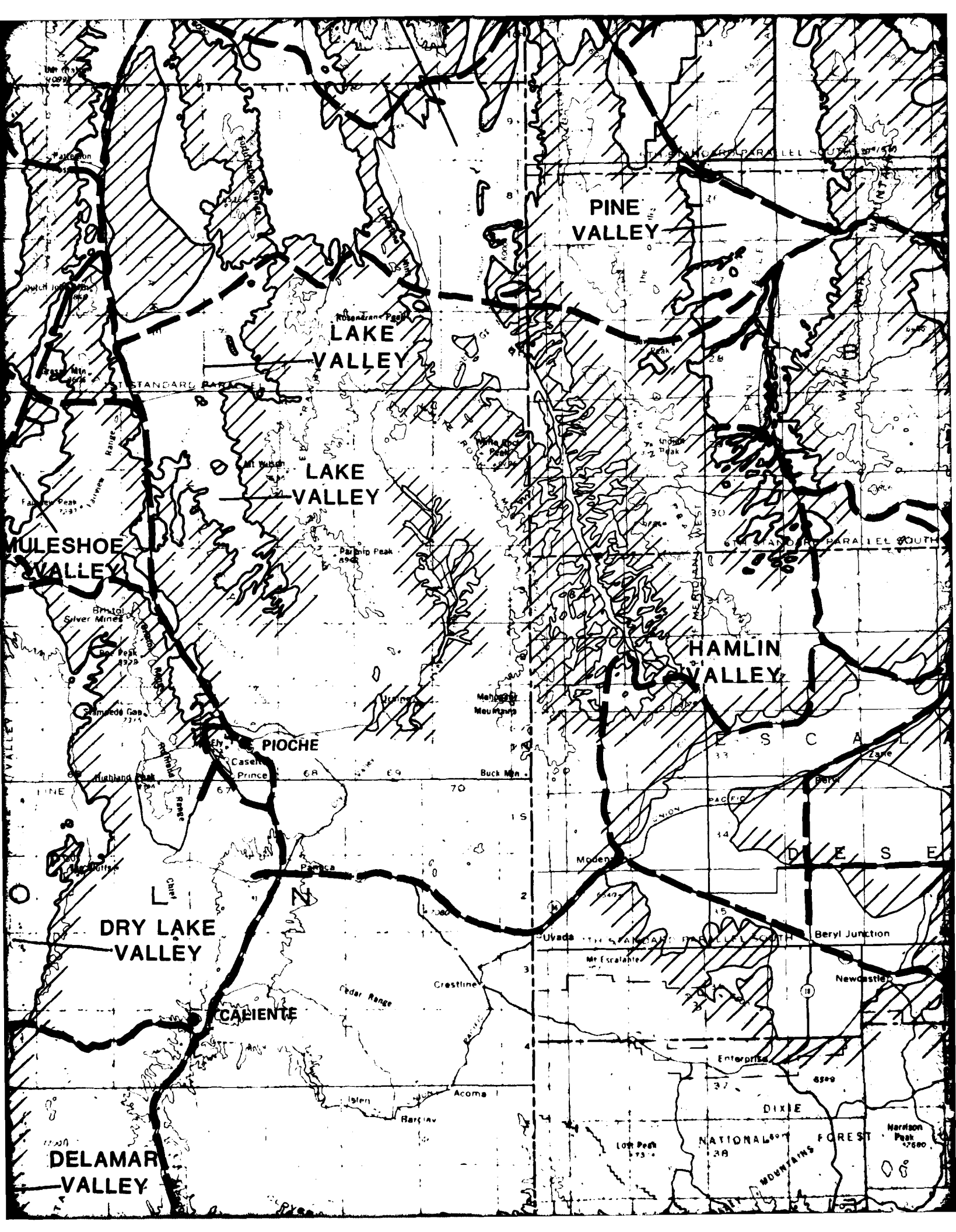

WHIRLWIND VALLEY
SEVIER LAKE
DELTA
SEVIER DESERT
SEVIER DESERT
FISH SPRINGS FLAT
Swasey Peak
Dome Canyon
Howell Peak
Marjum Canyon
SAWTOOTH MTN
Skull Rock Pass
Abraham
Sutherland
Oak City
Hinckley
Deseret
Oasis
McCornick
Pavant Butte Ruins
Clear Lake
Greenwood
Holden
Flowell
Meadow
Hatton
Black Rock Volcano
Kanosh
Black Rock
Cove Fort
Leamington
Lynndyl
Sugarville
Woodrow
Ruins
Tumarolo Butte
Desert Mtn
Black Mts
Sand Mts
Tabernacle Hill
Swasey Spring
Little Drum Mts
Drum Mts
Drum Mountains
Tule Valley
Fish Springs Flat
Pavant Range
Canyon Mts
Gilson Mts
Deep Creek Mts
Confusion Range
Wah Wah Mts
Wah Wah Valley
San Francisco Mts
Mineral Mts
Beaver Valley
Antelope Range
Cricket Mts
Needle Range
Black Rock Desert
Gold Hill
Gold Hill West
Meridian
Pacific
Union
Lee Valley
Fillmore
Indian Reservation
Fishlake National Forest
5000
5500
7500

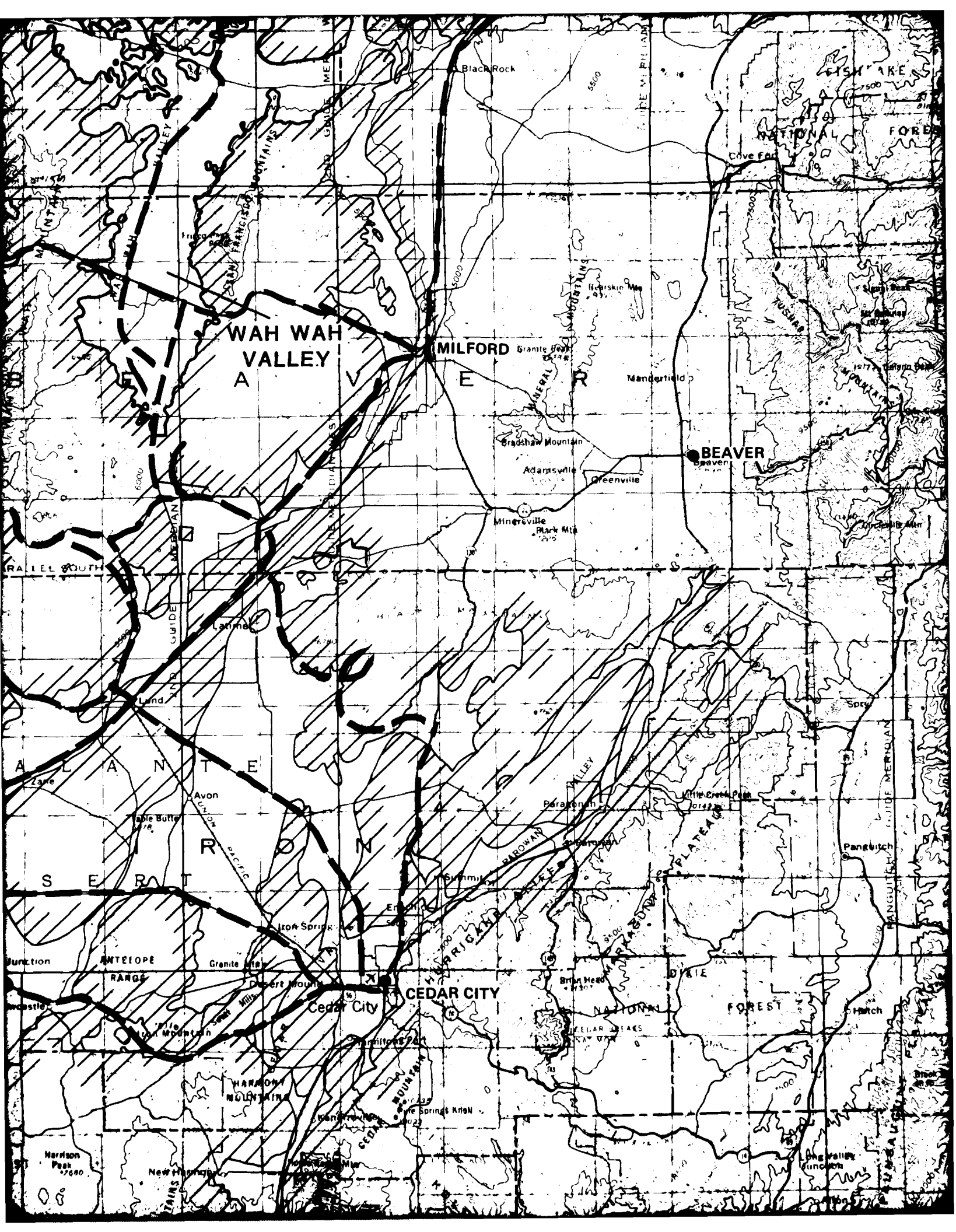

DELTA
WHIRLWIND VALLEY
SEVIER LAKE
FILLMORE
SEVIER DESERT
Jericho
Black Mts
Sand Mtn
Lynndyl
Leamington
Juab
Ruins
Wildhorse Peak
Mills
Sugarville
Woodrow
Abraham
Sutherland
Oak City
Delta
Hinckley
Deseret
Oasis
Scipio
McCornick
Pavant Butte
Ruins
Clear Lake
Greenwood
Holden
Flowell
Meadow
Hatton
Kanosh
Black Rock Volcano
Black Rock
Aurora
Vermillion
Sigurd
Venice
Richfield
Central
Elsinore
Austin
Joseph
Monroe
Sevier
Monroe Peak
Signal Peak
FISHLAKE NATIONAL FOREST
39° 00'

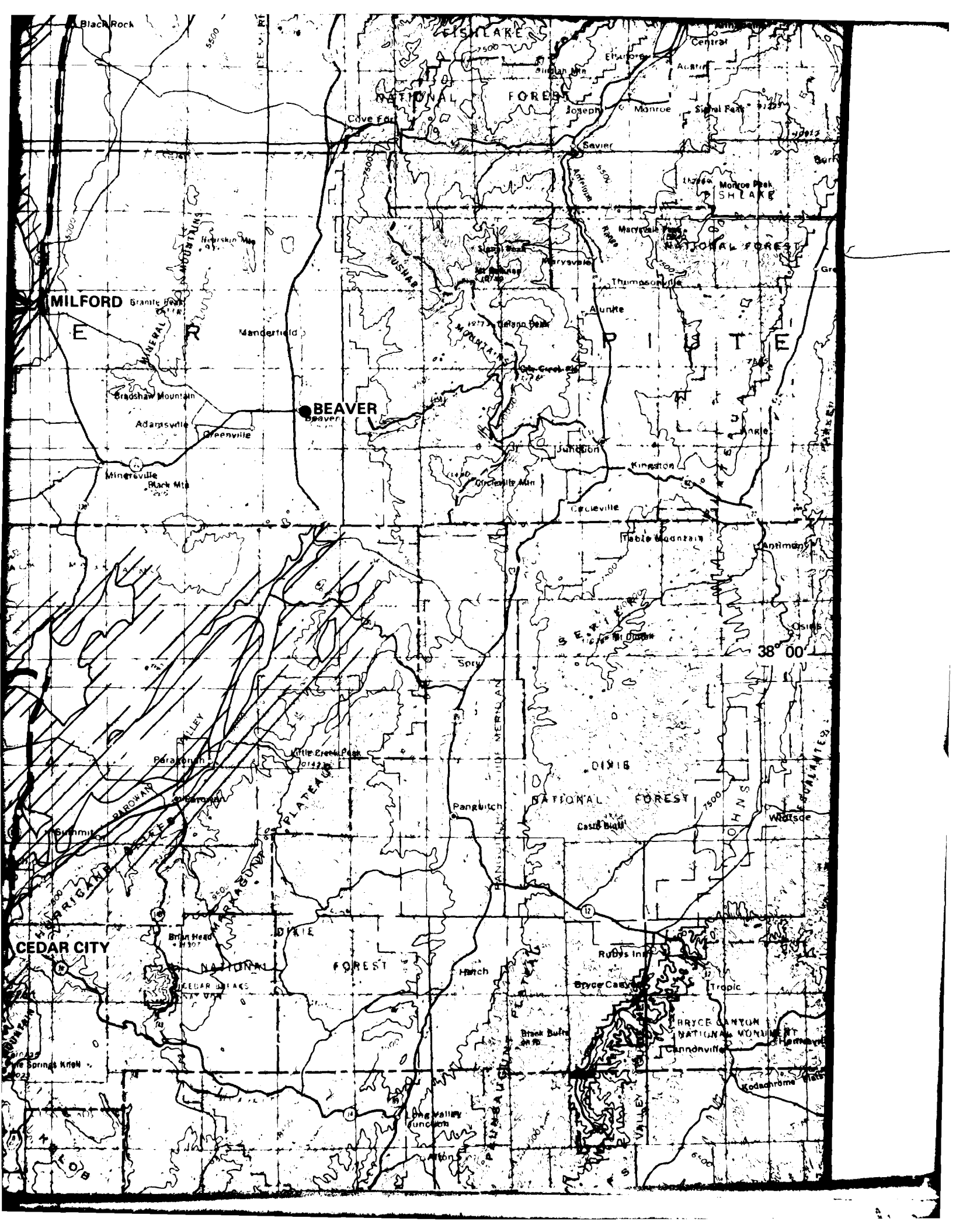

TONOPAH
GOLDFIELD
NELLIS
E S M E R A L D A
NEVADA
CALIFORNIA
38° 00'
Lime Mtn
Booker Mtn
Cane Mtn
Weepah Hills
Red Mtn
Silverpeak
Columbia Mtn
Montezuma Peak
Blackcap Mtn
Piper Peak
Piper Mtn
Magruder Mtn
Mt Jackson
Table Mtn
Pilot Peak
Emigrant Peak
Clayton Valley
Fish Lake Valley
Stonewall Flat
Palmetto Mts
Oasis
Lida
Dyer
Hills
Range
Valley
MT DIABLO BASE
MERIDIAN
RANGE
TOWNSHIP
SECTION

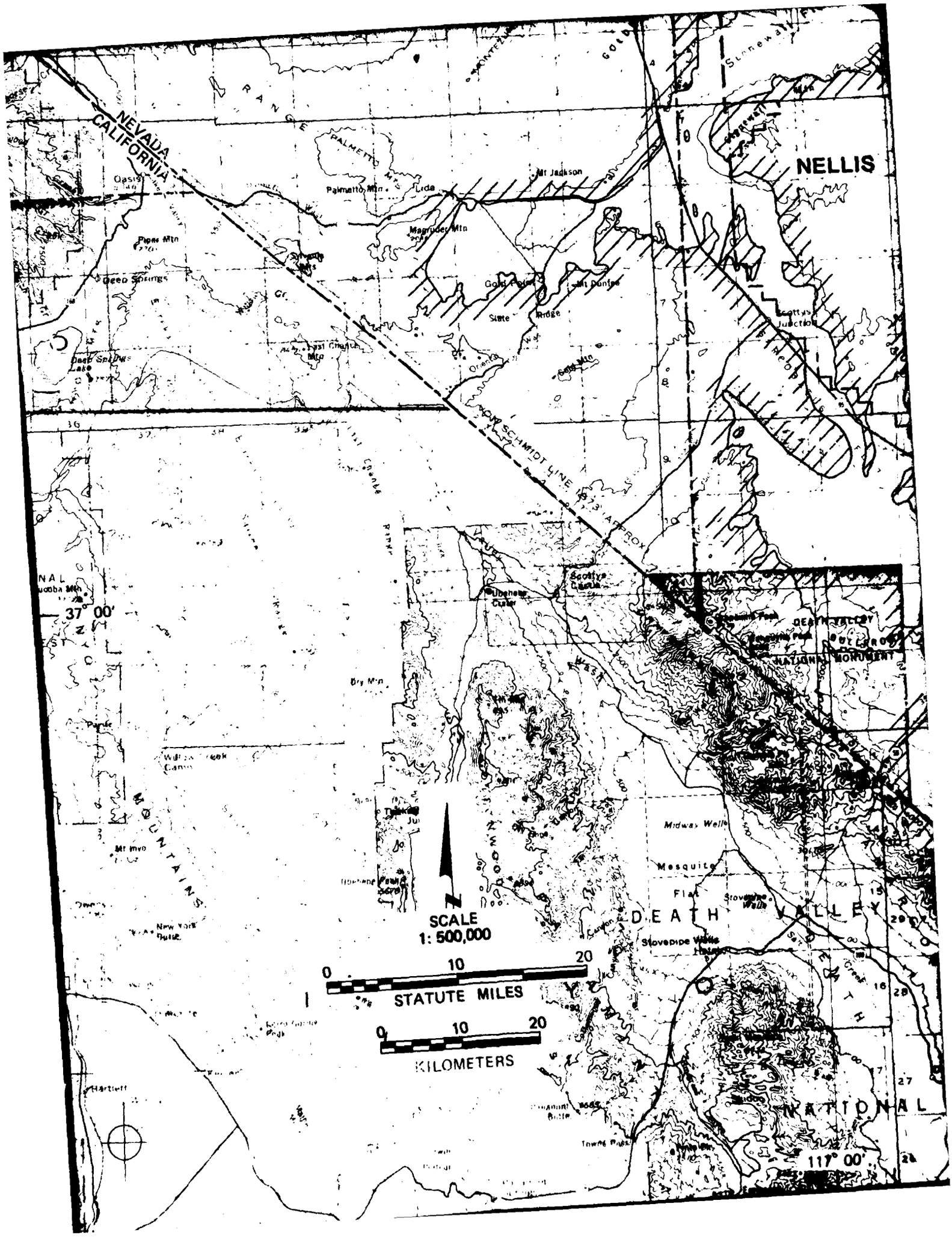

HOT CREEK VALLEY
STONE CABIN VALLEY
RALSTON VALLEY
REVEILLE VALLEY
PENOYE VALLEY
RAILROAD VALLEY
NELLIS
Warm Springs
Lunar Crater
Black Hutte
Big Tan Peak
Pilot Peak
Rawhide Mtn
Gold Mtn
Cedar Pass
Wheelbarrow Peak
45
46
47
48
49
51
52
53
54
55

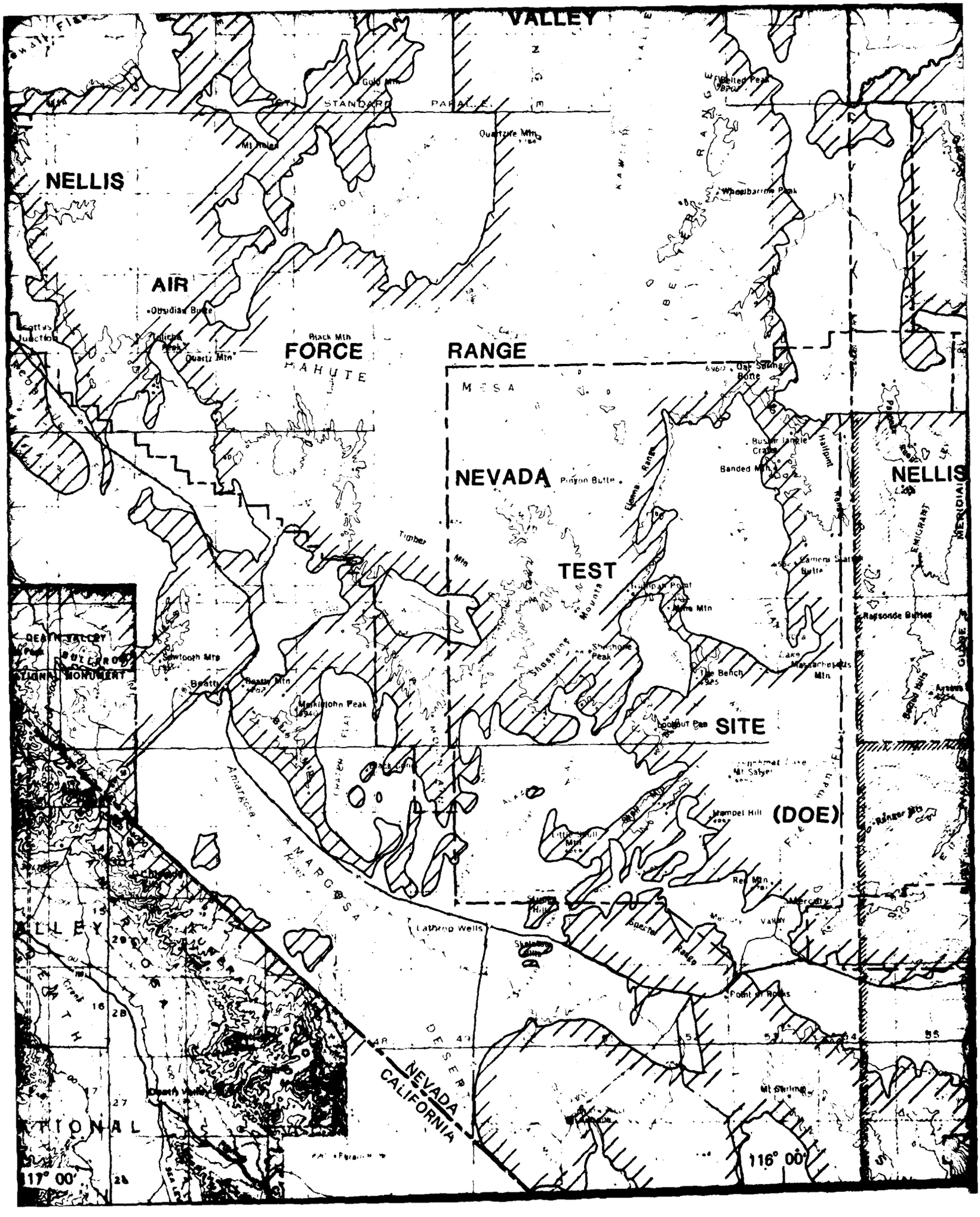

CAVE VALLEY
WHITE RIVER VALLEY
RAILROAD VALLEY
HUMBOLDT
GARDEN VALLEY
MULESHOE VALLEY
PENOYER VALLEY
COAL VALLEY
DRY LA VALLE
PAHROC VALLEY
DELAMAR VALLEY
NYE COUNTY
FOREST
BASE LINE
MT DIABLO
Timpahute Range
North Pahroc Range
White Pine Range
Highland Range
Quinn Canyon Range
Fairview Range
Egan Range
Schell Creek Range
Pahranagat Range
Kawich Range
Grant Range
Sheep Range
Spring Mts
Sunnyside
Bristol Silver Mines
Redtop Mtn
Timber Mtn
Troy Peak
Burnt Peak
Sheep Mtn
Tolicha Peak
Worthington Peak
Coyote Peak
Bald Mtn
Bear Mtn
Mt Irish
Mt Stirling
Mt Wilson
Mt Potosi
Wheeler Peak
Mt Charleston
Pahroc Summit
Dutch John Canyon
Pahranagat Valley
Indian Springs
Las Vegas
Pahrump
Amargosa Desert
Death Valley
Nevada
California

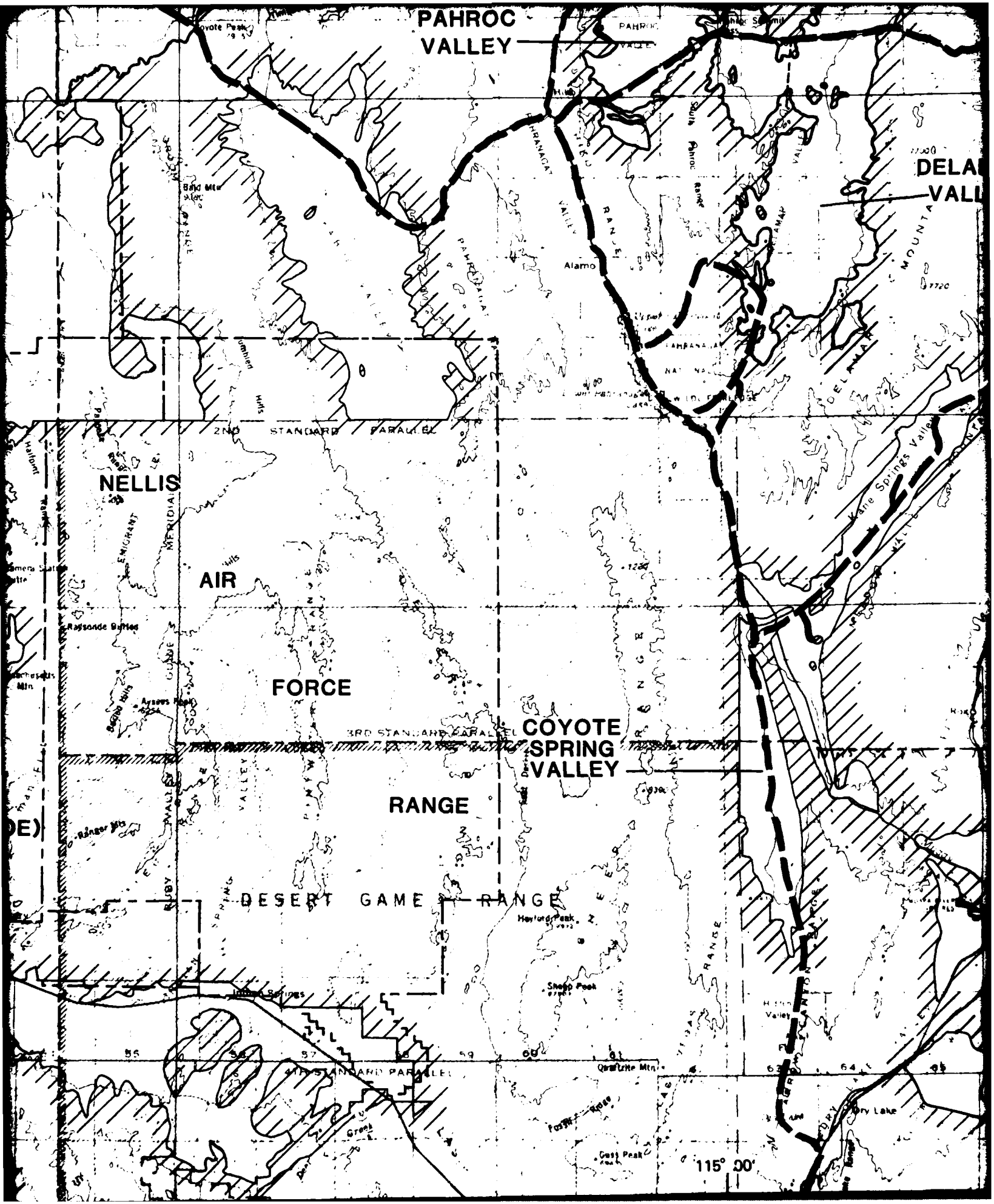

PINE VALLEY
LAKE VALLEY
LAKE VALLEY
MULESHOE VALLEY
HAMLIN VALLEY
PIOCHE
DRY LAKE VALLEY
CALIENTE
DELAMAR VALLEY
Bristol Silver Mines
Highland Peak
Ely
Caselton
Prince
Buck Mtn.
Pahroc
Modena
Uvada
Beryl Junction
Mt Escalante
Newcastle
Crestline
Cedar Range
Enterprise
Dixie
National Forest
Mountains
Acoma
Isten
Barclay
Lee Peak
Harrison Peak
Mahogany Mountains
Parsnip Peak
Fairview Peak
Rosendrant Peak
Mt Wilson
Meadow Valley Range
Highland Peak Range
Chief Range
Pahroc Range
Timpahute Range
Delamar Mountains
Clover Mountains
Pioche Mountains
Burnt Springs Range
Pine Valley Mountains
Union Pacific
Zane
Beryl
Escalante Desert
Standard Parallel South
Standard Parallel South

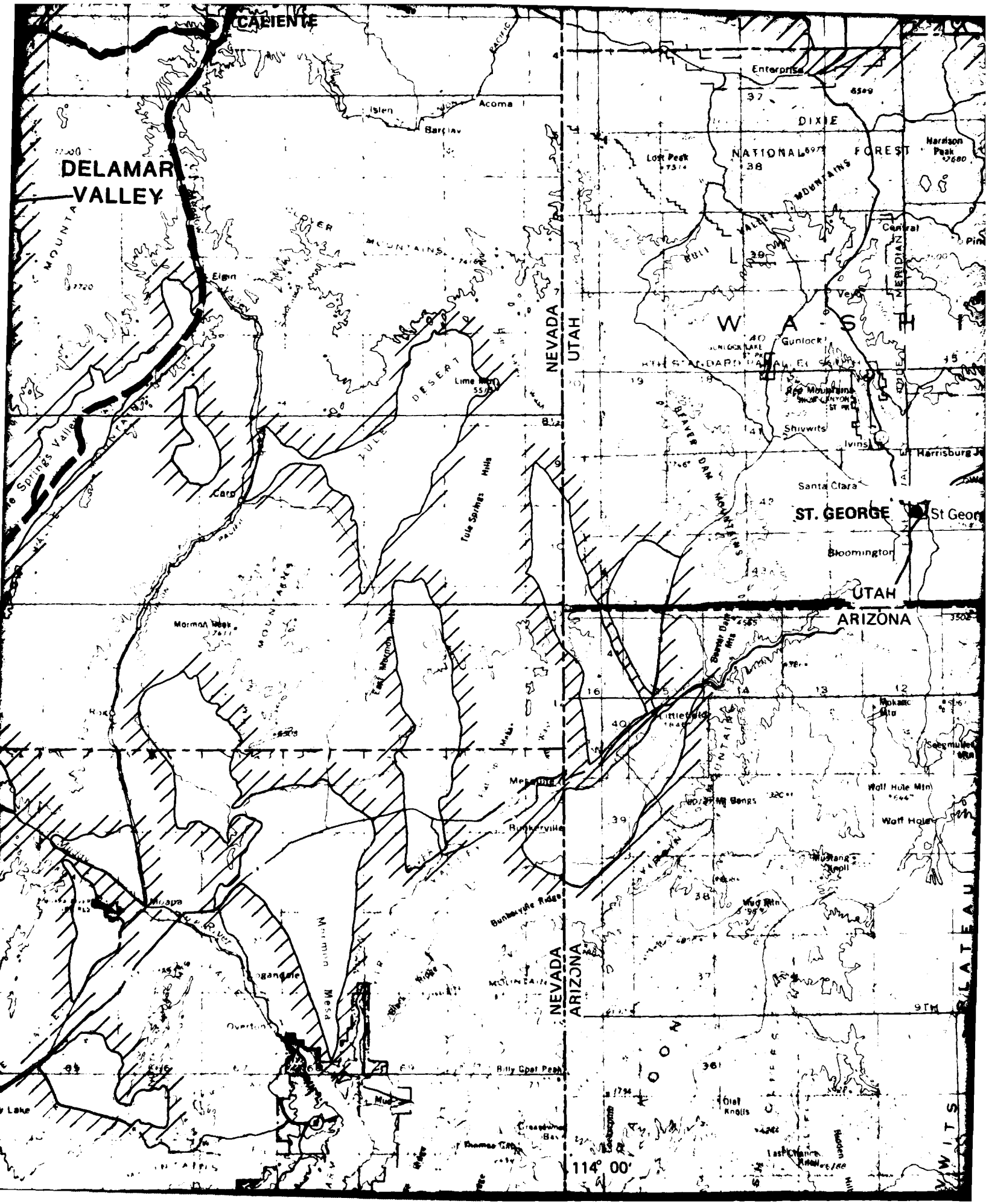

WAH WAH VALLEY
MILFORD
BEAVER
CEDAR CITY
Black Rock
Cove Fort
Fishlake National Forest
Fremont Valley
San Francisco Mountains
Wah Wah Mountains
Mineral Mountains
Tushar Mountains
Mt. Belknap
Mt. Baldy
Mt. Delano
Mt. Belknap
Granite Peak
Beaverhead Peak
Fisherman Mtn
Mandertield
Bradshaw Mountain
Adamsville
Greenville
Minersville
Black Mtn
Lund
Lund Cut Off
Latimer
Zane
Avon
Table Butte
Union Pacific
Sevier Desert
Summit
Enoch
Iron Springs
Antelope Range
Granite Mtn
Desert Mountain
Cedar City
Iron Mountain
Hamilton Fort
Harmony Mountains
Cedar Mountain
Five Springs Knoll
Harrison Peak
New Harmony
Paragonah
Parowan
Parowan Valley
Hurricane Valley
Markagunt Plateau
Kitty Creek Peak
Spry
Panguitch
Panguitch Guide Meridian
Dixie National Forest
Cedar Breaks
Brian Head
Hatch
Long Valley Junction
Salt Lake Meridian
Guide Meridian
Utah
Nevada

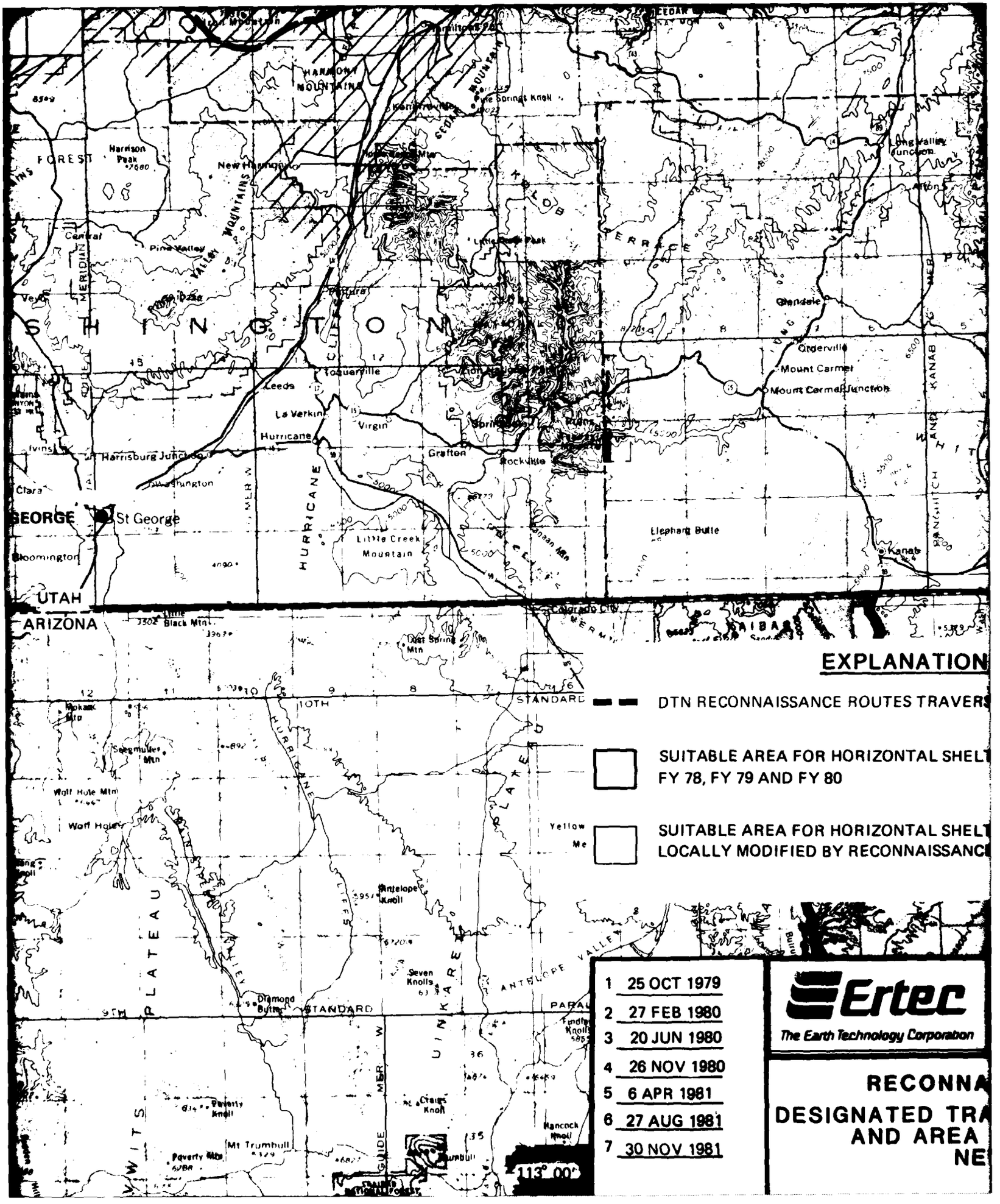

MILFORD
BEAVER
CEDAR CITY
Black Rock
Cove Fort
Sevier
Joseph
Monroe
Central
Elsinore
Sigurd
Richfield
Monroe Peak
Marysvale
Thompsonville
Junction
Kingston
Circleville
Antimony
Osiris
Sevier
Panguitch
Hatch
Bryce Canyon
Tropic
Cannonville
Kodachrome
Rubys Inn
Widtsoe
Grandaddy
Manderfield
Adamsville
Greenville
Minersville
Black Mtn
Paragonah
Parowan
Summit
Brian Head
Cedar Breaks
Alton
Long Valley Junction
Pine Springs Knoll
Castle Butte
Black Butte
Fiddler Butte
Flagstaff Point
Table Mountain
Delano Peak
Bradshaw Mountain
Granite Peak
Mineral Mountains
Tushar Mountains
Sevier Valley
Parowan Valley
Markagunt Plateau
Paunsaugunt Plateau
Johns Valley
Escalante Desert
Dixie National Forest
Fishlake National Forest
Cedar Breaks National Monument
Bryce Canyon National Monument
38° 00'
5500
7500


NEVADA
CALIFORNIA
NELLIS
Oasis
Palmetto Mts
Palmetto Mtn
Mt Jackson
Magruder Mtn
Piper Mtn
Deep Springs
Deep Springs Lake
Gold Point
Last Chance Mts
State Ridge
Lida
Lida Junction
Oriental
Gold Mtn
NEVADA SCHMIDT LINE 1973 APPROX
Scotty's Castle
Ubehebe Crater
DEATH VALLEY
NATIONAL MONUMENT
Dry Mtn
Panamint Mts
Panamint Valley
Wildrose Canyon
Mt Inyo
New York Butte
Midway Well
Mesquite Flat
Stovepipe Wells
Stovepipe Wells Village
DEATH VALLEY
NATIONAL
37° 00'
117° 00'
SCALE
1: 500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS


VALLEY
NELLIS
AIR
FORCE
RANGE
MESA
NEVADA
TEST
SITE
(DOE)
NELLIS
Gold Mtn
STANDARD PARALLEL
Quartzite Mtn
Mt Helen
Wheelbarrow Peak
Obsidian Butte
Scottys Junction
Tolicha Peak
Quartz Mtn
Black Mtn
MAHUTE
Oak Spring Butte
Buster Jangle Crater
Banded Mtn
Halfpint Range
Pintwater Range
Timber Mtn
Kawich Range
Emigrant Valley
Meridian
Kawich Mtns
Rainier Mesa
Shoshone Mtns
Shoshone Peak
Halfpint Point
Rainier Mtn
Rainier Ridge
Rainier Pass
Sawtooth Mts
Beatty
Beatty Mtn
Markleeljohn Peak
Lookout Pass
The Bench
Lake Mtn
Massacre Lake
Mt Salyer
Mampel Hill
Red Mtn
Mercury
Mercury Valley
Lathrop Wells
Amargosa Desert
Amargosa River
Point of Rocks
Mt Sterling
Death Valley Buttes
Death Valley Junction
NEVADA
CALIFORNIA
117° 00'
116° 00'


PAHROC VALLEY
NELLIS
AIR
FORCE
RANGE
COYOTE SPRING VALLEY
DESERT GAME RANGE
2ND STANDARD PARALLEL
3RD STANDARD PARALLEL
115° 00'


CAEIENTE
DELAMAR
VALLEY
Enterprise
DIXIE
NATIONAL FOREST
Harrison Peak
Lost Peak
MOUNTAINS
Central
Pine
MERIDIAN
Elgin
Acoma
Barclay
Gunlock
Shivwits
Ivins
Harrisburg
Santa Clara
ST. GEORGE
St Geor
Bloomington
NEVADA
UTAH
ARIZONA
DESERT
Lime
Carp
Tule Springs Hills
Mormon Peak
Meadow
Bunkerville
Mesquite
Wolf Hole Mtn
Wolf Hole
Mustang Knoll
Virgin Mtn
Bunkerville Ridge
Virgin River
Mormon Mesa
Overton
Logandale
Muddy
Billy Goat Peak
Tule Springs
Beaver Dam Mts
Littlefield
Seegmuller Mtn
Mt Bangs
Flat Knolls
Hidden Hills
Last Chance Range
114° 00'
WASHITA PLATEAU



EXPLANATION

DTN RECONNAISSANCE ROUTES TRAVERS

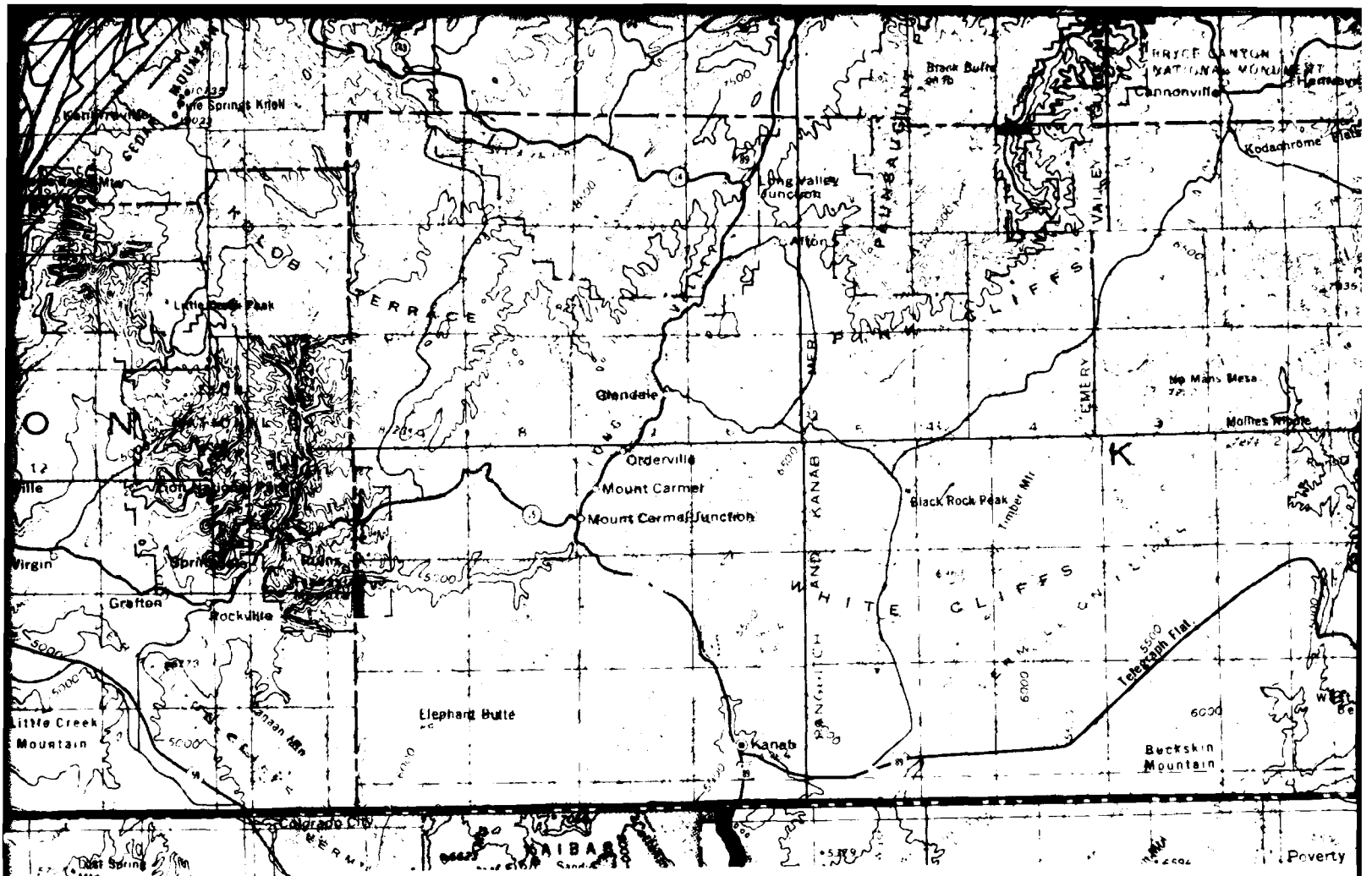
SUITABLE AREA FOR HORIZONTAL SHELT
FY 78, FY 79 AND FY 80

SUITABLE AREA FOR HORIZONTAL SHELT
LOCALLY MODIFIED BY RECONNAISSANC

1	25 OCT 1979
2	27 FEB 1980
3	20 JUN 1980
4	26 NOV 1980
5	6 APR 1981
6	27 AUG 1981
7	30 NOV 1981

Ertec
The Earth Technology Corporation

RECONNA
DESIGNATED TRA
AND AREA
NE



EXPLANATION

DTN RECONNAISSANCE ROUTES TRAVERSED FROM DEC 80 TO JUNE 81

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON VERIFICATION STUDIES FY 78, FY 79 AND FY 80

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON SCREENING STUDIES. LOCALLY MODIFIED BY RECONNAISSANCE STUDIES

1	25 OCT 1979
2	27 FEB 1980
3	20 JUN 1980
4	26 NOV 1980
5	6 APR 1981
6	27 AUG 1981
7	30 NOV 1981

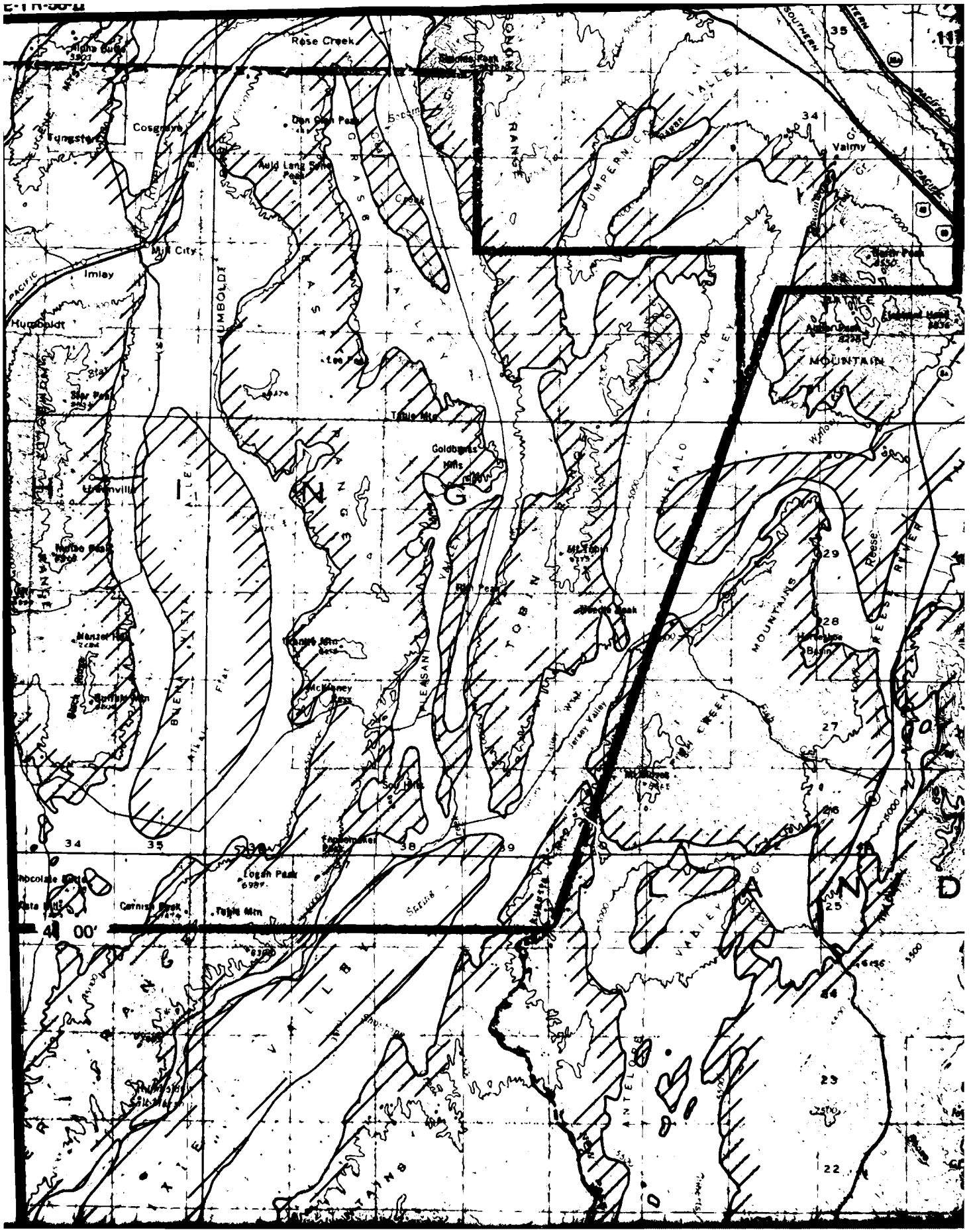
Ertec
The Earth Technology Corporation

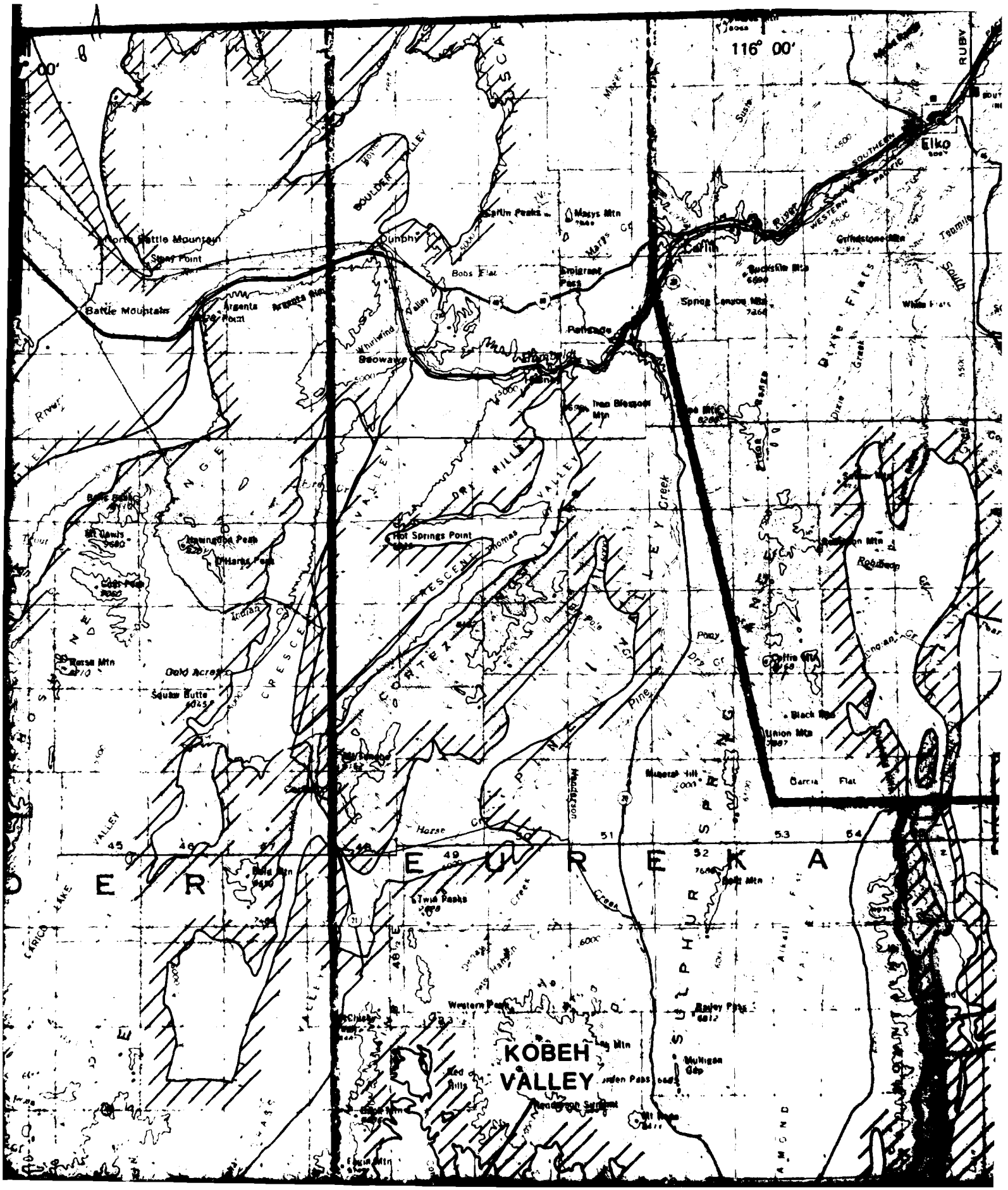
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

RECONNAISSANCE ROUTES
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS
NEVADA/UTAH

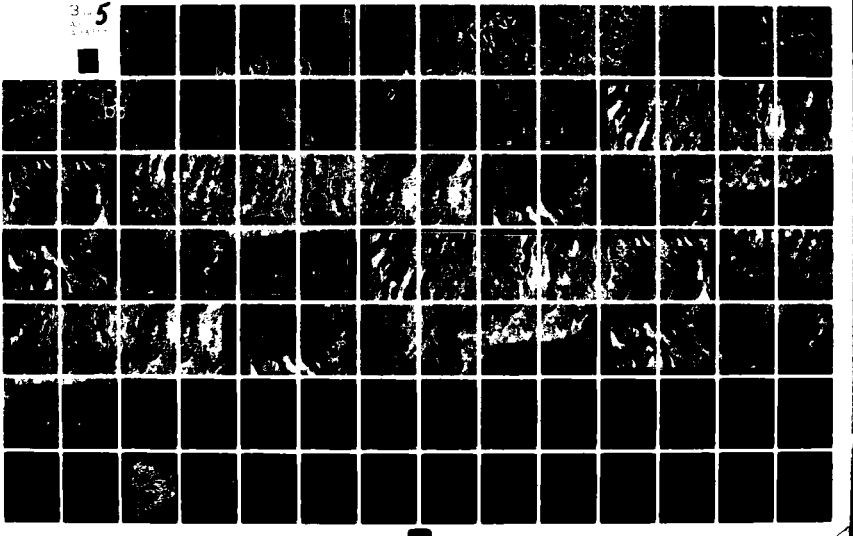
VOLUME II PART I

DRAWING 5-1


Rose Creek
Cosgrove
Imlay
Mill City
Humboldt
Lovelock
Table Mtn.
Goldbanks Hills
Valmy
MOUNTAIN
Reese River
Mt. Tobin
Mt. Tenabo
Mt. McKinney
Jersey Valley
Buena Vista Flat
Humboldt Flat
Pleasant Valley
Toiyabe Range
Sonoma Range
Antelle Valley
Pumpernickel Valley
Southern Pacific
Union Pacific
Western Pacific
Trinity Range
Buffalo Valley
Mountains
Basin
Creek
Valley
Flat
Hills
Peak
Mtn.
Spring
Canyon
Wash
Fish
Ranch
Hot Springs
Basin
Range
Pacific
Western
Southern
Union
Trinity
Buffalo
Reese River
Mountains


116° 00'
Elko
Carlin
Battle Mountain
Bobs Flat
Emigrant Pass
Pinyon
Dixie Flats
Dixie Creek
Susie Creek
Maggie Creek
Boulder Valley
Whirlwind Valley
Crescent Valley
Dry Hills
Pine Valley
Horse Creek
Henderson
Pinyon Range
Roberts Mtn
Union Mtn
Barrie Flat
Black Rock
Gold Acres
Squaw Butte
Hot Springs Point
Twin Peaks
Western Peak
Bald Mtn
Bailey Peak
Mulligan Gap
KOBEH VALLEY
EUREKA
RUBY
SOUTHERN PACIFIC
WESTERN

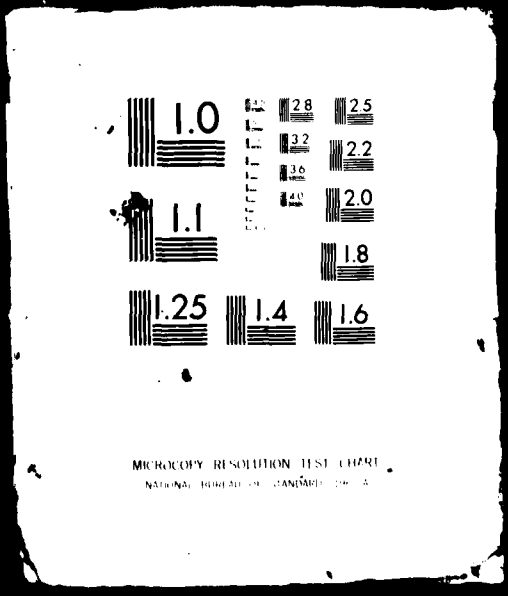
AD-A113 217 ERTEC WESTERN INC LONG BEACH CA F/G 16/1
MX SITING INVESTIGATION. MX SYSTEM SITING SUMMARY REPORT. DTN/A--ETC(U)
JAN 82 F04704-80-C-0006
UNCLASSIFIED E-TR-58-VOL-2 NL



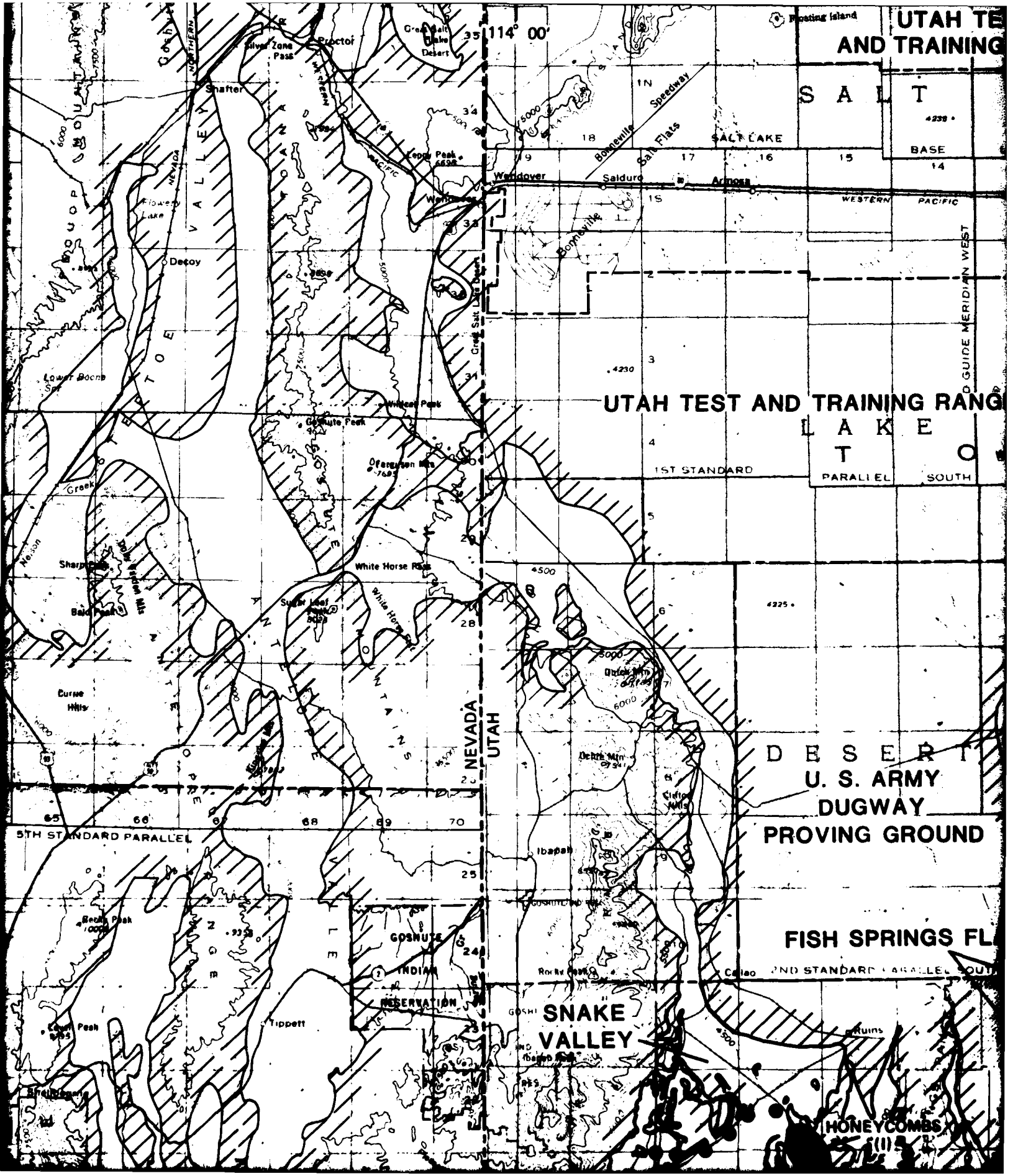
3 OF 5

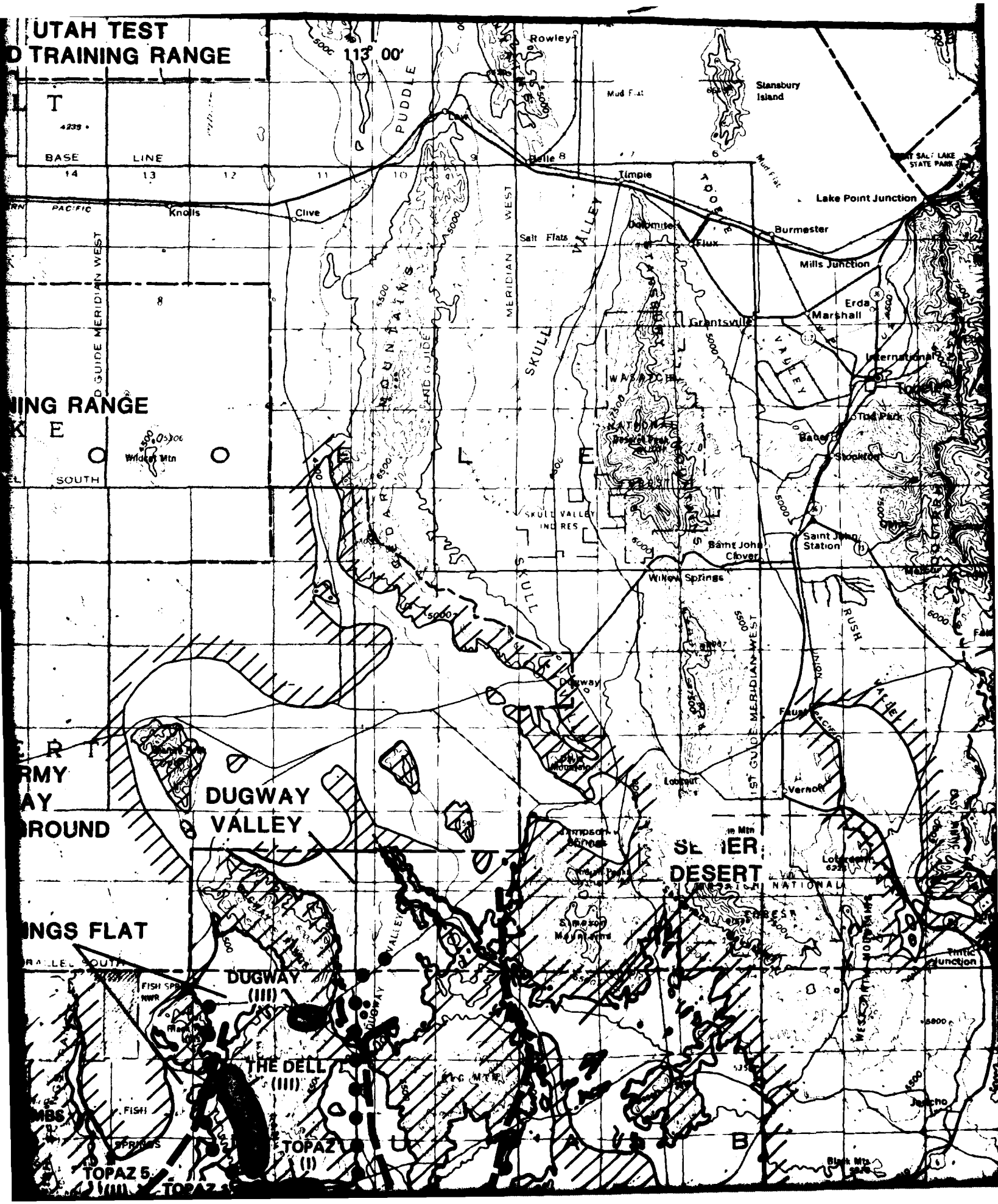
AD-

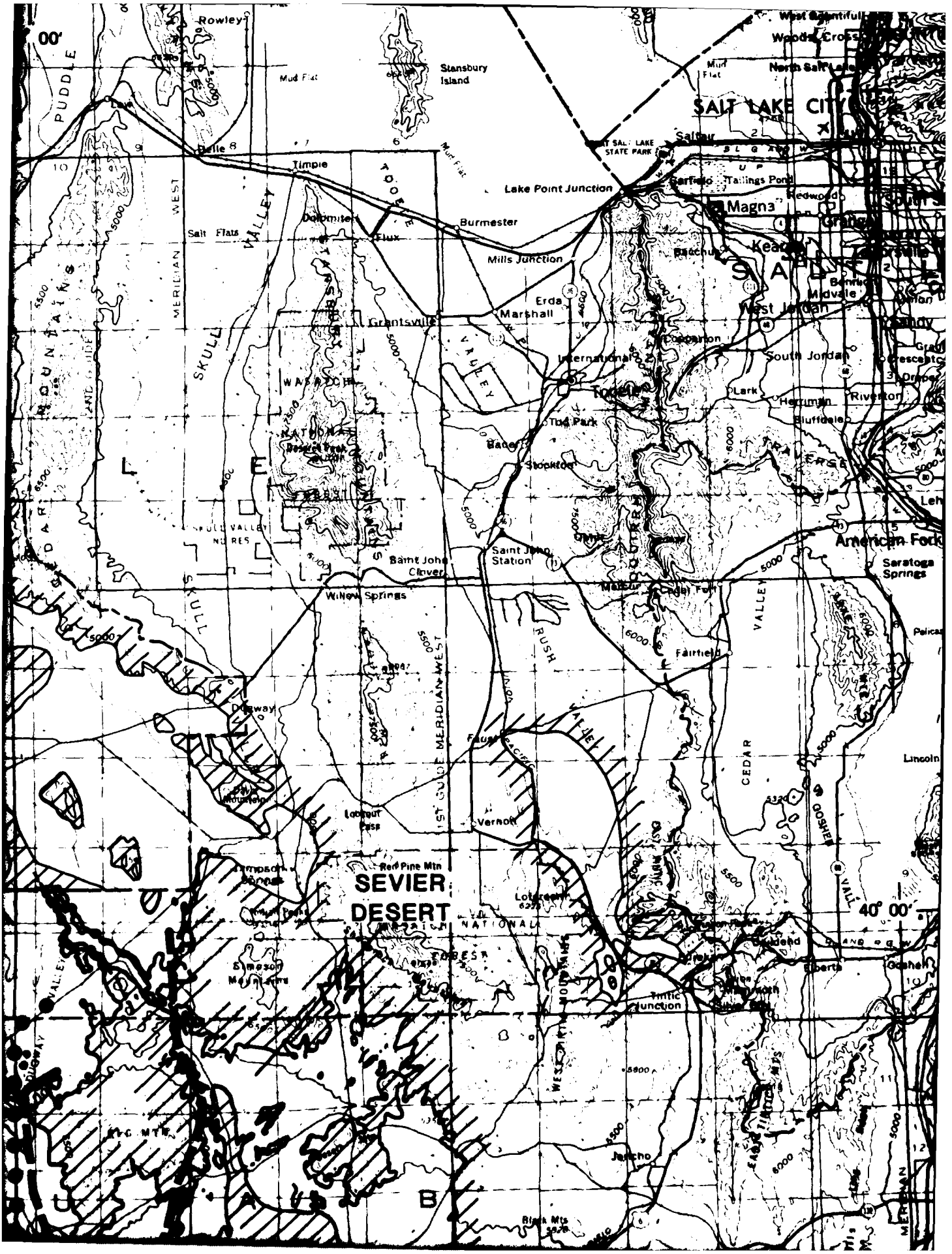
A113217

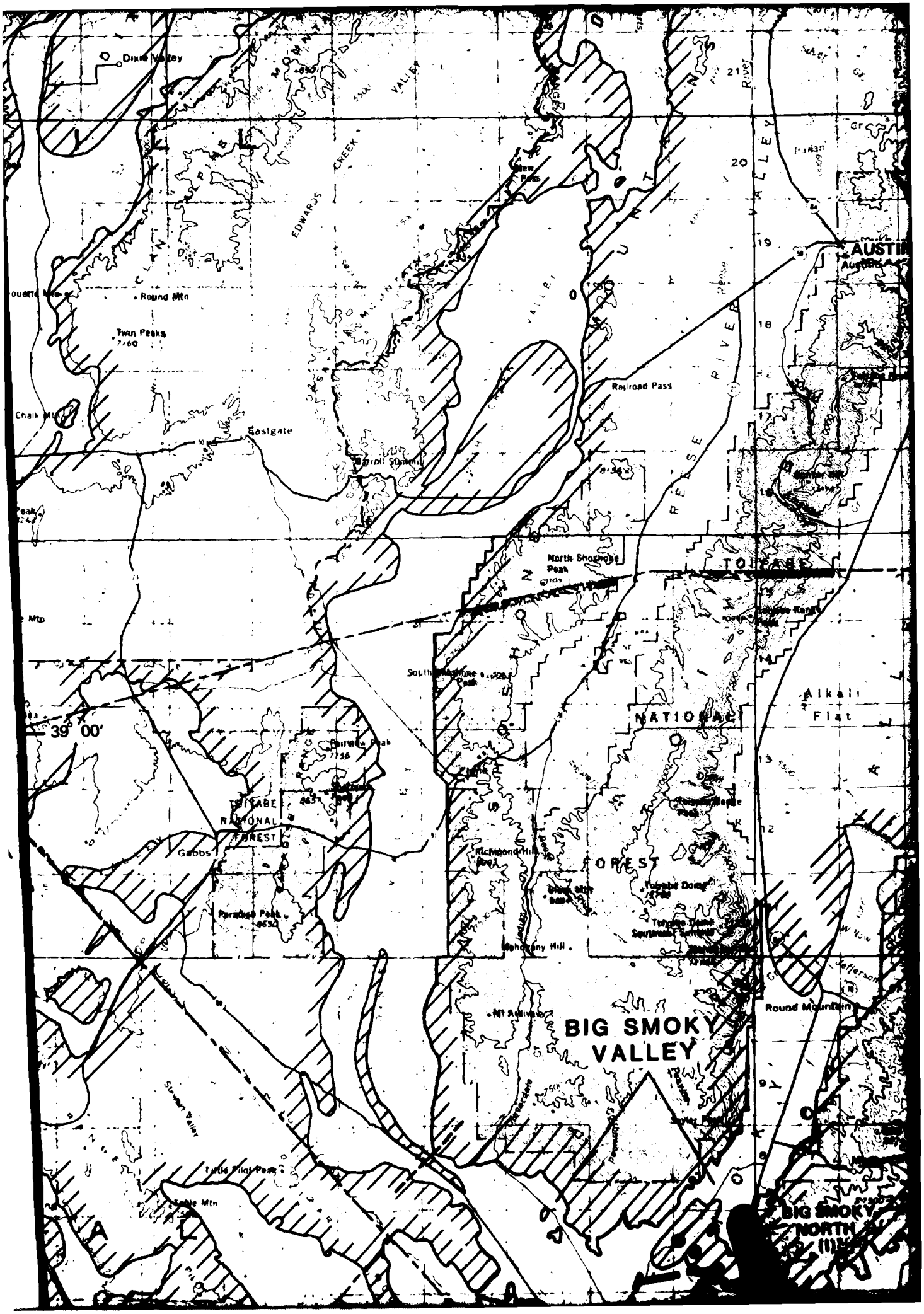


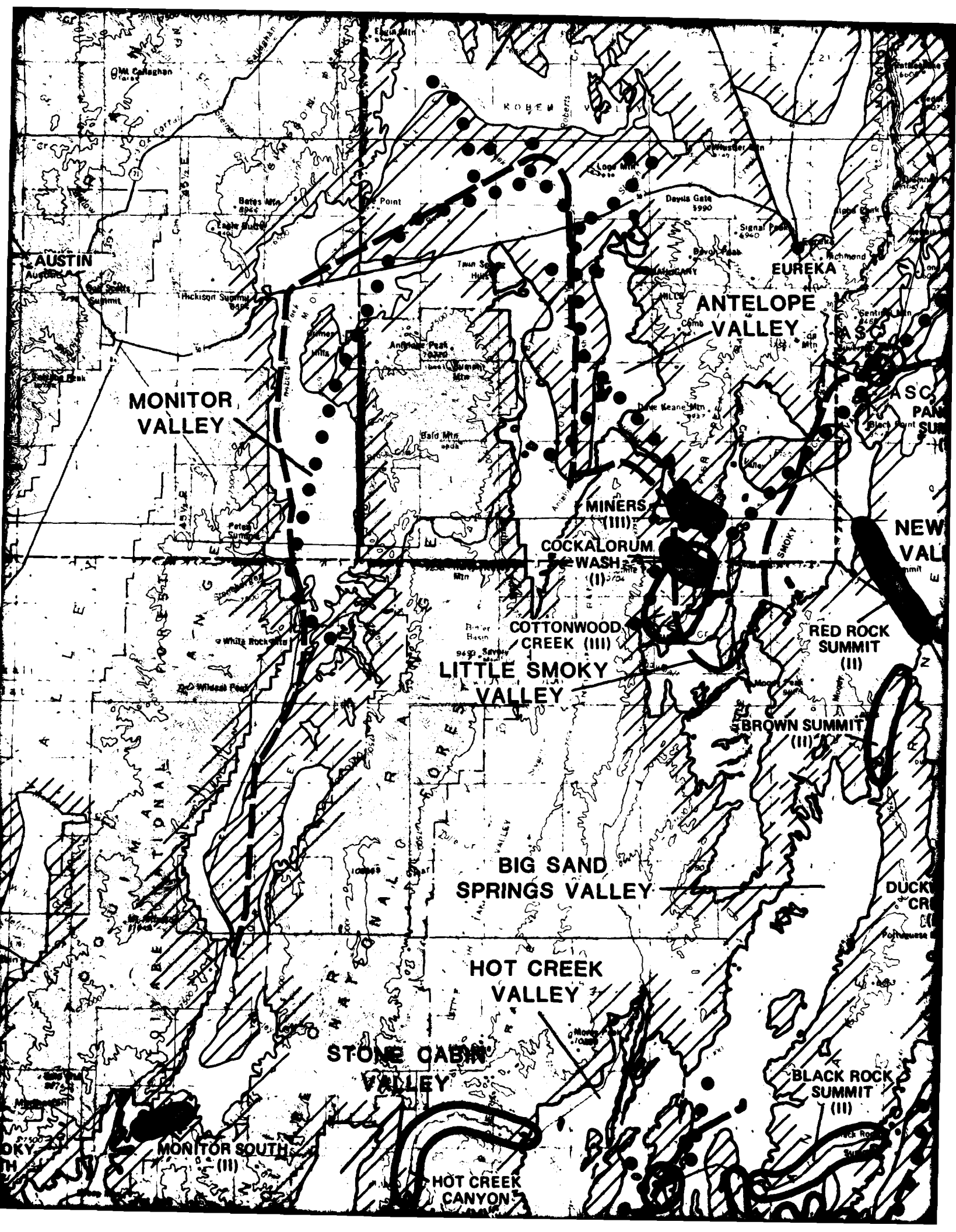

115° 00'
Elburz
Elko Mtn
Elko
Arthur
Lamoille
Lamoille Valley
Lamoille Creek
Snow Water Lake
Tabar
Chase Spr
Flowery Lake
Decoy
Toe
Valley Mtn
Lone Pine
Spruce Mtn
Lower Boone Spr
6TH STANDARD PARALLEL
Dry Lake Flat
Franklin Lake
Ruby Valley
Dolly Varden Mtns
Nelson Creek
Sharp Creek
Bald Peak
Currie
Currie Hills
High Bald Peaks
Ruby Lake
Wildlife Refuge
Gamble Lake
5TH STANDARD PARALLEL
Becky Peak
Cherry Creek
Cherry Peak
Little Dolly Mtn
Whitehead Springs
Ruby Valley
Forest
Indian Res
Nevada
Utah
Ruby
Toe
Valley
Mountain
Creek
Lake
Range
Hills
Peak
Spr
Mtn
Mtns

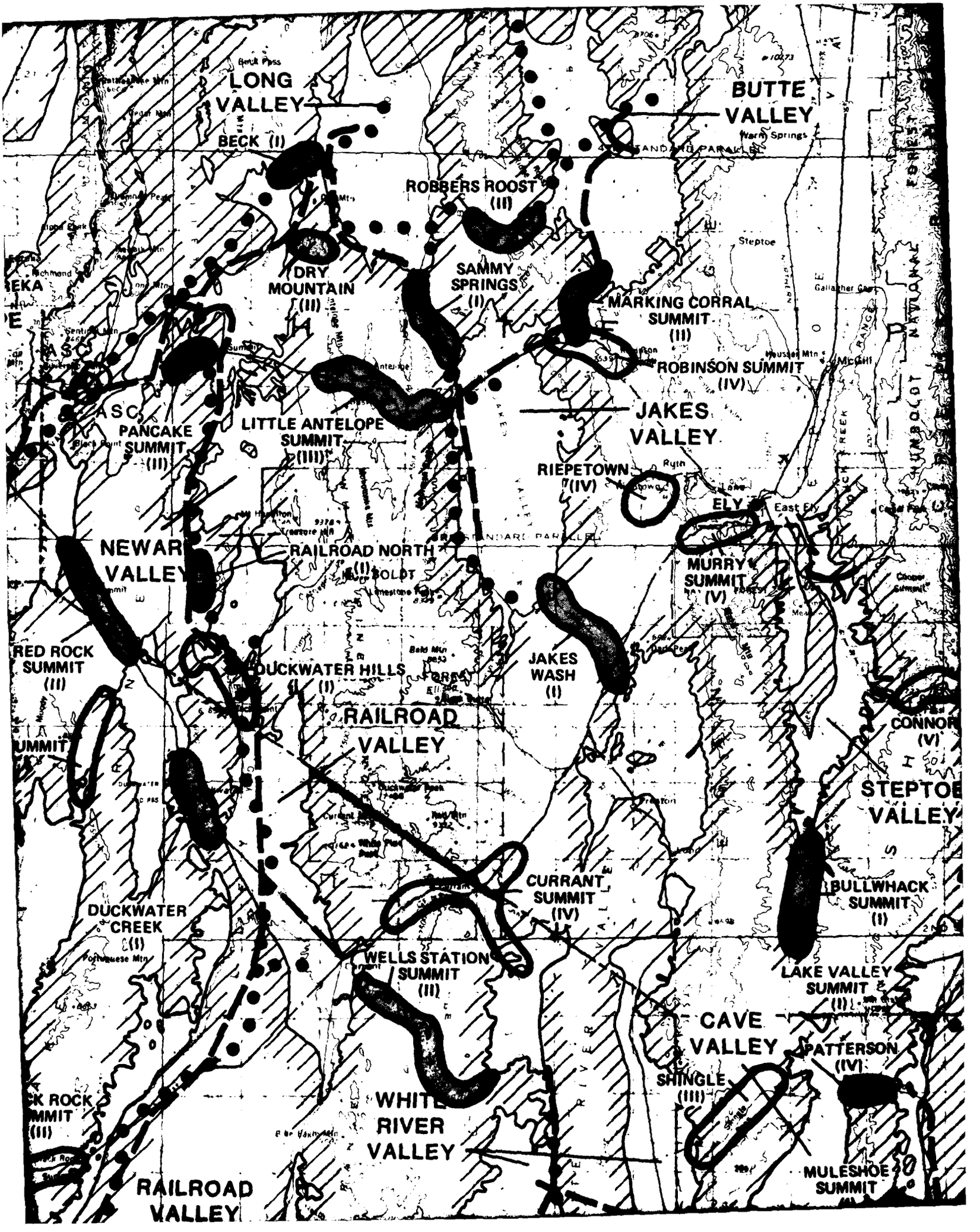

UTAH TE
AND TRAINING
SALT
BASE
UTAH TEST AND TRAINING RANG
LAKE
1ST STANDARD
PARALLEL SOUTH
DESERT
U. S. ARMY
DUGWAY
PROVING GROUND
FISH SPRINGS FL
SNAKE
VALLEY
HONEYCOMBS
NEVADA
UTAH
GOSHUTE
INDIAN
RESERVATION
5TH STANDARD PARALLEL
114° 00'
Floating Island
Great Salt Lake Desert
Bonneville Salt Flats
Bonneville Speedway
SALT LAKE
Wendover
Saldura
Aragosa
WESTERN PACIFIC
Shafter
Silver Zone Pass
Proctor
Decoy
Lower Boone Spr.
Whitecat Peak
Goshute Peak
Ferguson Mts.
White Horse Pass
Sharp Peak
Baldy Peak
Curlew Hills
Ibapah
Tippett
Cedar Peak
Becks Peak
Rocky Peak
Ruins
BOULTER MTNS.
TOWNSEND MTNS.
TOWNSEND VALLEY
BUTTE VALLEY
GUIDE MERIDIAN WEST

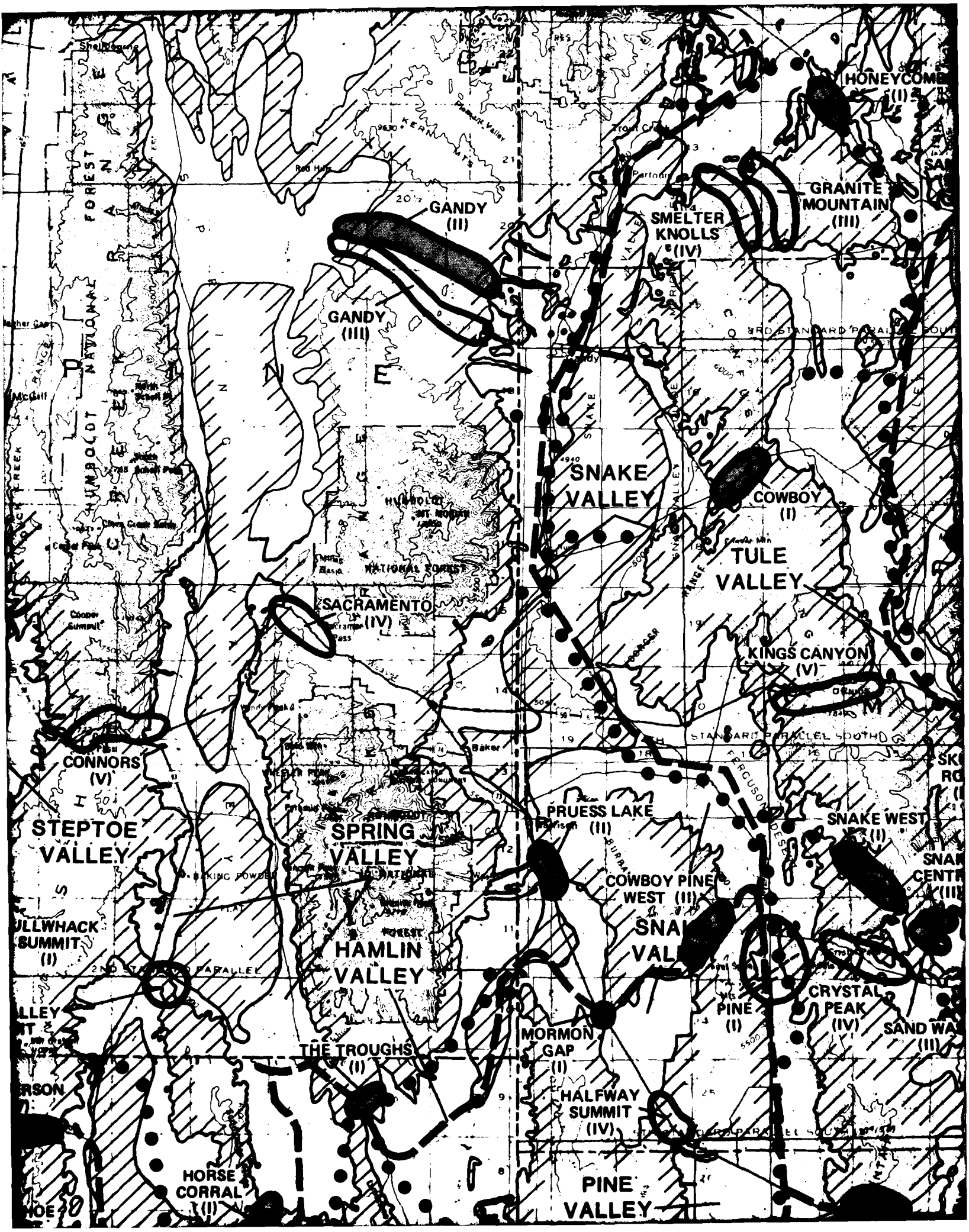

UTAH TEST
D TRAINING RANGE
113° 00'
Rowley
Stansbury Island
Mud Flat
PUDDLE
Belle 8
Timpie
Lake Point Junction
Knolls
Clive
Salt Flats
Dolomite
Flux
Burmester
Mills Junction
Erda
Marshall
Grantsville
SKULL VALLEY
WASATCH
NATIONAL
Tooele
Stockton
Saint John Station
Clover
Willow Springs
SKULL VALLEY INDIAN RES
RUSH VALLEY
DUGWAY VALLEY
DUGWAY
(III)
THE DELL
(III)
TOPAZ
(I)
TOPAZ 5
(III)
DESERT
NATIONAL
Vernon
Lookout
Simpson Springs
Simpson Mountains
Juniper
Black Mts
FISH SPRINGS NWR
FISH SPRINGS
1ST GUIDE MERIDIAN WEST
BASE LINE
PACIFIC
SOUTH
RANGE
ARMY
GROUND
FLAT

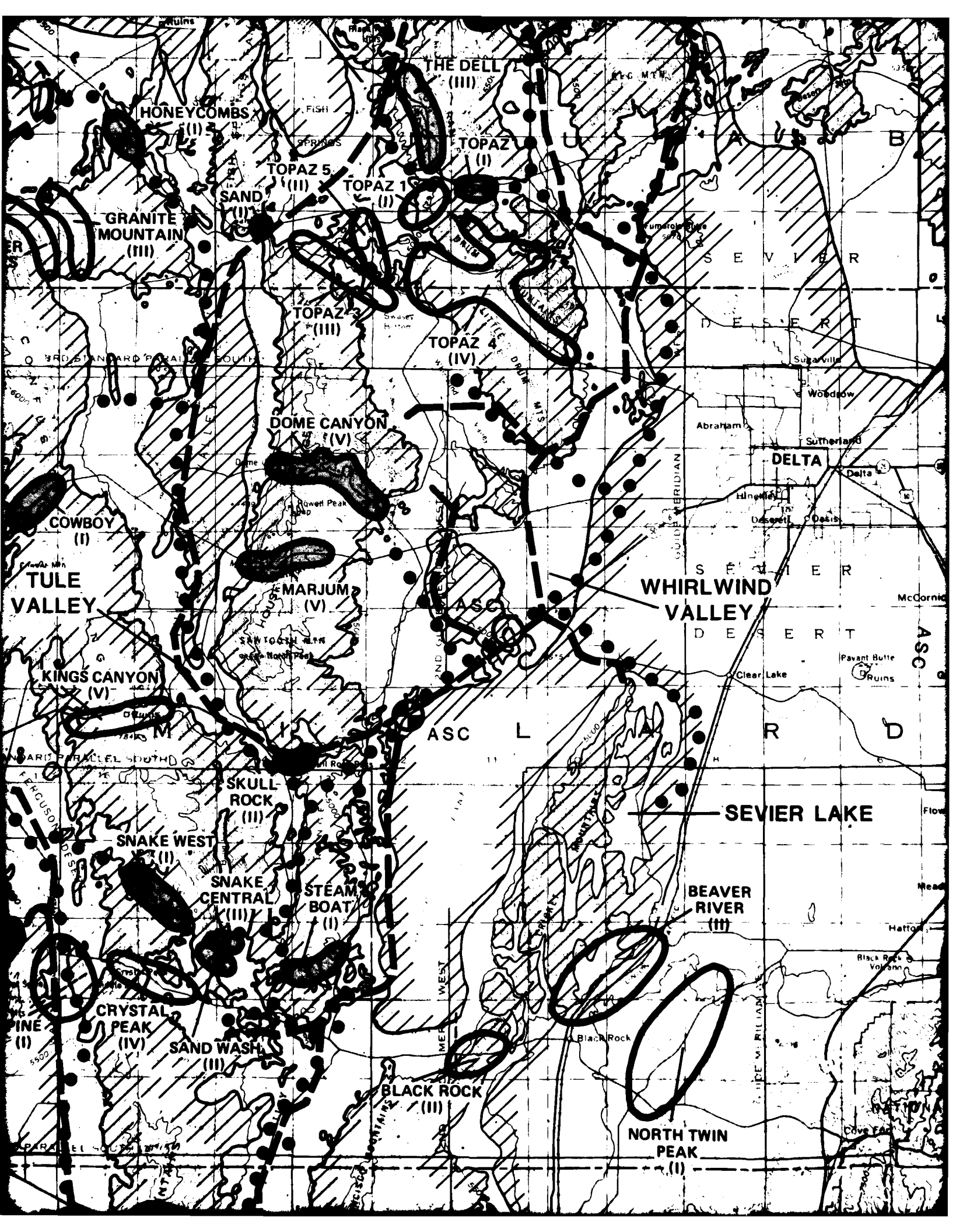

SEVIER DESERT
SALT LAKE CITY
Rowley
Stansbury Island
Timpie
Lake Point Junction
Magna
Burmester
Salt Flats
Mills Junction
Grantsville
Erda
Marshall
Tooele
Lake Point
Saltair
Garfield
Redwood
Kearns
West Jordan
Sandy
South Jordan
Riverton
Herriman
Bluffdale
Lark
Copperton
Midvale
Union
Bacchus
Dolomite
Flux
Baker
Stockton
Saint John Station
Saint John
Clover
Willow Springs
American Fork
Saratoga Springs
Fairfield
Cedar Fort
Lincoln
Vernon
Lookout Pass
Red Pine Mtn
Simpson Mountain
Dugway
Dugway Mountains
Jericho
Timpie Junction
Eskdale
Oasis
Gosh
Valley
Mud Flat
Puddle
Skull Valley
Meridian West
Cedar
Rush
Oquirrh Mts
Stansbury Mts
Cedar Mts
Fish Springs Mts
Rush Valley
Tooele Valley
Skull Valley Mts
Deseret Peak Wilderness
Wasatch Mts
Wasatch National Forest
Utah Test and Training Range
Pilot Peak
Lookout Peak
Simpson Mountain
Red Pine Mtn
Rush Valley
Cedar Valley
Oasis Valley
Gosh Valley
Fish Springs Mts
Cedar Mts
Stansbury Mts
Oquirrh Mts
Wasatch Mts
Skull Valley Mts
Deseret Peak Wilderness

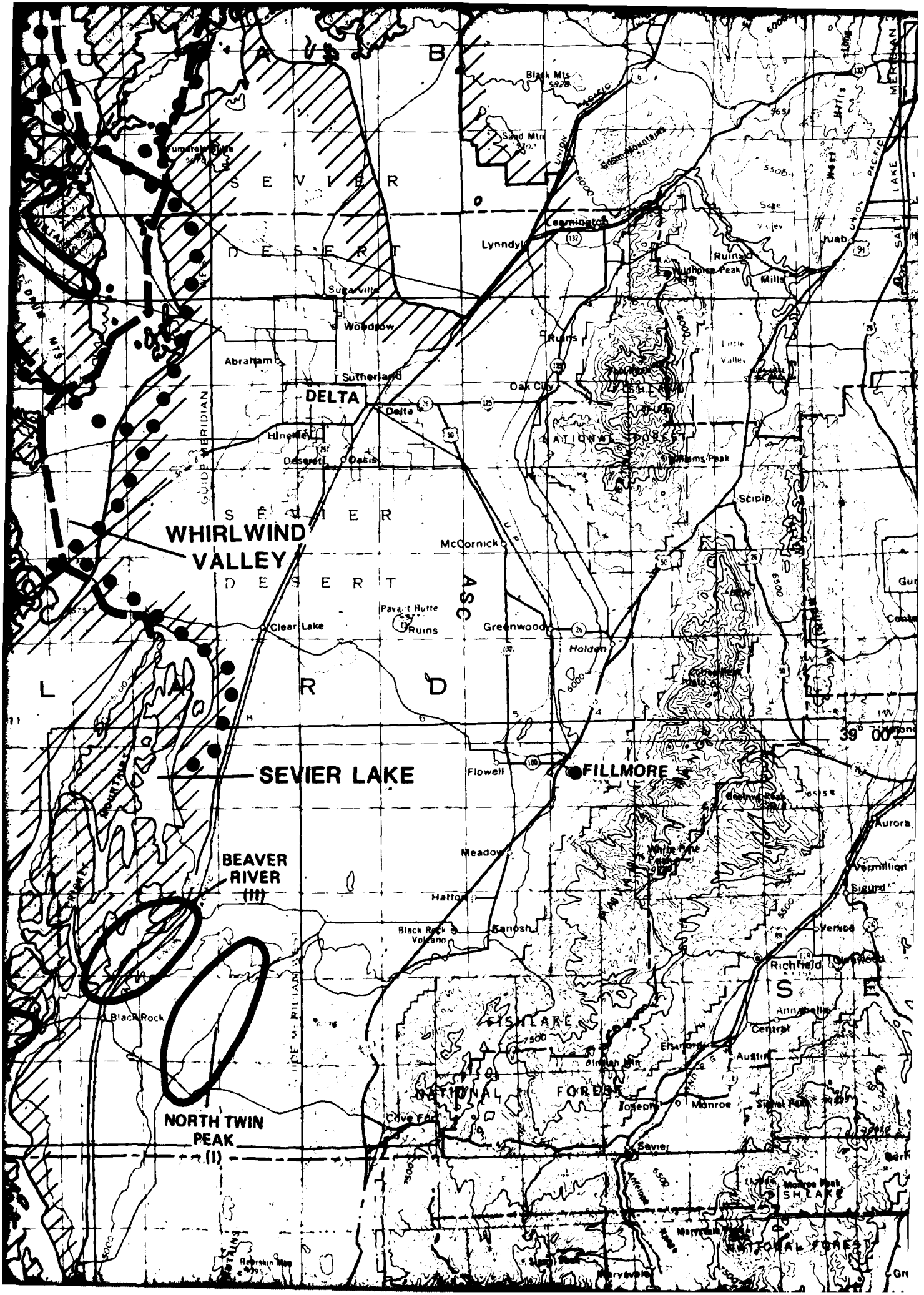

Dixie Valley
Round Mtn
Twin Peaks
Chalk Mtn
Eastgate
Carroll Summit
Railroad Pass
AUSTIN
North Shoshone Peak
TOIYABE
NATIONAL
FOREST
Alkali Flat
39° 00'
Fairview Peak
Gabbs
Paradise Peak
Mahogany Hill
Mt Airy
Round Mountain
BIG SMOKY VALLEY
Stewart Valley
Table Mtn
BIG SMOKY NORTH

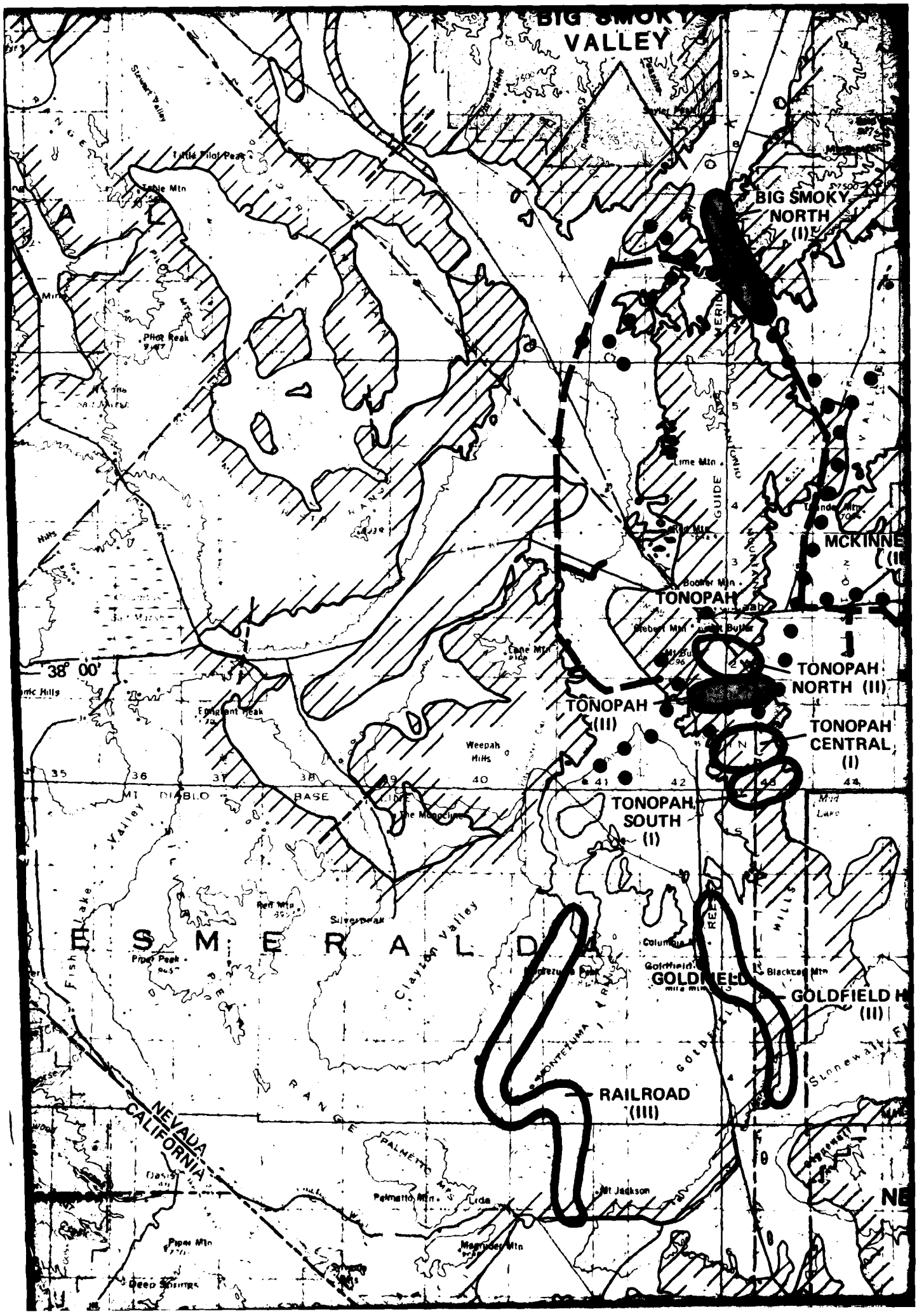

AUSTIN
EUREKA
ANTELOPE VALLEY
MONITOR VALLEY
MINERS (III)
COCKALORUM WASH (I)
COTTONWOOD CREEK (III)
LITTLE SMOKY VALLEY
RED ROCK SUMMIT (II)
BROWN SUMMIT (II)
BIG SAND SPRINGS VALLEY
HOT CREEK VALLEY
STONE CABIN VALLEY
BLACK ROCK SUMMIT (II)
MONITOR SOUTH (II)
HOT CREEK CANYON

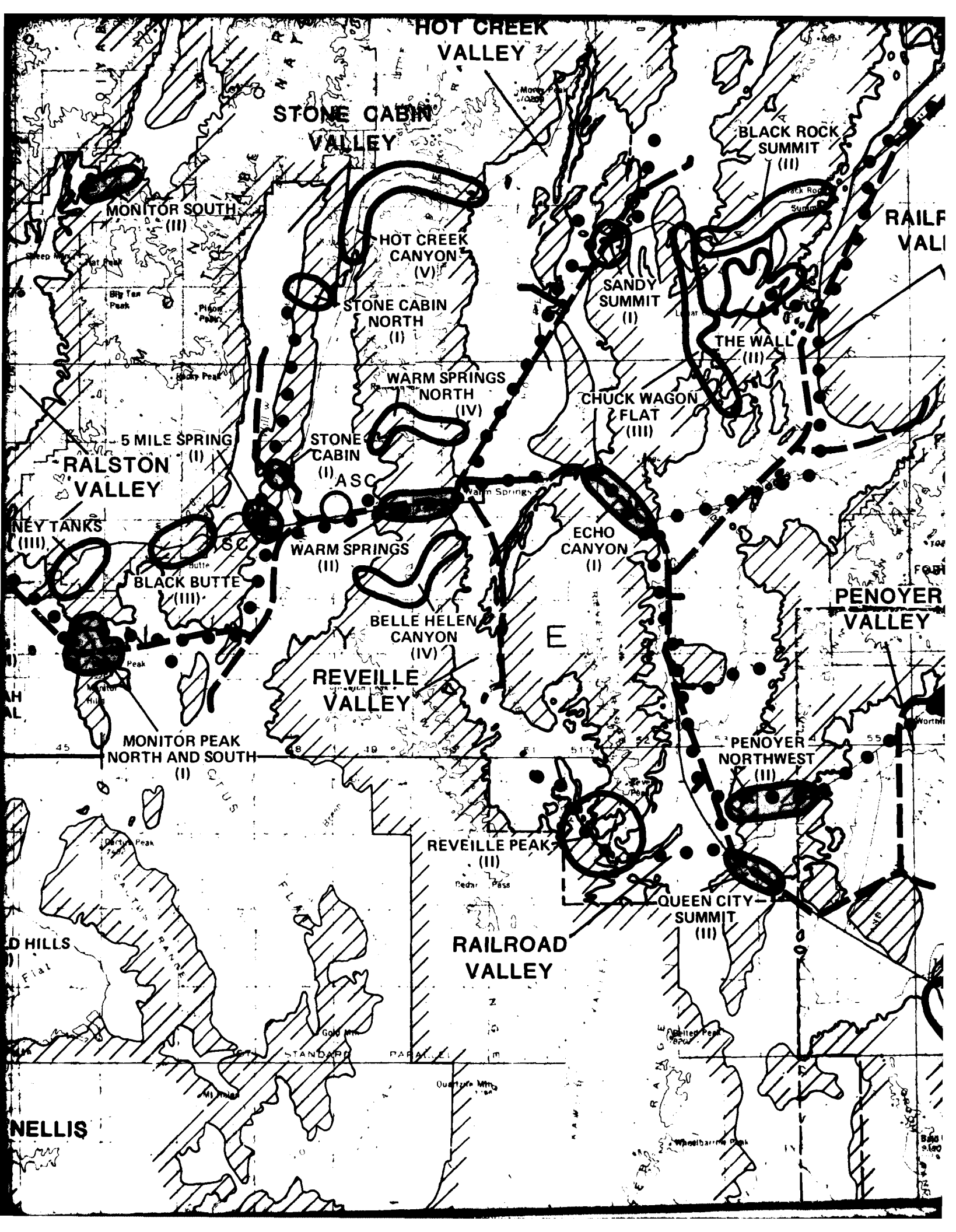

LONG VALLEY
BECK (I)
BUTTE VALLEY
ROBBERS ROOST (II)
DRY MOUNTAIN (II)
SAMMY SPRINGS (I)
MARKING CORRAL SUMMIT (II)
ROBINSON SUMMIT (IV)
JAKES VALLEY
PANCAKE SUMMIT (II)
LITTLE ANTELOPE SUMMIT (III)
RIEPETOWN (IV)
ELY
NEWARK VALLEY
RAILROAD NORTH (I)
MURRY SUMMIT (V)
RED ROCK SUMMIT (II)
DUCKWATER HILLS (I)
JAKES WASH (I)
RAILROAD VALLEY
CONNOR (V)
STEPTOE VALLEY
CURRANT SUMMIT (IV)
BULLWHACK SUMMIT (I)
DUCKWATER CREEK (I)
WELLS STATION SUMMIT (II)
LAKE VALLEY SUMMIT (I)
CAVE VALLEY
PATTERSON (IV)
SHINGLE (III)
WHITE RIVER VALLEY
MULESHOE SUMMIT
RAILROAD VALLEY

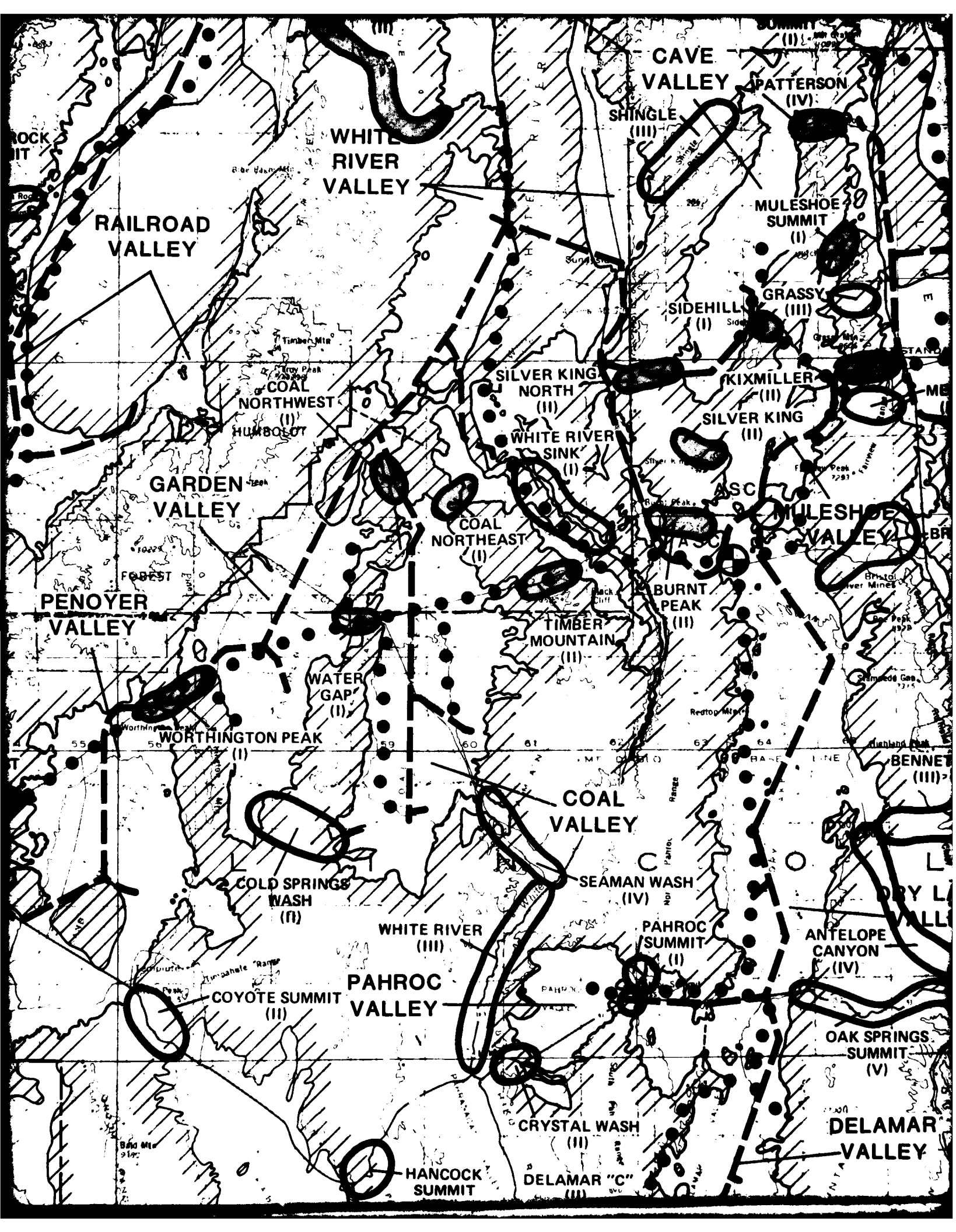

HONEYCOMB
(I)
GRANITE
MOUNTAIN
(III)
SMELTER
KNOLLS
(IV)
GANDY
(II)
GANDY
(III)
SNAKE
VALLEY
COWBOY
(I)
TULE
VALLEY
SACRAMENTO
(IV)
KINGS CANYON
(V)
CONNORS
(V)
STEPTOE
VALLEY
SPRING
VALLEY
PRUESS LAKE
(II)
SNAKE WEST
(I)
COWBOY PINE
WEST (II)
HAMLIN
VALLEY
CRYSTAL
PEAK
(IV)
PINE
(I)
MORMON
GAP
(I)
THE TROUGHS
(I)
HALFWAY
SUMMIT
(IV)
HORSE
CORRAL
(II)
PINE
VALLEY

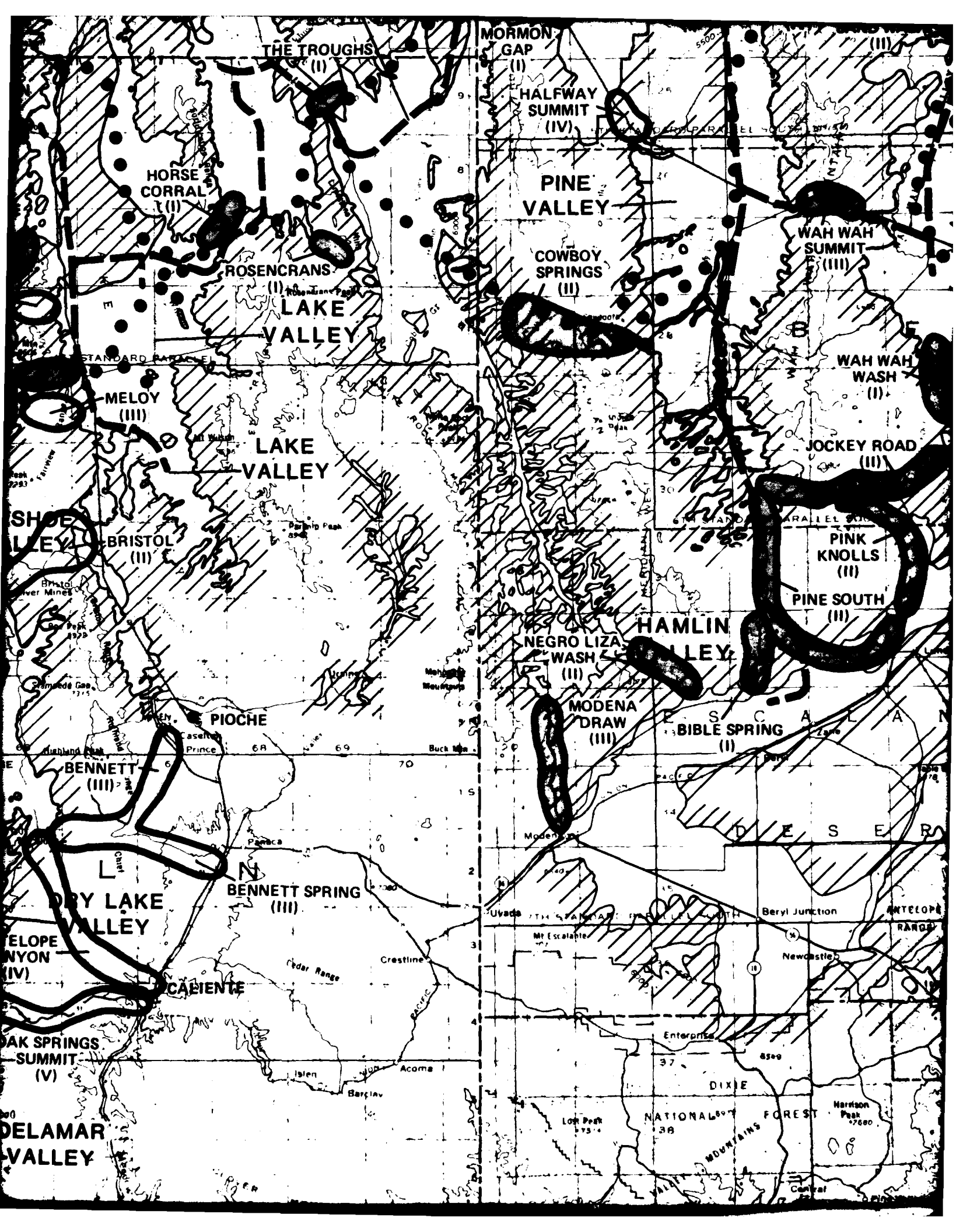

THE DELL (III)
HONEYCOMBS (I)
TOPAZ (I)
TOPAZ 5 (II)
TOPAZ 1 (I)
SAND (I)
GRANITE MOUNTAIN (III)
TOPAZ 3 (III)
TOPAZ 4 (IV)
DOME CANYON (V)
COWBOY (I)
TULE VALLEY
MARJUM (V)
WHIRLWIND VALLEY
KINGS CANYON (V)
SKULL ROCK (II)
SNAKE WEST (I)
SNAKE CENTRAL (II)
STEAM BOAT (I)
SEVIER LAKE
BEAVER RIVER (II)
CRYSTAL PEAK (IV)
SAND WASH (II)
BLACK ROCK (II)
NORTH TWIN PEAK (I)
DELTA
SEVIER DESERT
SEVIER
DESERT
Sugarville
Woodrow
Abraham
Sutherland
Delta
Hinckley
Deseret
Oasis
Clear Lake
Pavant Butte
Ruins
McCornick
Black Rock
Black Rock Volcano
Hatton
Cove Fort
Fumarole Butte
Rowell Peak
Dome
Ferguson Desert
Fish Springs
Little Drum Mts
Drum Mts
Confusion Range
Pahvant Range
Canyon Range
Sevier Desert
Sevier Lake
Black Rock Desert
Meadow
Flow


WHIRLWIND VALLEY
SEVIER LAKE
BEAVER RIVER (II)
NORTH TWIN PEAK (I)
DELTA
FILLMORE
SEVIER DESERT
SEVIER DESERT
SEVIER DESERT
Black Mts
Sand Mtn
Lynndyl
Leamington
Sugarville
Woodrow
Abraham
Sutherland
Oak City
Delta
Hinckley
Deseret
Oasis
McCornick
Clear Lake
Pavant Butte
Ruins
Greenwood
Holden
Flowell
Meadow
Hatton
Kanosh
Black Rock Volcano
Black Rock
Cove Fort
Scipio
Ruins
Mudhorse Peak
Mills
Juab
Sage Valley
Little Valley
Williams Peak
Aurora
Vermillion
Sigurd
Venice
Richfield
Annabella
Central
Elsinore
Austin
Joseph
Monroe
Sevier
Marysvale
FISHLAKE NATIONAL FOREST
FISHLAKE NATIONAL FOREST
Black Mts
Canyon Mts
Pahvant Range
Tushar Mts
Sevier Plateau
Gunnison Plateau
Union Pacific
Salt Lake Meridian
Guide Meridian
Utah
Nevada
39° 00'

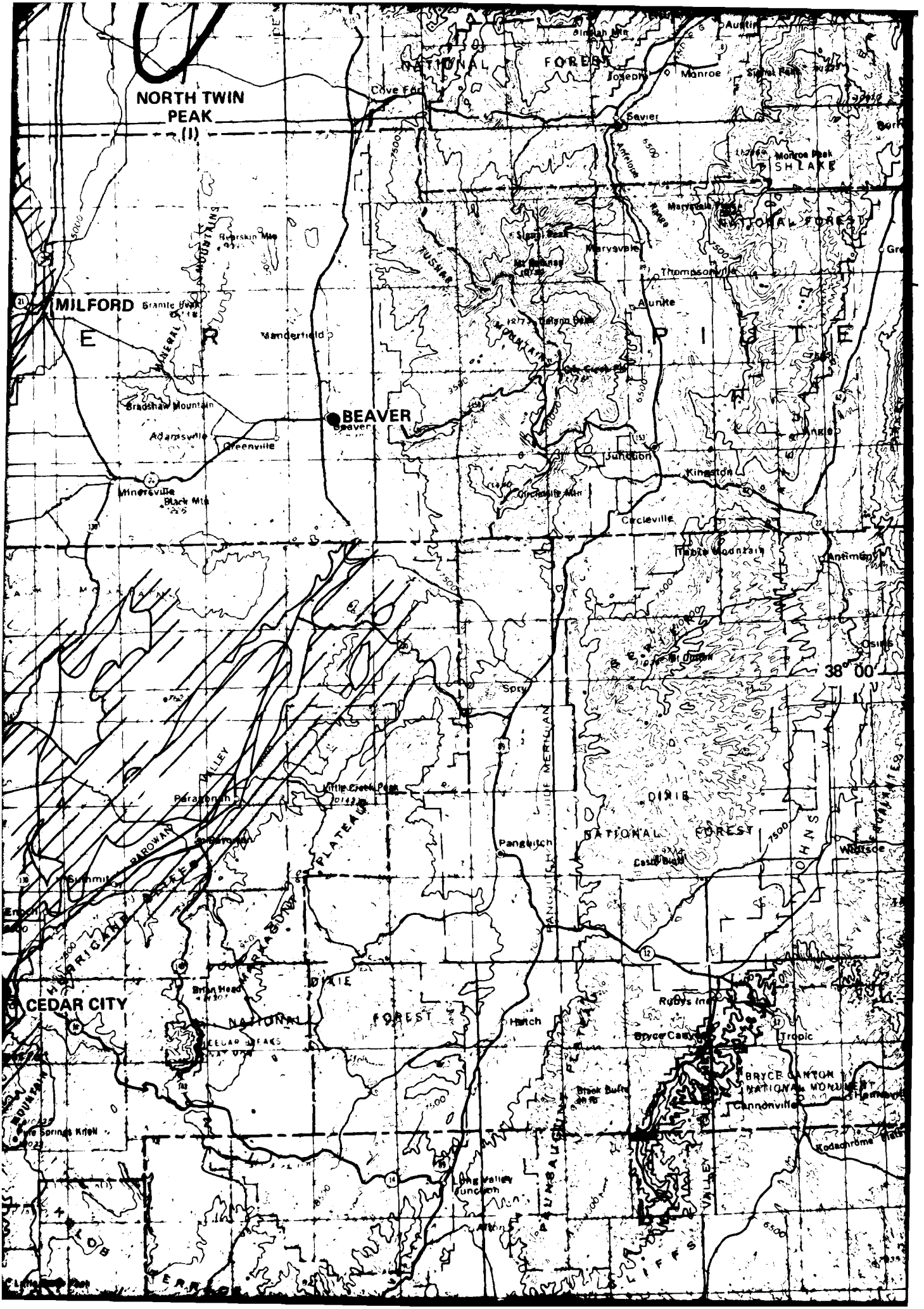

BIG SMOKY VALLEY
BIG SMOKY NORTH (I)
MCKINNE
TONOPAH
TONOPAH NORTH (II)
TONOPAH CENTRAL (I)
TONOPAH (II)
TONOPAH SOUTH (I)
GOLDFIELD
GOLDFIELD H (II)
RAILROAD (III)
E S M E R A L D A
NEVADA
CALIFORNIA
38° 00'
Little Pilot Peak
Table Mtn
Pilot Peak
Lime Mtn
Booker Mtn
Cone Mtn
Weepah Hills
Silverpeak
Red Mtn
Piper Peak
Palmetto Mts
Palmetto Mtn
Mt Jackson
Piper Mtn
Magruder Mtn
Blackcap Mtn
Columbia
Mud Lake
Fish Lake Valley
Clayton Valley
Montezuma Range
Gilbert Hills
Slonewall Flat
Deep Springs
Oasis
Lida
Mt Diablo Base Line

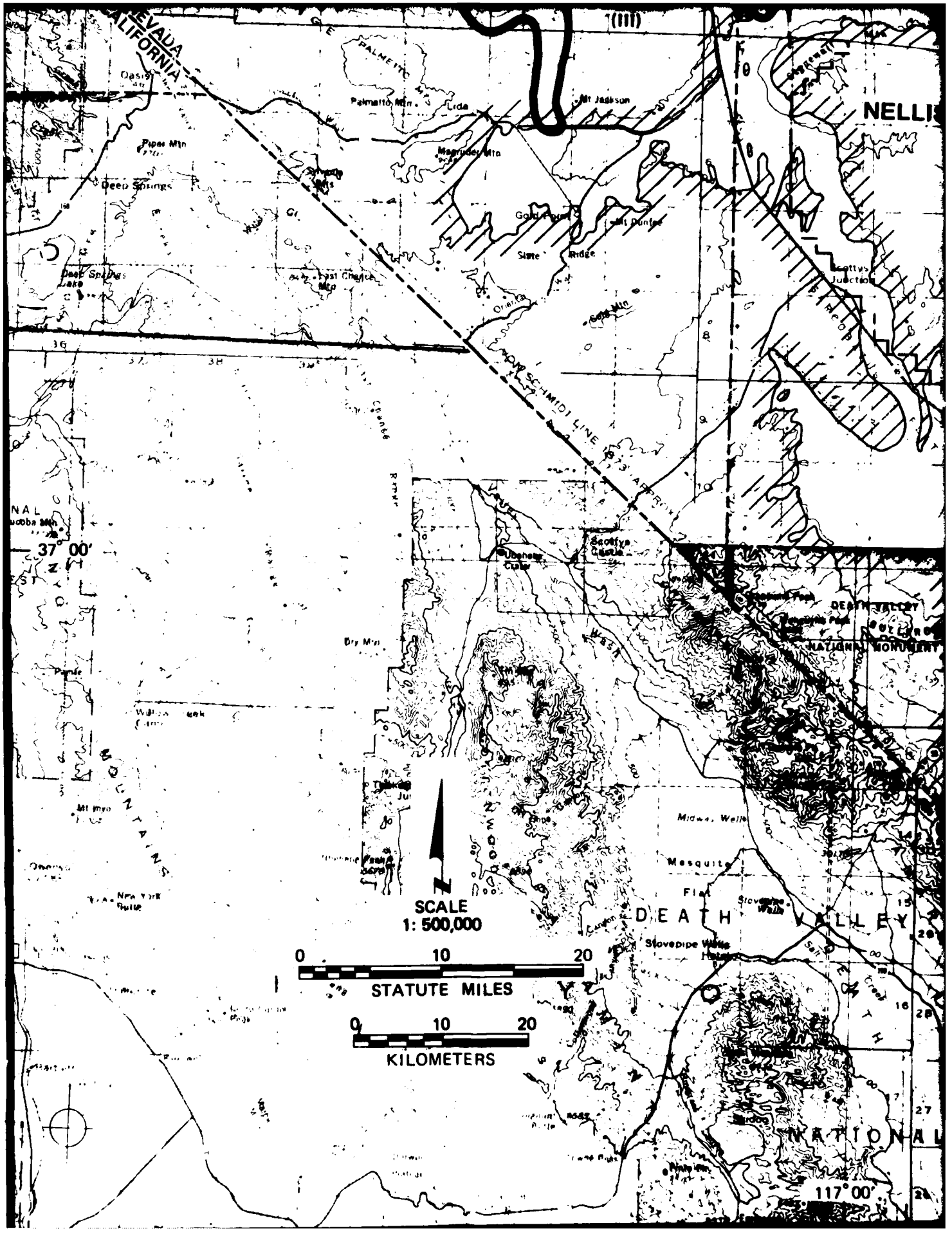

HOT CREEK VALLEY
STONE CABIN VALLEY
BLACK ROCK SUMMIT (II)
MONITOR SOUTH (II)
HOT CREEK CANYON (V)
STONE CABIN NORTH (I)
SANDY SUMMIT (I)
THE WALL (II)
WARM SPRINGS NORTH (IV)
CHUCK WAGON FLAT (III)
5 MILE SPRING (I)
RALSTON VALLEY
STONE CABIN (I)
ASC
Warm Springs
NEY TANKS (III)
SC
WARM SPRINGS (II)
ECHO CANYON (I)
BLACK BUTTE (III)
PENOYER VALLEY
BELLE HELEN CANYON (IV)
E
REVEILLE VALLEY
MONITOR PEAK NORTH AND SOUTH (I)
PENOYER NORTHWEST (II)
REVEILLE PEAK (II)
QUEEN CITY SUMMIT (II)
RAILROAD VALLEY
D HILLS
NELLIS

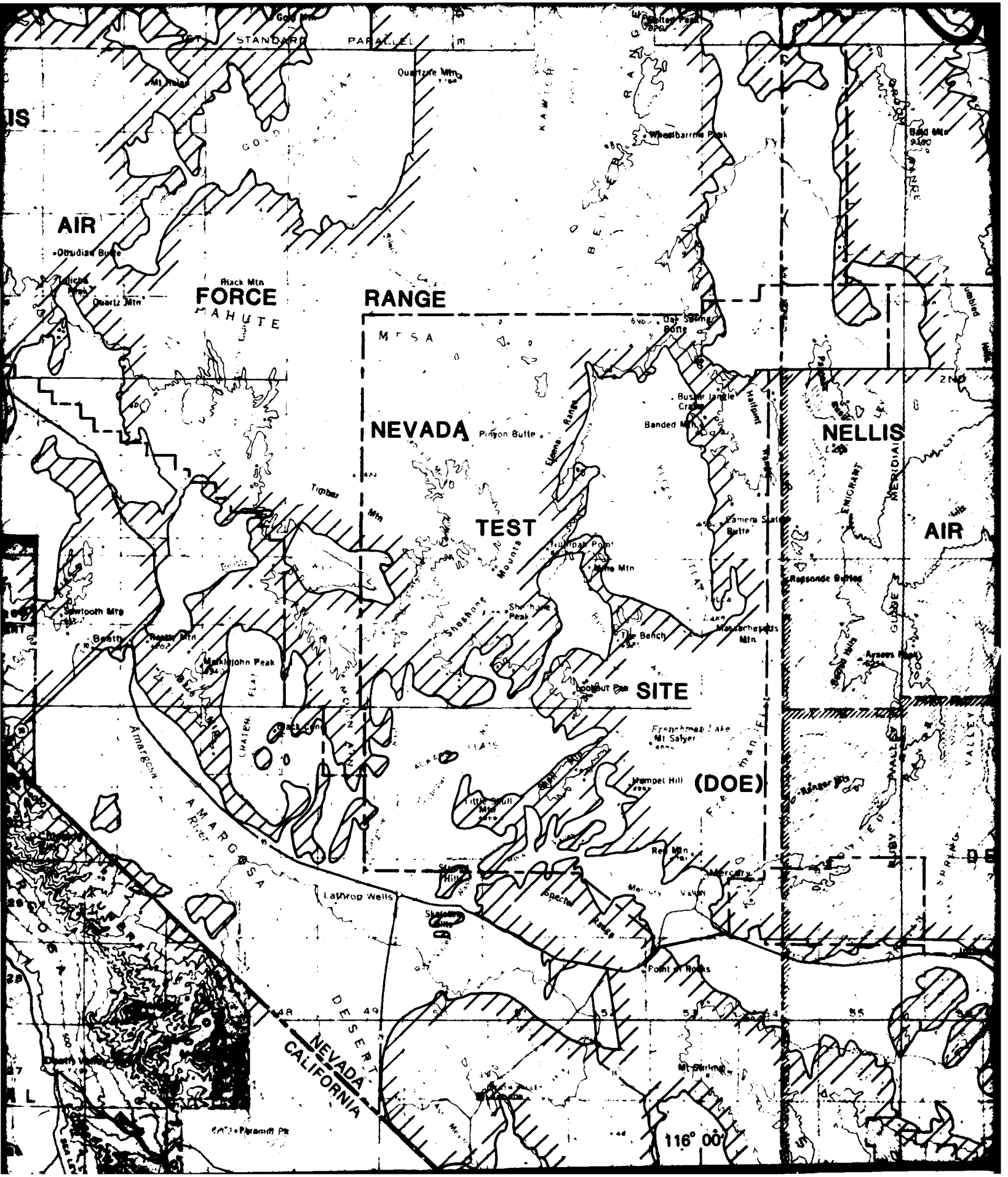

CAVE VALLEY
PATTERSON (IV)
SHINGLE (III)
WHITE RIVER VALLEY
RAILROAD VALLEY
MULESHOE SUMMIT (I)
GRASSY (III)
SIDEHILL (I)
SILVER KING NORTH (II)
COAL NORTHWEST (I)
KIXMILLER (II)
SILVER KING (II)
WHITE RIVER SINK (I)
GARDEN VALLEY
COAL NORTHEAST (I)
MULESHOE VALLEY
PENOYER VALLEY
BURNT PEAK (II)
TIMBER MOUNTAIN (II)
WATER GAP (I)
WORTHINGTON PEAK (I)
BENNET (III)
COAL VALLEY
COLD SPRINGS WASH (I)
SEAMAN WASH (IV)
WHITE RIVER (III)
PAHROC SUMMIT (I)
ANTELOPE CANYON (IV)
PAHROC VALLEY
COYOTE SUMMIT (II)
OAK SPRINGS SUMMIT (V)
CRYSTAL WASH (II)
DELAMAR VALLEY
HANCOCK SUMMIT
DELAMAR "C" (II)

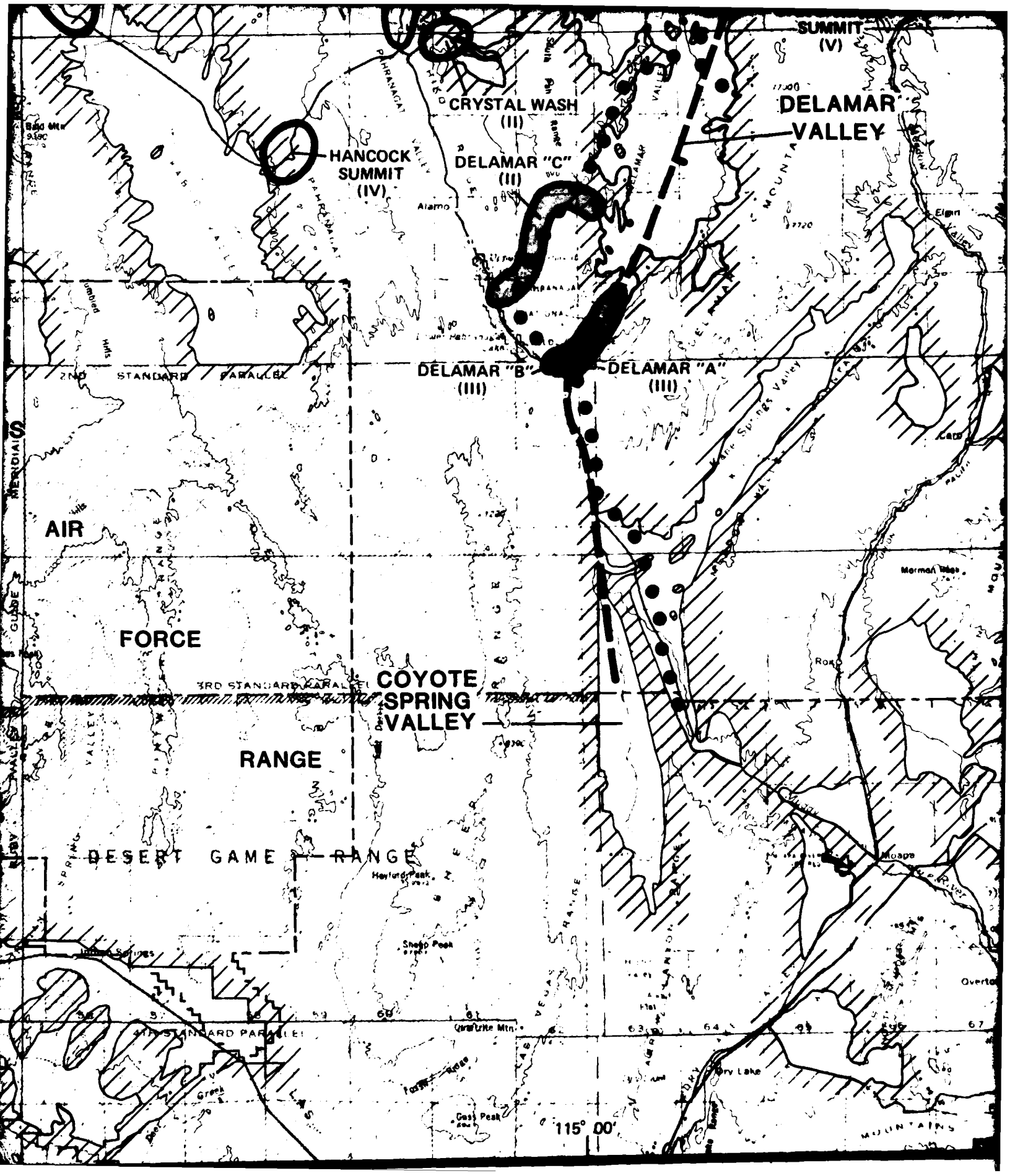

THE TROUGHS (I)
MORMON GAP (I)
HALFWAY SUMMIT (IV)
HORSE CORRAL (I)
PINE VALLEY
WAH WAH SUMMIT (III)
COWBOY SPRINGS (II)
ROSENCRANS (I)
LAKE VALLEY
WAH WAH WASH (I)
MELOY (III)
LAKE VALLEY
JOCKEY ROAD (II)
BRISTOL (II)
PINK KNOLLS (II)
PINE SOUTH (II)
HAMLIN VALLEY
NEGRO LIZA WASH (II)
MODENA DRAW (III)
BIBLE SPRING (I)
PIOCHE
BENNETT (III)
BENNETT SPRING (III)
DRY LAKE VALLEY
CALIENTE
OAK SPRINGS SUMMIT (V)
DELAMAR VALLEY
DIXIE NATIONAL FOREST
Uvada
Beryl Junction
Newcastle
Enterprise
Modena
Crestline
Caselton
Prince
Pioche
Panaca
Acoma
Barclay
Isten
Mt Escalante
Cedar Range
Lee Peak
Harrison Peak
Central
ANTELOPE RANGE

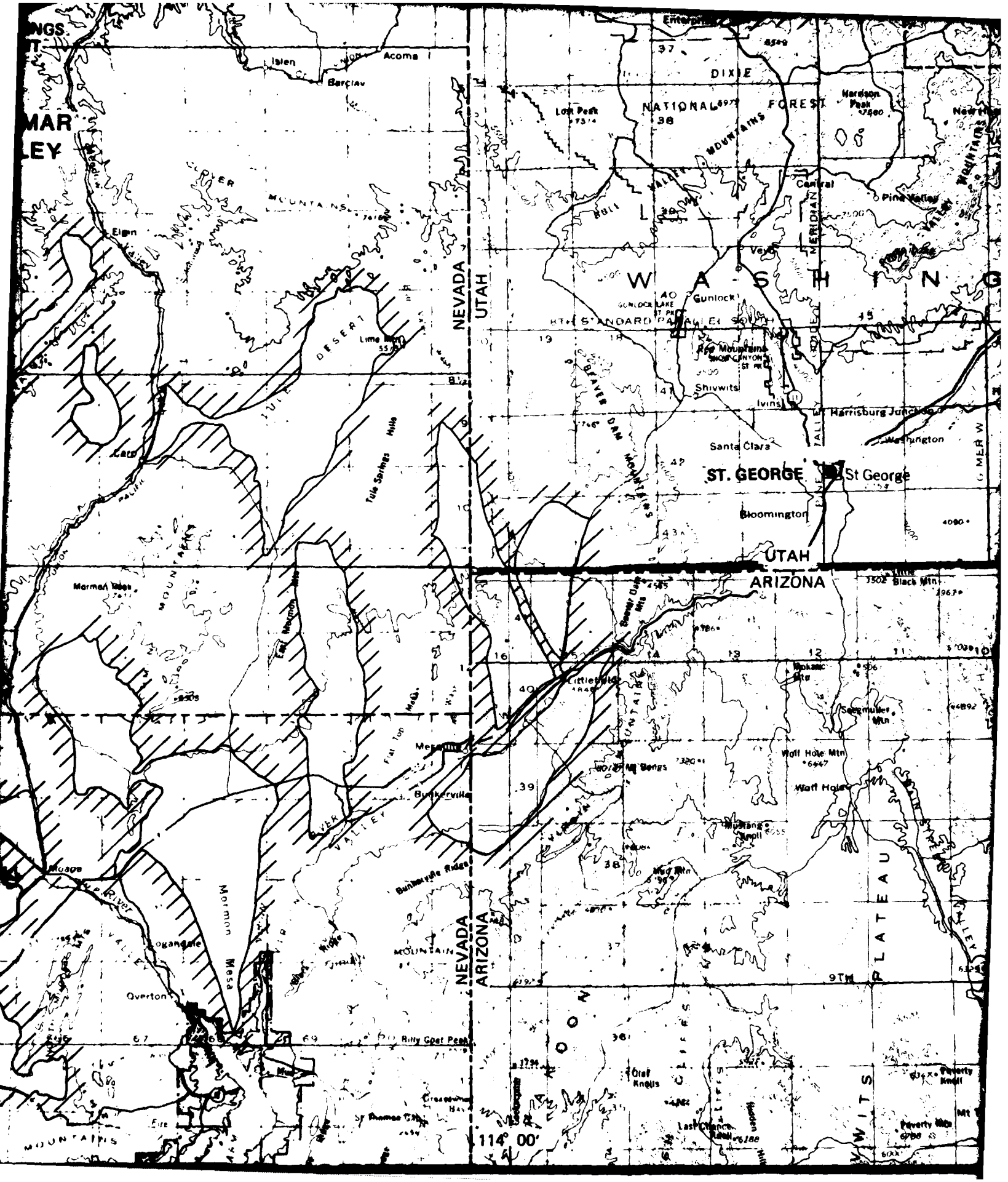

BLACK ROCK
(II)
NORTH TWIN
PEAK
(I)
FRISCO SUMMIT
(II)
WAH WAH
VALLEY
MILFORD
GROVER
WASH
(III)
WAH WAH
WASH
(I)
BEAVER
Adamsville
Greenville
Minersville
Black Mts
Bradshaw Mountain
Mineral Mountains
Tushars
Manderfield
Beaver
Junction
Circleville
Marysvale
Sevier
Joseph
Clive Fork
NATIONAL
FOREST
Reparkin Mtn
Frisco Peak
Granite Peak
Delano Peak
Old Woman Plateau
Old Woman Mts
Old Creek Peak
Old Creek Mtn
Laminar
Land
Spry
Avon
Table Butte
Paragonah
Little Creek Peak
Parowan
Panguitch
Panguitch Lake
Summit
Enoch
Iron Springs
Iron Mountain
Antelope Range
Granite Mts
Desert Mound
CEDAR CITY
Cedar City
Brian Head
Cedar Breaks
Cedar Breaks National Monument
Dixie
Forest
Hatch
Harmony Mountains
Pine Springs Knob
New Harmony
Long Valley Junction
Black Butte
Hurricane Fault
Hurricane Valley
Parowan Valley
Parowan Gap
Kanarra Mountain
Pacific
Union
Guide Meridian
Sevier Desert
Escalante Desert
Plateau
Valley
Mountains
Range
Wash
Key Road
Ink
Dolls
South

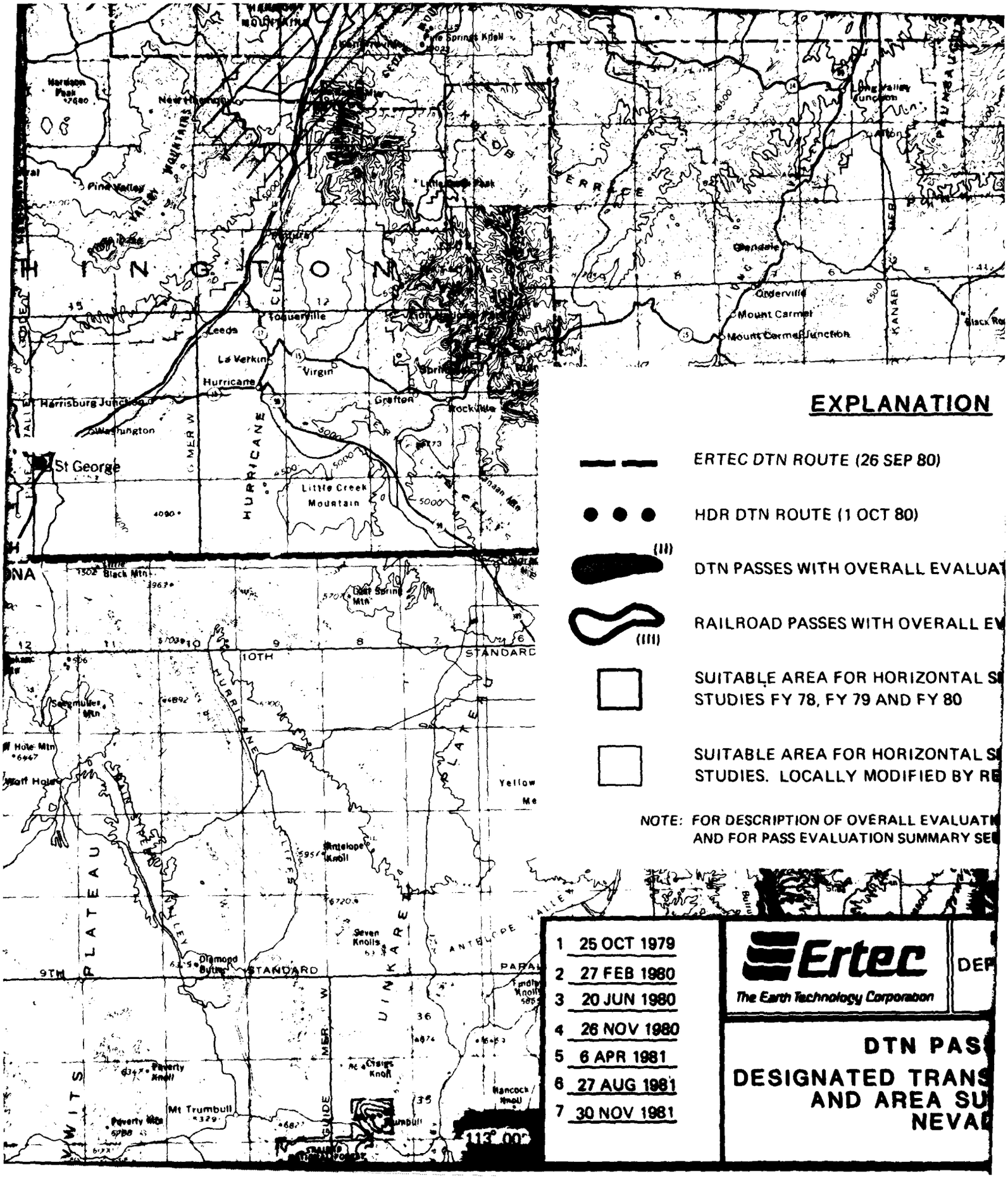

NORTH TWIN PEAK
(1)
NATIONAL FOREST
Joseph
Monroe
Sevier
Cove Fort
Monroe Peak
SHLAKE
NATIONAL FOREST
Marysvale
Thompsonville
Alunite
MILFORD
Bramle Hill
Mandertield
Bradshaw Mountain
BEAVER
Adamsville
Greenville
Junction
Kingston
Minersville
Black Mtn
Circleville Mtn
Circleville
Table Mountain
Antimony
38° 00
Spry
Paragonah
Kanarraville
Parowan
Summit
Enoch
Pangwitch
DIXIE
NATIONAL FOREST
Castle Butte
Whitsett
CEDAR CITY
Brian Head
NATIONAL
FOREST
Hatch
Ruby's Inn
Bryce Canyon
Tropic
BRYCE CANYON NATIONAL MONUMENT
Cannonville
Kodachrome
Long Valley Junction
Black Butte
Five Springs Knoll
PARKE
PIUTE
SEVIER
WASHINGTON
KANE
GARFIELD
MINERAL MOUNTAINS
TUSHAR
MARKAGUNT PLATEAU
SEVIER VALLEY
PARUNUWEAP
HURRICANE FAULT
HURRICANE CLIFFS
PINE VALLEY
LONG VALLEY
JOHNSON
VALLEY
SALT LAKE MERIDIAN


NEVADA
CALIFORNIA
(III)
Oasis
Palmetto Mts
Palmetto Mtn
Mt Jackson
NELLIS
Piper Mtn
Magruder Mtn
Deep Springs
Gold Point
Mt Dunfee
Slate Ridge
Deep Springs Lake
Last Chance Mts
Scotty's Junction
Saline Valley
Dry Mtn
Scotty's Castle
Ubehebe Crater
DEATH VALLEY
NATIONAL MONUMENT
37° 00'
Panamint Range
Mt Hyman
Owlshead Mts
New York Butte
Mesquite Flat
Stovepipe Wells
Stovepipe Wells Hotel
DEATH VALLEY
NATIONAL
117° 00'
SCALE
1: 500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS


STANDARD PARALLEL
AIR FORCE
MAHUTE
RANGE
NEVADA
TEST
SITE
(DOE)
NELLIS
AIR
RANGE
MESA
Black Mtn
Quartz Mtn
Obsidian Butte
Pigeon Butte
Timber Mtn
Sawtooth Mts
Beatty
Shoshone Peak
Tolicha Peak
Buster Jangle Crater
Banded Mtn
Camera Station Butte
Rainier Mesa
Aqueduct Mesa
Frenchman Lake
Mt Salyer
Trumpet Hill
Little Skull Mtn
Lathrop Wells
Point of Rocks
Mercury
Mt Stirling
Amargosa River
AMARGOSA DESERT
NEVADA
CALIFORNIA
116° 00'


SUMMIT
(V)
CRYSTAL WASH
(II)
DELAMAR
VALLEY
HANCOCK
SUMMIT
(IV)
DELAMAR "C"
(II)
DELAMAR "B"
(III)
DELAMAR "A"
(III)
2ND STANDARD PARALLEL
AIR
FORCE
3RD STANDARD PARALLEL
COYOTE
SPRING
VALLEY
RANGE
DESERT GAME RANGE
4TH STANDARD PARALLEL
115° 00'


DIXIE
NATIONAL FOREST
Lost Peak
Hardison Peak
Central
Pine Valley
Gunlock
Veyo
WASHINGTON
Shivwits
Ivins
Harrisburg Junction
Santa Clara
ST. GEORGE
St George
Bloomington
UTAH
ARIZONA
NEVADA
Elgin
Acoma
Barclay
Lime Mtn
Tule Springs Hills
Mormon Mesa
Overton
Logandale
Mesquite
Bunkerville
Billy Goat Peak
Littlefield
Beaver Dam Mts
Seegmiller Mtn
Wolf Hole Mtn
Mustang Knoll
Meg Mtn
Bunkerville Ridge
Virgin River
Fort Top Mesa
Beaver Dam Wash
Virgin Mountains
Virgin River Mountains
Gold Butte
Last Chance Knoll
Poverty Knoll
Poverty Hills
Grand Wash Cliffs
Meadow Valley Wash
Muddy River
Muddy River Mountains
Mormon Mesa
Virgin River Valley
Meadow Valley Mountains
Mormon Lake
Lake Mead
Lake Mohave
Lake Las Vegas
Lake Mojave
Lake Pleasant
Lake Havasu
Lake Powell
Lake Mead National Recreation Area
Lake Mead National Recreation Area
Lake Mead National Recreation Area



EXPLANATION

ERTEC DTN ROUTE (26 SEP 80)

HDR DTN ROUTE (1 OCT 80)

(II) DTN PASSES WITH OVERALL EVALUAT

RAILROAD PASSES WITH OVERALL EV (III)

SUITABLE AREA FOR HORIZONTAL S STUDIES FY 78, FY 79 AND FY 80

SUITABLE AREA FOR HORIZONTAL S STUDIES. LOCALLY MODIFIED BY RE

NOTE: FOR DESCRIPTION OF OVERALL EVALUATI AND FOR PASS EVALUATION SUMMARY SE

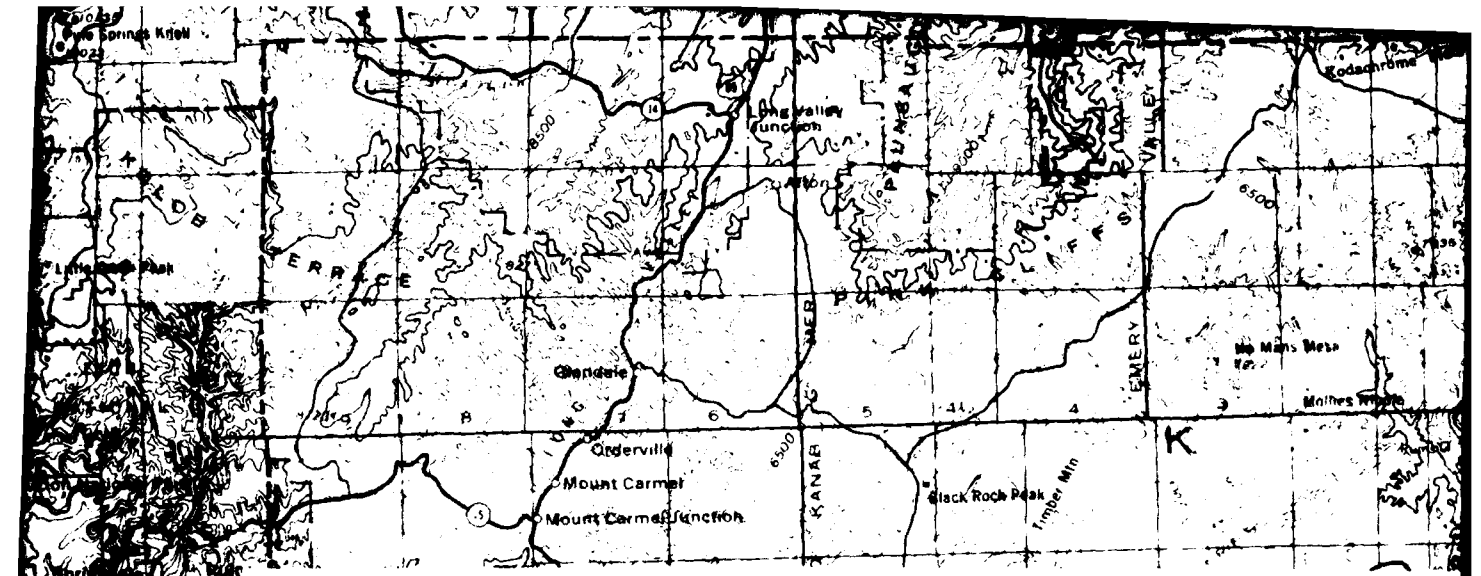
1	25 OCT 1979
2	27 FEB 1980
3	20 JUN 1980
4	26 NOV 1980
5	6 APR 1981
6	27 AUG 1981
7	30 NOV 1981

Ertec
The Earth Technology Corporation

DEP

DTN PAS

DESIGNATED TRANS AND AREA SU NEVA



EXPLANATION

ERTEC DTN ROUTE (26 SEP 80)

HDR DTN ROUTE (1 OCT 80)

(II)

DTN PASSES WITH OVERALL EVALUATION

(III)

RAILROAD PASSES WITH OVERALL EVALUATION

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON VERIFICATION STUDIES FY 78, FY 79 AND FY 80

SUITABLE AREA FOR HORIZONTAL SHELTER BASED ON SCREENING STUDIES. LOCALLY MODIFIED BY RECONNAISSANCE STUDIES

NOTE: FOR DESCRIPTION OF OVERALL EVALUATION RANKING SEE SECTION AND FOR PASS EVALUATION SUMMARY SEE APPENDIX C.

1	25 OCT 1979
2	27 FEB 1980
3	20 JUN 1980
4	26 NOV 1980
5	6 APR 1981
6	27 AUG 1981
7	30 NOV 1981

Ertec
The Earth Technology Corporation

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

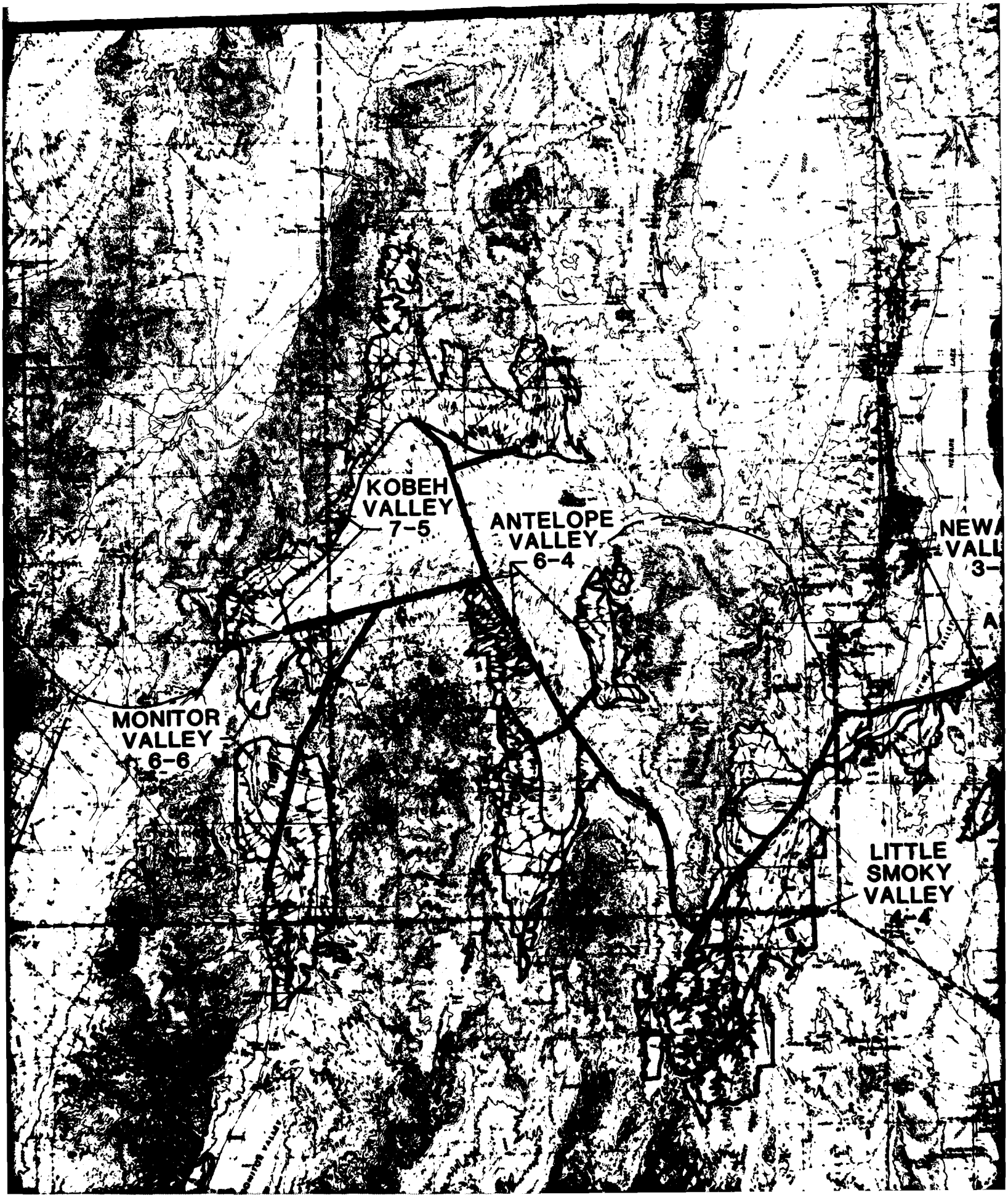
DTN PASS LOCATION

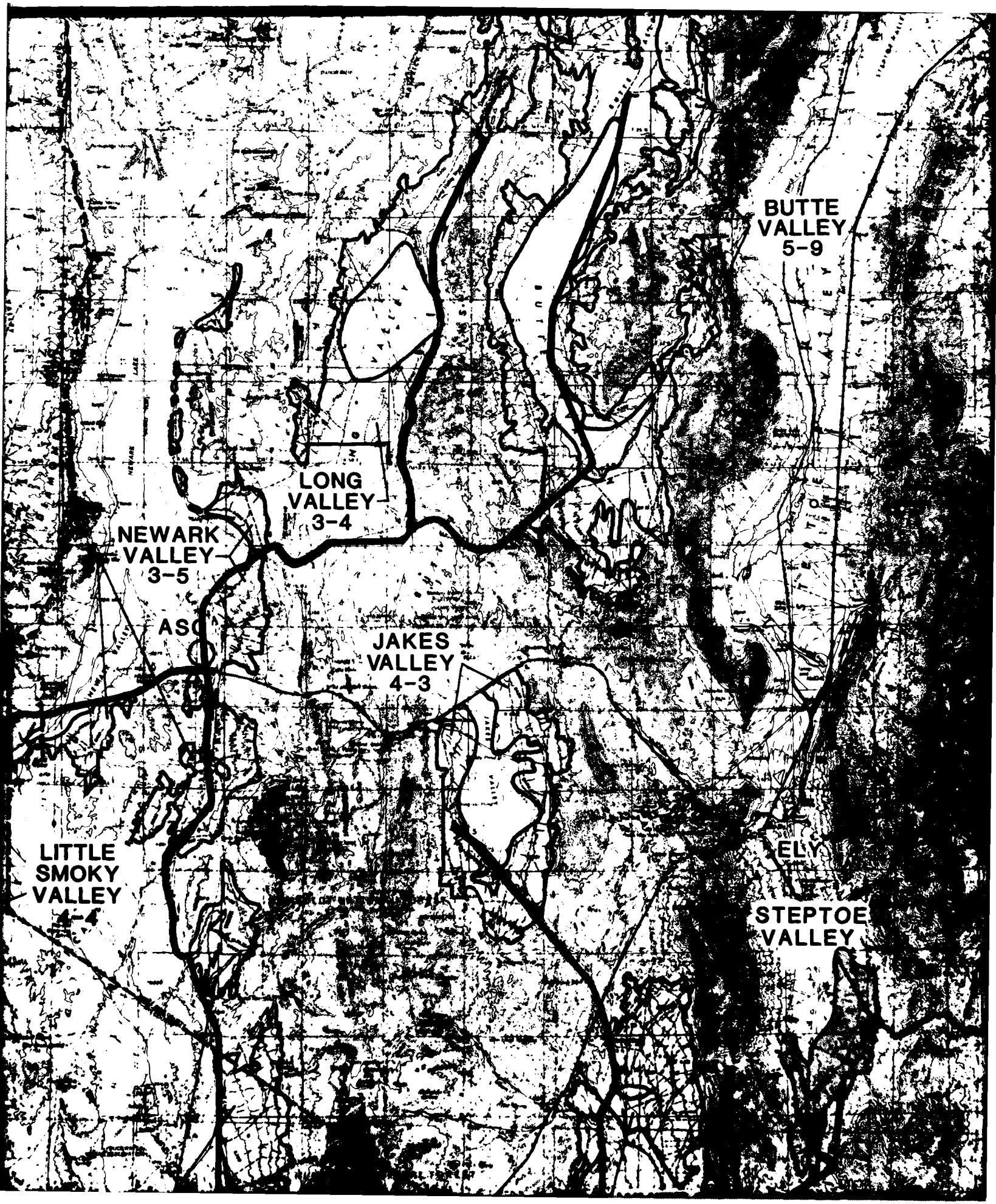
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

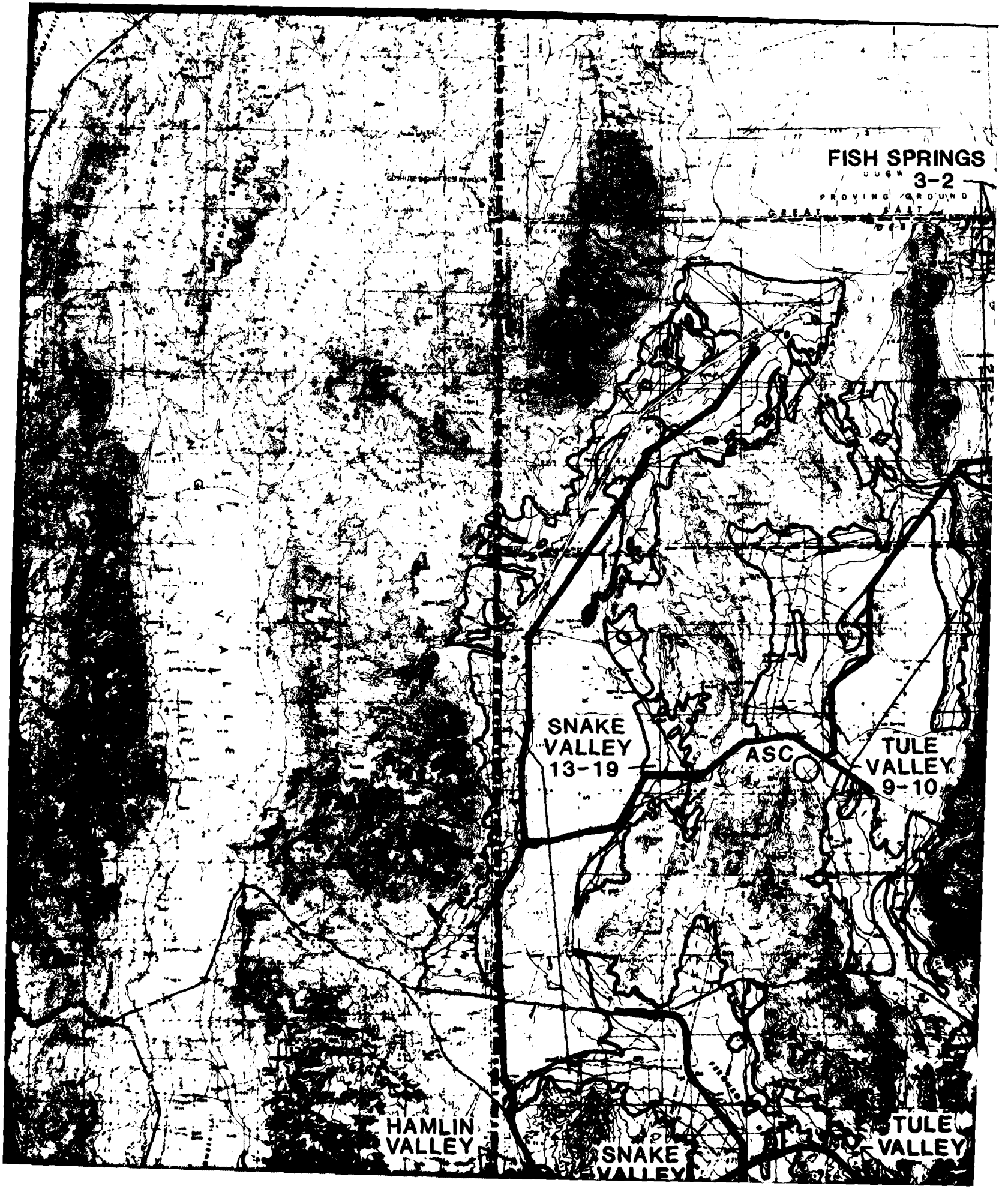
VOLUME II PART 1

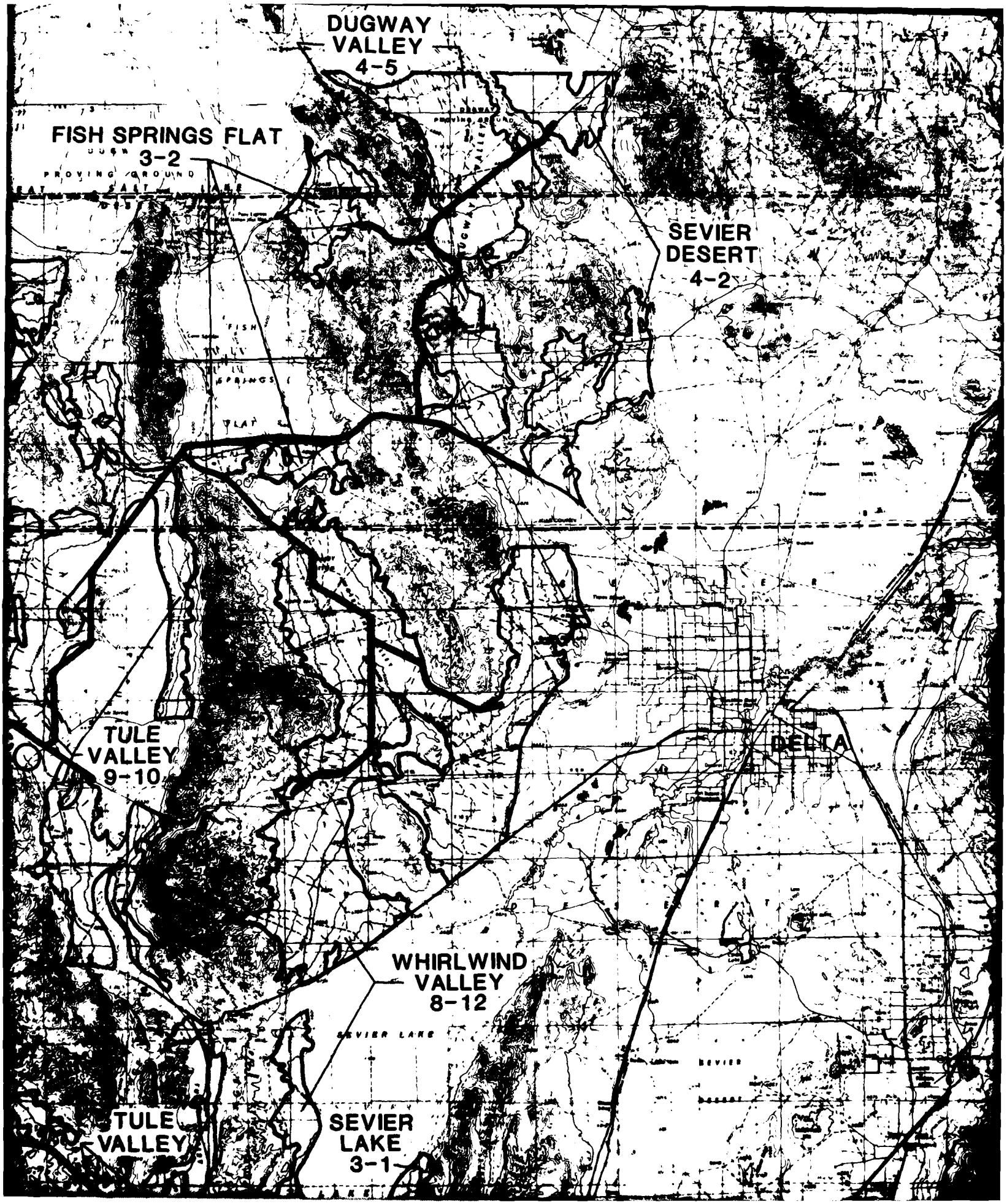
DRAWING 5-2

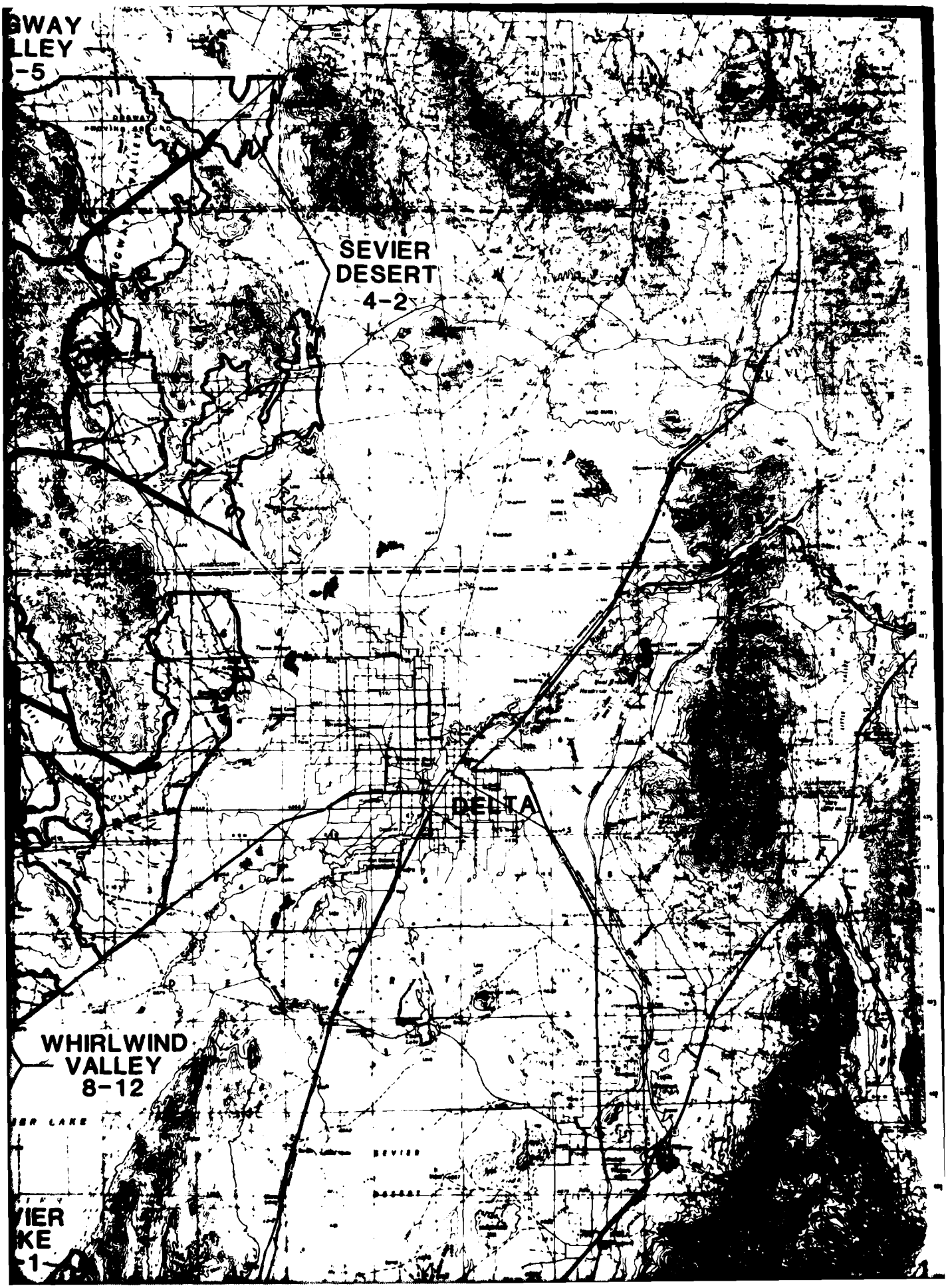
AUSTIN

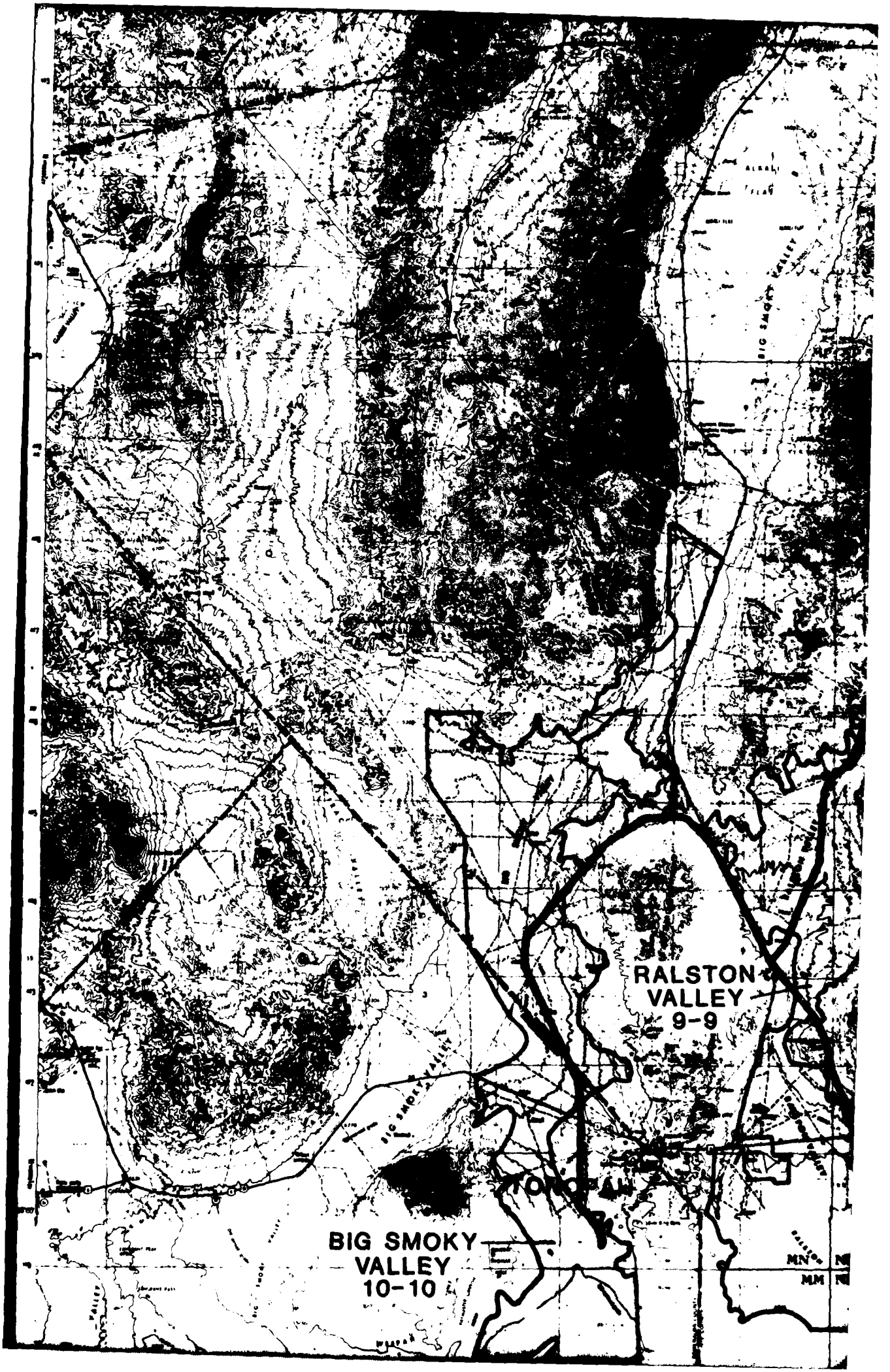

KOBEH
VALLEY
7-5
ANTELOPE
VALLEY
6-4
MONITOR
VALLEY
6-6
LITTLE
SMOKY
VALLEY

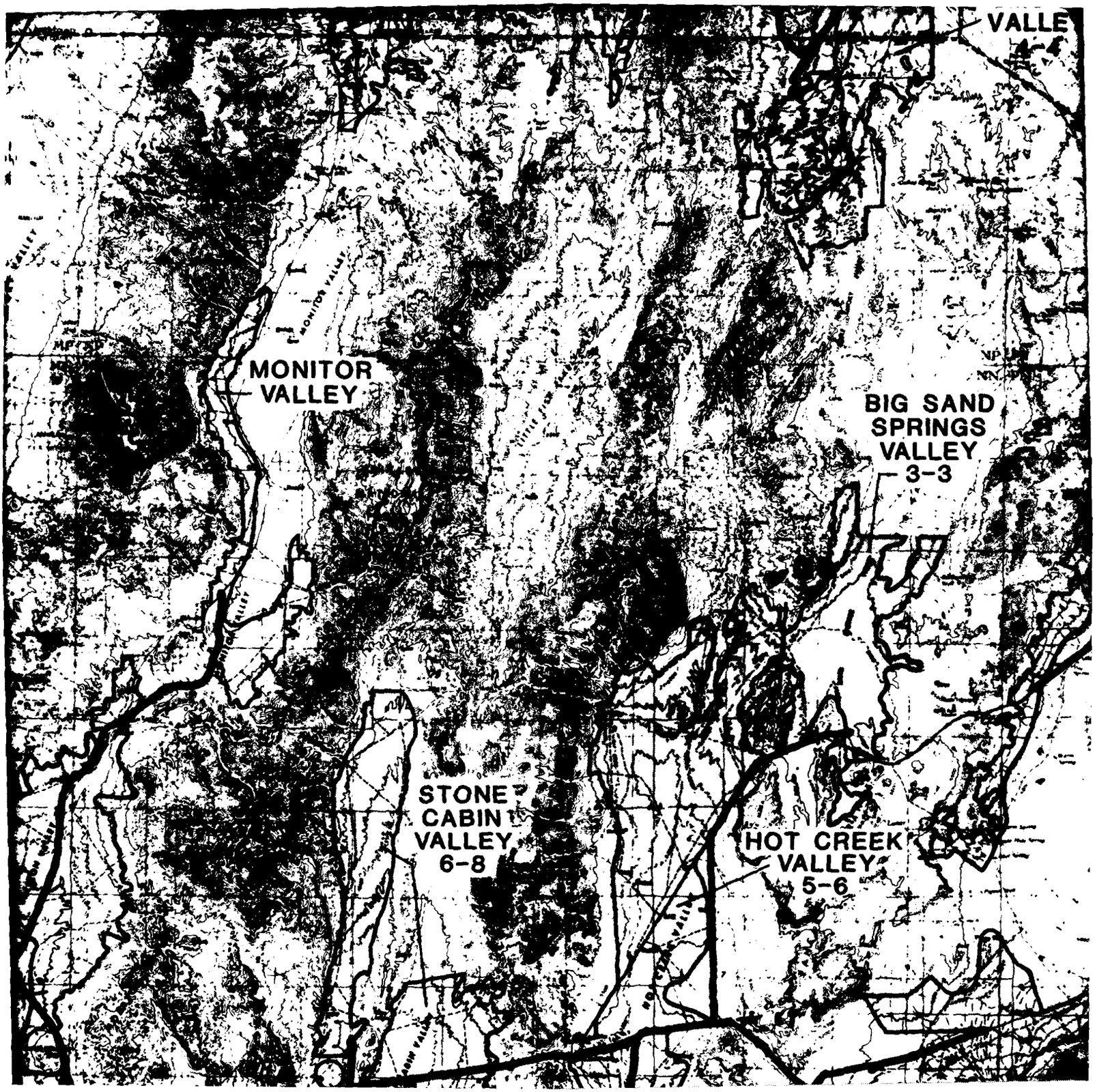

BUTTE
VALLEY
5-9
LONG
VALLEY
3-4
NEWARK
VALLEY
3-5
JAKES
VALLEY
4-3
LITTLE
SMOKY
VALLEY
4-4
ELY
STEPTOE
VALLEY

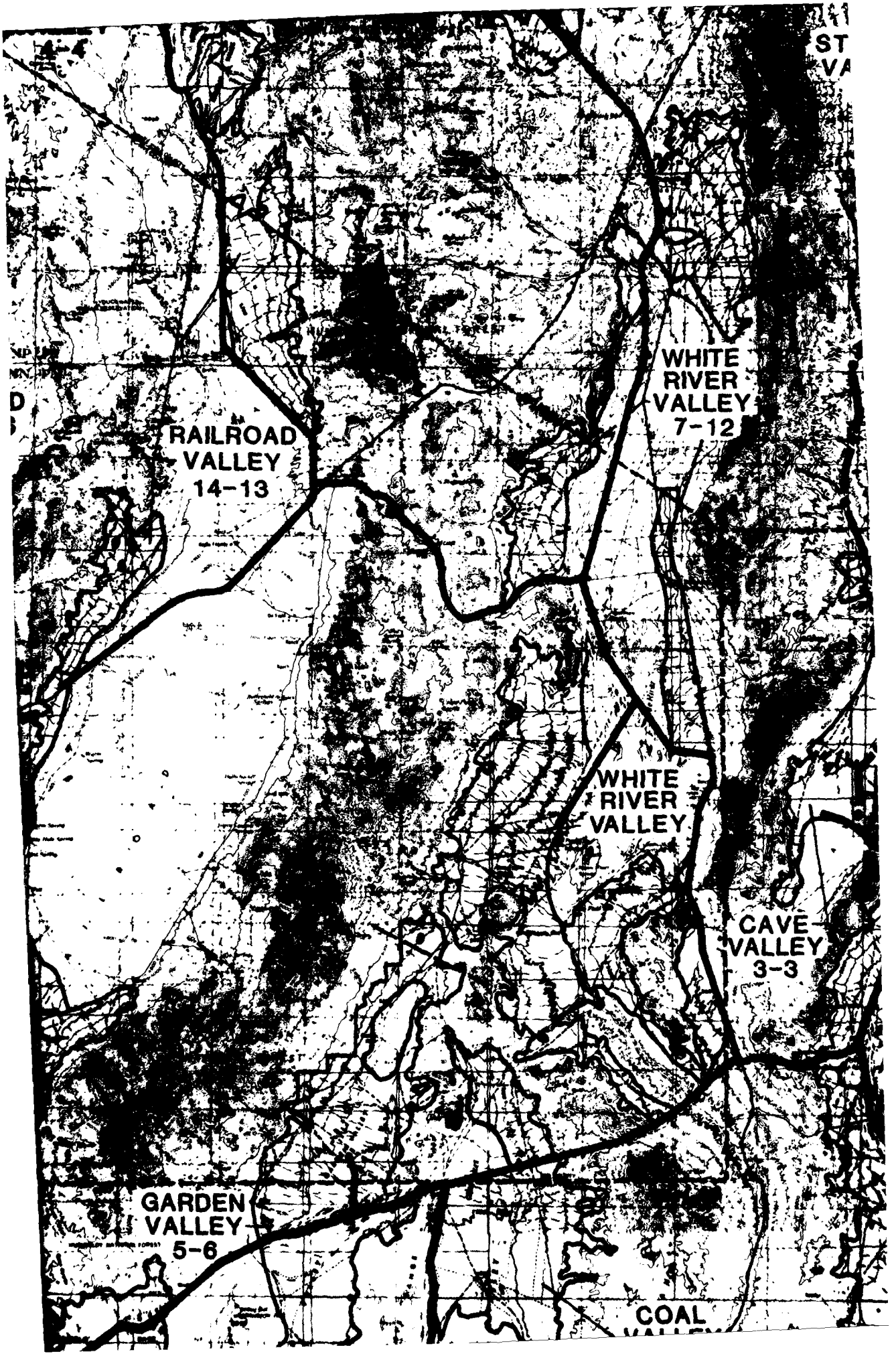

FISH SPRINGS
3-2
SNAKE
VALLEY
13-19
ASC
TULE
VALLEY
9-10
HAMLIN
VALLEY
SNAKE
VALLEY
TULE
VALLEY

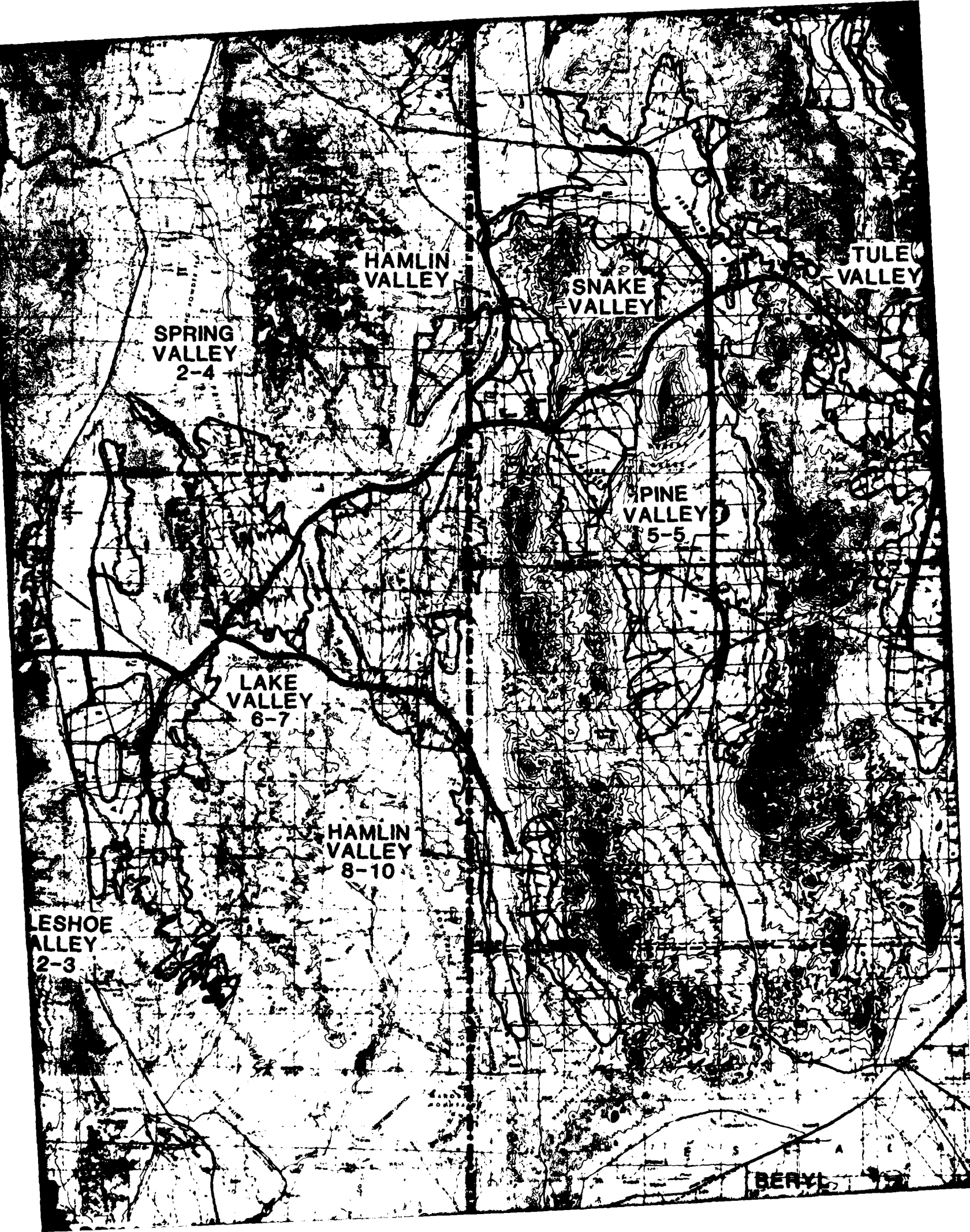

DUGWAY
VALLEY
4-5
FISH SPRINGS FLAT
3-2
SEVIER
DESERT
4-2
TULE
VALLEY
9-10
DELTA
WHIRLWIND
VALLEY
8-12
SEVIER LAKE
TULE
VALLEY
SEVIER
LAKE
3-1

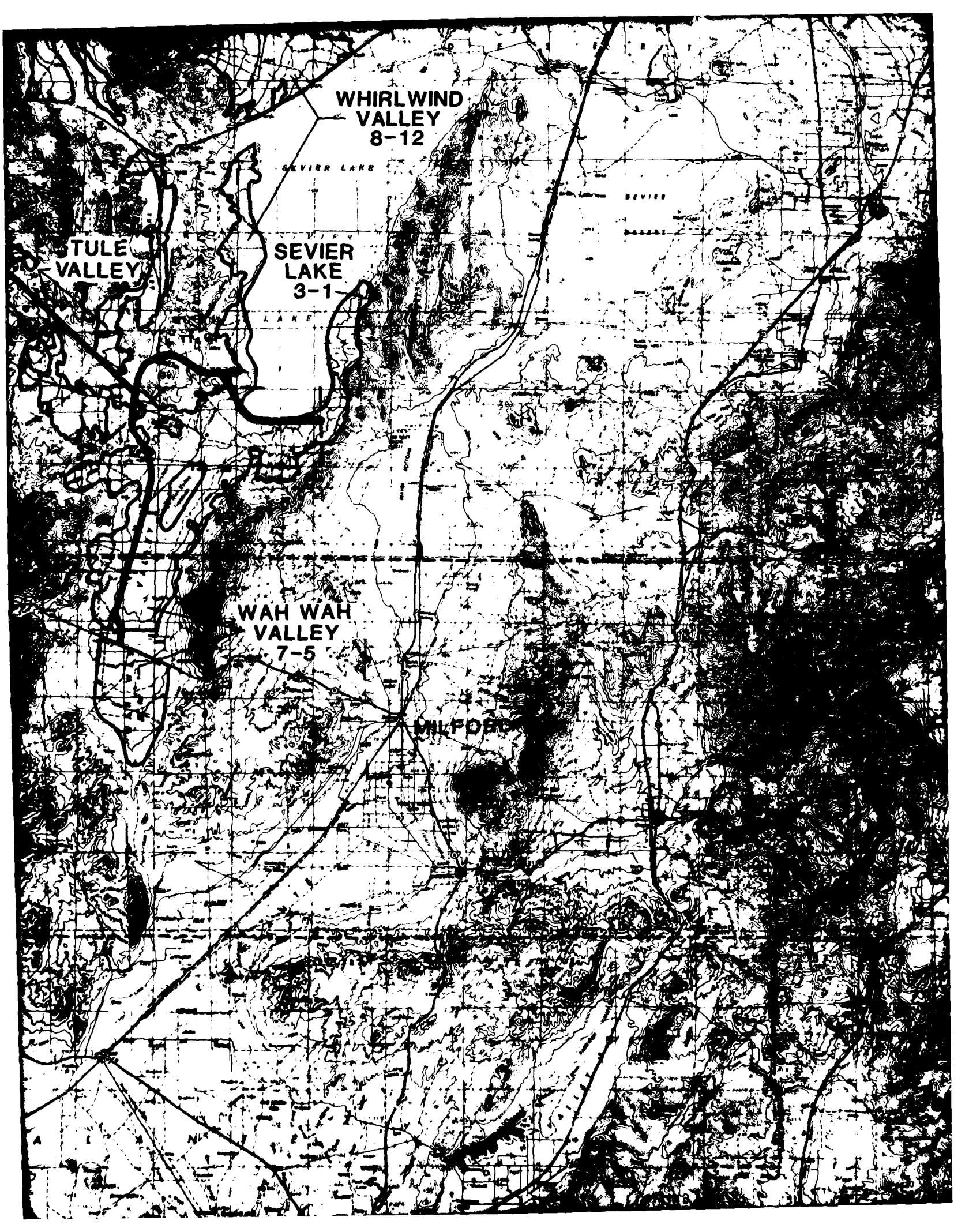

GWAY
LLEY
-5
SEVIER
DESERT
4-2
DELTA
WHIRLWIND
VALLEY
8-12
IER
KE
-1


RALSTON
VALLEY
9-9
BIG SMOKY
VALLEY
10-10

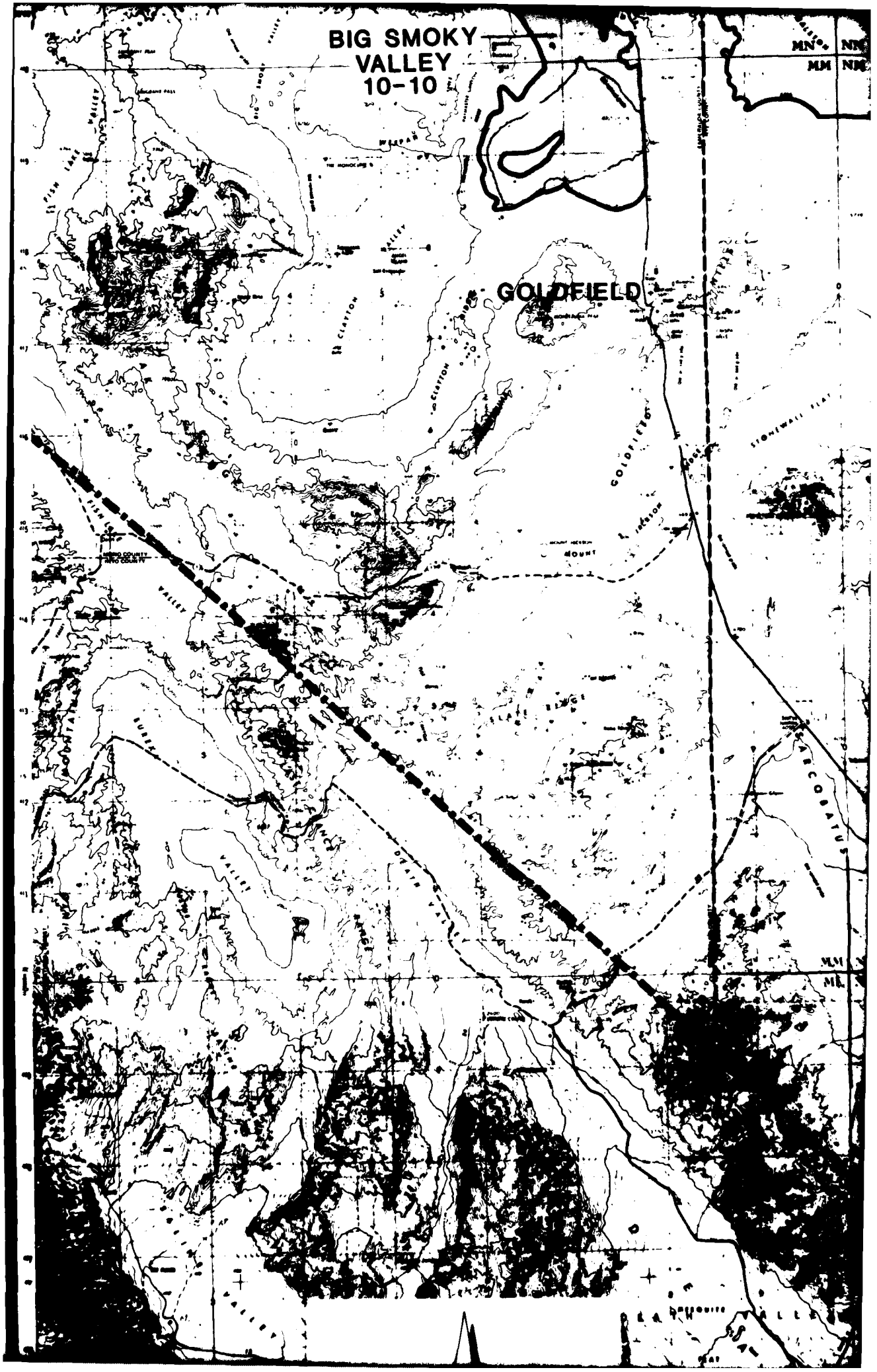

MONITOR VALLEY
BIG SAND SPRINGS VALLEY 3-3
STONE CABIN VALLEY 6-8
HOT CREEK VALLEY 5-6

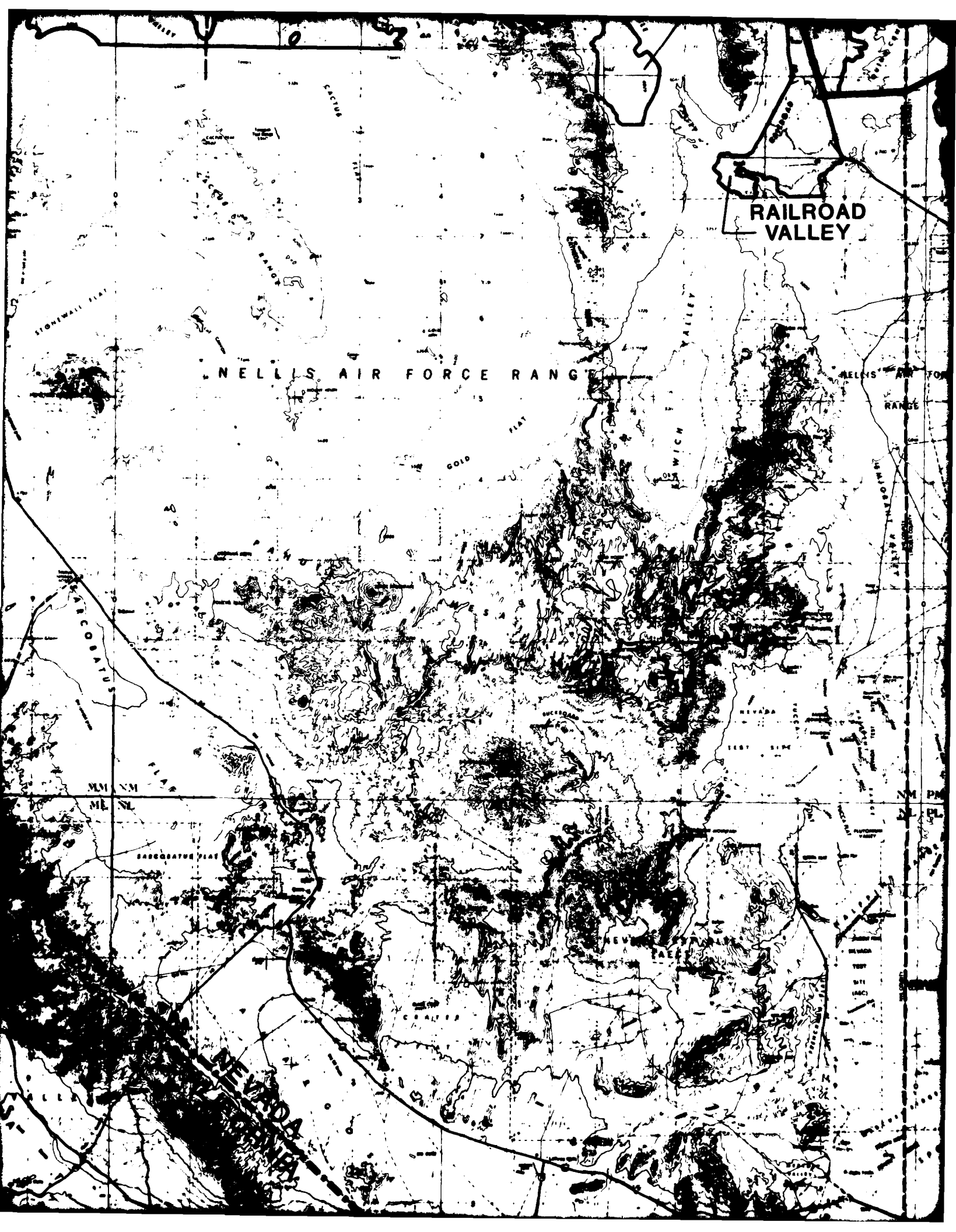

WHITE
RIVER
VALLEY
7-12
RAILROAD
VALLEY
14-13
WHITE
RIVER
VALLEY
CAVE
VALLEY
3-3
GARDEN
VALLEY
5-6
COAL

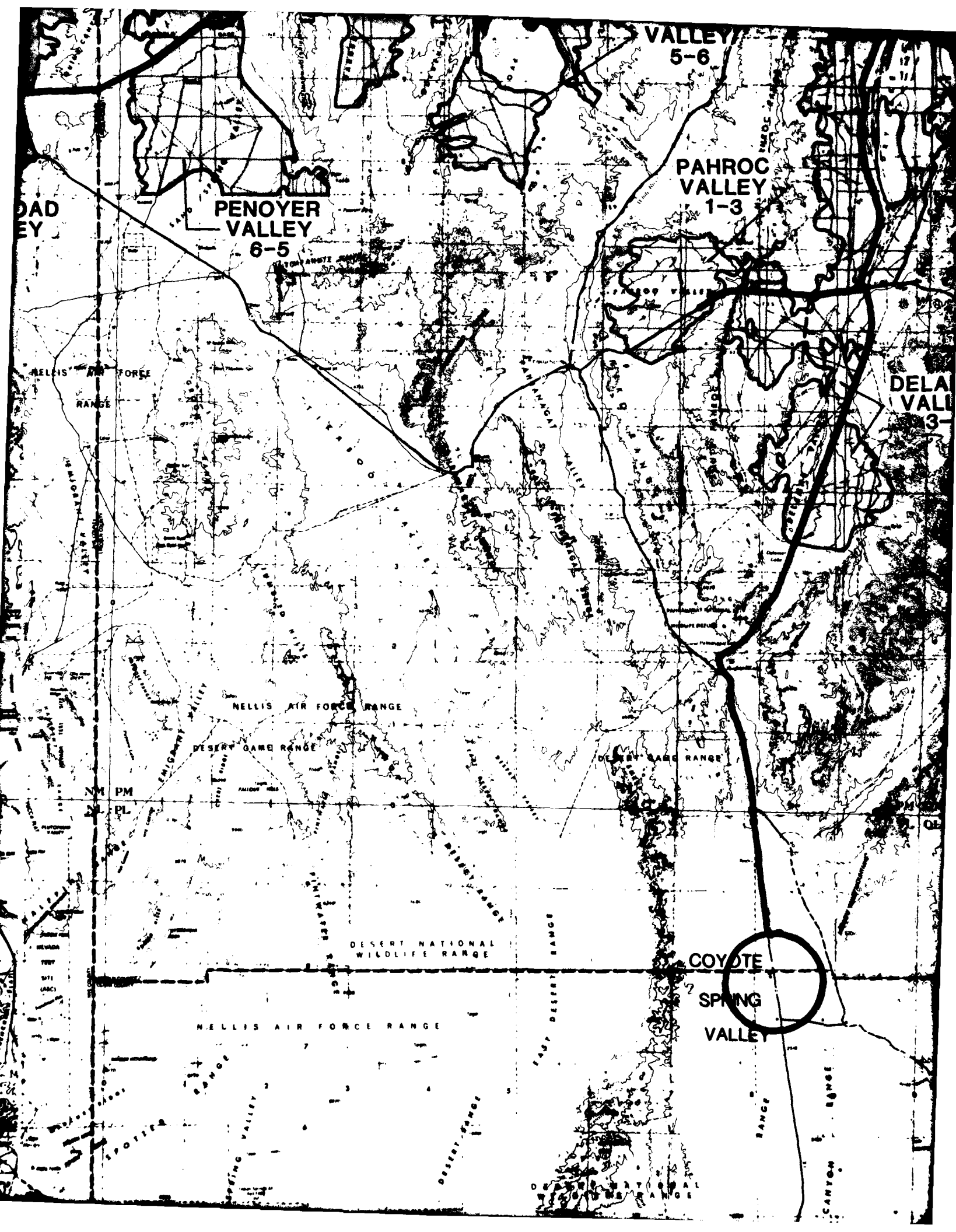

HAMLIN
VALLEY
SNAKE
VALLEY
TULE
VALLEY
SPRING
VALLEY
2-4
SPINE
VALLEY
5-5
LAKE
VALLEY
6-7
HAMLIN
VALLEY
8-10
LESHOE
ALLEY
2-3
BERYL

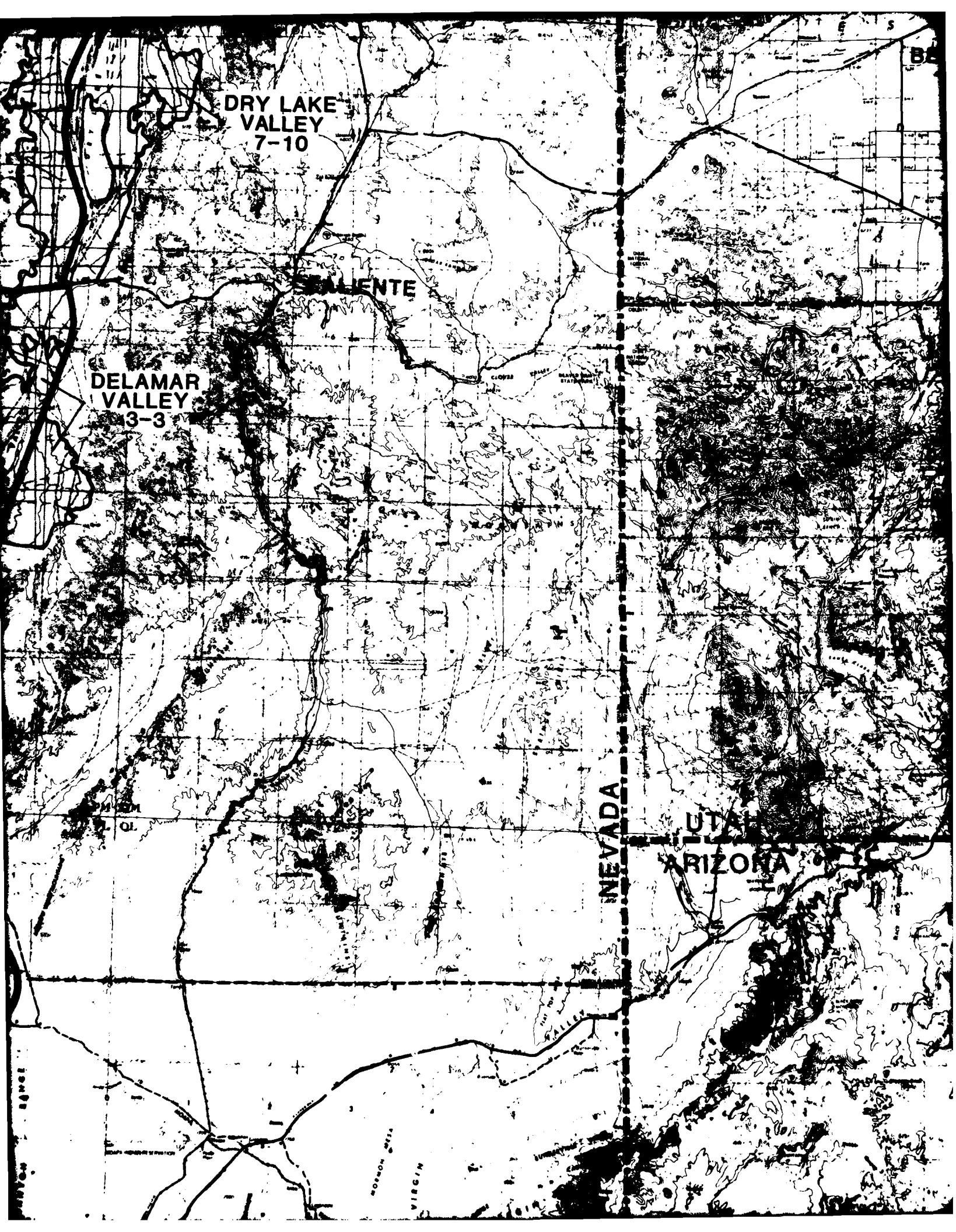

WHIRLWIND
VALLEY
8-12
SEVIER LAKE
TULE
VALLEY
SEVIER
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MILFORD


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SEVIER LAKE
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7-5
MILFORD


BIG SMOKY
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10-10
GOLDFIELD


RAILROAD
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NELLIS AIR FORCE RANGE
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VALLEY
5-6
PAHROC
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PENOYER
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DESERT GAME RANGE
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VALLEY
NELLIS AIR FORCE RANGE


DRY LAKE
VALLEY
7-10
DELAMAR
VALLEY
3-3
NEVADA
UTAH
ARIZONA



EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK
BASE (OB) SITE IN COYOTE SPRING VALLEY, NEVADA

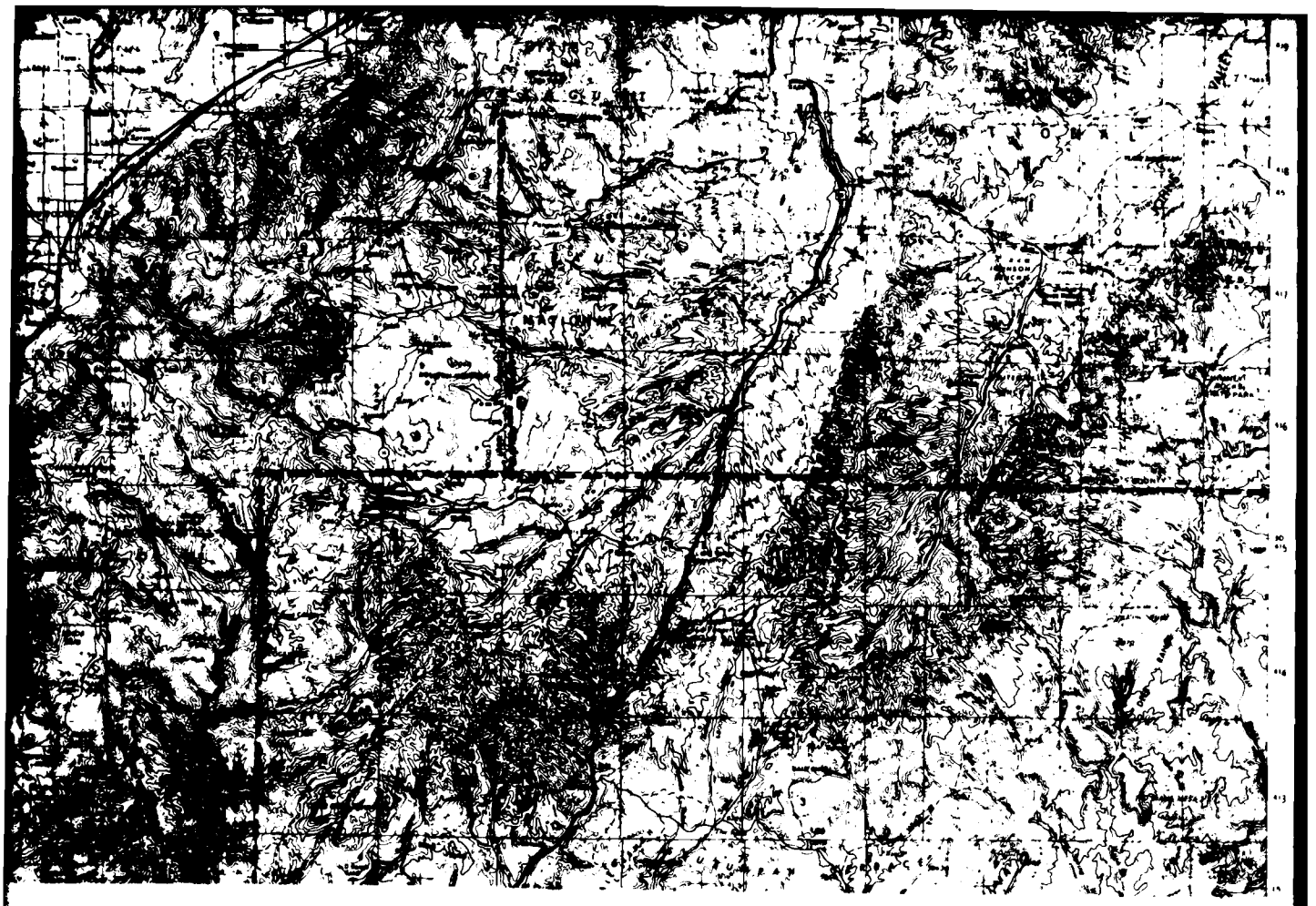
STEPTOE VALLEY DELETED FROM FURTHER STUDIE

PORTION OF SUITABLE AREA CLUSTERED

AREA SUPPORT CENTER (ASC)

NOTES: 1. CLUSTERED AREAS ARE BASED ON 5200 + 200– FOOT
HEXAGONAL PATTERN, WITH 23 PRIMARY MULTIPLE
TURES (SHELTERS).

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CATION FIELD STUDIES STILL IN PROGRESS.



EXPLANATION

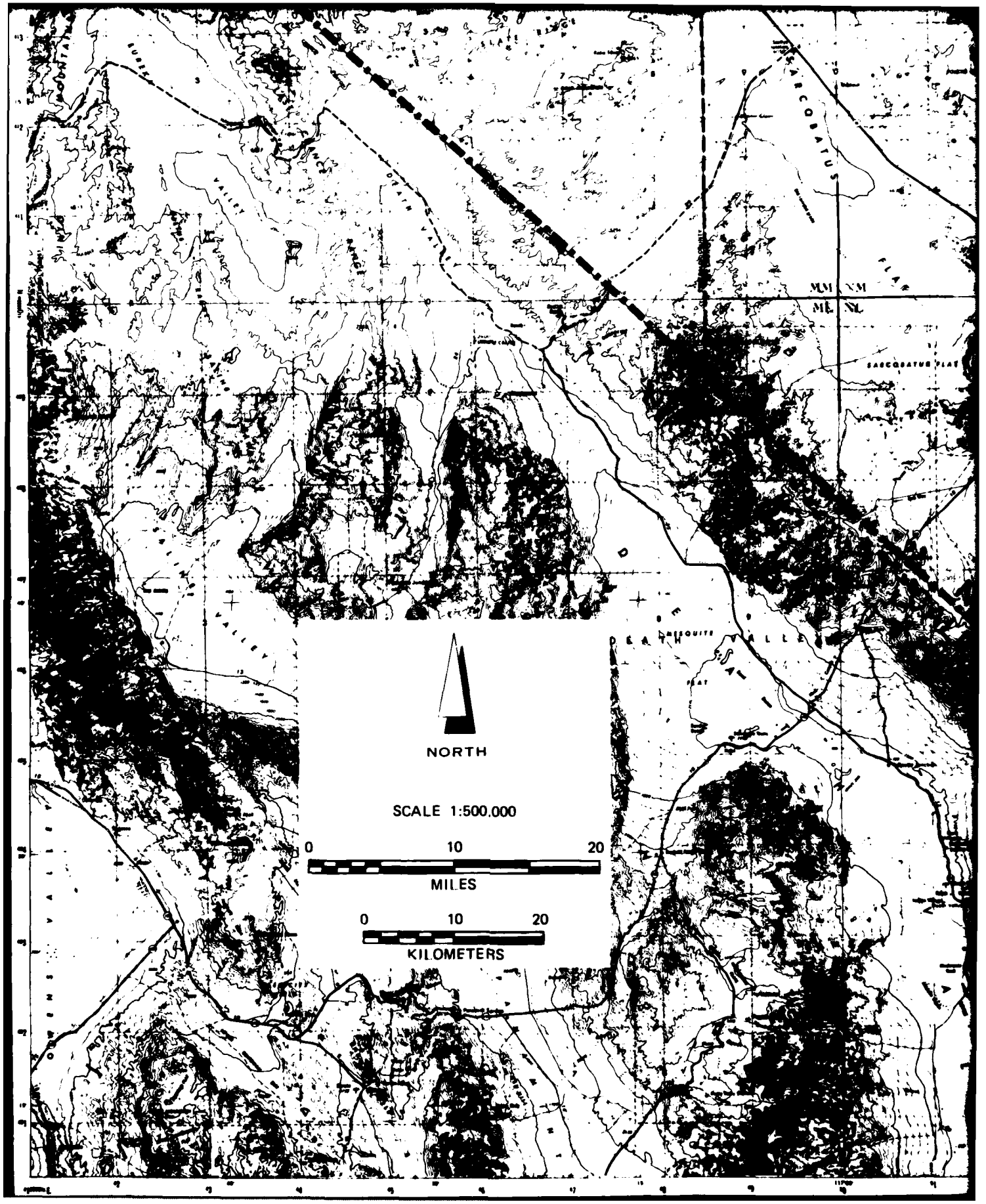
ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR OPERATIONAL BASE (OB) SITE IN COYOTE SPRING VALLEY, NEVADA

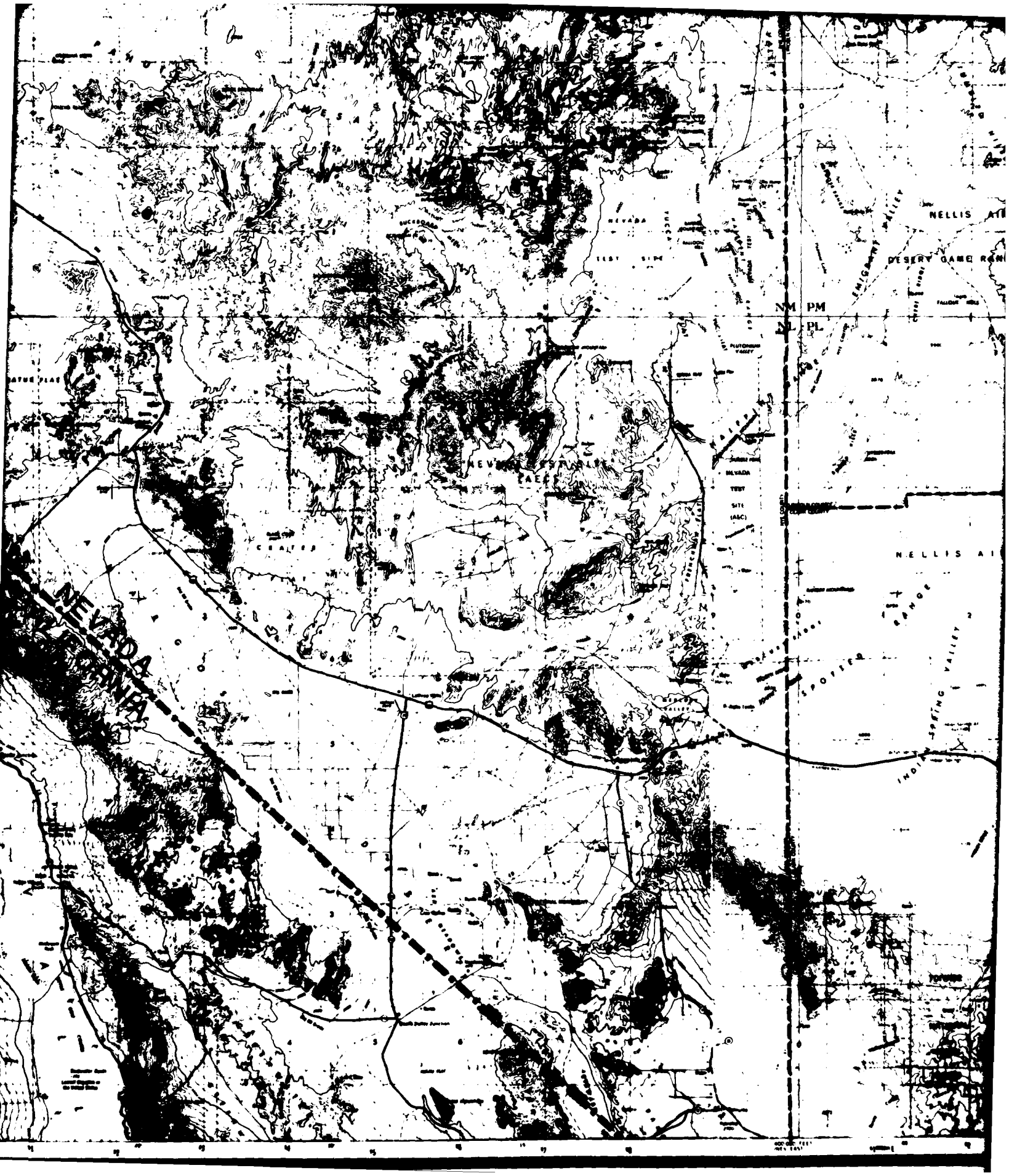
STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTEMBER 1980

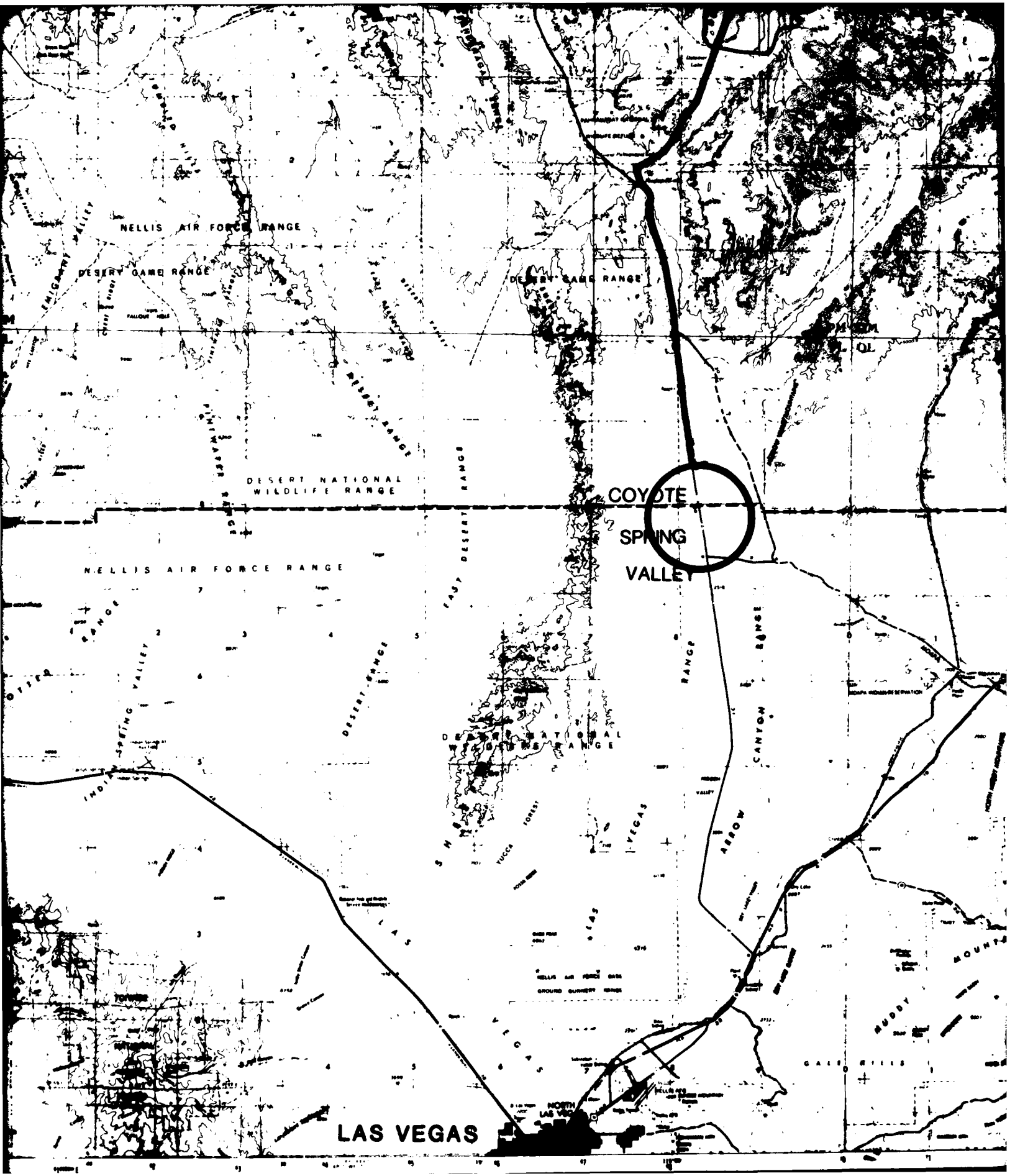
PORTION OF SUITABLE AREA CLUSTERED

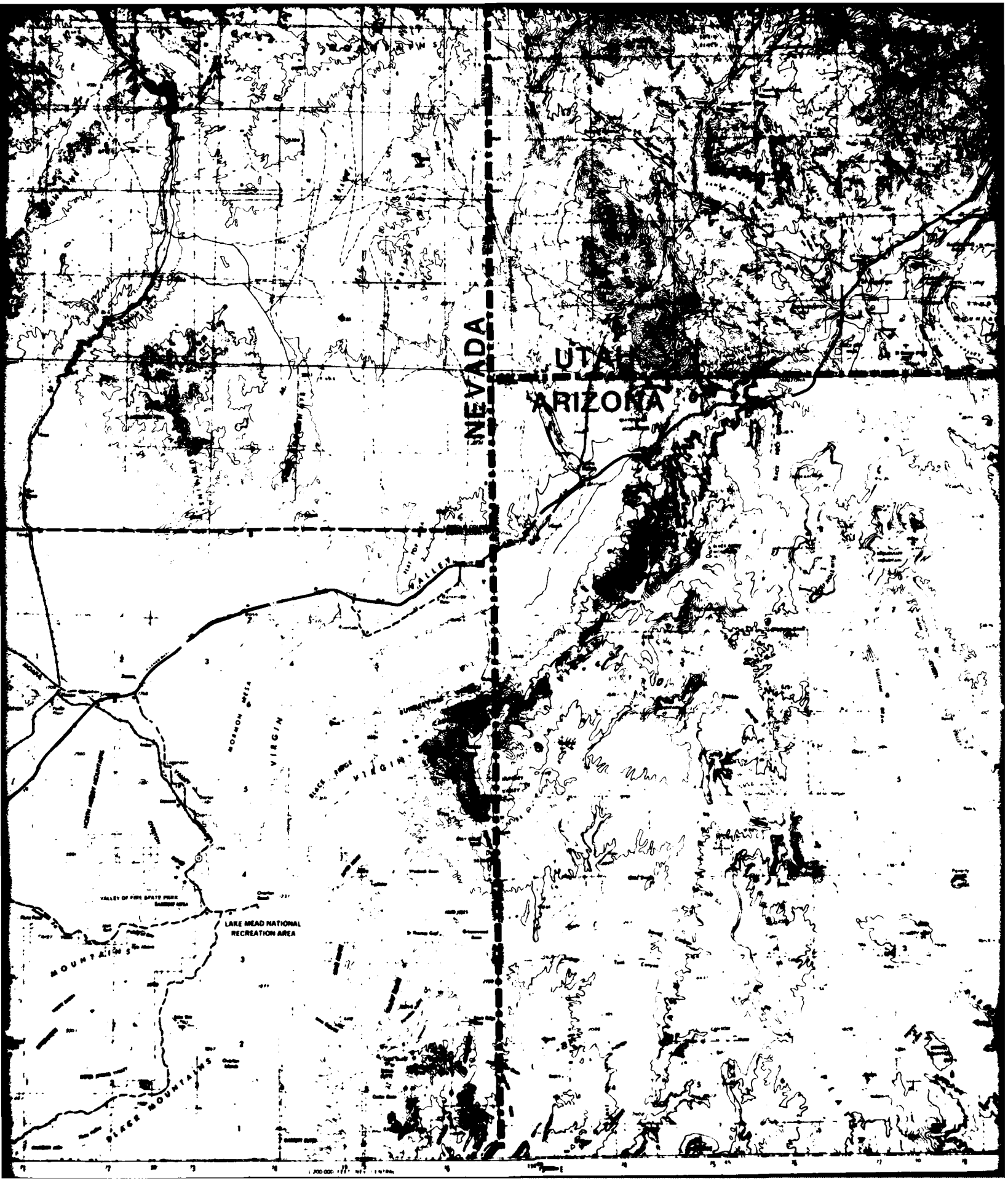
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SCALE 1:500,000
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KILOMETERS


NEVADA
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DESERT GAME RANGE
DESERT GAME RANGE
DESERT NATIONAL WILDLIFE RANGE
COYOTE SPRING VALLEY
NELLIS AIR FORCE RANGE
LAS VEGAS


NEVADA
UTAH
ARIZONA
VIRGIN
MORMON MESA
VIRGIN
LAKE MEAD NATIONAL
RECREATION AREA
MOUNTAINS
BLACK MOUNTAINS



EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR O
BASE (OB) SITE IN COYOTE SPRING VALLEY, NEVADA

STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTE

PORTION OF SUITABLE AREA CLUSTERED

AREA SUPPORT CENTER (ASC)

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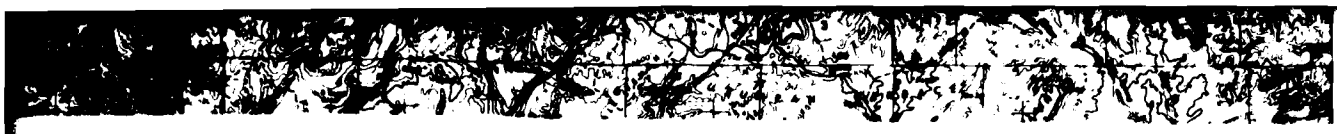
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MX SITING
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AND AREA SUPPORT C
NEVADA/UTAH



EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR OPERATIONAL BASE (OB) SITE IN COYOTE SPRING VALLEY, NEVADA

STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTEMBER 1980

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AREA SUPPORT CENTER (ASC)

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30 NOV 1981

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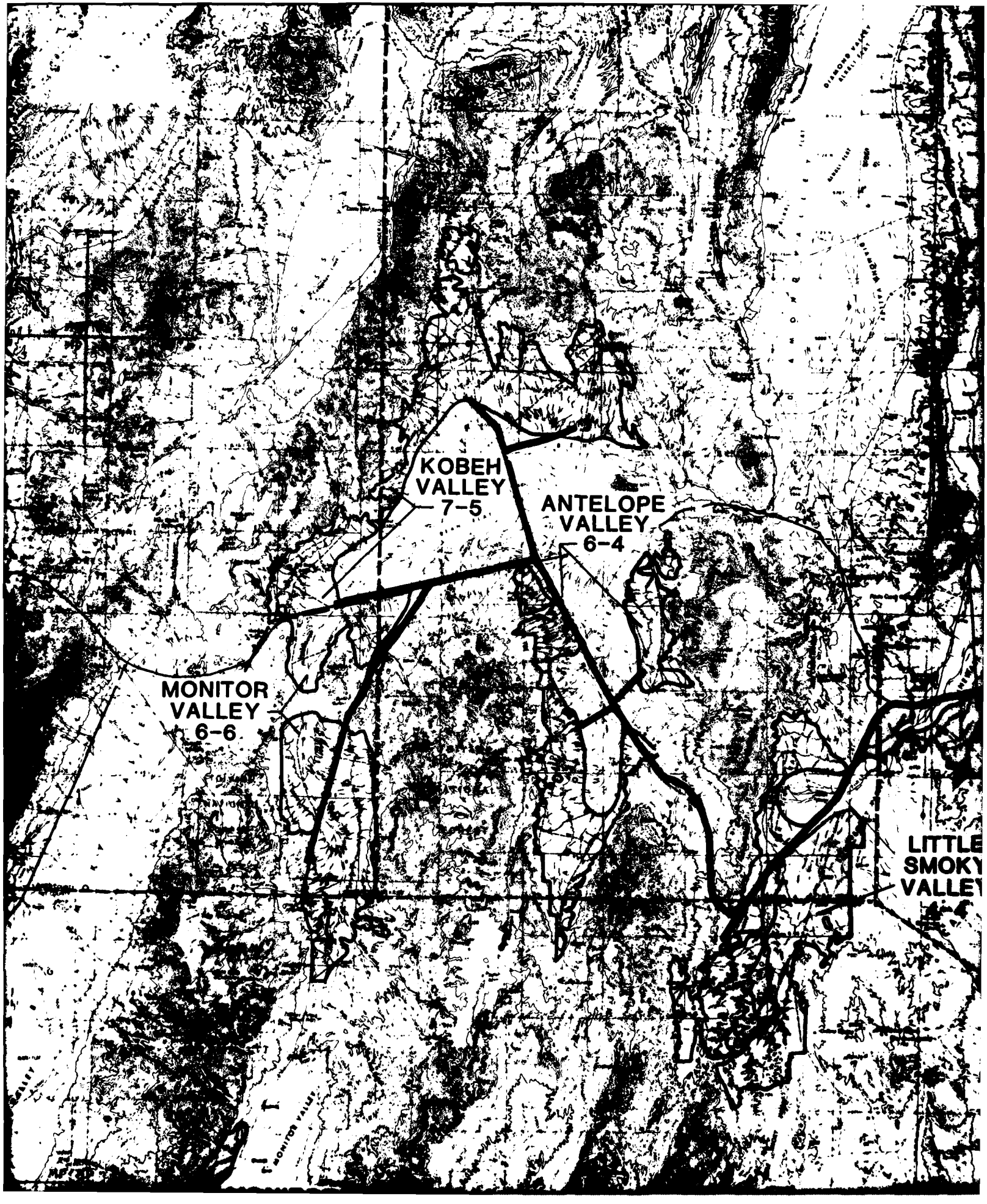
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

PREFERRED DTN AND ASC SITES MAIN OPERATING BASE AT COYOTE SPRING VALLEY, NEVADA

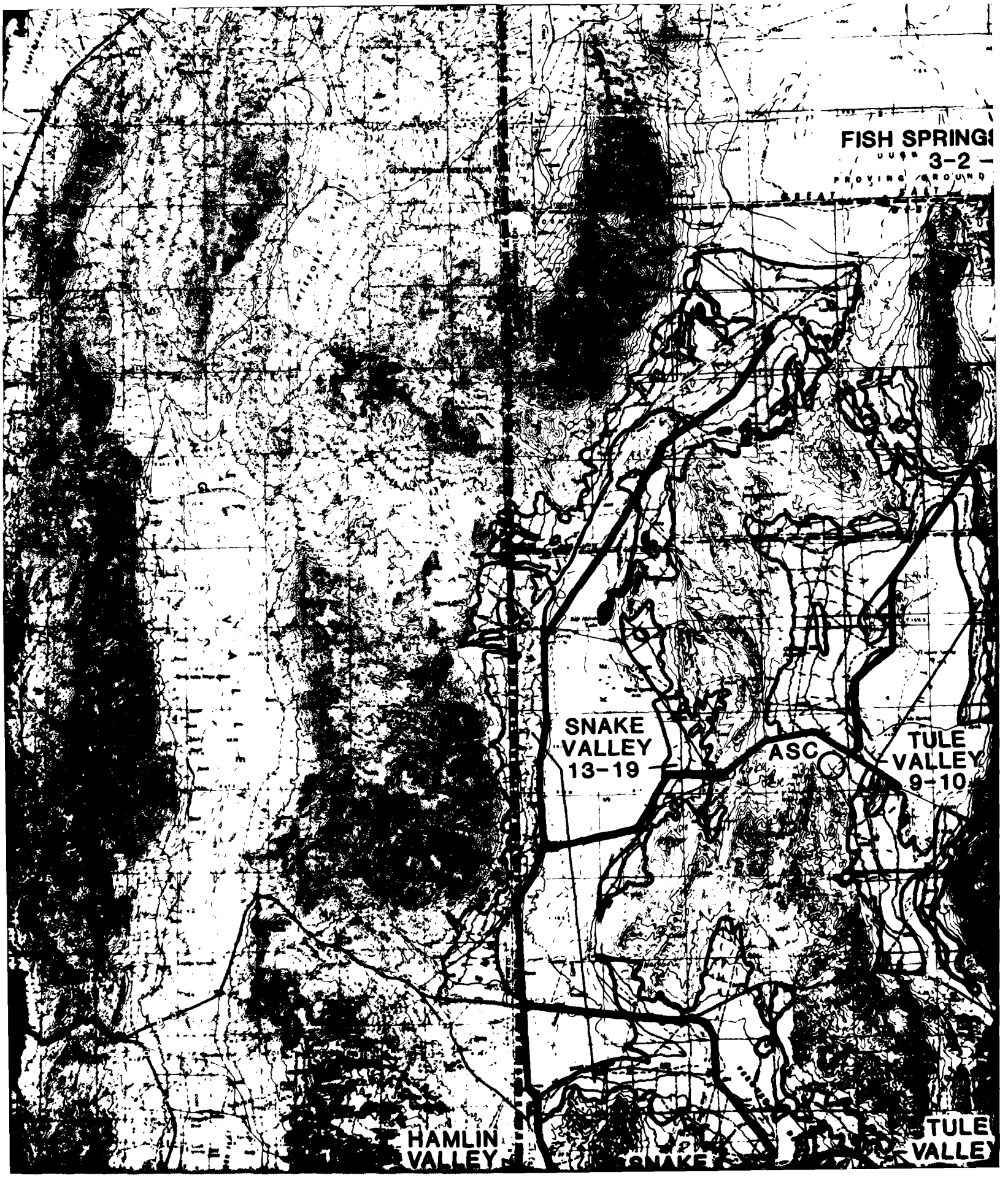
DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

VOLUME II PART I
DRAWING 7-1

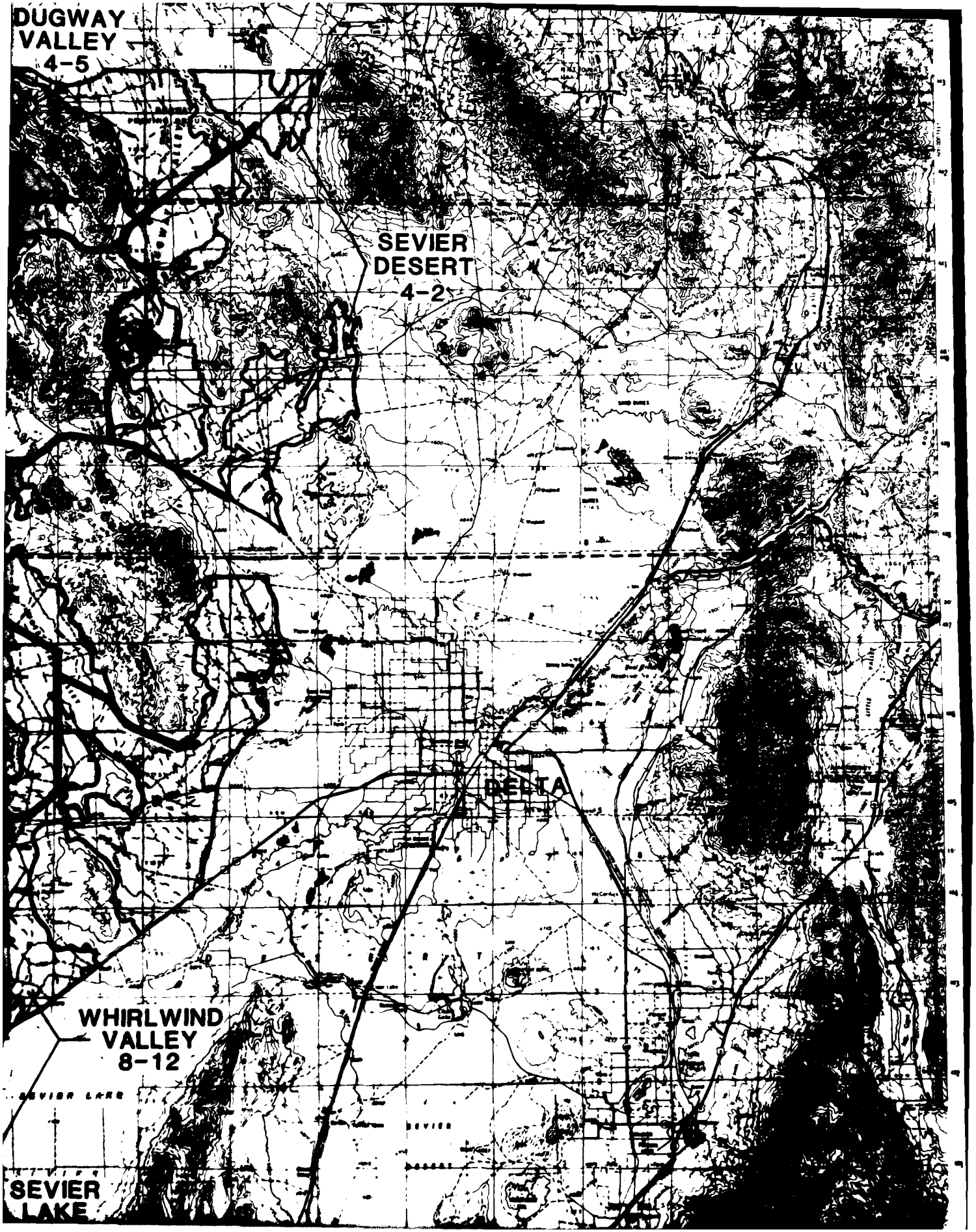
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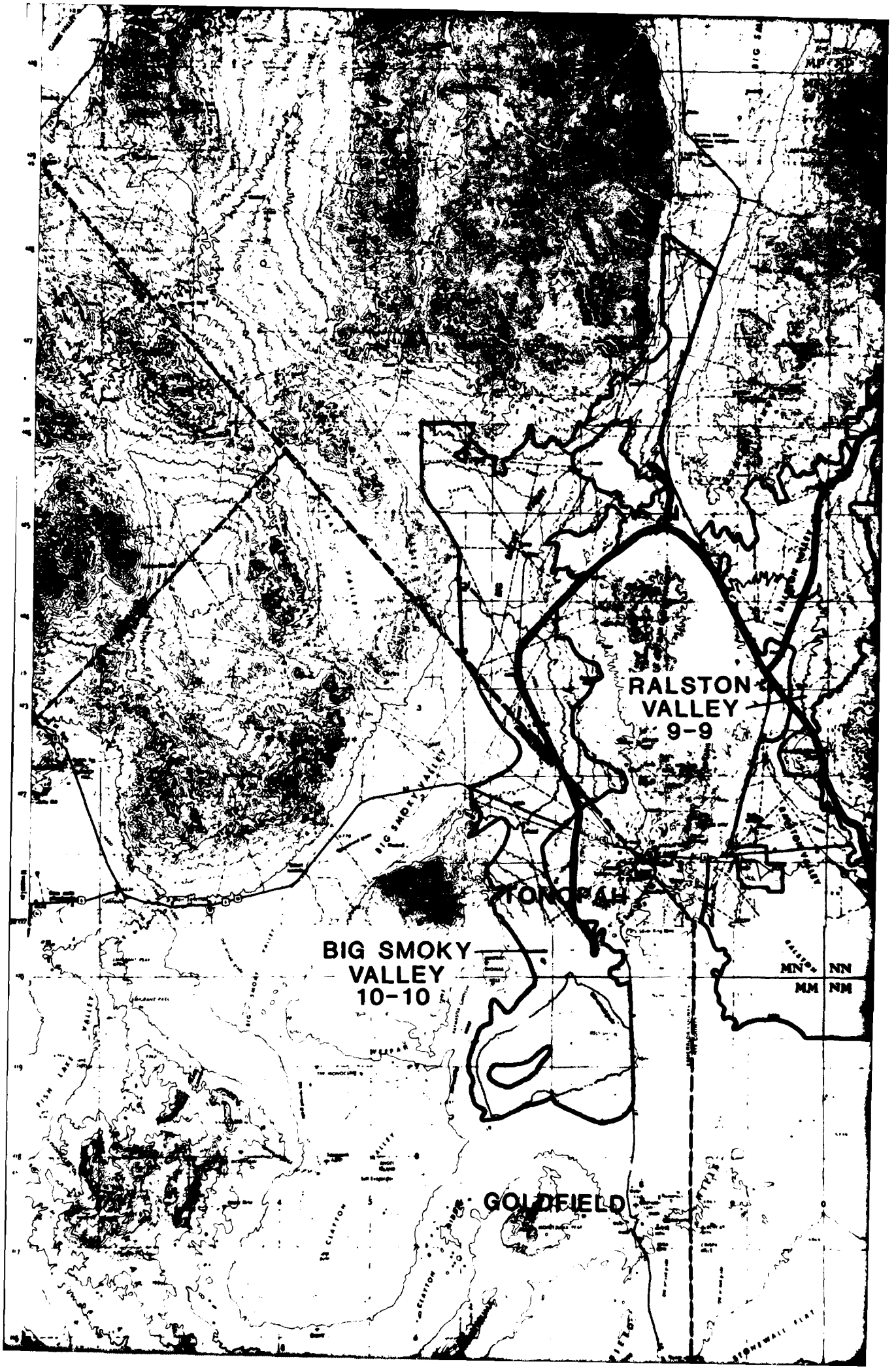

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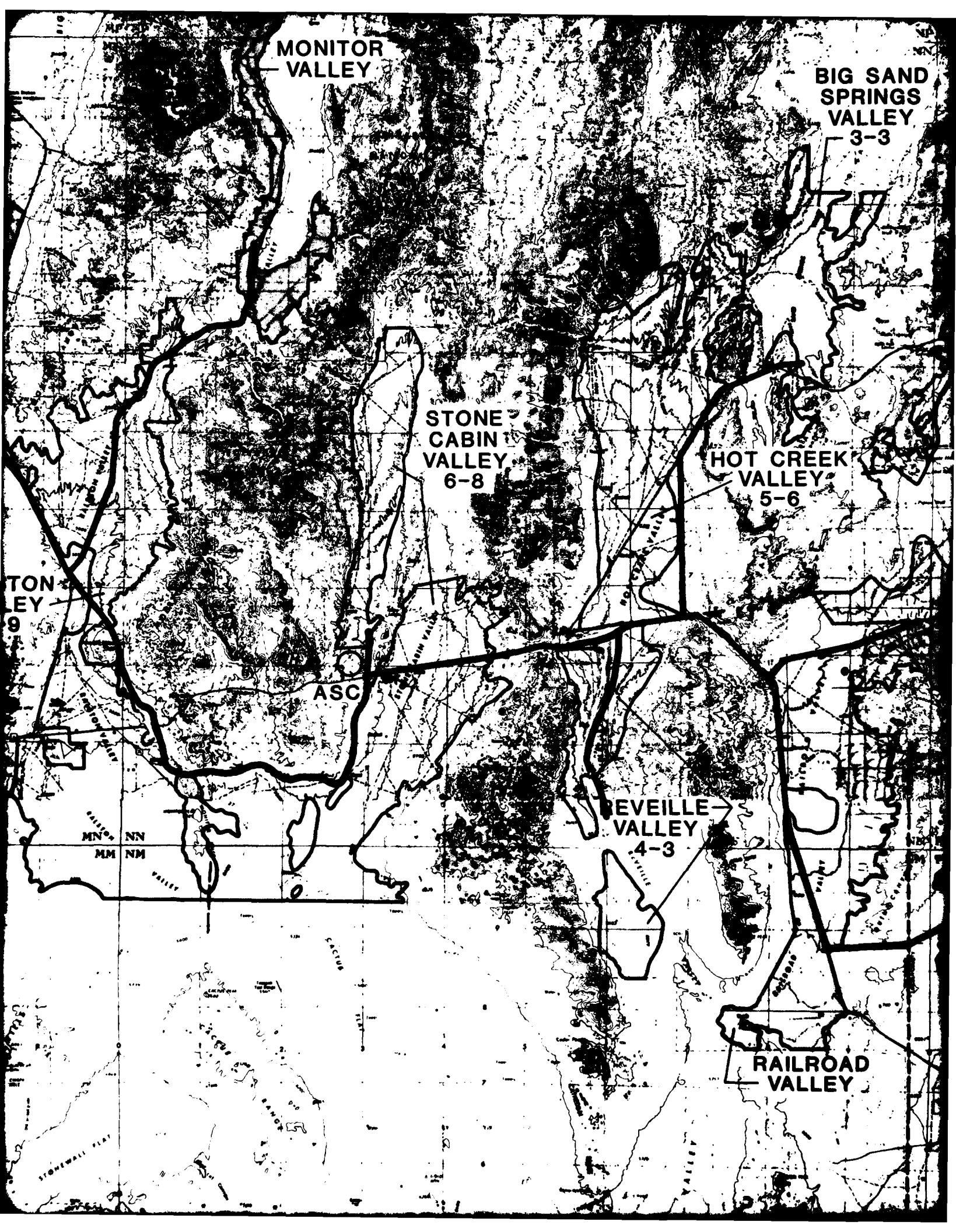

BUTTE
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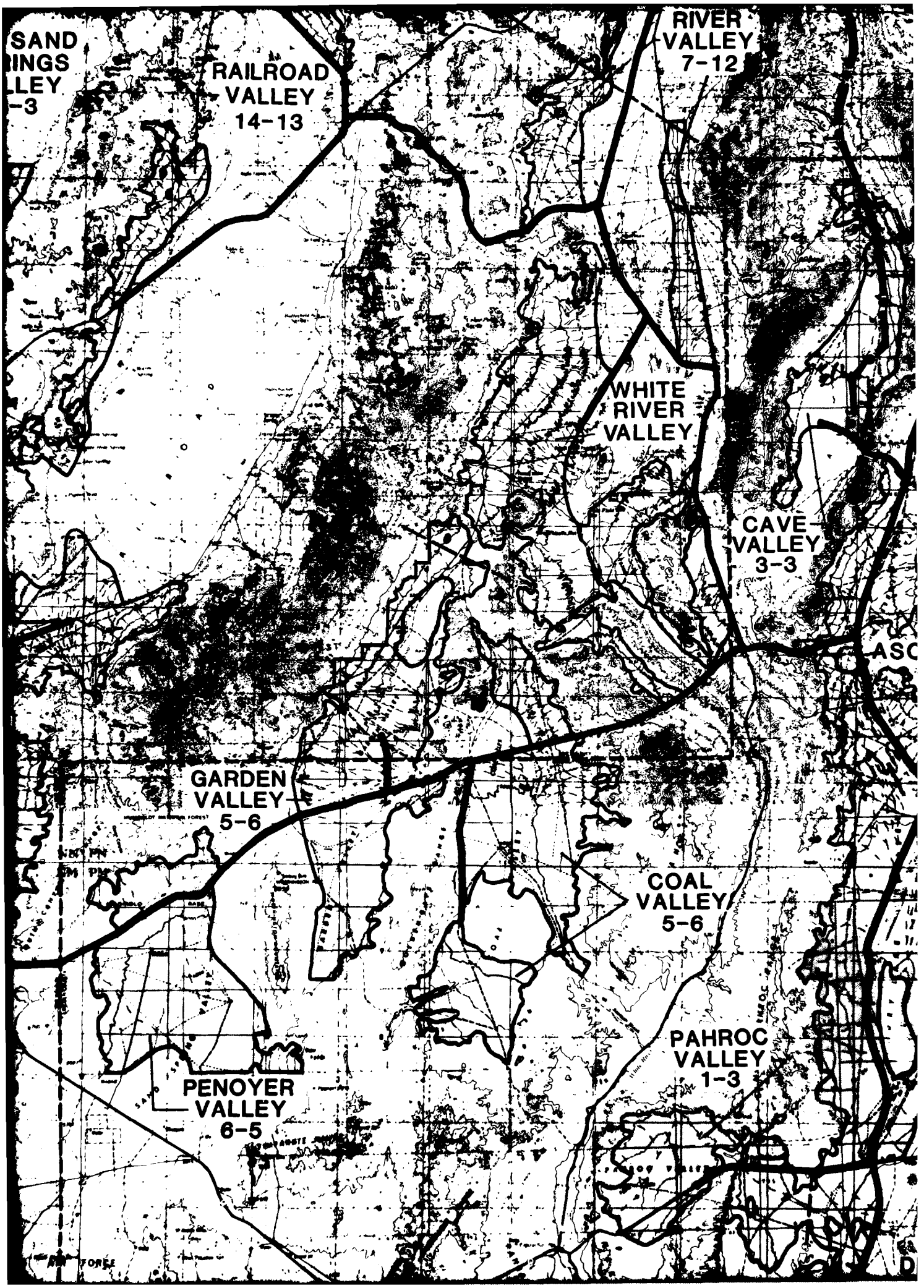

FISH SPRINGS
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HAMLIN
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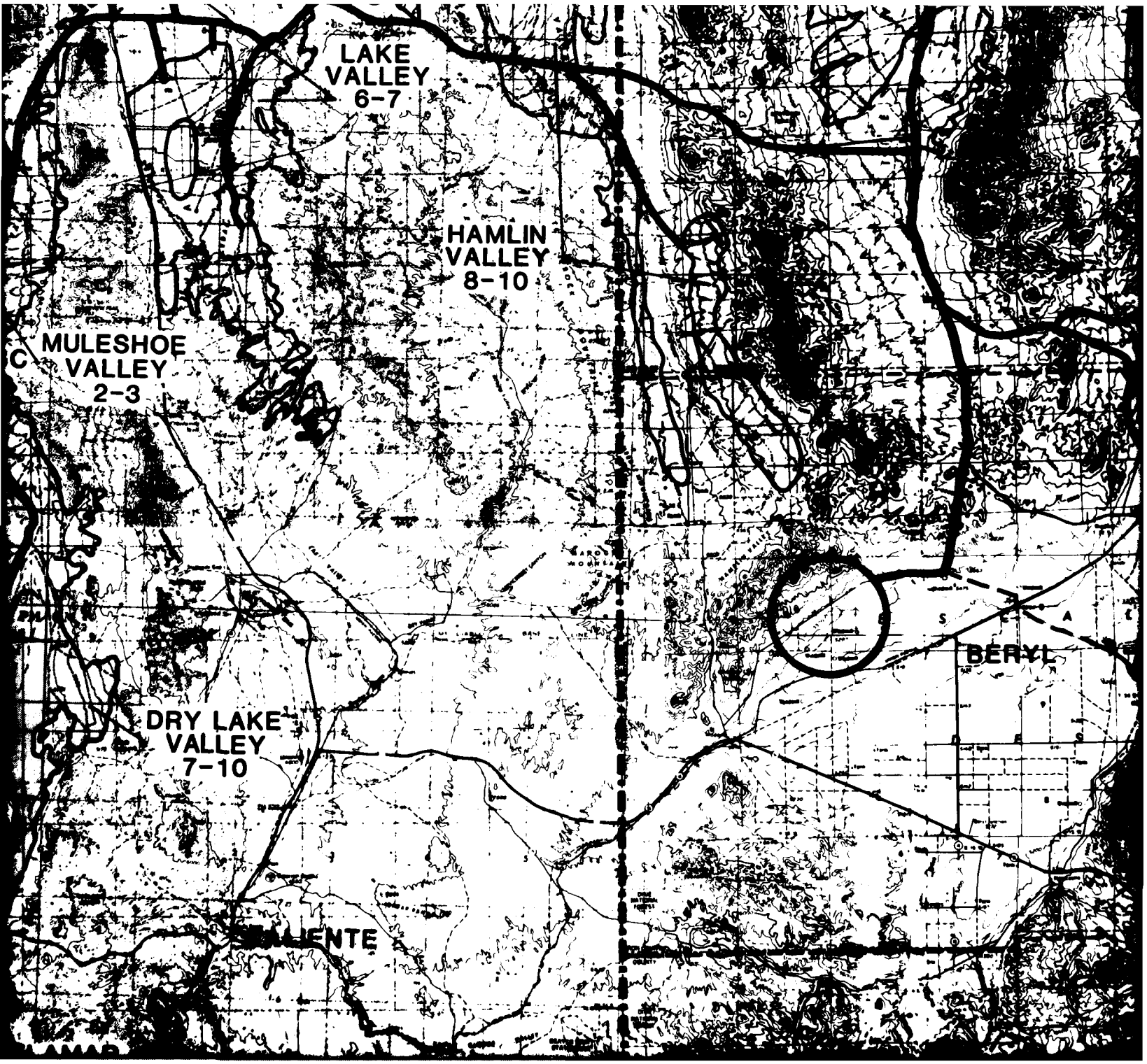

DUGWAY
VALLEY
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FISH SPRINGS FLAT
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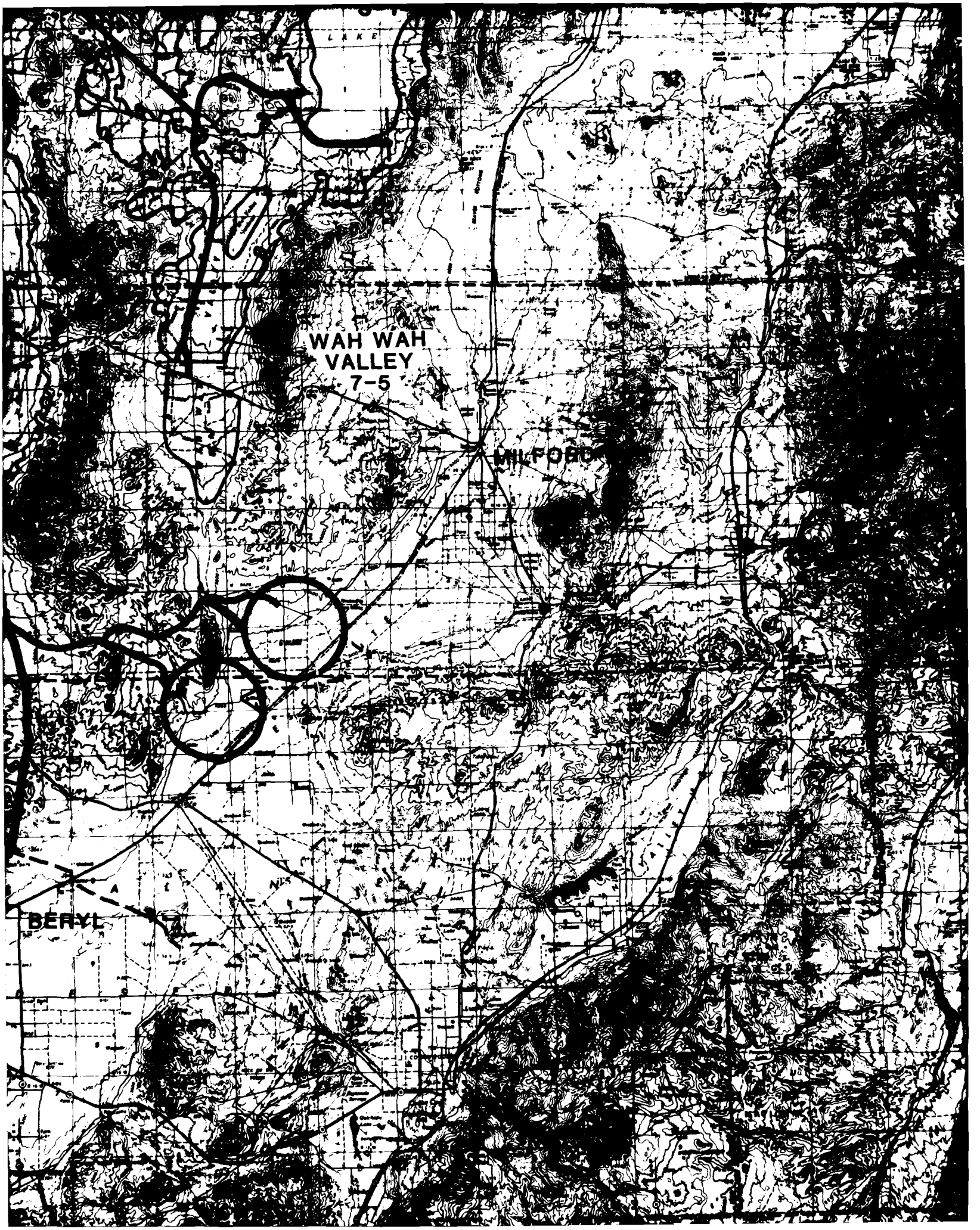

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SEVIER LAKE

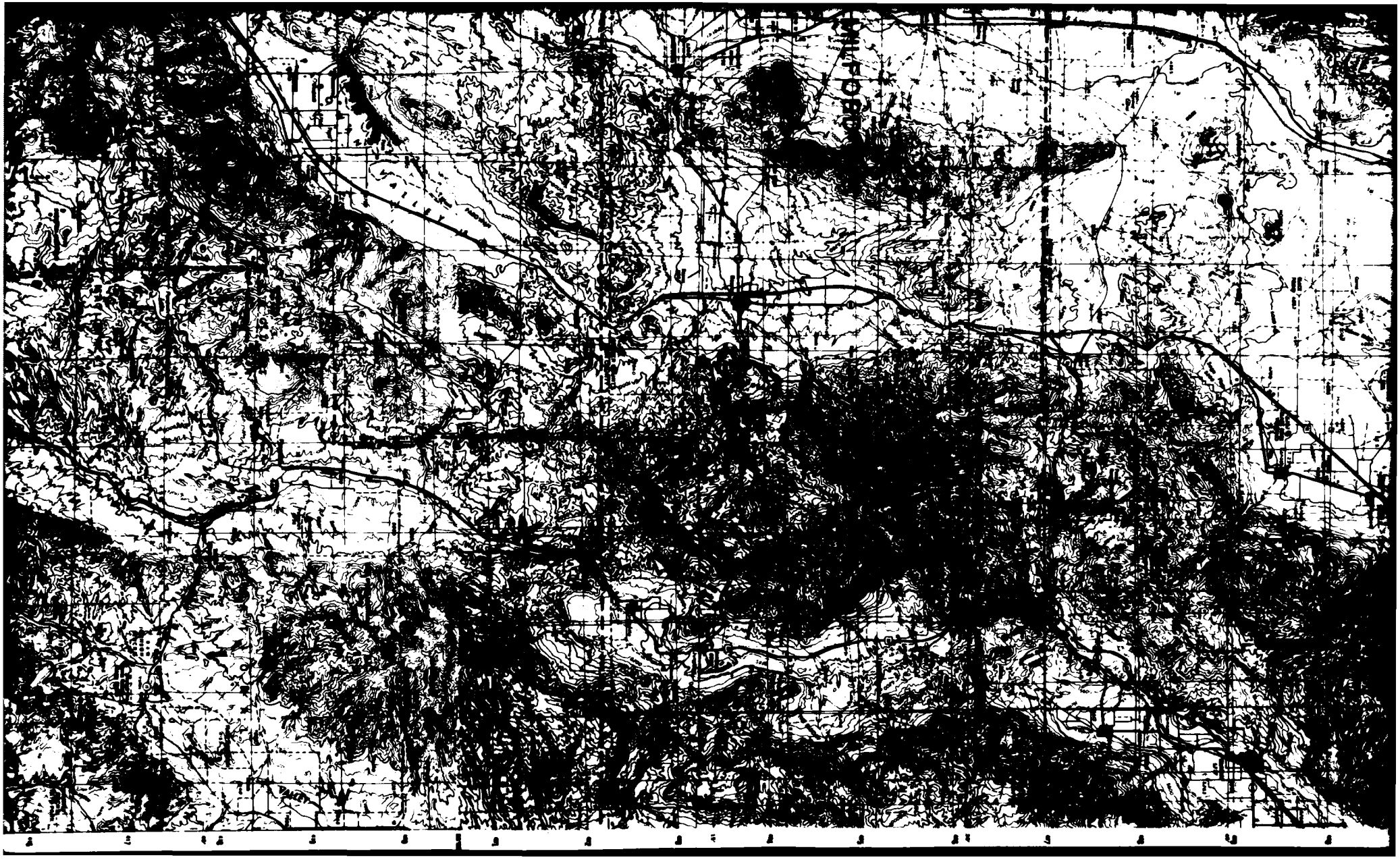

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9-9
TONOPAH
BIG SMOKY
VALLEY
10-10
GOLDFIELD

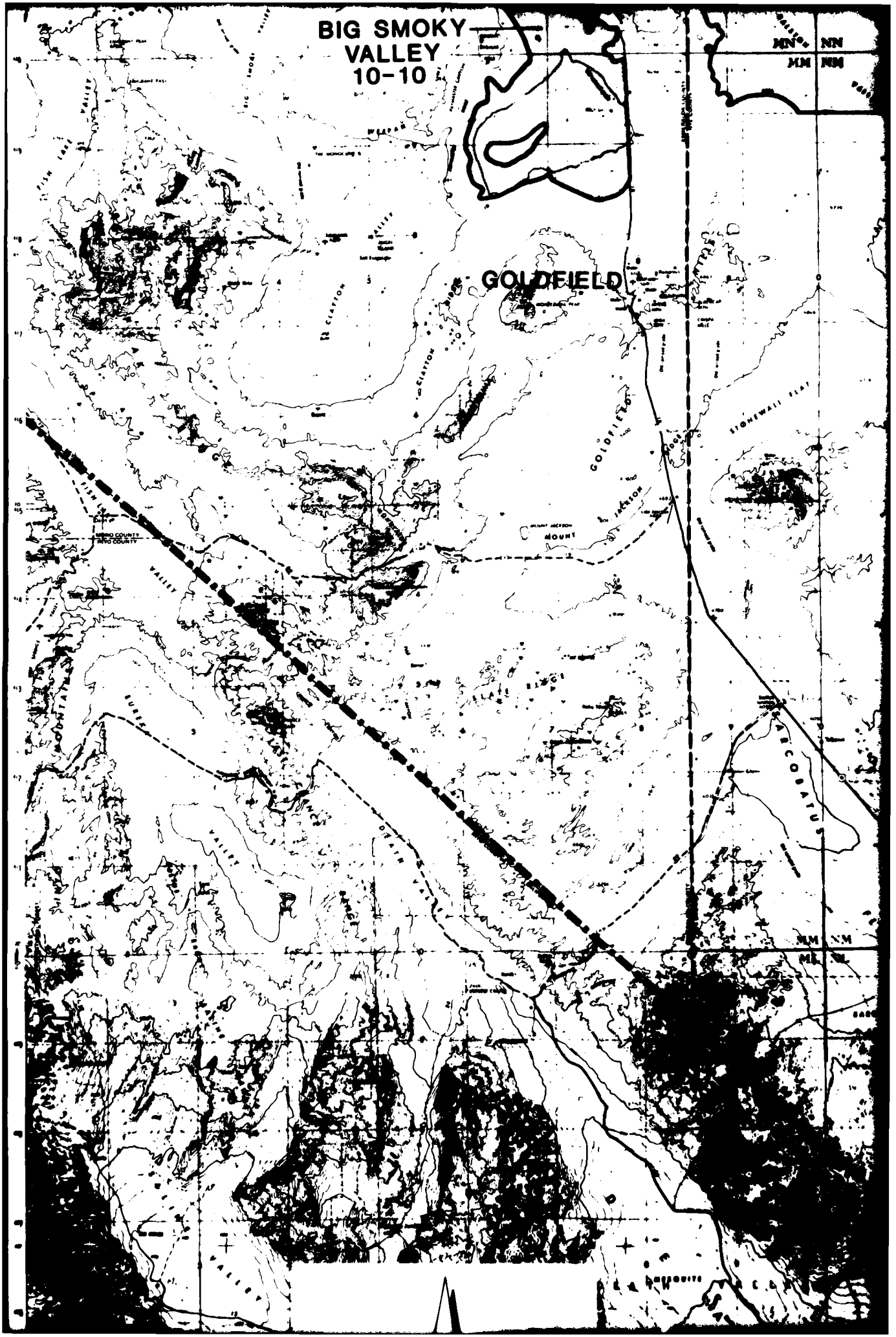

MONITOR VALLEY
BIG SAND SPRINGS VALLEY 3-3
STONE CABIN VALLEY 6-8
HOT CREEK VALLEY 5-6
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RAILROAD VALLEY

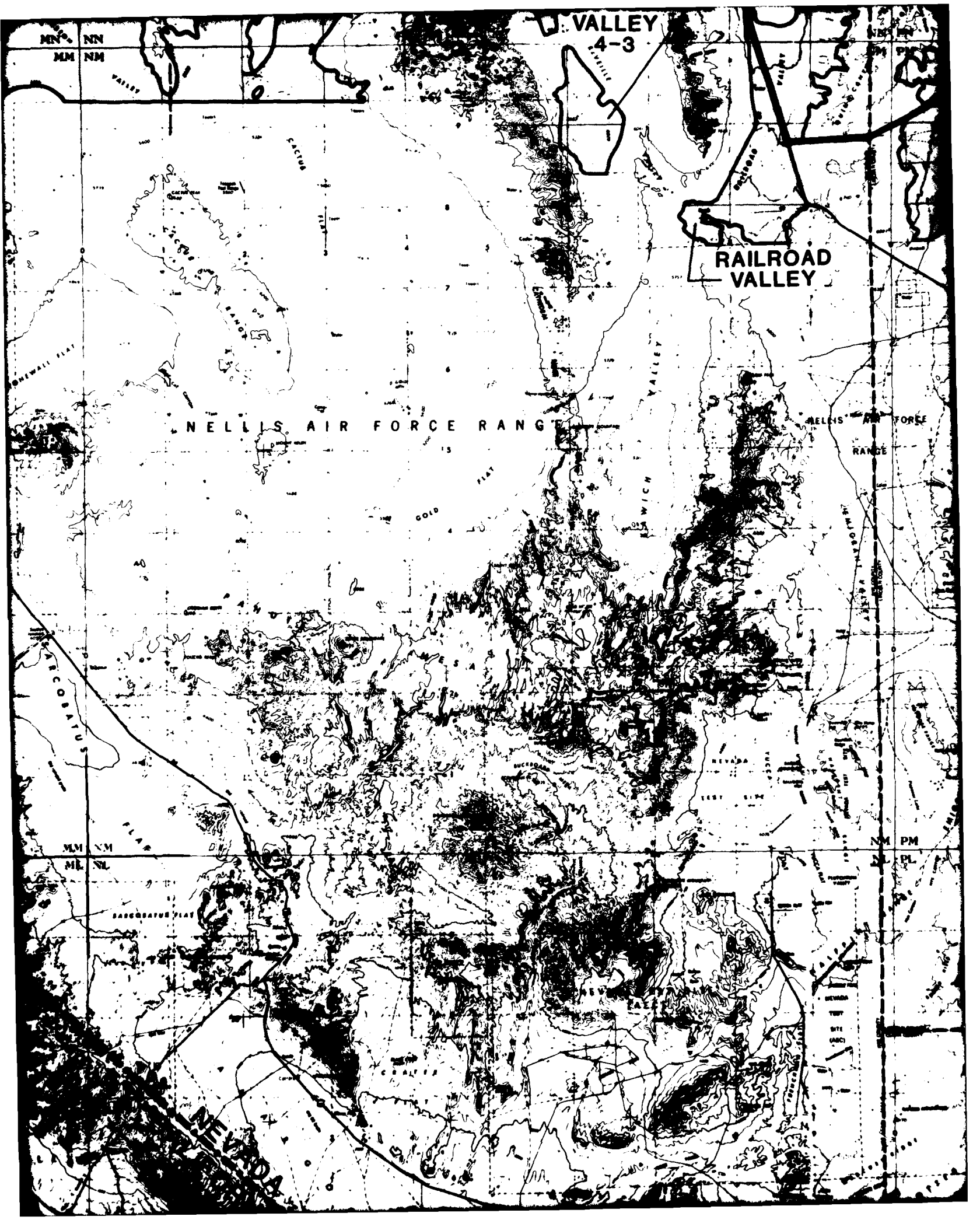

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PENOYER
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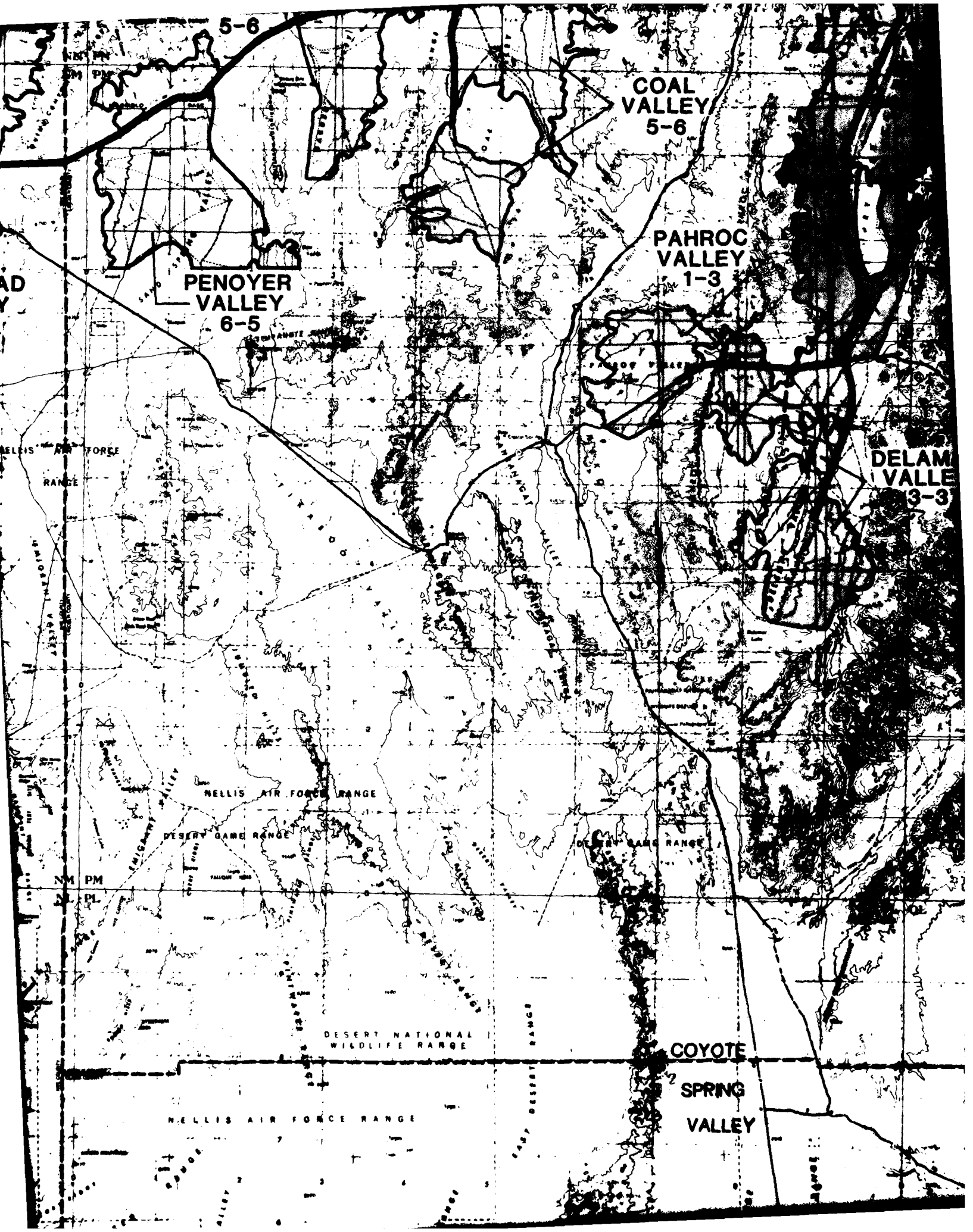

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DRY LAKE
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BERYL

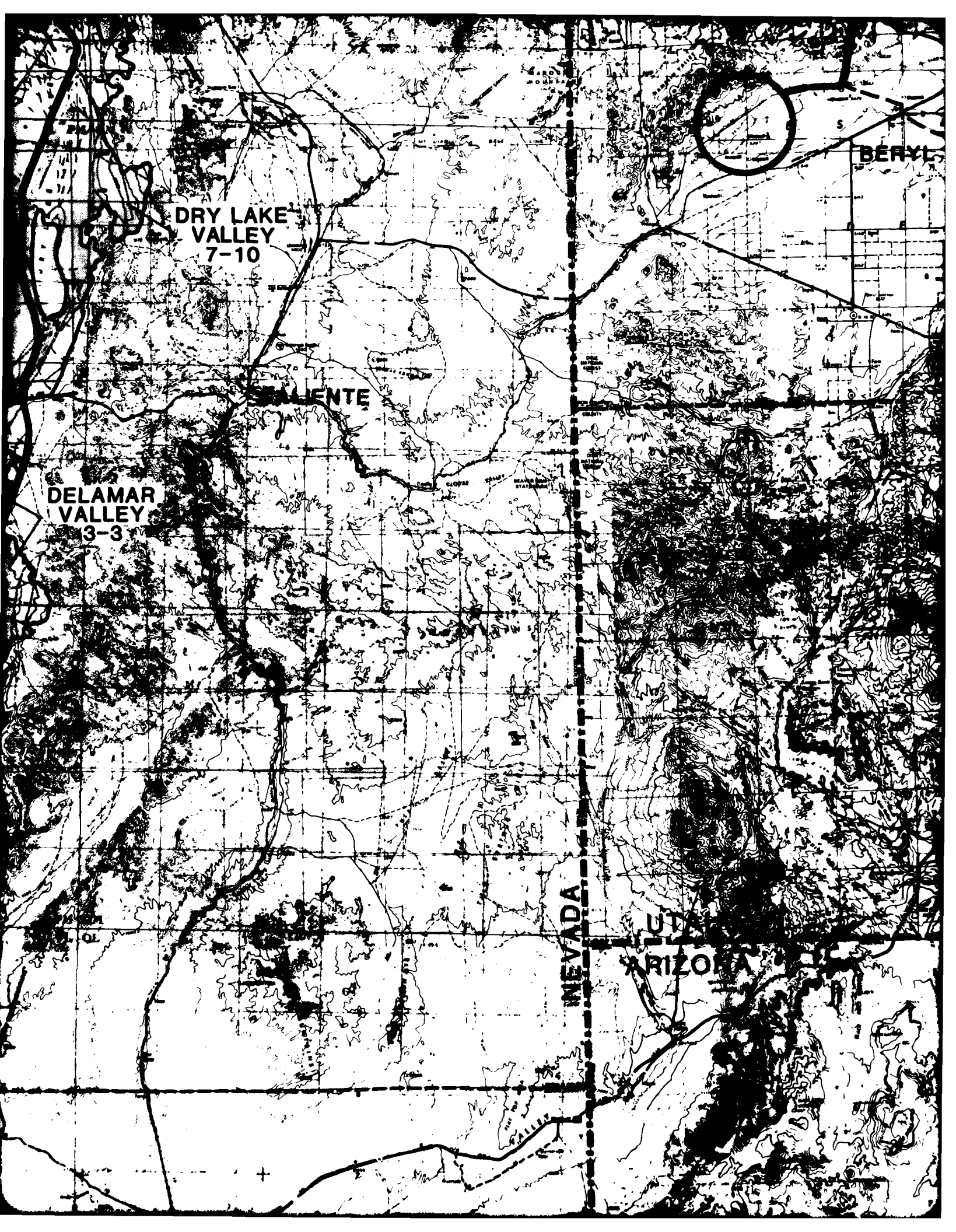

WAH WAH
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7-5
MILFORD
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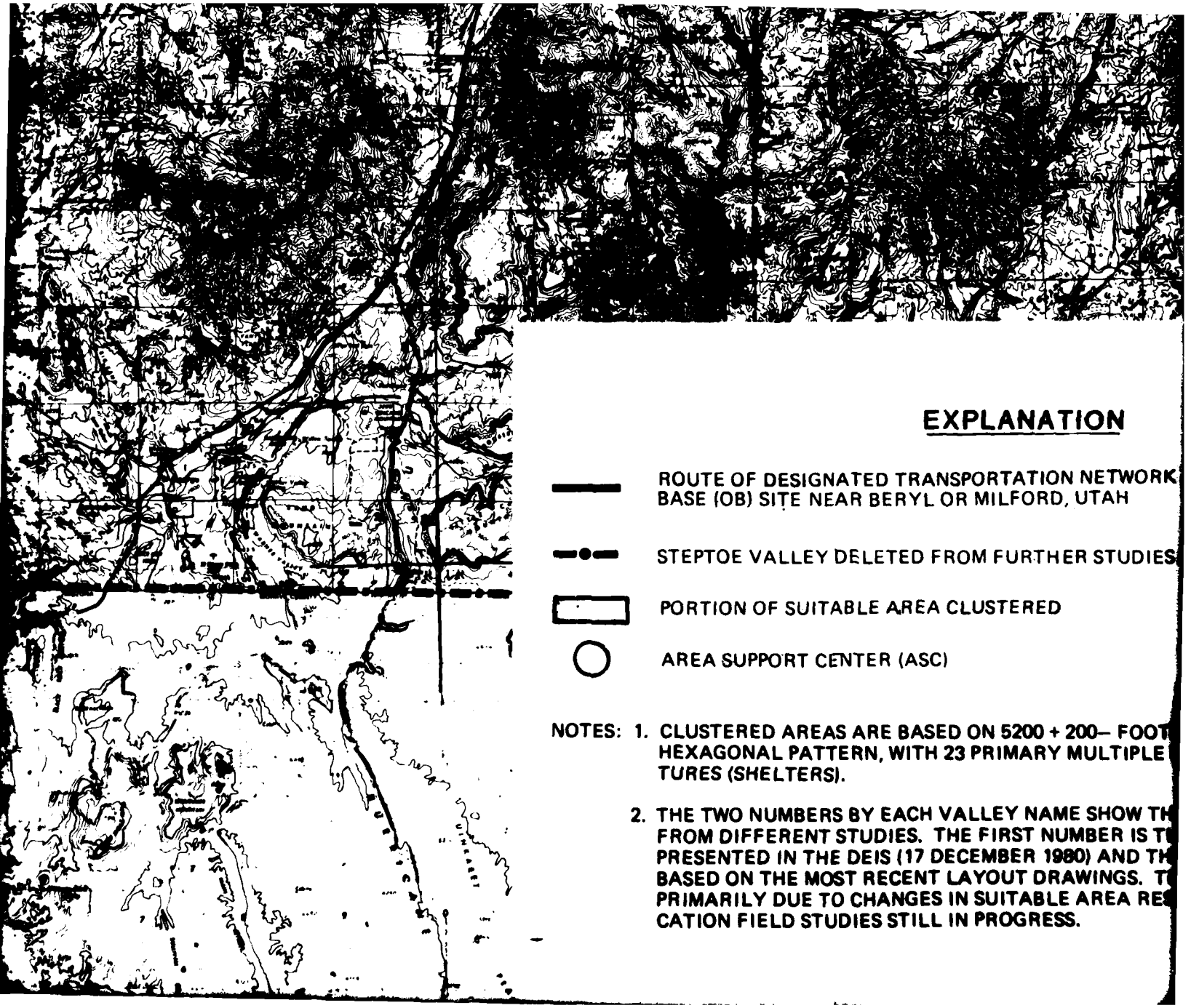


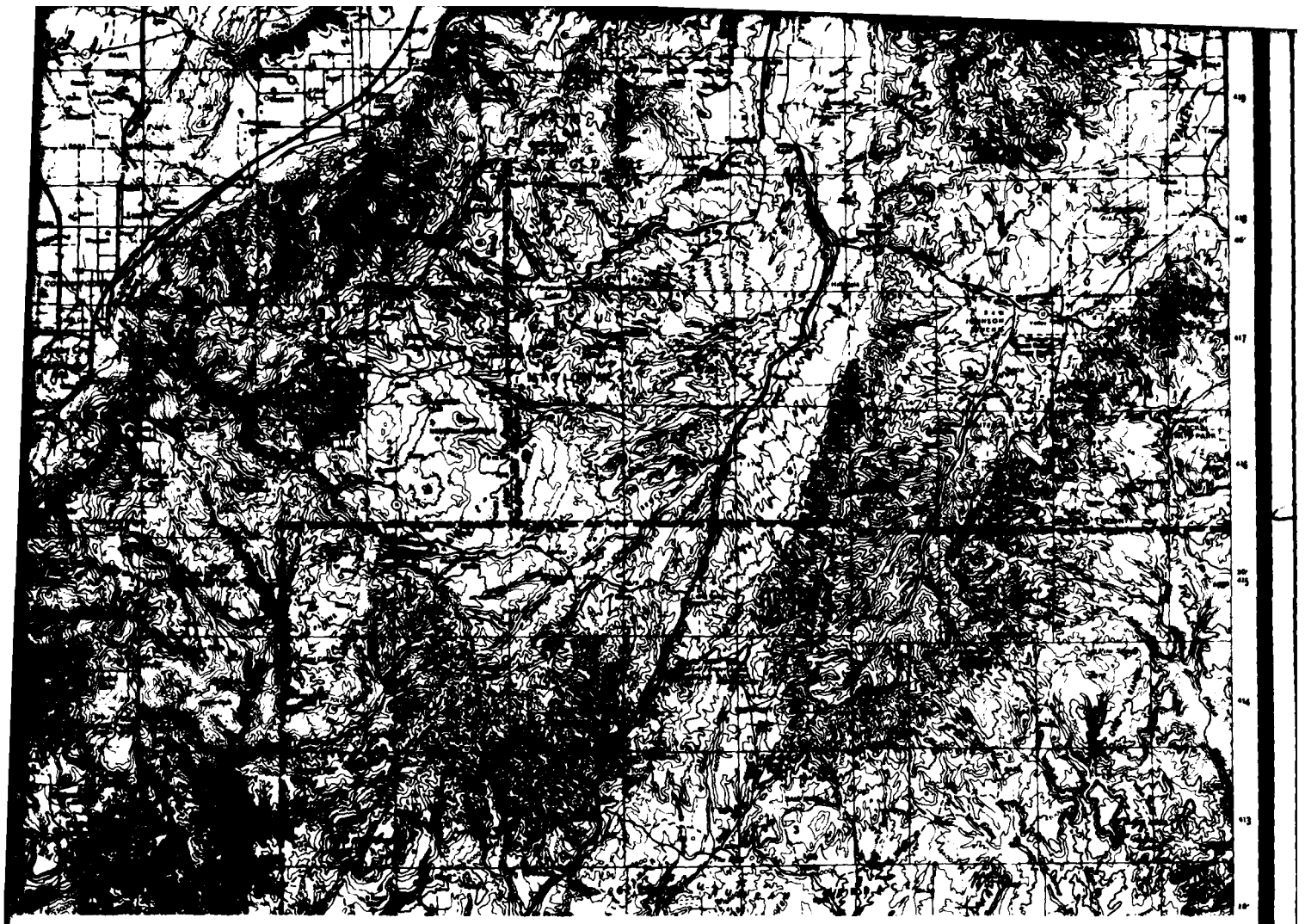

BIG SMOKY
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GOLDFIELD


VALLEY
4-3
RAILROAD
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RANGE
NEVADA


5-6
COAL VALLEY 5-6
PAHROC VALLEY 1-3
PENOYER VALLEY 6-5
DELAM VALLE 3-3
NELLIS AIR FORCE RANGE
DESERT GAME RANGE
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COYOTE SPRING VALLEY
NELLIS AIR FORCE RANGE


DRY LAKE
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ARIZONA


EXPLANATION
ROUTE OF DESIGNATED TRANSPORTATION NETWORK
BASE (OB) SITE NEAR BERYL OR MILFORD, UTAH
STEPTOE VALLEY DELETED FROM FURTHER STUDIES
PORTION OF SUITABLE AREA CLUSTERED
AREA SUPPORT CENTER (ASC)
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EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR OPERATIONAL BASE (OB) SITE NEAR BERYL OR MILFORD, UTAH

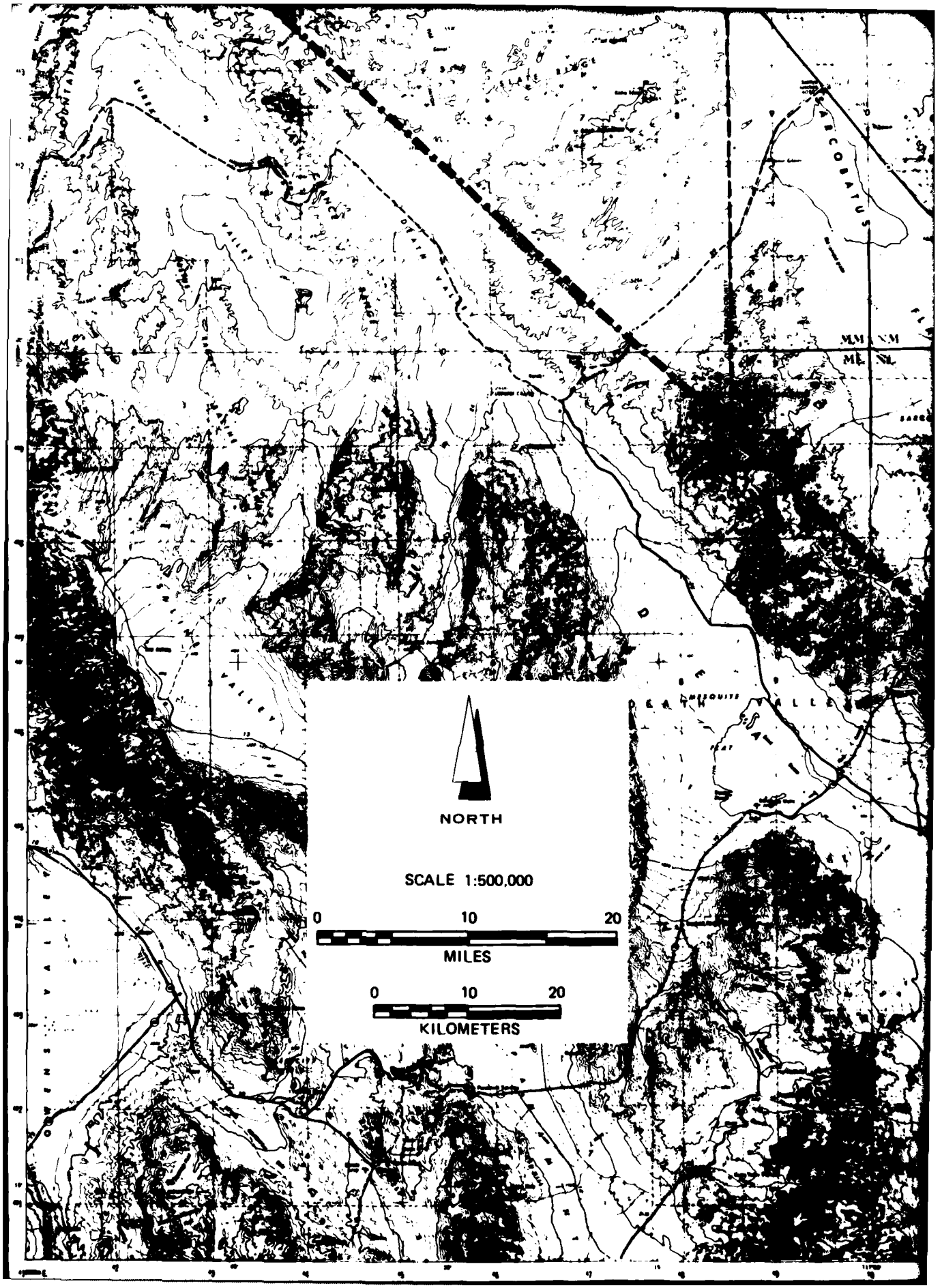
STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTEMBER 1980

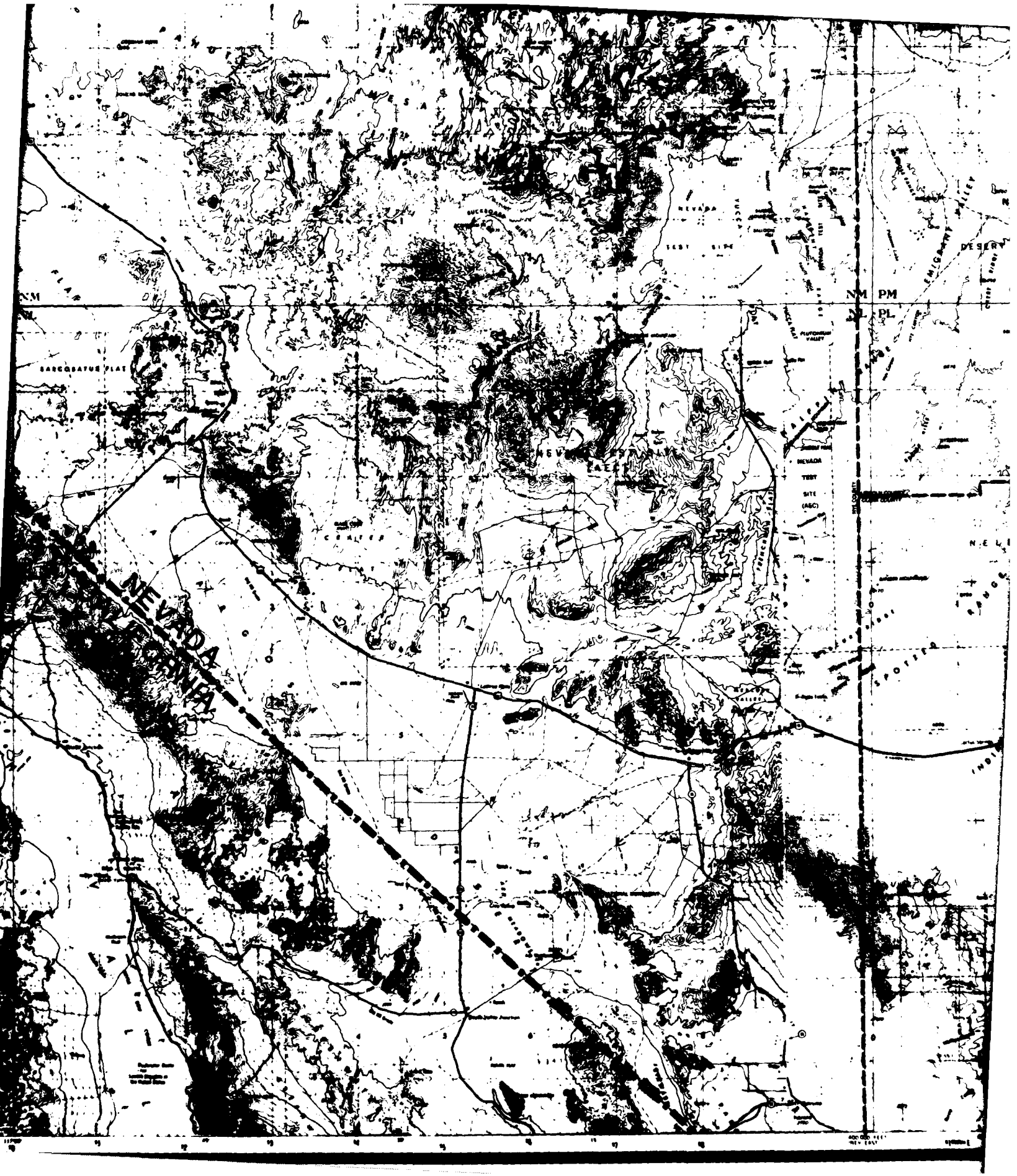
PORTION OF SUITABLE AREA CLUSTERED

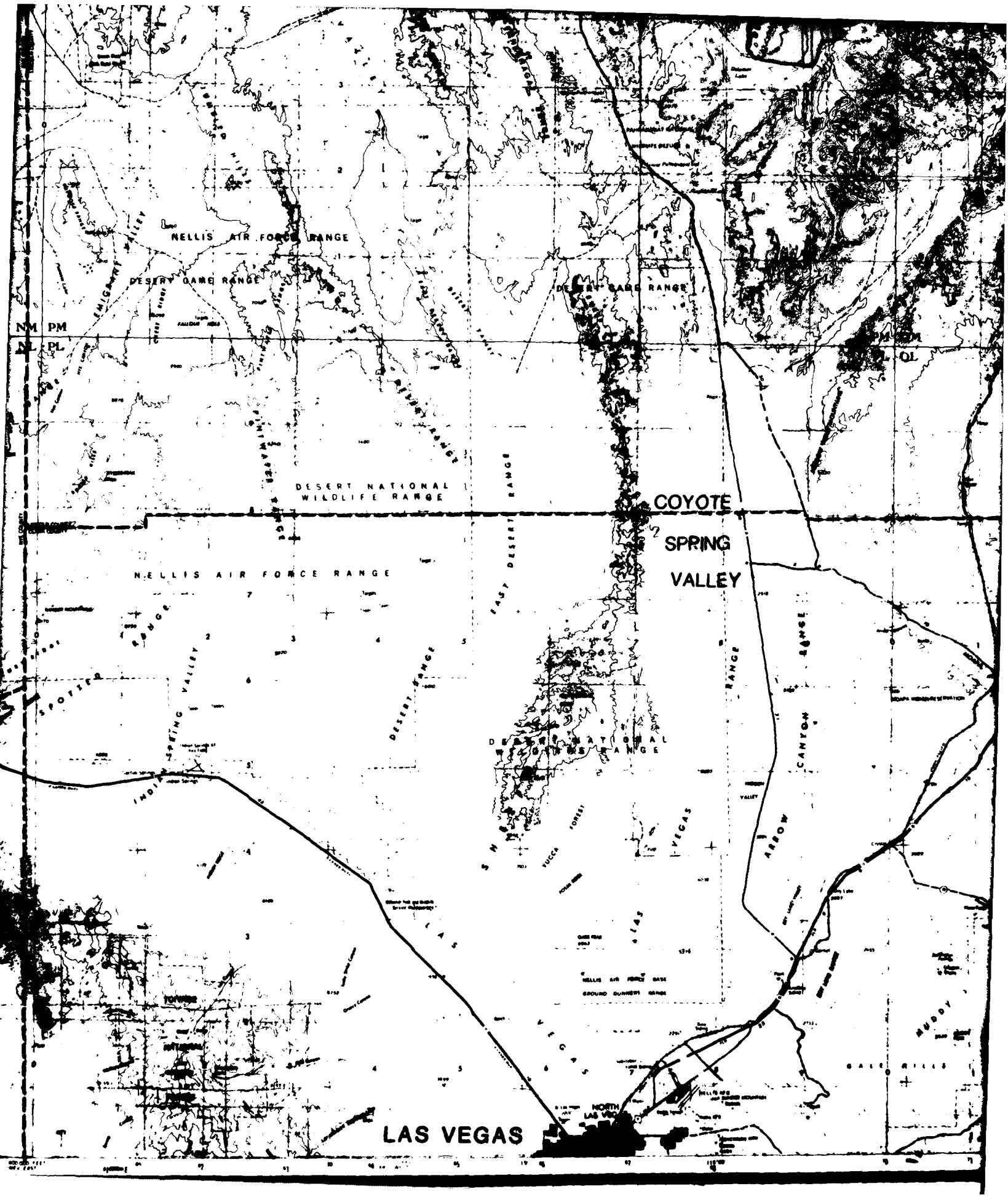
AREA SUPPORT CENTER (ASC)

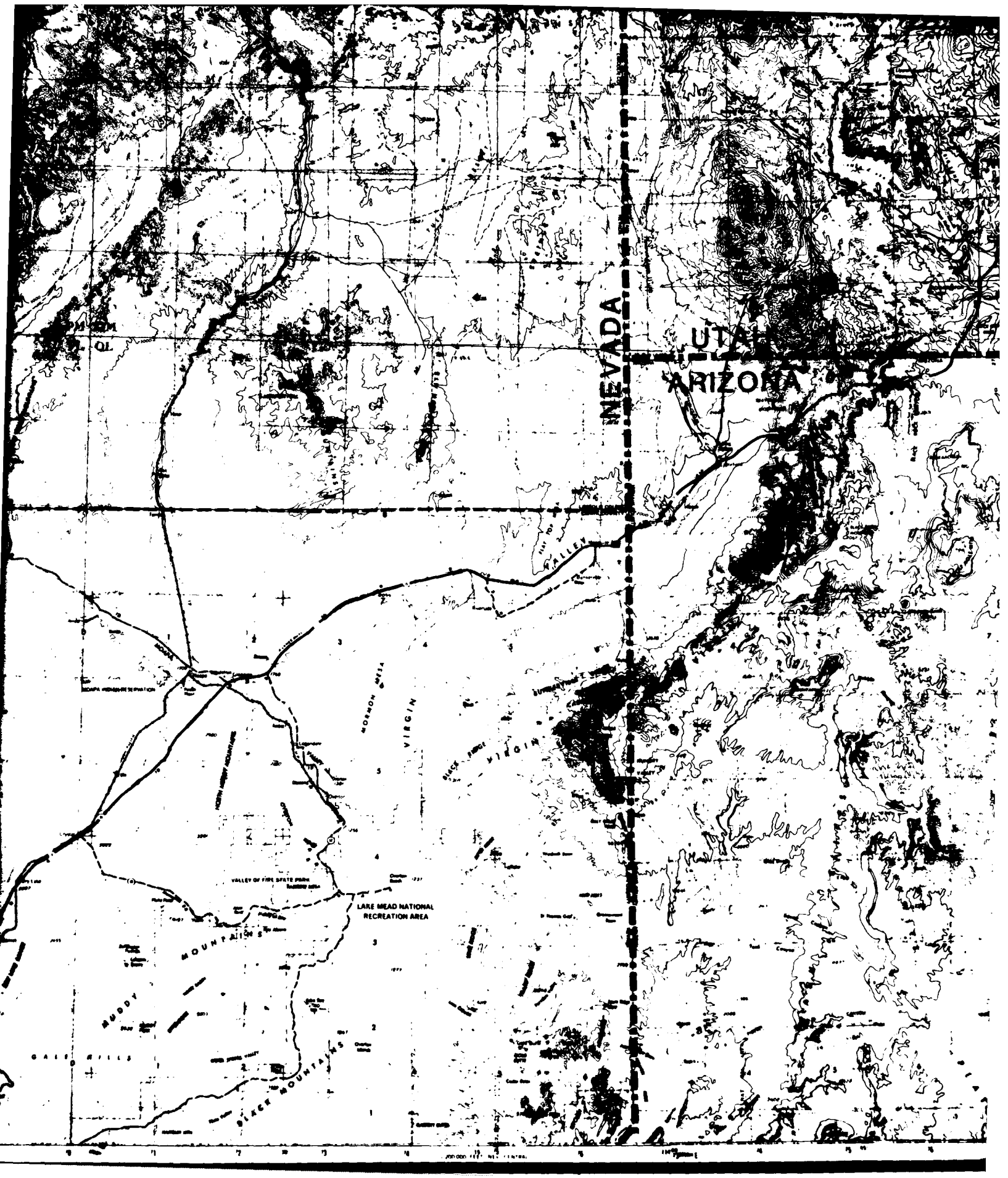
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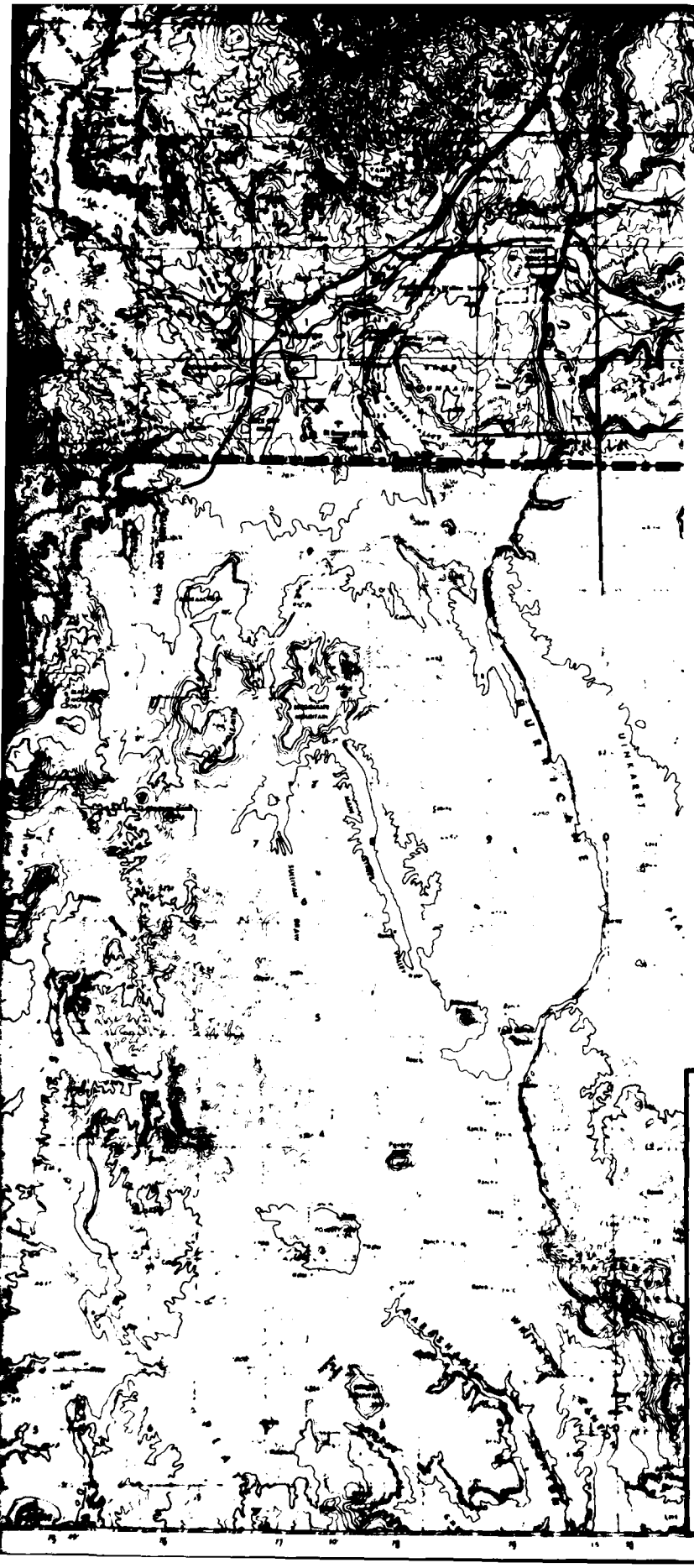
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MOUNTAINS
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EXPLANATIO

ROUTE OF DESIGNATED TRANSPORTATION NE
BASE (OB) SITE NEAR BERYL OR MILFORD, UT

STEPTOE VALLEY DELETED FROM FURTHER S

PORTION OF SUITABLE AREA CLUSTERED

AREA SUPPORT CENTER (ASC)

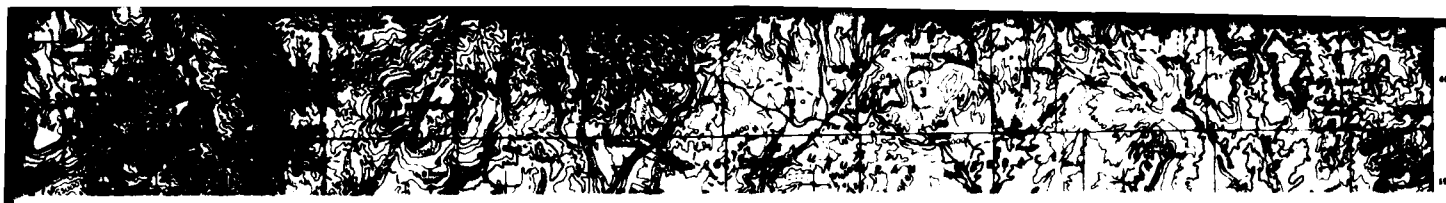
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EXPLANATION

ROUTE OF DESIGNATED TRANSPORTATION NETWORK (DTN) FOR OPERATIONAL BASE (OB) SITE NEAR BERYL OR MILFORD, UTAH

STEPTOE VALLEY DELETED FROM FURTHER STUDIES AS OF SEPTEMBER 1980

PORTION OF SUITABLE AREA CLUSTERED

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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

PREFERRED DTN AND ASC SITES MAIN OPERATING BASES AT BERYL/MILFORD, UTAH

DESIGNATED TRANSPORTATION NETWORK AND AREA SUPPORT CENTERS NEVADA/UTAH

VOLUME II PART I
DRAWING 7-2

MX SYSTEM SITING
SUMMARY REPORT

VOLUME II, PART II
OBTS/DTA SITING

Prepared for:

U.S. Department of the Air Force
Ballistic Missile Office
Norton Air Force Base, California 92409

Prepared by:

Ertec Western, Inc.
3777 Long Beach Boulevard
Long Beach, California 90807

18 January 1982

Ertec

FOREWORD

This report has been prepared for the U.S. Department of the Air Force, Ballistic Missile Office, in compliance with Contract No. F04704-80-C-0006. It presents the summary of Ertec Western's investigations for siting of facilities and routing of a transportation network for the MX system in Nevada, Utah, and New Mexico. Information, results, and conclusions contained in this report are based on MX siting studies conducted during fiscal years 1980 and 1981. The major part of the study covers 37 deployment valleys and three main operating base sites in Nevada and Utah. Limited studies were also performed in the area surrounding the main operating base site in New Mexico. This report consists of three volumes.

Volume I, Part I

- o General Introduction providing brief overviews of the MX system, program schedule, and siting program which includes:
  - Introduction
  - Summary of MX System Components
  - MX Program Schedule Overview
  - Siting Program Overview

Volume I, Part II

- o Summary discussions of results, conclusions, and recommendations of the Shelter Siting Summary studies of the 37 deployment valleys which includes:
  - Introduction
  - Siting Requirements
  - Siting Methodology
  - MPS/HSS Siting Program, Nevada/Utah DDA
  - Shelter Siting Program Summary, Conclusions, and Recommendations

Volume II, Part I

- o Results and conclusions of the Designated Transportation Network/Area Support Centers (DTN/ASC) siting studies within the MX system study areas which includes:
  - Introduction
  - Objective and Scope
  - Methodology
  - Criteria
  - Field Reconnaissance and Pass Evaluation
  - Evaluation of Optimum DTN Routings and ASC Locations
  - Conclusions

Volume II, Part II

- o Results and conclusions of the Operational Base Test Site/ Designated Training Area (OBTS/DTA) siting studies near the main operating base sites in Nevada-Utah and New Mexico which includes:

  - Introduction
  - Siting Requirements
  - Methodology
  - OBTS/DTA Siting Evaluation
  - Conclusions

Volume III

- o Land Acquisition Application Package Map Sheets depicting the various preferred and alternate facility combinations for land parcel acquisition which includes:

  - Introduction

This report was being prepared prior to the President's decision on 2 October 1981 not to proceed with the MPS MX basing option. It was intended that more detailed valley siting reports would follow this general evaluation. The original objective of the report was to provide interim data to the users of MX siting data until these more detailed evaluations could be produced. As a result of the President's decision, this report represents the final summary of the MX system siting in the MPS basing mode.

It should be noted that at the beginning of FY 81, siting studies were performed under the firm name of Fugro National, Inc. at its Long Beach offices. On 25 March 1981, the corporate name was changed to The Earth Technology Corporation - Ertec. Since that date, the siting studies have been performed at the same offices under the name of Ertec Western, Inc. with support from Ertec Northwest, Inc., Seattle, Washington; Ertec Airborne Systems, Inc., Cypress, California; and Ertec Rocky Mountain, Inc., Denver, Colorado.

LIST OF ACRONYMS

ADT	Average Daily Traffic
AFRCE-MX	Air Force Regional Civil Engineer-MX
AFSC	Air Force System Command
ALCC	Airborne Launch Control Center
AOB	Auxiliary Operating Base
ASC	Area Support Center
BLM	Bureau of Land Management
BMO	Ballistic Missile Office
C^3	Command, Control, and Communication
CBR	California Bearing Ratio
CDP	Candidate Deployment Parcel
CEQ	Council on Environmental Quality
CMF	Cluster Maintenance Facility
COE	U. S. Department of the Army, Corps of Engineers
CONUS	Conterminous United States
CPT	Cone Penetrometer Test
CRN	Cluster Road Network
CSR	Candidate Siting Region
DAA	Designated Assembly Area
DDA	Designated Deployment Area
DEIS	Draft Environmental Impact Statement
DMA	Defense Mapping Agency
DOPAA	Description of Proposed Actions and Alternatives
DTA	Designated Training Area
DTN	Designated Transportation Network
EIS	Environmental Impact Statement
FLPMA	Federal Land Policy Management Act
FNI	Fugro National, Inc.
FSED	Full Scale Engineering Development
FY	Fiscal Year
GBNP	Great Basin National Park
HDR	Henningson, Durham, & Richardson, Inc.
HSS	Horizontal Shelter Site
IOC	Initial Operational Capability
KGRA	Known Geothermal Resources Area
MF	Medium Frequency
MMC	Martin Marietta Company
MOA	Military Overflight Area
MOB	Main Operating Base
MPS	Multiple Protective Structure
MPT	Mobile Patrol Teams
NCA	National Control Authorities
NEPA	National Environmental Policy Act
NH&S	Nuclear Hardness and Survivability
OB	Operational Base
OBTS	Operational Base Test Site

OSR	Operational Support Road
PLU	Preservation of Location Uncertainty
PMOA	Programmetric Memorandum of Agreement
POL	Petroleum, Oils, and Lubricants
PS	Protective Structure
QA	Quality Assurance
QD	Quantity Distance
R&D	Research and Development
REPR	Real Estate Planning Report
RES	Renewable Energy Sources
RMP	Ralph M. Parsons Company
ROW	Right-of-way
RSS	Remote Surveillance Site
SAC	Strategic Air Command
SALT	Strategic Arms Limitation Talks
SHPO	State Historic Preservation Officer
STV	Special Transport Vehicle
T&E	Threatened and Endangered
TEL	Transporter and Erector Launcher
TI	Technical Interchange
TSF	Test Support Building
USGS	United States Geological Survey
USPLS	United States Public Land Survey
UTM	Universal Transverse Mercator
V&H	Vulnerability and Hardness

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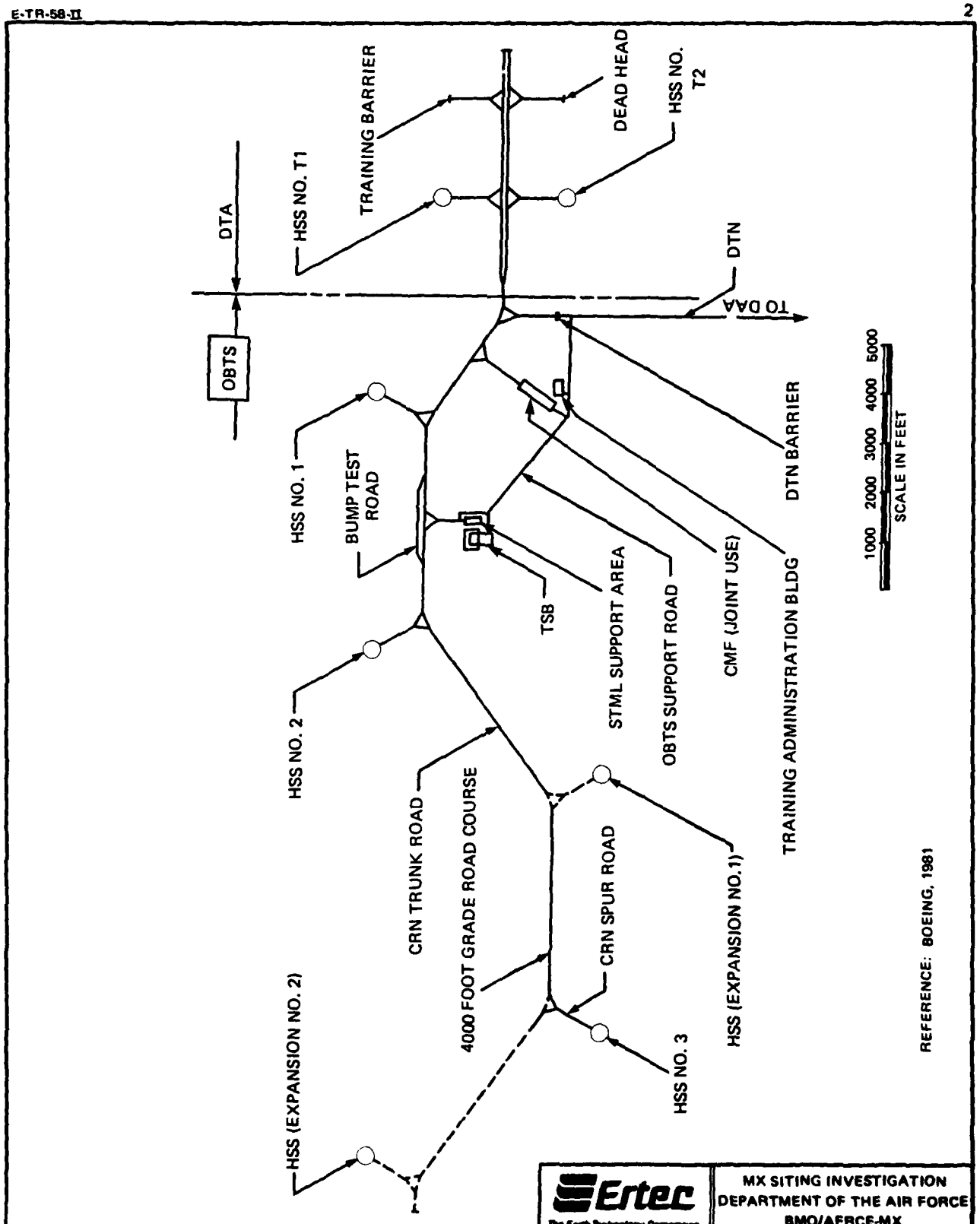
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1.0 INTRODUCTION

This report presents the results and documentation of the studies performed by the Operational Base Test Site/Designated Training Area (OBTS/DTA) working group on the preliminary siting and conceptual layout of the OBTS/DTA in the Nevada-Utah and New Mexico study areas.

The OBTS/DTA provides a centralized location to perform numerous tests, evaluations, and training activities in support of the MX weapon system development. These activities occur prior to, during, and after deployment area construction. To support these various time periods, the OBTS/DTA is designed as a "phased build up" facility. Over the life of the system, this facility supports 1) operational system development tests, 2) processing tests, 3) operational system integration tests, 4) operational weapon system tests, 5) follow-on weapon system development test and evaluation, as well as, 6) the training activities to be carried out in the Designated Training Area (DTA).

The OBTS facilities (Figure 1-1) are intended to be representative of a portion of the present cluster basing mode (Figure 1-2) to be built in the Designated Deployment Area (DDA). All operational design requirements are to be retained for both the location and the configuration of the facilities. The components of the OBTS are: 1) two to five Horizontal Shelter Sites (HSSs) spaced 5200 feet (1585 m) apart, 2) a Cluster Maintenance Facility (CMF), 3) a test support building and 4) a



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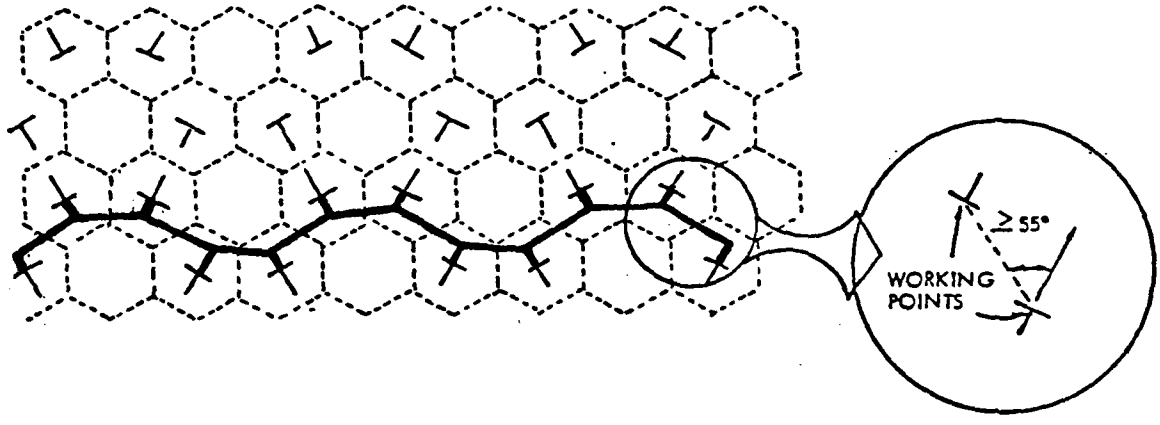
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

CONCEPTUAL OBTS/DTA BASELINE LAYOUT FOR OPEN LAND

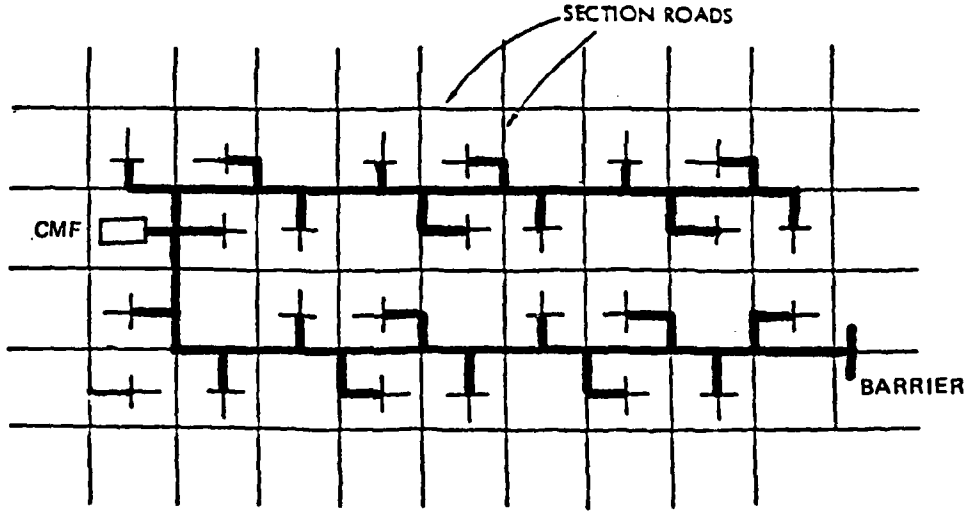
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 1-1



LAYOUT AND BEARING (OPEN LAND)



LAYOUT AND BEARING (SECTIONED LAND)

REFERENCE:

UNITED STATES DEPARTMENT OF THE AIR FORCE, 1980

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OPEN LAND VS SECTIONED LAND BASING OPTION LAYOUTS

OPERATIONAL BASE TEST SITE AND DESIGNATED TRAINING AREAS

30 NOV 81

FIGURE 1-2

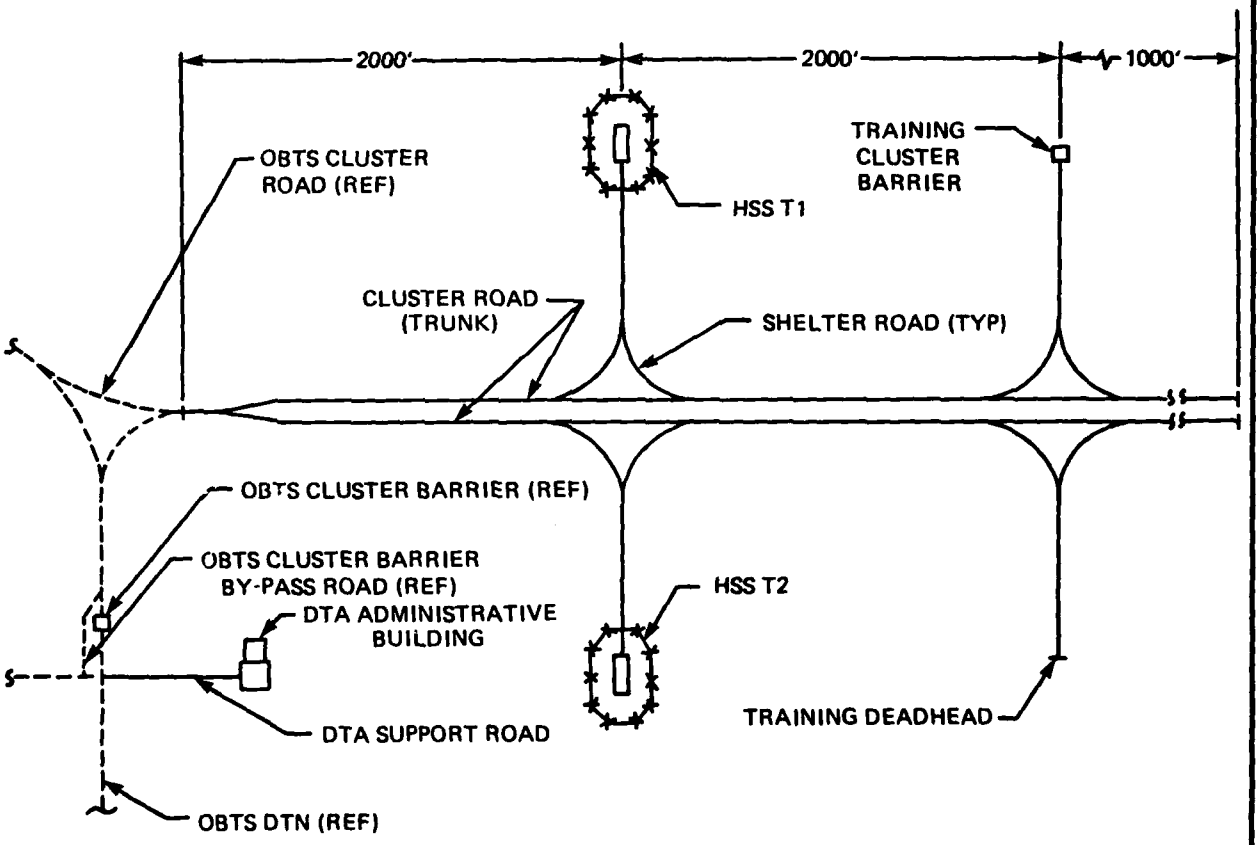
series of connector roads between the HSSs to provide vehicle test roads. The DTA facility (Figure 1-3) provides training to personnel on the use of the system and its equipment. The facilities consist of two HSS mock-ups, a barrier, and a deadhead used for turn-around practice. The CMF supports both the OBTS and the DTA.

This section includes a brief description of the study area and a review of previous studies. Sections 2.0 and 3.0 summarize the overall siting process in terms of the objectives, scope of the study, and the siting requirements used, as well as the methodology for site selection and production of conceptual layouts. The OBTS/DTA area siting layout development and preferred/alternate site evaluation results are presented in Section 4.0. Section 5.0 contains conclusions based on the preferred and alternate OBTS/DTA sites developed.

1.1 STUDY AREA

The study area for the OBTS/DTA (Figures 1-4 and 1-5) is restricted to an area in close proximity to the MOB options. The MOB options are: 1) Coyote Spring, Nevada; 2) Beryl, and 3) Milford, Utah; and 4) Cannon Air Force Base (AFB), New Mexico. The Nevada-Utah MOBs are located to the south and southeast, respectively, of the DDA. The New Mexico MOB is 8 miles (12.8 km) west of Clovis, New Mexico, encircled by the DDA.

The outer limits of the study area were defined by an approximate 50-mile (80.4-km) radius around each of the Nevada/Utah



EXPLANATION

—— DTA FACILITIES
--- OBTS FACILITIES

REFERENCE: BOEING, 1981

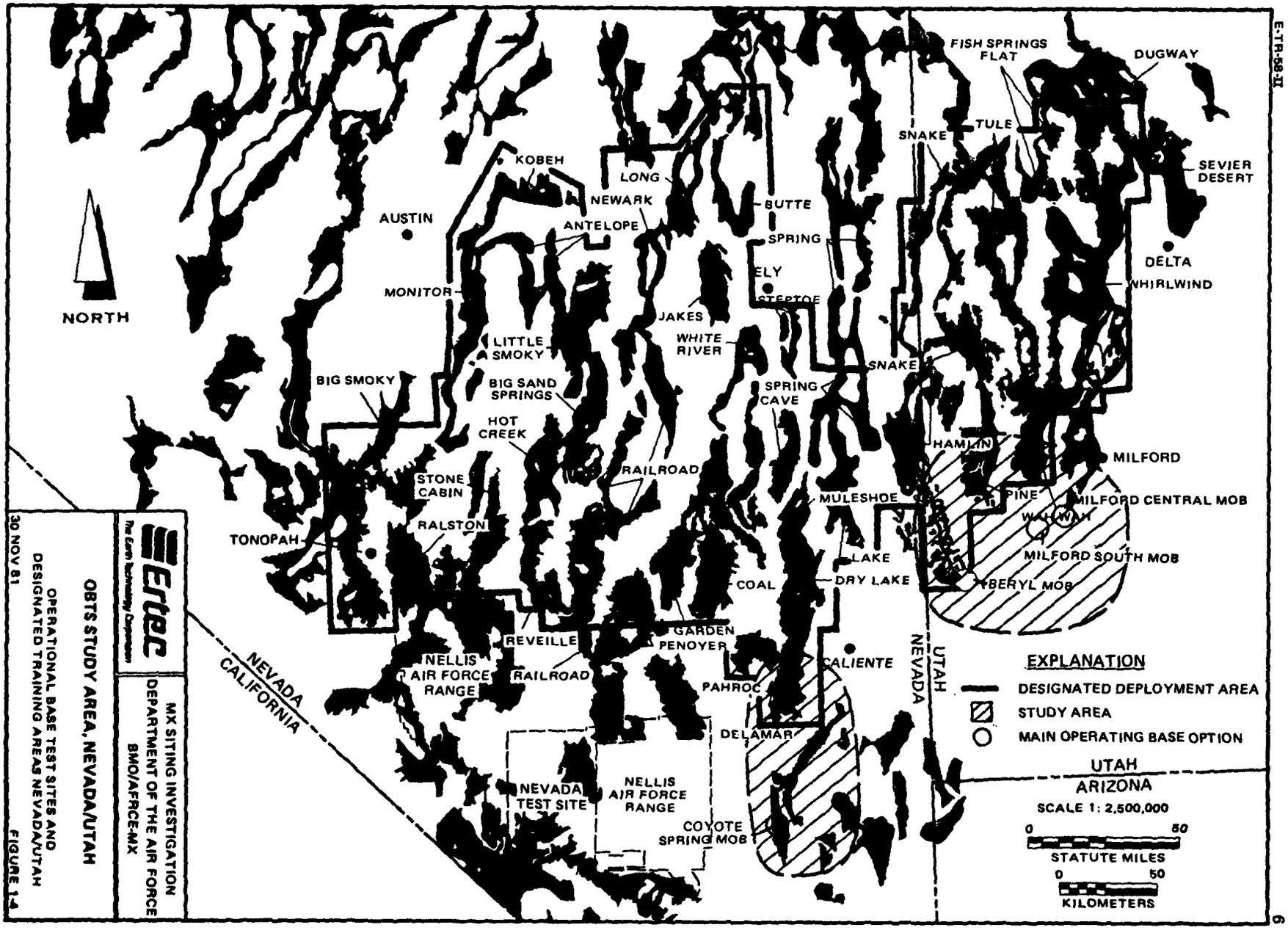
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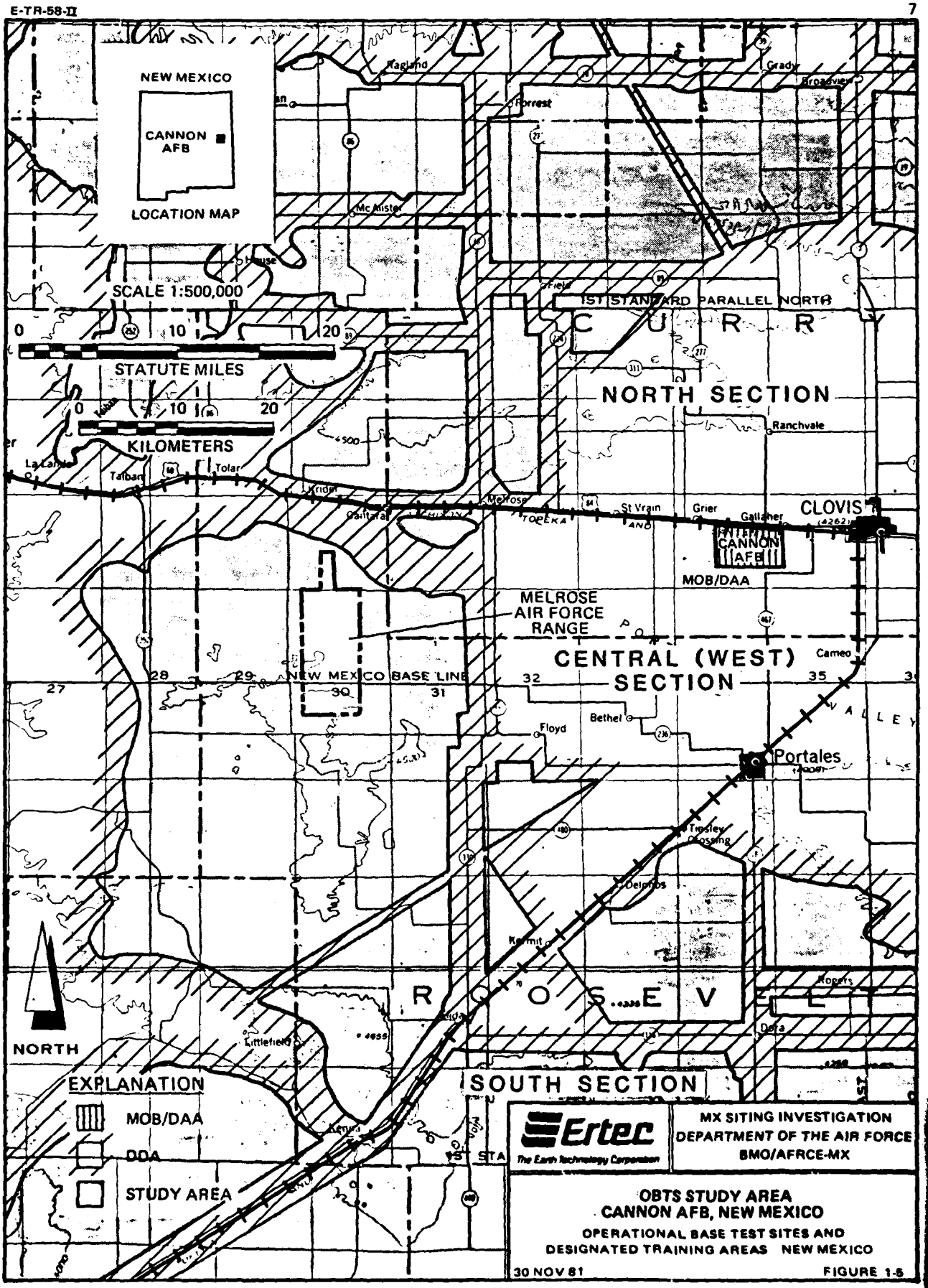
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CONCEPTUAL DTA BASELINE LAYOUT FOR OPEN LAND

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 1-3


NORTH
AUSTIN
KOBEH
LONG
NEWARK
ANTELOPE
BUTTE
SPRING
ELY
STEPTOE
MONITOR
JAKES
WHITE RIVER
LITTLE SMOKY
BIG SMOKY
BIG SAND SPRINGS
SPRING CAVE
HOT CREEK
RAILROAD
STONE CABIN
RALSTON
TONOPAH
REVEILLE
NELLIS AIR FORCE RANGE
NEVADA
CALIFORNIA
GARDEN
PENOYER
PAHROC
DELAMAR
NEVADA TEST SITE
NELLIS AIR FORCE RANGE
COYOTE SPRING MOB
CALIENTE
UTAH
NEVADA
LAKE
DRY LAKE
COAL
MULESHOE
HAMLIN
PINE
WAHWAH
MILFORD
MILFORD CENTRAL MOB
MILFORD SOUTH MOB
BERYL MOB
FISH SPRINGS FLAT
DUGWAY
SNAKE
TULE
SEVIER DESERT
DELTA
WHIRLWIND
SNAKE
EXPLANATION
DESIGNATED DEPLOYMENT AREA
STUDY AREA
MAIN OPERATING BASE OPTION
UTAH
ARIZONA
SCALE 1: 2,500,000
0 50
STATUTE MILES
0 50
KILOMETERS
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OBTS STUDY AREA, NEVADA/UTAH
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 1-4
MX SITING INVESTIGATION
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BMO/AFRCE-MX


NEW MEXICO
CANNON AFB
LOCATION MAP
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
1ST STANDARD PARALLEL NORTH
C U R R Y
NORTH SECTION
Ranchvale
CLOVIS
CANNON AFB
MOB/DAA
MELROSE AIR FORCE RANGE
CENTRAL (WEST) SECTION
NEW MEXICO BASE LINE
Cameo
Bethel
Floyd
Portales
Tinsley Crossing
Delphos
R O O S E V E L T
Roberts
Dora
Littlefield
SOUTH SECTION
NORTH
EXPLANATION
MOB/DAA
ODA
STUDY AREA
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OBTS STUDY AREA
CANNON AFB, NEW MEXICO
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81
FIGURE 1-5

MOB options. This radius was selected to ensure that the closest DDA valleys would be included in the study (i.e., Delamar, Pine, and Wah Wah). The limit of the New Mexico study area was defined by a 60- to 80-mile (97- to 129-km) radius around Cannon AFB in New Mexico only. This radius is larger than that used in Nevada-Utah to ensure sufficient land was available to select a preferred IOC site prior to OBTS/DTA site selection.

1.2 BACKGROUND

Initial siting studies for the Operational Base (OB) complex were performed from December through June, Fiscal Year 1980 (FY 80) (Fugro National, Inc., 1980a). As part of each OB complex option, OBTS conceptual layouts were prepared. The sites selected were reevaluated by the AFRCE-MX formed OB working group beginning in July 1980. This group coordinated OB complex evaluations and developed preliminary OB area layouts prior to the availability of an OB comprehensive planner. Detailed facility layouts within the complex areas were not attempted. The results of these activities were presented on maps dated 20 August 1980.

In October and November 1980, field investigations and surveys of three of the OB complex areas were performed (Fugro National, Inc., 1980b, 1981a, b, and c). These studies were limited to preliminary geotechnical and environmental evaluations of the Coyote Spring, Nevada, and Beryl and Milford, Utah, OB complex areas. Field studies confirmed the suitability of the

selected sites as acceptable OB and OBTS areas. No field studies were performed in New Mexico.

1.3 OBJECTIVES

The objectives of this study were:

- Coordinate activities at the OBTS/DTA working group;
- Assist the Air Force and other members of the working group in development of siting criteria;
- Evaluate all existing data to determine potential sites for the OBTS/DTA for each MOB option;
- Prepare 1:62,500 scale maps showing preferred and alternate OBTS/DTA sites and submit these drawings to the Air Force for review;
- Perform field surveys to determine geotechnical suitability and to obtain data needed for an environmental assessment; and
- Prepare layout drawings and parcel descriptions for inclusion in the land acquisition application package.

2.0 SITING REQUIREMENTS

The siting requirements for OBTS/DTA site selection and layout development were initially developed at the 22 April 1981 (U.S. Department of the Air Force, BMO/AFRCE-MX, 1981a) meeting (Table 2-1). These requirements were developed to support the initial siting studies until more formalized requirements were available. A major element of these requirements was the standoff distances. Initially, it was established that the separation of the OBTS from other facilities and corridors would range from 6 to 10 miles (10 to 16 km), with 10 miles (16 km) being the preferred. With the formalization of the requirements by the BMO/AFRCE-MX on 27 May 1981 (Tables 2-2 through 2-4) it was determined that a distance of 4 miles (6 km) is acceptable, and that the need for lesser separation distances would be evaluated on a site-specific basis (U.S. Department of the Air Force, BMO/AFRCE-MX, 1981b). Modifications to the requirements were made on 14 August 1981 (U.S. Department of the Air Force, BMO/AFRCE-MX, 1981c). It was established that the area of "No Public Use," which originally applied to all shelters and roads, would only pertain to shelters 1 and 2 and their connecting cluster road.

These requirements were also applied to the OBTS/DTA siting activities in New Mexico. Modifications to the operational requirements occur when the sectioned land shelter basing layout option is used rather than the open land basing layout option used in Nevada/Utah.

GENERAL

- 8 miles from OB (DDA)
- 10 miles from airfields, railroads, major highways, DTN
- 5 miles from power lines, gas lines
- Elongated shape, 6-square mile area expansion potential
- One shelter to face magnetic west
- Minimize driving distance from OB
- Within OB siting vicinity zone or EIS boundary

GEOTECHNICAL

- Avoid surface rock and rock within 50 feet
- Avoid surface water and water within 50 feet
- *Less than five percent grade*
- Avoid adverse terrain and major drainage

CULTURAL

- Avoid EIS exclusions and environmentally sensitive areas
- Avoid high potential mineral areas
- Minimize impact on ranching

Note:
All shelter operational siting requirements (E-TR-58-I) are applicable unless modified above

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OBTS AND DTA
22 APRIL 81 SITING REQUIREMENTS

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 2-1

OPERATIONAL

- 4 mile separation (from shelter centerline to)
  - OB/DAA
  - Airfields
  - Railroads
  - Major highways or major service road
  - DTN
  - Power lines greater than 250 kV
  - Mining or processing plants
- One mile separation from pipelines
- Approximately 3000 feet of cluster road network with average of three percent grade with a maximum of five percent grade for not more than 5000 feet
- One shelter to face magnetic west
- The DTA shall be sited adjacent to the OBTS but outside the "No Public Use" area
- Locate within OB siting vicinity zone and/or EIS boundary
- The "No Public Use" area is the zone 1 mile from the centerline of each OBTS shelter, the CMF, and the cluster road
- Minimize driving distance from OB/DAA
- An additional area 0.9 to 1.5 miles outside the "No Public Use" area would allow all public use on a noninterference basis

Note:

All shelter operational siting requirements (E-TR-58-I) are applicable unless modified above.

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OBTS AND DTA OPERATIONAL REQUIREMENTS

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 2-2

GEOTECHNICAL

I. EXCLUSIONS:

- Outcropping or shallow rock
- Surface slope greater than 10 percent
- Adverse terrain (two or more drainages 10 feet deep within 1000 feet)
- Standing water, swamps, or perennial streams
- Depth to rock less than 50 feet (i.e., material with a seismic velocity of 7000 fps)
- Depth to water less than 50 feet (i.e., first encountered water)
- Active playas

II. CONSIDERATIONS:

- Fault rupture hazard
- Potential sheet wash
- Surface slope greater than five percent
- Dunes
- Desiccation cracks
- Tufa
- Boulder fields

ENVIRONMENTAL

I. EXCLUSIONS:

- Designated wilderness areas
- Wilderness study areas
- Existing/proposed federal and state
  - Wildlife refuges, archaeological areas
- Existing/proposed national
  - Wildlife refuges, preserves, registered archaeological properties
- Federal threatened and endangered species
- Non-attainment air quality areas

II. CONSIDERATIONS:

- Federal and state proposed threatened and endangered species
- Locally identified "sensitive" areas
  - Environmental
  - Socio-Economical
- Visual Resources

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OBTS AND DTA GEOTECHNICAL/ENVIRONMENTAL REQUIREMENTS
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 2-3

GEOGRAPHICAL

I EXCLUSIONS:

- Existing/proposed federal and state:
  - Parks, landmarks, refuges, monuments, forests, recreational areas
- Existing/proposed national:
  - Grasslands, Indian reservations, ranges, military ranges (training areas, proving grounds, test site), registered historic properties
- Radii from population centers:
  - 20 statute miles from cities of 25,000 or more
  - 3.5 statute miles from cities of 5000 to 25,000
  - 1 statute mile from cities of less than 5000
- Inhabited buildings
- Industrial complexes:
  - Active mining areas, tank farms, pipeline complexes
- "High" potential mineral areas: *
  - Oil and gas fields, active and potentially active mining areas, strippable coal, oil shale, uranium deposits, known geothermal resource areas
- COE recommended exclusions

II CONSIDERATIONS:

- Private property
- State property
- "Good" potential mineral areas: *
  - Oil and gas, active and potentially active mining areas, strippable coal, oil shale, uranium deposits, known geothermal resource areas
- Irrigated farmland
- Prime agricultural land
- Moapa Indian Expansion Area
- Duckwater Indian Expansion Area
- Ranch and grazing allotments
- Existing access roads
- Proposed utility corridors

* Mineral potential to be determined by a study as required by FLPMA

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OBTS AND DTA
GEOGRAPHICAL REQUIREMENTS
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 2-4

3.0 METHODOLOGY

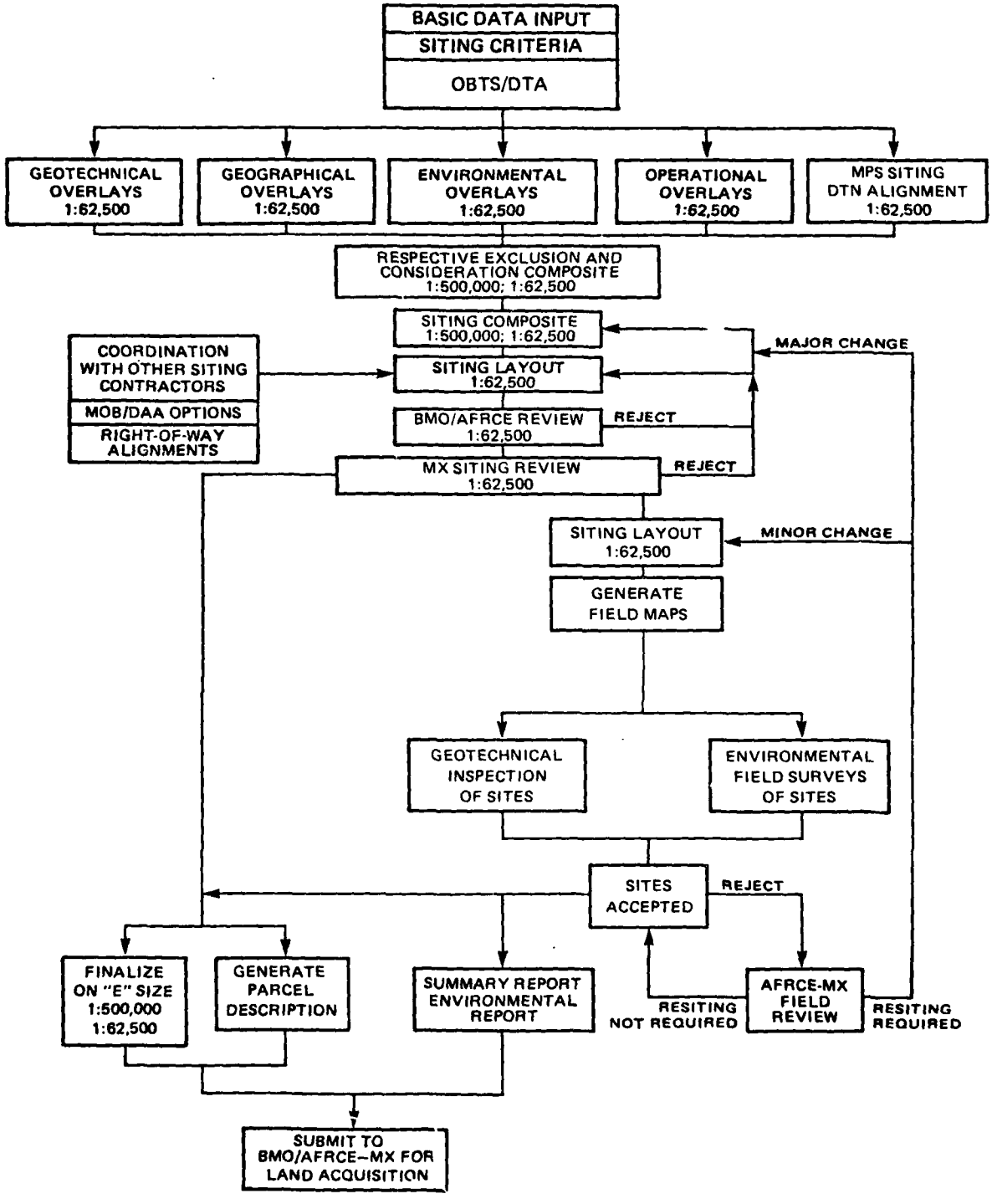
In April 1981, the OBTS/DTA working group was formed by the AFRCE-MX from members of the DTN working group and others. The members of the OBTS/DTA working group are as follows.

1. Ballistic Missile Office (BMO)
2. Air Force Regional Civil Engineer-MX (AFRCE-MX)
3. TRW (TRW)
4. Ertec Western, Inc. (Ertec)
5. Boeing Aerospace Company (Boeing)
6. Martin Marietta Corporation (MMC)
7. Ralph M. Parsons Company (RMP)
8. Henningson, Durham & Richardson, Inc. (HDR)
9. U.S. Army, Corps of Engineers (COE)

Ertec, as the siting contractor, performed the task of group coordinator as well as OBTS/DTA site integrator. The siting decisions reached by the group were integrated with the base comprehensive planner for the ongoing MOB siting studies. The initial activities of the OBTS/DTA working group were focused on defining the siting requirements described in Section 2.0 and reviewing the previous studies.

The methodology used in siting the OBTS/DTA is diagrammed in the flow chart in Figure 3-1. The process depicted in this chart includes the following major activities:

- Collect and synthesize geotechnical, geographical, environmental, and operational data;
- Establish boundaries for the areas which are suitable for siting the OBTS;
- Produce conceptual layouts of the OBTS/DTA facilities and those Designated Transportation Network (DTN) and service roads necessary to connect the OBTS/DTA to the Main Operating Base/Designated Assembly Area (MOB/DAA);
- Perform field reconnaissance of the OBTS/DTA sites and associated DTN alignments;



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METHODOLOGY FLOW CHART
OBTS/DTA LAYOUT
SITE-SELECTION PROCESS
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS

30 NOV 81

FIGURE 3-1

- Support field surveys of the OBTS/DTA locations and the DTN from the MOB/DAA to the OBTS/DTA;
- Provide preferred and alternate site locations and layouts for each MOB option to the environmental assessment contractor in support of the tiered decision-making process; and
- Prepare maps showing site locations and produce parcel descriptions for preferred and alternate OBTS/DTA sites for each MOB option in support of the land acquisition application.

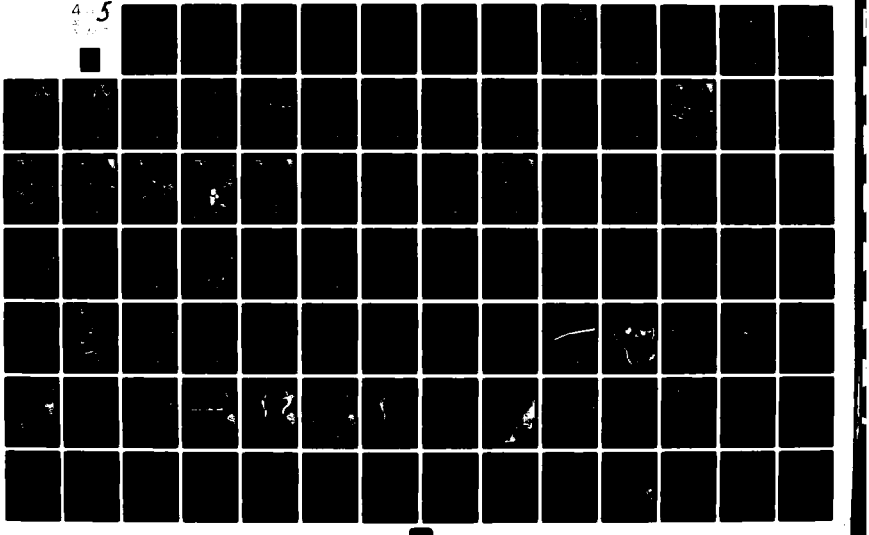
3.1 DEFINING THE SITING AREA

A common process was used to define the areas suitable for siting the OBTS at each of the MOB locations. All known data were depicted on a series of topical exclusionary overlays using a topographic map as a base. The topics of these overlays are operational, geotechnical, environmental, and geographical. The overlays, with their exclusion and consideration data, were composited to form "windows" of suitability (i.e., that area not excluded) or siting areas.

The initial evaluations of the Nevada-Utah study areas were performed at a regional scale of 1:500,000. Those siting requirements depictable at this scale were applied and the regional siting areas were determined. The regional siting areas developed for each MOB option were then reexamined at the site-specific scale of 1:62,500. At this scale, all siting requirements were applied and the exact limits of the siting area were determined.

In the New Mexico study area, the initial activity was to site a preferred IOC location and its supporting DTN route from the

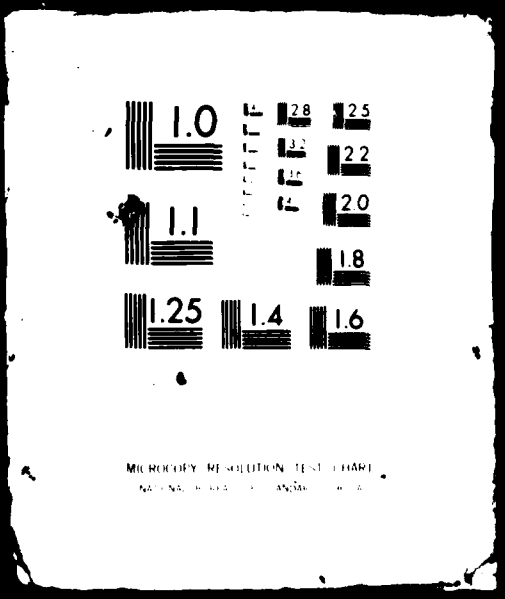
AD-A113 217 ERTEC WESTERN INC LONG BEACH CA F/G 16/1
MX SITING INVESTIGATION. MX SYSTEM SITING SUMMARY REPORT. DTN/A--ETC(U)
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MOB. The selection of an IOC site was necessary so that the OBTS/DTA did not preclude the use of a prime area for the IOC and to enable depicting the DTN standoff corridors as specified in the siting requirements. The IOC area should be the most accessible suitable area to the MOB/DAA and possess the minimum cultural and environmental impacts.

3.2 DEVELOPING CONCEPTUAL LAYOUTS

Conceptual OBTS/DTA layouts were produced within the site-specific suitable areas sited for each MOB option. These layouts were based on the baseline conceptual layouts (Figures 1-1, 1-3, and 3-2) provided by BMO/AFRCE-MX and altered to best fit the physical characteristics of the siting area. Prior to developing site-specific suitable areas in which to perform layouts, a rectangular shaped box approximately 6 mi^2 (16 km^2), was used to represent the area of the layout. When the DTA was included, an additional 1 mi^2 (3 km^2) was added at one end of the rectangle.

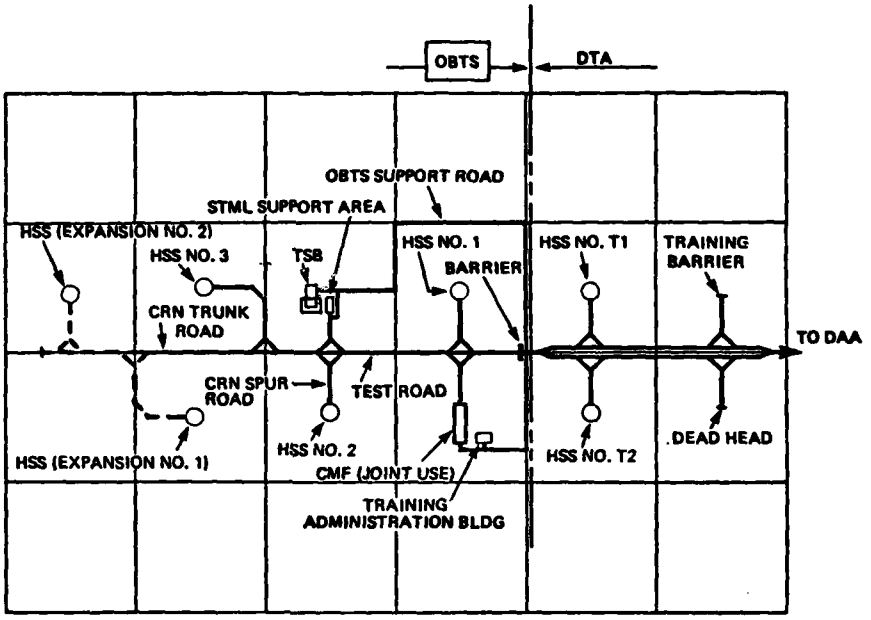
Once site-specific suitable areas were identified in Nevada and Utah, layouts were produced which applied the baseline conceptual layout using the direct connect 5200-foot (1585-m) MPS basing mode. These layouts also integrated those siting requirements and considerations which were appropriate. In this process, numerous layout configurations were generated to take maximum advantage of the local topographic relief and to reduce the "No Public Use" ground coverage needed from each HSS by using a closed hexagonal pattern. DTN alignments between

the OBTS/DTA and the MOB/DAA were routed using the DTN siting requirements as presented in Part I of this report.

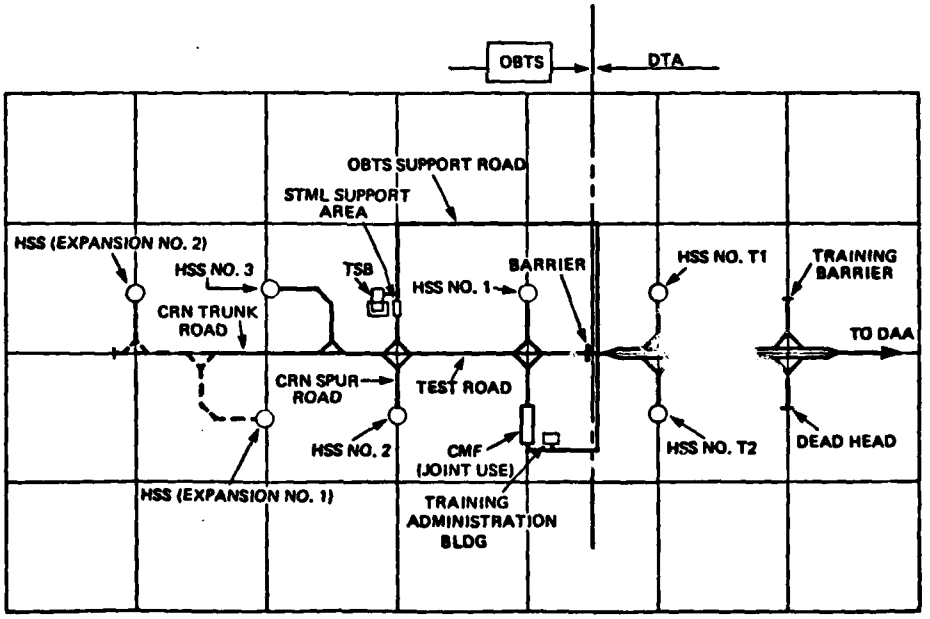
Similar layout alternatives were produced using the sectioned land 5200-foot (1585-m) basing mode in New Mexico. These layouts were based on Ertec generated baseline conceptual layouts which placed the HSS on the section line or in the middle of a section (Figure 3-2). The HSS in the middle of the section was presented in the Draft Environmental Impact Statement (DEIS) (U.S. Department of the Air Force, 1980). The existing roads on the section lines were used as the cluster road network.

With the siting area defined and the layouts developed, preferred and alternate site evaluations for each MOB/DAA area were performed. Each site was evaluated against the siting requirements. For each MOB study area, the site and DTN route which produced the most optimum set of siting factors was selected as the preferred. The second most optimal site was designated as the alternate. Where the preferred site had both preferred and alternate layouts, the alternate layout was generally preferred over the use of the alternate site.

Alternate HSS spacing concepts were also produced. By maintaining the established siting requirements, but enlarging the spacing from 5200 feet (1585 m) to 1.73 miles (2.78 km), numerous new layouts were developed (see Figure 4-15).

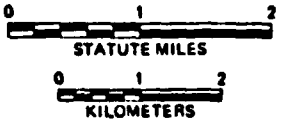


CONCEPTUAL OBTS/DTA BASELINE LAYOUT FOR SECTIONED LAND



ALTERNATE CONCEPTUAL OBTS/DTA BASELINE LAYOUT FOR SECTIONED LAND

*Grid represents existing roads along township and range section lines



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CONCEPTUAL OBTS/DTA BASELINE LAYOUTS FOR SECTIONED LAND

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81 FIGURE 3-2

3.3 PERFORMING FIELD RECONNAISSANCE AND SURVEYS

Field reconnaissance trips were performed at all of OBTS locations. The field observations made it possible to evaluate the actual terrain and geotechnical conditions at the sites. This input was integrated into the conceptual layout development process.

After the conceptual layouts were produced, quarter-mile buffer zones were drawn around the sites. These boundaries delimited that area where environmental field surveys and geotechnical field inspections were performed. The DTN alignments from the OBTS/DTA to the MOB/DAA were also surveyed. The results of these surveys were to have been presented in the Ertec DTN/OBTS Field Surveys Report. This report was not completed due to a stop work order.

3.4 COORDINATING THE SITING PROCESS

To provide the necessary OBTS/DTA siting coordination and evaluations of preferred and alternative sites, a series of working group, data exchange, and technical interchange (TI) meetings were held. These meetings served as coordinating functions between the various subcontractors and the AFRCE-MX.

The working group meetings provided an opportunity for open discussion on the siting factors and their applications. This coordination effort provided a means of making decisions which incorporated all inputs and supported the selection of the preferred and alternate OBTS/DTA areas for each MOB/DAA option.

Data exchange meetings were initiated to include the descriptions of these proposed actions and alternatives in the tiered decision-making process. The meetings were concerned with the following.

- o Coordination between the contractors performing siting tasks;
- o Providing the environmental contractor with layouts of those preferred and alternate facilities and alignments needed for environmental assessment (i.e., Tier IIA deliverables); and
- o Delivering to the environmental contractor the data generated during environmental field surveys and geotechnical inspections.

Technical interchange meetings provided the client with an opportunity to exchange ideas, provide program updates, and obtain preliminary results of ongoing activities. Those TI meetings related to OBTS/DTA were concerned with the following activities.

- o Coordination among members of the OBTS/DTA working group; and
- o Presentation of the OBTS/DTA area parcels, parcel descriptions and appropriate DTN alignments for presentation in the MX system land acquisition application package.

All layouts produced were reviewed by the BMO/AFRCE-MX and the OBTS/DTA working group.

3.5 TIERING AND LAND ACQUISITION DELIVERABLES

The preferred and alternate OBTS/DTA area parcels presented in the MX system land acquisition application package and for delivery to the environmental assessment contractor were developed by the following processes.

- Draw a 1-mile (1.6-km) "No Public Use" area radius around HSS 1 and 2;
- Produce a tight footprint around the "No Public Use" area, the DTA, HSS, and the connecting roads;
- Develop a land acquisition parcel boundary by determining the township, range, and quarter sections around the zone; and
- Determine the parcel description based on the quarter-section boundary.

The OBTS/DTA parcels were then depicted on "E" size sheets using a 1:62,500 scale topographic base. A series of sheets were produced for each combination of preferred and alternate MOB/DAA with the appropriate preferred and alternate OBTS/DTA; each facilities combination depicted its own unique DTN alignment as well. It was intended that the AFRCE-MX would provide the multi-optional package to the COE. The COE would make the appropriate request for land to the Bureau of Land Management (BLM). This was done so that once the decision-makers had decided on the preferred combination of facilities, only a short delay would occur before the application could be delivered to the BLM.

4.0 OBTS/DTA SITING EVALUATION

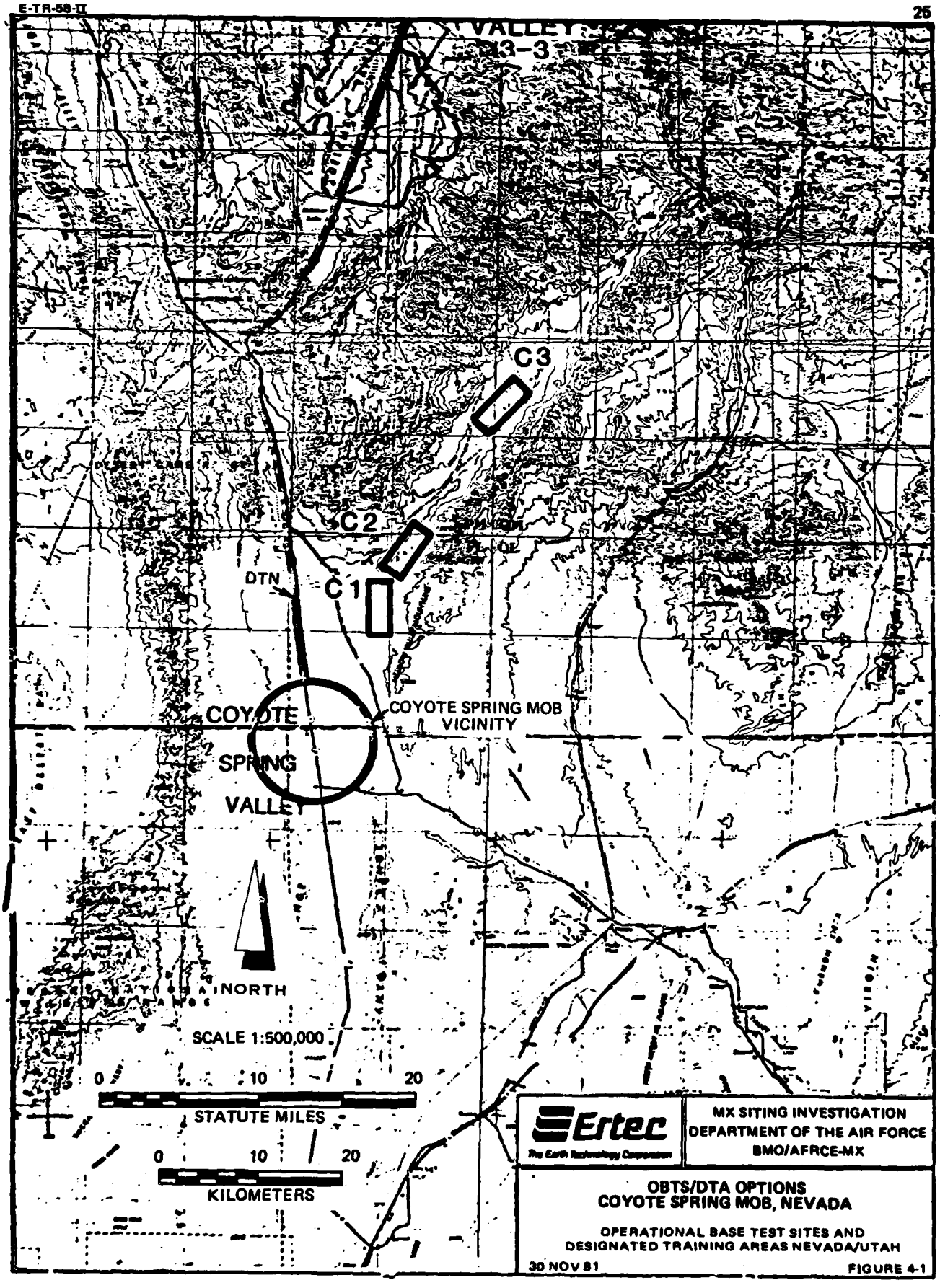
Evaluations were performed to determine the OBTS/DTA alternatives for each MOB/DAA option. These evaluations are based on the methodology presented in Section 3.0. The following is a summary of the evaluations and the major areas of concern.

4.1 OBTS/DTA EVALUATION - COYOTE SPRING, NEVADA

4.1.1 Suitable Sites

A regional study of the Coyote Spring study area, based on the 22 April 1981 siting requirements, produced two potential OBTS sites (C2, C3) in Kane Springs Valley. The original OBTS site (C1), proposed in FY 80, was also included to verify the need for resiting (Figure 4-1). Rectangular shapes, representing the relative layout area, were developed for each site. A site in Delamar Valley was deemed not possible, even if both the existing and proposed power lines and the DTN were rerouted or a cluster was removed. Each site was evaluated at a site-specific scale (1:62,500) against the 22 April 1981 requirements, and an evaluation table was developed. The results of that comparison are presented in Table 4-1.

On 12 May 1981, a field reconnaissance of the Coyote Spring OBTS/DTA study area was performed by the OBTS working group. Of the three sites, only Option C2 was noted as having adverse geotechnical characteristics. The northeast half of Option C2 contains areas of caliche and adverse terrain. On 27 May 1981, after the BMO/AFRCE-MX review and prior to the 27 May 1981


VALLEY
3-3
C3
C2
C1
DTN
COYOTE SPRING MOB VICINITY
COYOTE SPRING VALLEY
NORTH
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
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The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OBTS/DTA OPTIONS
COYOTE SPRING MOB, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-1

OBTS/DTA FOR A COYOTE SPRING MOB		
OPTION C1 ORIGINAL OBTS	OPTION C2 KANE SPRINGS VALLEY WEST	OPTION C3 KANE SPRINGS VALLEY CENTRAL
• 5 miles to DAA	• Outside OB vicinity zone	• Outside DEIS boundary
• 4 miles to DTN/major highway	• 4 1/2 miles to proposed IPP line	• 20 miles to DAA
• 4 miles to existing power line	• Some cemented gravels (caliche)	• Possible future upgrading of Kane Springs Road to state highway
• 2 1/2 miles to proposed IPP line	• Adverse terrain (10% area)	• Some area subject to flooding
• Some area subject to flooding	• Grade > 5% (40% area)	• WSA southeast of option
• Grade > 5% (20% area)	• WSA east of option	• Desert tortoise in option
• WSA east of option	• Desert tortoise in option	• Big horn sheep north and southeast of option
• Desert tortoise in option	• Big horn sheep to the east of option	
• Big horn sheep to the east of option		

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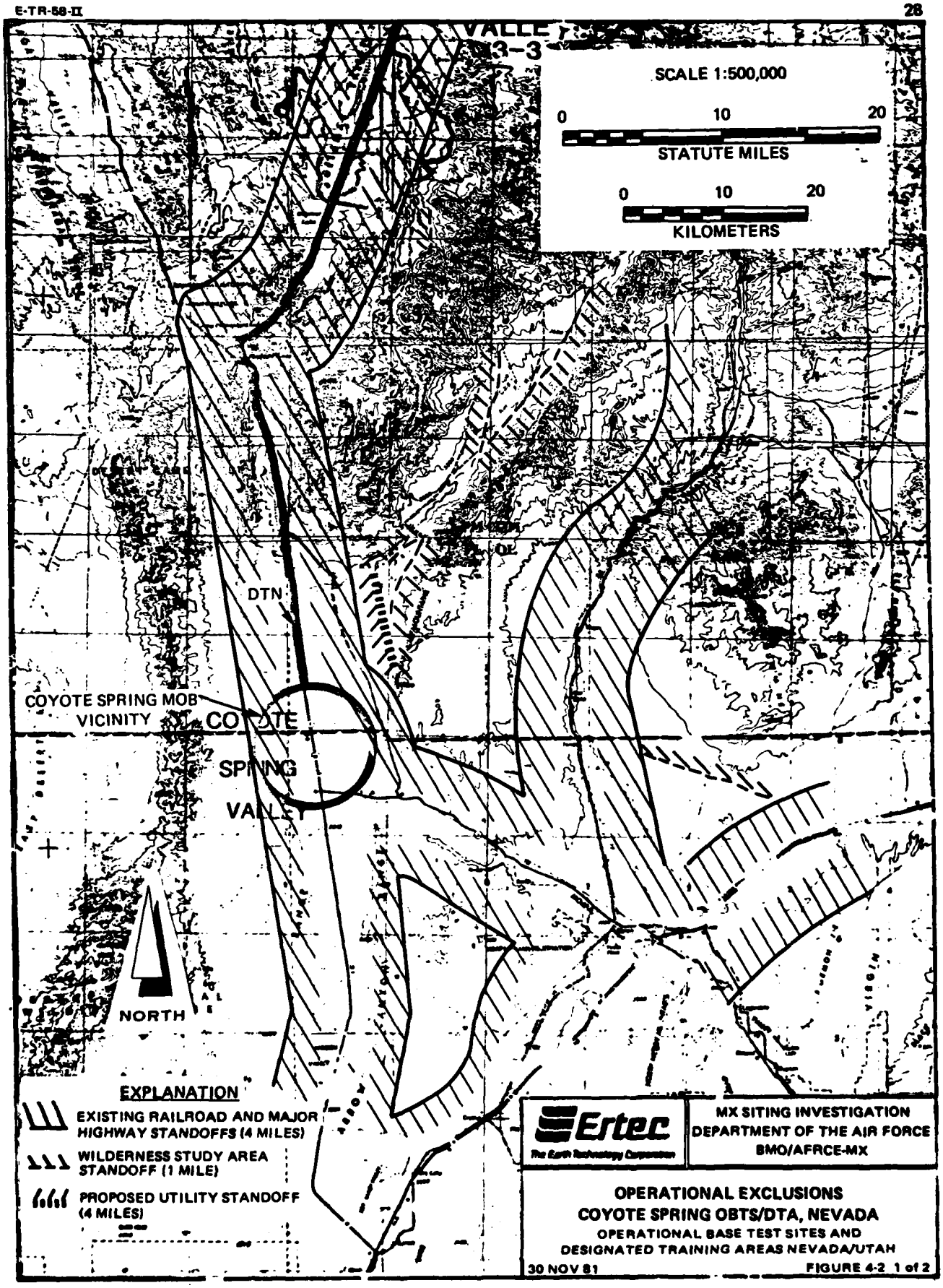
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

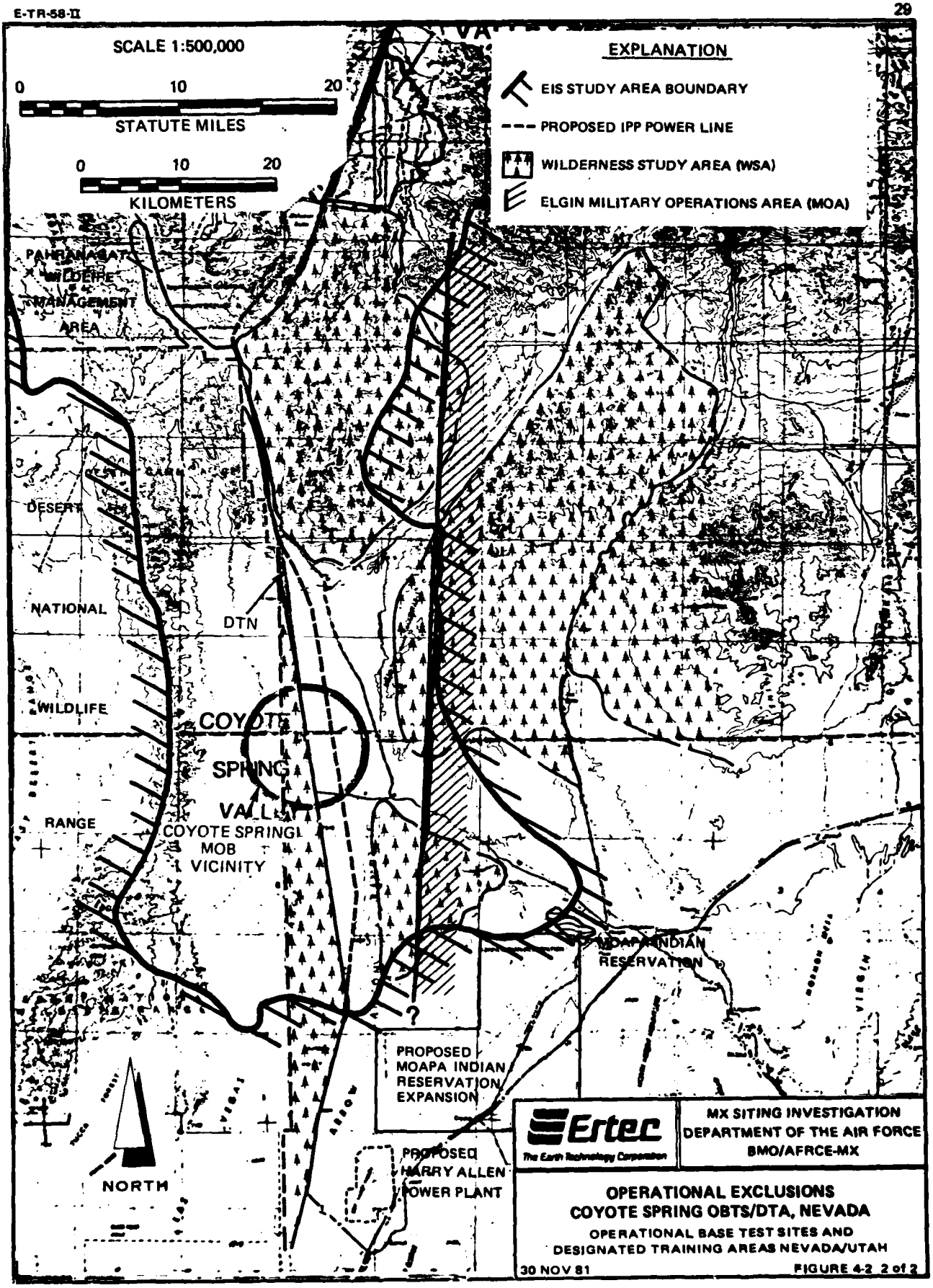
OBTS/DTA SITE EVALUATIONS
COYOTE SPRING MOB, NEVADA
OPERATIONAL BASE TEST SITE AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

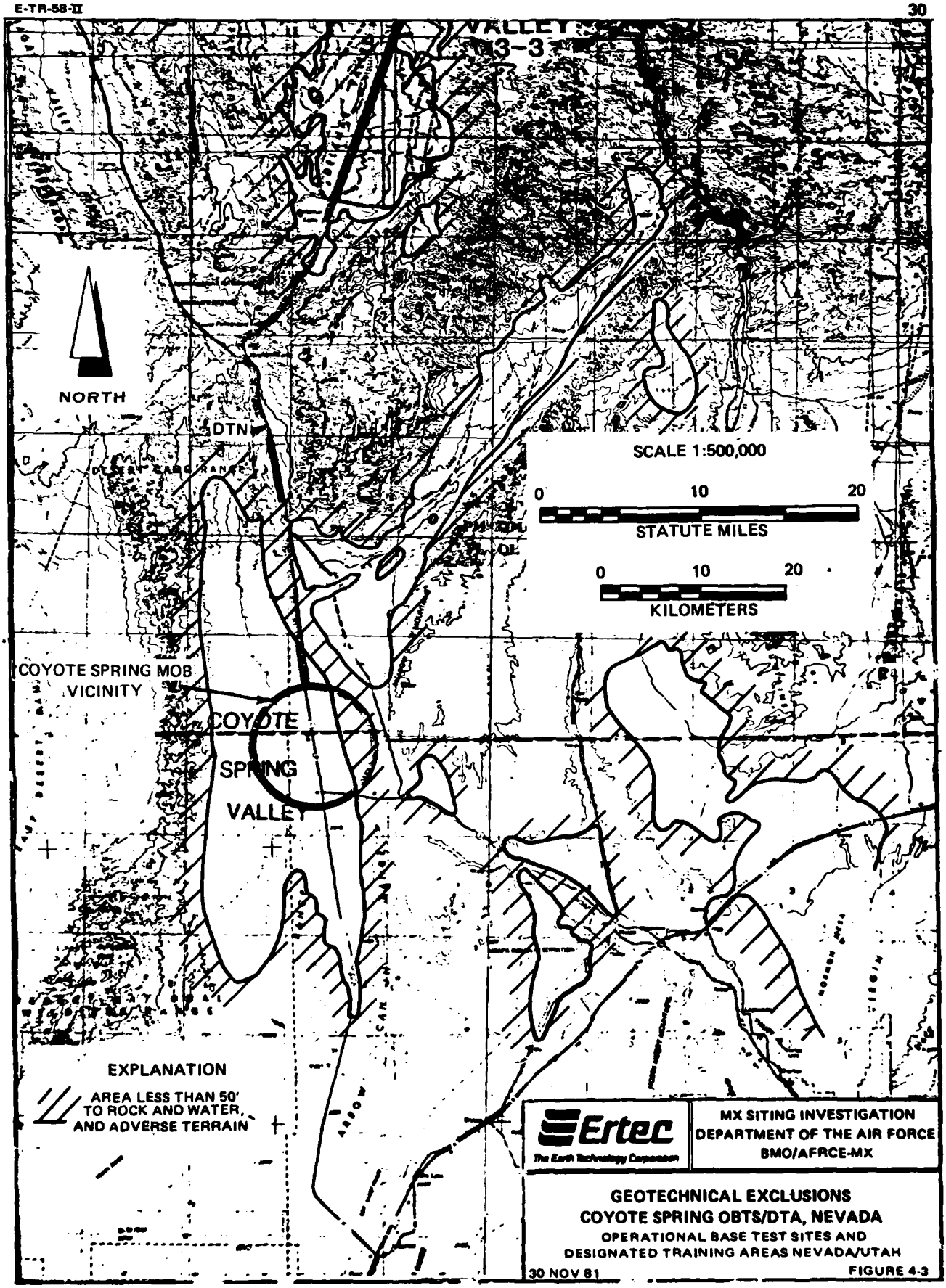
30 NOV 81 TABLE 4-1

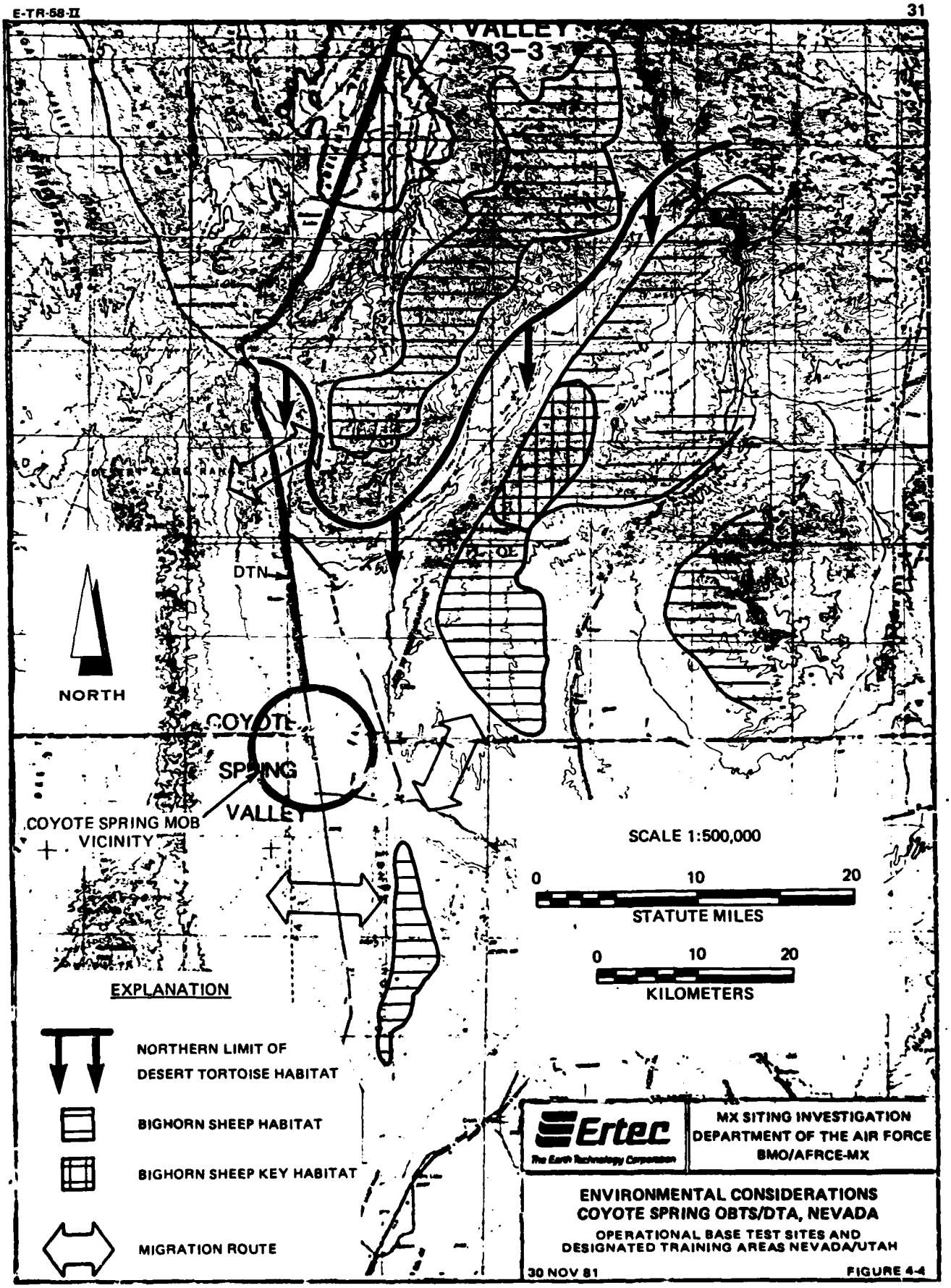
requirements being finalized, it was determined that Option C3 must be eliminated because it is outside the DEIS boundary. Also, Option C2, although greater than 4 miles (6 km) from the proposed IPP power lines, was less than desirable because the northern half was outside the MOB vicinity zone as well as being only marginally suitable. The southern half of Option C2 remained suitable. Option C1 was determined to be the most desirable area, but only if the proposed IPP power lines could be rerouted further to the west to increase the 2 1/2-mile (4-km) standoff to 4 miles (6 km).

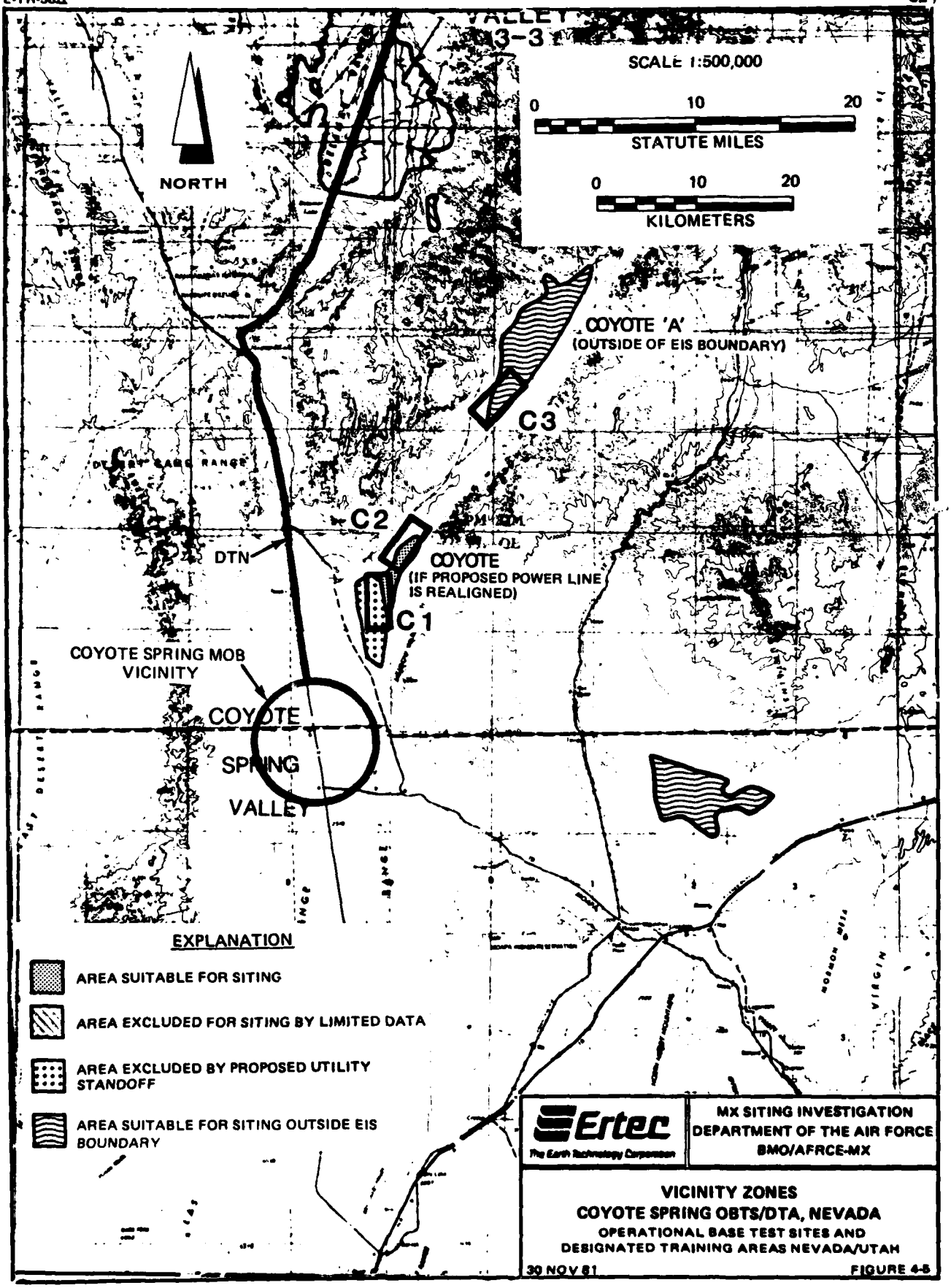
After receiving the 27 May 1981 siting requirements, the study area was reevaluated at a regional scale (Figures 4-2 through 4-5). Applying a 4-mile (6-km) standoff requirement, it was determined that the original areas around Option C1 and southern Option C2 were the only suitable locations available. The proposed IPP power lines would still need to be moved further to the west. A site-specific evaluation was performed for the remaining suitable area options (C1 and south C2) at a scale of 1:62,500. The suitability of the area was again confirmed and the limits of the area more exactly defined. Figures 4-6 through 4-8 represent this process by depicting a more detailed determination of the operational, geotechnical, and environmental exclusions and considerations in the area of Option C1. These data are composited to form a window of suitability (i.e., that area not excluded) or siting area as presented in Figur 4-9. [illegible]ing the site-selection process and as

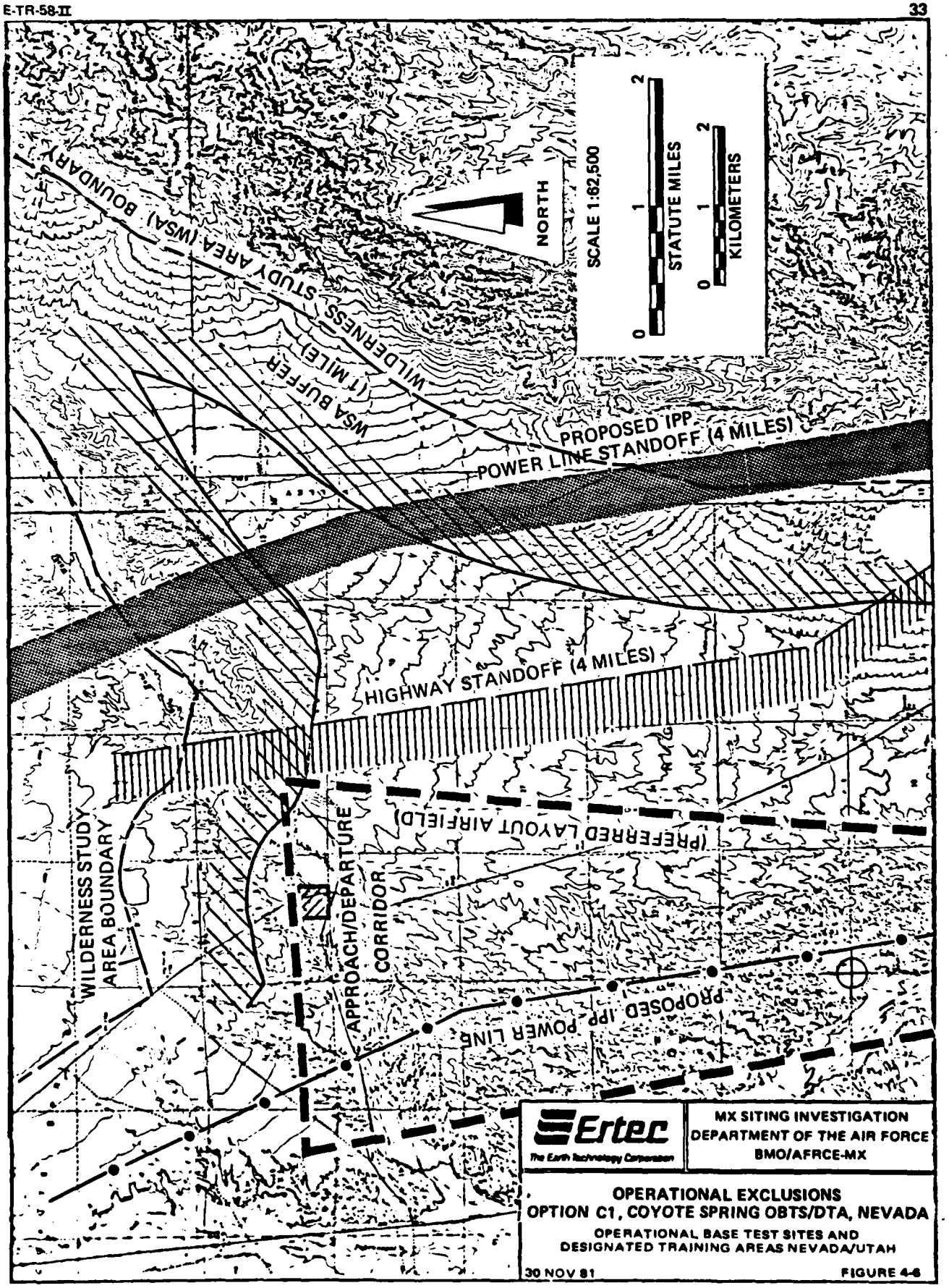

SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
DTN
COYOTE SPRING MOB
VICINITY
COYOTE
SPRING
VALLEY
NORTH
EXPLANATION
EXISTING RAILROAD AND MAJOR HIGHWAY STANDOFFS (4 MILES)
WILDERNESS STUDY AREA STANDOFF (1 MILE)
PROPOSED UTILITY STANDOFF (4 MILES)
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OPERATIONAL EXCLUSIONS
COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-2 1 of 2

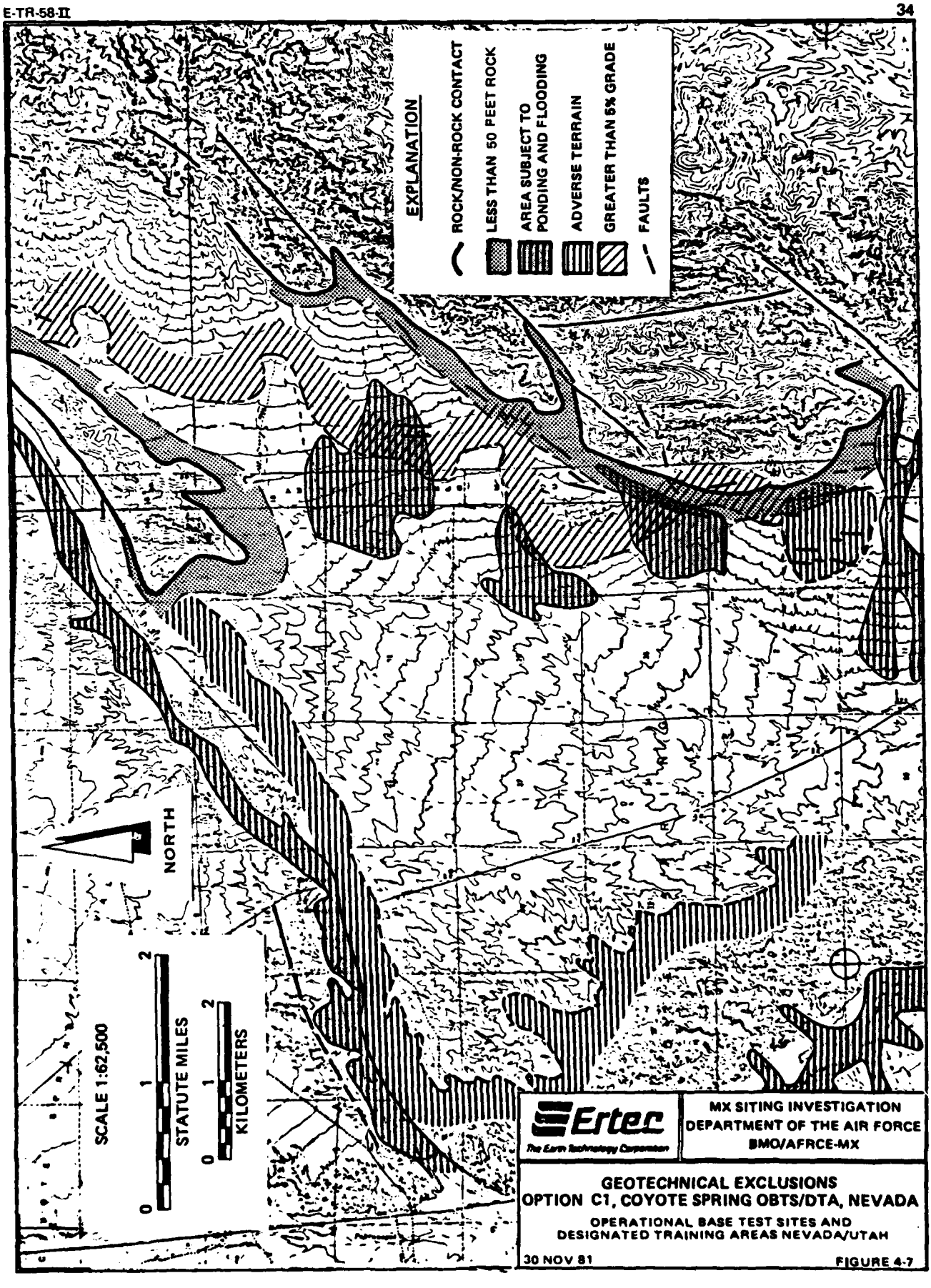

SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
EXPLANATION
EIS STUDY AREA BOUNDARY
PROPOSED IPP POWER LINE
WILDERNESS STUDY AREA (WSA)
ELGIN MILITARY OPERATIONS AREA (MOA)
PAHRANAGAT
WILDLIFE
MANAGEMENT
AREA
DESERT
NATIONAL
WILDLIFE
RANGE
DTN
COYOTE
SPRING
VALLEY
COYOTE SPRING
MOB
VICINITY
MOAPA INDIAN
RESERVATION
PROPOSED
MOAPA INDIAN
RESERVATION
EXPANSION
PROPOSED
HARRY ALLEN
POWER PLANT
NORTH
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OPERATIONAL EXCLUSIONS
COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-2 2 of 2

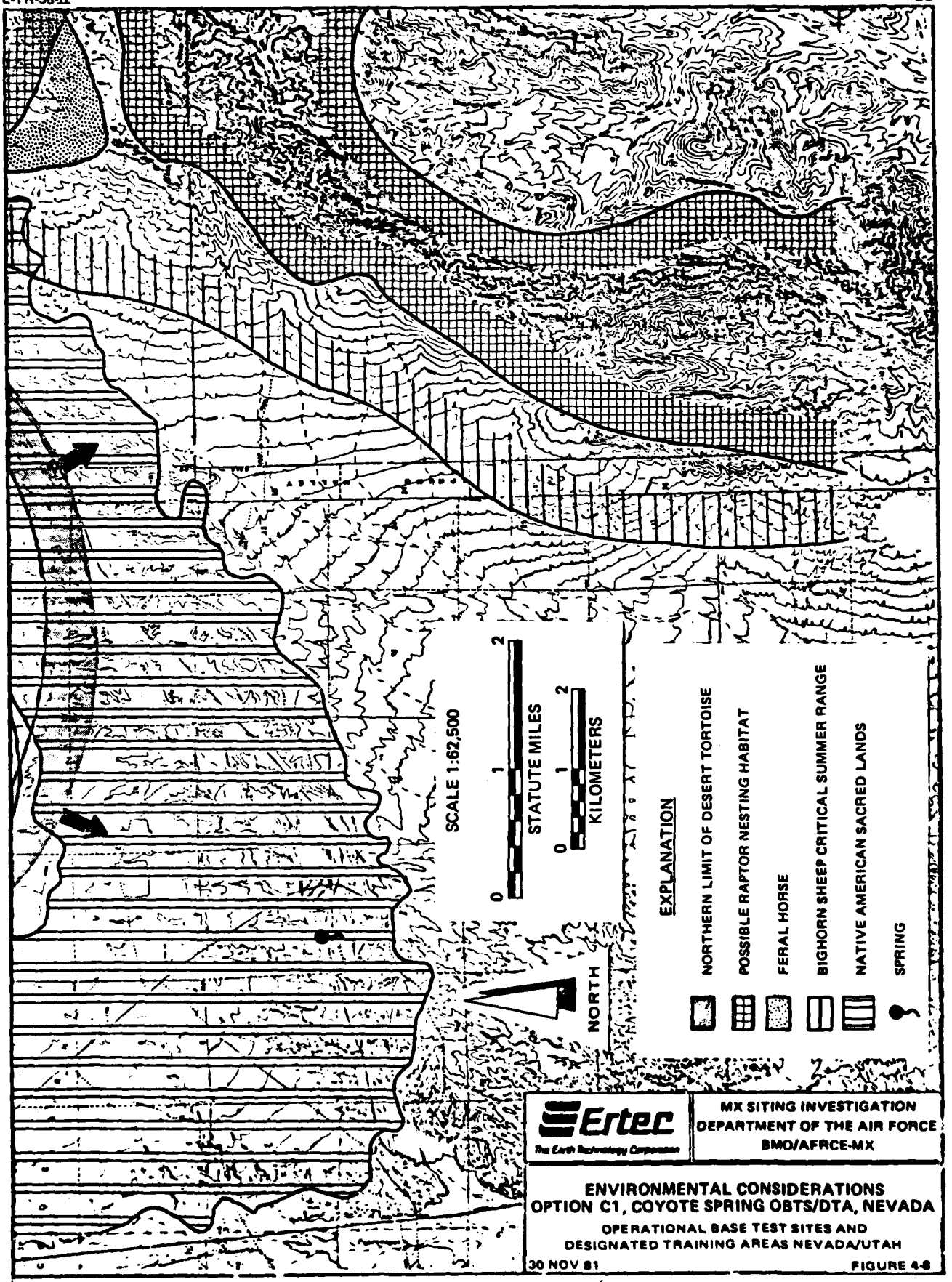

NORTH
DTN
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
COYOTE SPRING MOB
VICINITY
COYOTE
SPRING
VALLEY
EXPLANATION
AREA LESS THAN 50'
TO ROCK AND WATER,
AND ADVERSE TERRAIN
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GEOTECHNICAL EXCLUSIONS
COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-3

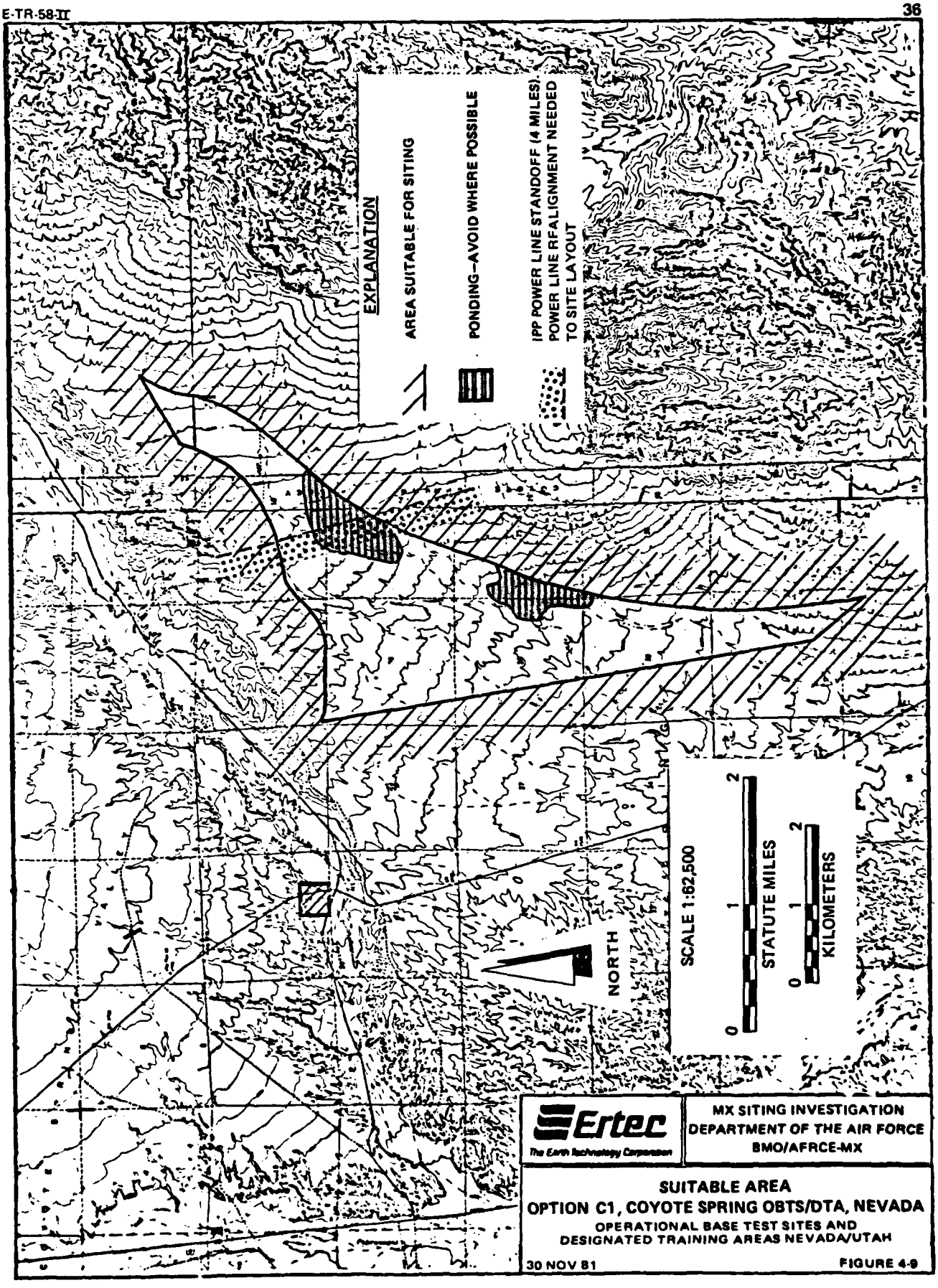

VALLEY
3-3
DTN
NORTH
COYOTE
SPRING
VALLEY
COYOTE SPRING MOB
VICINITY
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
EXPLANATION
NORTHERN LIMIT OF
DESERT TORTOISE HABITAT
BIGHORN SHEEP HABITAT
BIGHORN SHEEP KEY HABITAT
MIGRATION ROUTE
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BMO/AFRCE-MX
ENVIRONMENTAL CONSIDERATIONS
COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-4


3-3
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
NORTH
COYOTE 'A'
(OUTSIDE OF EIS BOUNDARY)
C3
C2
C1
DTN
COYOTE
(IF PROPOSED POWER LINE
IS REALIGNED)
COYOTE SPRING MOB
VICINITY
COYOTE
SPRING
VALLEY
EXPLANATION
AREA SUITABLE FOR SITING
AREA EXCLUDED FOR SITING BY LIMITED DATA
AREA EXCLUDED BY PROPOSED UTILITY
STANDOFF
AREA SUITABLE FOR SITING OUTSIDE EIS
BOUNDARY
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VICINITY ZONES
COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-5


NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
WILDERNESS STUDY AREA BOUNDARY
WSA BUFFER (1 MILE)
PROPOSED IPP POWER LINE STANDOFF (4 MILES)
HIGHWAY STANDOFF (4 MILES)
(PREFERRED LAYOUT AIRFIELD)
APPROACH/DEPARTURE CORRIDOR
PROPOSED IPP POWER LINE
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OPERATIONAL EXCLUSIONS
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-6


EXPLANATION
ROCK/NON-ROCK CONTACT
LESS THAN 50 FEET ROCK
AREA SUBJECT TO PONDING AND FLOODING
ADVERSE TERRAIN
GREATER THAN 5% GRADE
FAULTS
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
0 1 2
0 1 2
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
GEOTECHNICAL EXCLUSIONS
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-7


SCALE 1:62,500
STATUTE MILES
KILOMETERS
NORTH
EXPLANATION
NORTHERN LIMIT OF DESERT TORTOISE
POSSIBLE RAPTOR NESTING HABITAT
FERAL HORSE
BIGHORN SHEEP CRITICAL SUMMER RANGE
NATIVE AMERICAN SACRED LANDS
SPRING
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
ENVIRONMENTAL CONSIDERATIONS
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-8


EXPLANATION
AREA SUITABLE FOR SITING
PONDING–AVOID WHERE POSSIBLE
IPP POWER LINE STANDOFF (4 MILES). POWER LINE REALIGNMENT NEEDED TO SITE LAYOUT
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
0 1 2
0 1 2
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MX SITING INVESTIGATION
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BMO/AFRCE-MX
SUITABLE AREA
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-9

an ongoing activity, coordination between the OBTS working group and the base comprehensive planner (EDAW, Inc.) was taking place.

4.1.2 Conceptual Layouts

Numerous OBTS and DTA layouts, as well as DTN alignments between the MOB and the OBTS/DTA, were performed within this new site-specific suitable area (Figure 4-10). These layouts were developed with the assumption that Kane Springs road was not a major service road. The state has the option of upgrading this road into a state highway. Based on this potential action, the question of standoff distance from the road was raised.

New layouts to the south were produced. To accommodate a maximum HSS move to the south, the HSS standoff requirement was modified. The requirement was changed so that only HSS 1 and 2 need to maintain a 4-mile (6-km) standoff. The HSS 3 through 5 standoff distance was lowered to 3 miles (5 km). With this new southern Coyote Spring layout, HSS 1 and 2 are separated from the Kane Springs road by 4 miles (6 km) and the other HSSs by a minimum of 1 mile (1.6 km). The associate DTN from the MOB/DAA to the OBTS/DTA was also moved further south. Both the original and new DTN routes provide the shortest distance between the respective OBTS/DTA and the MOB/DAA by crossing, rather than going around, the Pahranagat Wash. The DTA is also located outside suitable area. Although the power line standoff is not met, the geotechnical conditions are still satisfactory. The standoff requirements apply to the OBTS only.

EXPLANATION
AREA SUITABLE FOR SITING
PONDING—AVOID WHERE POSSIBLE
IPP POWER LINE STANDOFF (4 MILES). POWER LINE REALIGNMENT NEEDED TO SITE LAYOUT
SHELTER 3
SHELTER 2
BUMP TEST ROAD
SHELTER 4
SHELTER 5
TEST SUPPORT BUILDING (TSB)
SHELTER 1
DESIGNATED TRAINING AREA (DTA)
SERVICE ROAD
CLUSTER MAINTENANCE FACILITY (CMF)
BARRIER
DESIGNATED TRANSPORTATION NETWORK (DTN)
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
0 1 2
0 1 2
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EXAMPLE OF CONCEPTUAL LAYOUT WITHIN OPTION C1, SUITABLE AREA COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-10

After completion of the preliminary siting and layout process, an evaluation to select the preferred and alternate OBTS/DTA locations was performed. Since there was only one site at Coyote Spring, the evaluation was between potential layouts. The siting requirements were evaluated for each layout and the optimal layout and DTN route were selected as the preferred OBTS/DTA location (Table 4-2 and Figures 4-20 and 4-21). The southern layout in C1 is the preferred, while the northern layout is the alternate.

4.2 OBTS/DTA EVALUATION - BERYL, UTAH

4.2.1 Suitable Sites

The regional study of the Beryl study area included the original OBTS site (B1), as well as two potential OBTS/DTA sites (Figure 4-11). One of these sites is at the southwest end of Hamlin Valley (B2) and the other is southeast of Table Mountain in the Escalante Desert (B3). Rectangular shapes were developed for each site based on the 22 April 1981 siting requirements. The original site (B1), as assumed, did not meet the railroad standoff requirements. No sites in Pine Valley were possible because of the terrain and the standoff exclusion from the DTN.

A reconnaissance within this study area was performed on 13 May 1981. Both sites appeared geotechnically acceptable. Option B2 was located close to an active ranch with reseeded range land in the vicinity. The site was relocated further north into more natural vegetation. The primary existing road access

COYOTE SPRING, NEVADA OBTS/DTA

Preferred – Option C1 (south)

Pros

- 4 miles to DAA
- 4 miles to existing power lines
- 4 miles to DTN
- 100 percent BLM land
- No major drainage

Cons

- 2½ miles to proposed IPP line
- Desert tortoise in OBTS/DTA
- Big horn sheep east of OBTS/DTA

Alternate – Option C1 (north)

Pros

- Only other potential site
- 100 percent BLM land
- No major drainage

Cons

- 6 miles to DAA
- 3 miles to DTN
- 3 miles to existing power line
- 1 mile to major service road (Kane Springs Road; potential upgrade to state highway)
- 2½ miles to proposed IPP line
- Desert tortoise in OBTS/DTA
- Big horn sheep east of OBTS/DTA

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PREFERRED VS ALTERNATE
OBTS/DTA OPTION EVALUATION
COYOTE SPRING, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 4-2

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OBTS/DTA OPTIONS
BERYL/MILFORD MOB'S, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 FIGURE 4-11.

from the Beryl MOB/DAA south into southern Hamlin Valley is through Modena Draw Pass. This route is excessive and greater than the optimum of 10 miles (16 km). A much shorter DTN access between the MOB/DAA by way of Negro Liza Wash Pass was deemed feasible. On 27 May 1981, after the BMO/AFRCE-MX review and prior to receiving the finalized requirements, it was determined that Option B1 (original site) did not meet the standoff requirement from the railroad and this site was eliminated. Also, another site (Option B2A) in the southeastern portion of Hamlin Valley should be added as an alternative. Option B3 was thought to be only marginally acceptable because the requirements were only minimally satisfied. The specific site evaluations and comparisons generated are presented in Table 4-3.

Having received the 27 May 1981 siting requirements, a regional scale reevaluation using a 4-mile (6-km) standoff exclusion was performed at the Beryl sites (Figures 4-12 through 4-15). This evaluation resulted in Option B2 being eliminated because of its proximity to a high potential mining area and a north-south trending, potentially major, service road. Option B2A and the DTN route through Negro Liza Wash continued to be acceptable. Option B3 was found to be bisected by the proposed Rocky Mountain natural gas line which would have to be relocated to make this location feasible. These sites were reexamined during the site-specific scale evaluation (Appendix A-5 through A-12). The site options were coordinated with and integrated into EDAW's MOB activities.

OBTS/DTA FOR A BERYL MOB

OPTION B1	OPTION B2	OPTION B2A	OPTION B3
ORIGINAL OBTS	SOUTH HAMLIN VALLEY (WEST)	SOUTH HAMLIN VALLEY (EAST)	TABLE BUTTE SOUTH
• 3 miles to DTN	• Outside OB vicinity zone	• Outside OB vicinity zone	• 19 miles to DAA
• 1/2 mile to railroad	• 7 1/2 miles to DAA	• 7 1/2 miles to DAA	• 5 miles to railroad
• 1/2 mile to power line	• 12 miles to DAA (no existing road, this route)	• 10 1/2 miles to DAA (no existing road, this route)	• 2 1/2 miles to proposed IPP line
• Small area subject to flooding	• 3 miles to nearest shelter	• 1 mile to nearest shelter	• Proposed Rocky Mountain gas line passes through site
• Impact on ranching - 83% private land	• Water depth < 50' in northwest corner	• Adverse terrain to west	• Water depth < 50' in northwest 1/2 of site
• Feral horse range to the northwest of option	• Some adverse terrain to north and east	• Shallow rock to northeast	• Impact on ranching – 88% private land
	• 48% private land	• 100% BLM land	• Bald eagle and antelope range in option
	• Mining activity to the west of option	• Elk–winter range in option	
		• Ferruginous hawk nest sites in option	
		• Feral horse range to east of option	

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OBTS/DTA SITE EVALUATIONS
BERYL MOB, UTAH

OPERATIONAL BASE TEST SITE AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

TABLE 4-3

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MX SITING INVESTIGATION
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OPERATIONAL EXCLUSIONS
BERYL/MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 4-12 1 of 2

WAH WAH VALLEY 7-5
MILFORD
MINERSVILLE
KGRA
MILFORD CENTRAL MOB VICINITY
MILFORD SOUTH MOB VICINITY
CEDAR CITY
NORTH
BERYL MOB VICINITY
BERYL
CEDAR CITY
EXPLANATION
HIGH POTENTIAL MINERAL AREA NONMETALLIC
HIGH POTENTIAL MINERIAL AREA METALLIC
EIS STUDY AREA BOUNDARY
PROPOSED IPP POWER LINE
PROPOSED ROCKY MOUNTAIN GAS LINE
POTENTIAL AND EXISTING SERVICE ROADS
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETER
Erteo
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OPERATIONAL EXCLUSIONS
BERYL/MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-12 2 of 2

SCALE 1:500,000
STATUTE MILES
KILOMETERS
NORTH
EXPLANATION
AREA LESS THAN 50 FEET TO ROCK
AREA LESS THAN 50 FEET TO WATER
ADVERSE TERRAIN
SAND DUNES, SHEET SANDS
AREA SUBJECT TO PONDING AND FLOODING
MILFORD CENTRAL MOB
VICINITY
MILFORD SOUTH MOB
VICINITY
DTN
BERYL MOB
VICINITY
IAMLIN
ALLEY
8-10
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BMO/AFRCE-MX
GEOTECHNICAL EXCLUSIONS
BERYL/MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-13

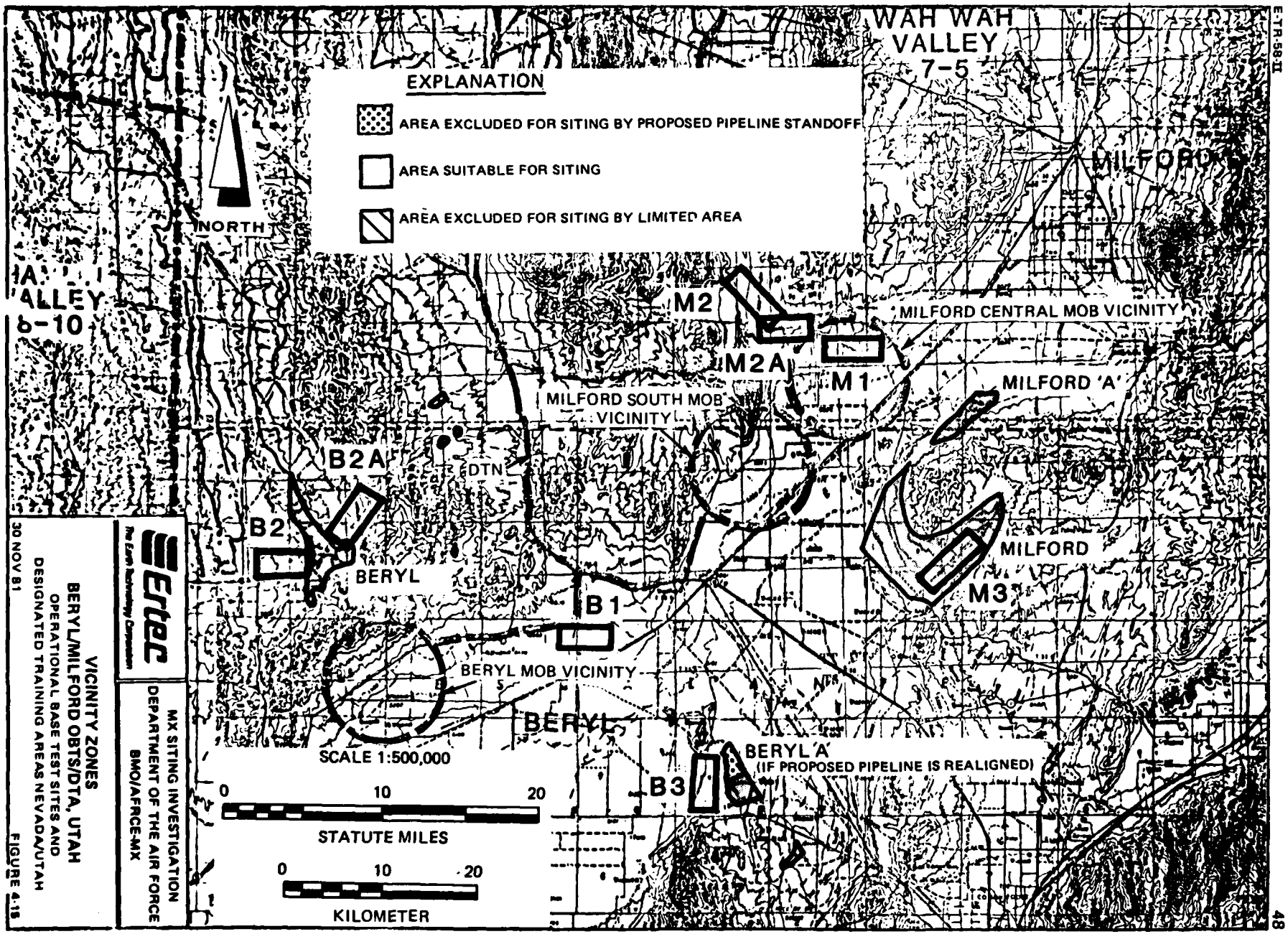
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ENVIRONMENTAL CONSIDERATIONS
BERYL/MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

FIGURE 4-14


WAH WAH VALLEY 7-5
EXPLANATION
AREA EXCLUDED FOR SITING BY PROPOSED PIPELINE STANDOFF
AREA SUITABLE FOR SITING
AREA EXCLUDED FOR SITING BY LIMITED AREA
NORTH
MILFORD
M2
MILFORD CENTRAL MOB VICINITY
M2A
M1
MILFORD 'A'
MILFORD SOUTH MOB VICINITY
B2A
DTN
B2
BERYL
MILFORD
M3
B1
BERYL MOB VICINITY
BERYL
BERYL 'A'
(IF PROPOSED PIPELINE IS REALIGNED)
B3
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETER
VICINITY ZONES
BERYL/MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-15
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4.2.2 Conceptual Layouts

Within the new site-specific suitable area, numerous OBTS and DTA layouts as well as DTN alignments between the MOB/DAA and the OBTS were performed. Layout concerns for Option 2A, located within southern Hamlin Valley, were the avoidance of adverse terrain to the west, private property to the south, springs in the southeast, and the wintering range for elk in the east. Layouts were developed to accommodate these concerns.

For all layouts, Negro Liza Wash was used for DTN access. The layout in Option B3, south of Table Mountain, was developed in an area bisected by a presently unsurveyed alignment of a proposed natural gas line. To maintain the 1-mile (1.6-km) standoff distance from this gas line, the OBTS was sited to the south of the pipeline alignment standoff. North of the proposed gas line there is insufficient suitable area in which to site the DTA. Also, the area northwest of the proposed gas line has ground water levels less than 50 feet (15 m) from the ground surface.

The proposed gas line would have to be rerouted to the north side of Table Mountain for the DTA to be sited outside the gas line standoff distance and within the suitable area. Presently, the DTA is depicted 1/2-mile (1 km) north of the approximated gas line alignment and in the area of less than 50 feet (15 m) to water. If the gas line cannot be rerouted, BMO would need to reevaluate the present requirements for DTA siting and

determine if these requirements need to be as stringent as the OBTS.

The DTN alignment to Option B3 crosses the railroad track at Zane. It then follows an existing road through sand dunes and a small playa. Efforts to reroute around these areas would only lengthen the amount of road construction and not avoid the sand dunes. The concerns addressed for this segment of DTN are in no way worse than those encountered by the DTN throughout the DDA. Also, the DTN between the facilities would have to be designed to cross over the pipeline. There is insufficient area for an alternate layout.

After the preliminary site-selection and layout development was completed, an evaluation to determine the preferred and alternate OBTS/DTA locations was performed. For each site, the siting requirements were evaluated. The optimal site and DTN route were selected as the preferred. The southern Hamlin site (B2A) is the preferred and the Table Mountain (B3) area is the alternate site for Beryl. Table 4-4 presents the alternative site comparison.

4.3 OBTS/DTA EVALUATION - MILFORD, UTAH

4.3.1 Suitable Sites

The regional study of the Milford study area included the original FY 80 OBTS sites (M1) and two additional OBTS sites (Figure 4-16). One of these sites is at the southern end of Wah Wah Wash (M2) and the other is south of the railroad in the area of the Escalante Desert called "the Neck" (M3).

BERYL, UTAH OBTS/DTA

Preferred – Option B2A

Pros

- 7 ½ miles to DAA
- 100 percent BLM land
- No major drainage
- 11 miles to railroad
- 4 miles to major service road
- 5 miles to potential mining activities

Cons

- Within 2 miles to nearest cluster
- Elk – winter range in OBTS/DTA
- Ferruginous hawk nest site in OBTS/DTA
- Feral horse range to east

Alternate – Option B3

Pros

- Only other potential site

Cons

- 21 miles to DAA
- 15 miles to DTN
- Proposed gas pipeline through OBTS/DTA
- Realignment required to obtain minimum suitable area
- Ponding in OBTS/DTA
- Must cross railroad from OB
- Bald eagle and antelope range in OBTS/DTA
- 80 percent private land

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PREFERRED VS ALTERNATE OBTS/DTA OPTION EVALUATION BERYL, UTAH
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 4-4

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OBTS/DTA OPTIONS
BERYL/MILFORD MOB'S, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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FIGURE 4-16

Rectangular shapes were developed for each site based on the 22 April 1981 siting requirements. Milford MOB consisted of three options; North, Central, and South. Milford MOB North was dropped because of the high mineral activity in the area. Initially, OBTS/DTA Options M1, M2, and M2A were sited assuming the southern MOB was considered the preferred site. Option M2 was eliminated because of its proximity to a high metallic mineral potential area. Option M2A was generated in an effort to maintain a site in that location by avoiding the mineral problem area. Both Options M1 and M2A were eventually eliminated due to the high probability of a main service road passing through or nearby the sites. No sites in Wah Wah Valley were possible because of the standoff exclusion from State Highway 21, the potential loss of a cluster, the mining activity, and the use of the area as a major north-south service road. Each specific site was reevaluated at 1:62,500 scale against the requirements, and a comparison chart was produced (Table 4-5).

The OBTS working group performed a reconnaissance of this study area on 14 May 1981. Although sufficient depth to rock data were not available, all of the sites appeared geotechnically suitable. Telephone poles traversed "the Neck" site (M3) but no lines were strung on the poles. The DTN route to each site did not appear to pose a problem. On 27 May 1981, after the BMO/AFRCE-MX review and prior to receiving the final requirements, it was agreed that all sites north of the tracks were

OBTS/DTA FOR A MILFORD SOUTH MOB			OBTS/DTA FOR A MILFORD CENTRAL MOB
OPTION M1 ORIGINAL OBTS	OPTION M2 AND M2A WAH WAH WASH	OPTION M3 THE NECK, EAST OF LUND	OPTION M3 THE NECK, EAST OF LUND
• 3 1/2 miles to OB • 7 1/2 miles to DAA • 2 miles to railroad • 0 mile to proposed IPP line • 1 mile to service road • Antelope range in option	• Outside OB vicinity zone • 8 miles to DAA • 5 1/2 miles to DTN (2A-5 miles) • 8 miles to railroad (2A-6 miles) • Service road next to site • Northwest half option 2 and northwest corner option 2A in high potential mineral area • Some rock outcrops in 2A • Potential shallow rock in options 2 and 2A (~20%)	• 12 miles to DAA • 6 1/2 miles to Highway 19 • 9 miles to railroad • Some area to southwest subject to flooding • One drainage about 20 feet to northeast • Mule deer winter range and antelope range in option • Bald eagle range south of option	• 13 miles to DAA • 6 1/2 miles to Highway 19 • 9 miles to railroad • Antelope range in option

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OBTS/DTA SITE EVALUATIONS
MILFORD MOB, UTAH

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

TABLE 4-5

not acceptable. Later, Milford Central MOB became the preferred MOB option.

In addition to Options M1 and M2A being unsuitable, as previously discussed, they are also unacceptable because they do not meet the standoff distance from the Milford Central MOB. Only Option M3 remained acceptable.

Upon receiving the 27 May 1981 siting requirements, all Milford sites were reevaluated at a regional scale, using a 4-mile (6-km) standoff (Figures 4-12 through 4-15). The sites north of the railroad tracks remained unacceptable. The limits of the suitable area around Option M3 were increased. The area of "the Neck" was still the preferred portion of Option M3 suitable area. A new location originally called Milford "A" came into existence. For reference, the site is now named Option M3A. This site is north of "the Neck" and southeast of the railroad tracks. It just meets all minimum standoff requirements and is bordered by two Known Geothermal Resource Areas (KGRA).

During the site-specific evaluation, the suitable area limits were more accurately depicted (Appendix A-13 through A-20). Interaction took place with EDAW, in regards to both the site-selection process and MOB coordination. Of special concern was coordination of the Milford South versus Milford Central MOB locations in analyzing the preferred and alternate OBTS/DTA sites.

4.3.2 Conceptual Layouts

Numerous layouts of the OBTS and DTA were performed within the new site-specific suitable areas. Many alignments of the DTN between MOB/DAA and the OBTS/DTA were studied. These layouts and alignments addressed the problems of minimizing the distance and providing proper orientation of the OBTS/DTA to the different MOB/DAA options. The DTN alignments selected were also intended to provide the shortest construction mileage. Similar routing conditions as in the Beryl study area are present in the Milford study area. Use of the existing roads and BLM land was maximized.

Once the siting area and layouts were developed, the potential preferred and alternate OBTS/DTA locations were evaluated. At each site, the siting requirements were reviewed and a preferred site selected. For both a Milford Central MOB and a Milford South MOB, the preferred OBTS/DTA is the "the Neck" (M3) site, and the alternate site is Option M3A. The evaluation of the respective sites is presented in Table 4-6.

4.4 OBTS/DTA EVALUATION - CANNON AFB, NEW MEXICO

4.4.1 Suitable Sites

Regional studies in the vicinity of Cannon AFB were performed in two phases. The first phase consisted of siting a preferred IOC area and developing a DTN from the MOB/DAA at Cannon AFB to the IOC area. The portions of the suitable area evaluated were labeled the North, Central (West), and South sections (Figure 4-17). These areas are divided by both railroads and U.S.

MILFORD, UTAH OBTS/DTA

Preferred – Option M3

Pros

- Site best meets preferred standoff requirements
- 9 miles to railroad
- 8 miles to Highway 19
- 100 percent BLM land

Cons

- 16 miles to DAA
- One major drainage on west side
- DTN must cross railroad
- Mule deer winter range and antelope range in OBTS/DTA
- Bald eagle range south of OBTS/DTA

Alternate – Option M3A

Pros

- 7 miles from DAA
- 85 percent BLM land

Cons

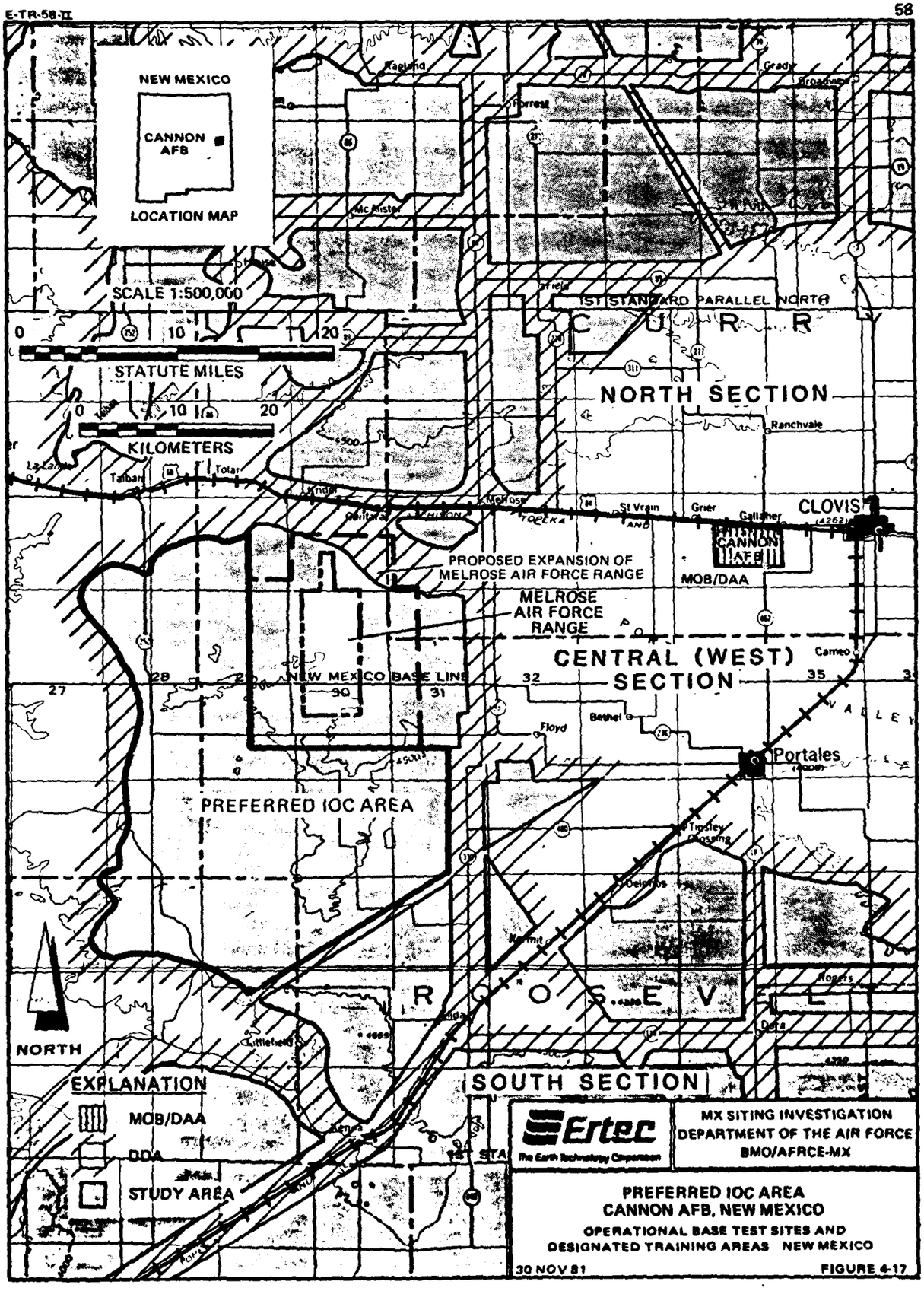
- Minimum amount of suitable area
- Site meets only minimum standoff requirements
- DTN must cross railroad
- KGRA north of OBTS/DTA
- Antelope and sage grouse range in OBTS/DTA

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PREFERRED VS ALTERNATE OBTS/DTA OPTION EVALUATION MILFORD, UTAH
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 4-6


NEW MEXICO
CANNON AFB
LOCATION MAP
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
1ST STANDARD PARALLEL NORTH
NORTH SECTION
CENTRAL (WEST) SECTION
SOUTH SECTION
CLOVIS
CANNON AFB
MOB/DAA
PROPOSED EXPANSION OF MELROSE AIR FORCE RANGE
MELROSE AIR FORCE RANGE
NEW MEXICO BASE LINE
PREFERRED IOC AREA
Portales
Ranchvale
Cameo
Floyd
Bethel
Tiptey Crossing
Delphos
Kermit
Rogers
Dora
Littlefield
Tolar
Taiban
Melrose
Grier
Gallacher
St Vrain
Broadview
Grady
Forrest
Ragland
NORTH
EXPLANATION
MOB/DAA
DDA
STUDY AREA
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
PREFERRED IOC AREA
CANNON AFB, NEW MEXICO
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81
FIGURE 4-17

federal highway. The North Section was originally proposed as the IOC area. A field reconnaissance of the potential IOC areas was performed by the OBTS working group from 2 to 5 June 1981. The results of this field evaluation are presented in Table 4-7. After evaluating the proposed sites, the Central Section was selected as the preferred site. Various conceptual layouts were performed in the central area using both the sectional land and open land layout approach. A preferred IOC area adjacent to the Melrose Air Force Range was delimited (Figure 4-18).

The second phase consisted of applying the 27 May 1981 OBTS/DTA siting requirements at a regional scale. The geotechnically suitable area is that suitable area presented in the DEIS (U.S. Department of the Air Force, 1980) and is based on the results of the Intermediate Screening (Fugro National, Inc., 1977). Within this geotechnically suitable area, the 4-mile (6-km) standoff requirement was applied. Only three areas remained with sufficient space to site the OBTS/DTA. The largest of the potential sites was the area selected for placing the IOC. The other two sites are shown in Figure 4-18. The western site (CA1) is in the Central Section, and the southern site (CA2) is in the South Section. A site-specific evaluation was performed, and the suitability of the sites reconfirmed (Appendix A-21 through A-24). MOB coordination and interaction with EDAW was established prior to site selection.

CANNON AFB, NEW MEXICO IOC AREA

North Section (Alternate 2)

Pros

- Closest proximity to DAA

Cons

- Highest potential for shallow caliche layers - closest proximity to the cap rock
- Intense farm agriculture
- Highest density of houses (also abandonments)
- Higher potential for utility relocations
- DTN must cross railroad from DAA to DDA

No Impact

- Present IOC clusters 8, 9, and 10 are under Melrose Range restricted air space

Central (West) Section (Preferred)

Pros

- Less active farming - more grazing land - fewer homes
- DTN does not need to cross railroad lines

Cons

- Potential for shallow caliche layers
- Potentially higher environmental concerns

No Impact

- Presently vegetated stable dunes in area

South Section (Alternate 1)

Pros

- Potential aggregate source igneous dike exposures

Cons

- Potential for shallow caliche layers - farthest area from cap rock
- DTN must cross railroad from DAA to DDA

No Impact

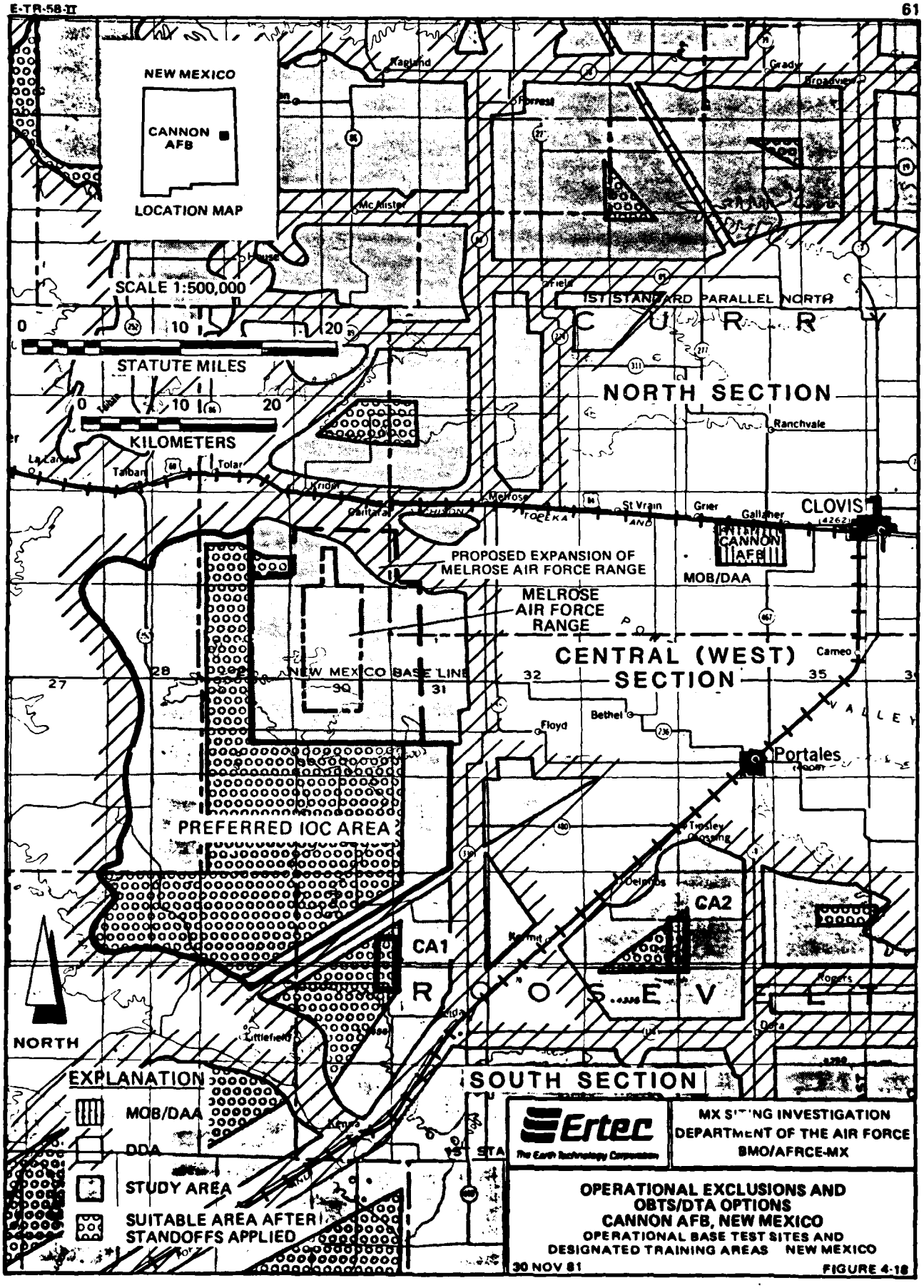
- Eastern portion is actively dry-farmed, some grazing
- Fewer homes - lower population density than in north section

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IOC SITING EVALUATION
CANNON AFB, NEW MEXICO
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81 TABLE 4-7


NEW MEXICO
CANNON AFB
LOCATION MAP
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
1ST STANDARD PARALLEL NORTH
NORTH SECTION
CENTRAL (WEST) SECTION
SOUTH SECTION
CLOVIS
CANNON AFB
MOB/DAA
PROPOSED EXPANSION OF MELROSE AIR FORCE RANGE
MELROSE AIR FORCE RANGE
NEW MEXICO BASE LINE
PREFERRED IOC AREA
CA1
CA2
Portales
Ranchvale
Cameo
Floyd
Bethel
Littlefield
NORTH
EXPLANATION
MOB/DAA
DDA
STUDY AREA
SUITABLE AREA AFTER STANDOFFS APPLIED
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OPERATIONAL EXCLUSIONS AND OBTS/DTA OPTIONS
CANNON AFB, NEW MEXICO
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81
FIGURE 4-18

4.4.2 Conceptual Layouts

Various OBTS and DTA layouts as well as the DTN alignments between the MOB/DAA and the OBTS/DTA within the new site-specific areas, were performed. The layouts developed at Option CA1 used the HSSs in the center of the section conceptual OBTS/DTA layout (Figure 3-2). The use of the existing roads was maximized. To avoid a large surface depression of unknown origin, the OBTS and the DTA were separated more than usual. The DTN from the OBTS/DTA used existing roads, and this minimizes the distance to the IOC DTN.

In Option CA2, the HSSs were located on the section lines. For this case, the configuration maximizes the use of the existing road network and impacts the farm lands within the individual sections to a lesser degree. The DTN length was minimized consistent with maximum use of existing roads between the OBTS/DTA and the IOC DTN. All DTN routes attempted to bypass existing communities. There are numerous residences along all proposed DTN routes.

After developing the siting area and layouts, the OBTS/DTA locations were evaluated against the siting requirements to select the preferred and alternate site. The preferred site selected represents the optimal site and DTN route. The CA1 site near the IOC was determined to be preferred, while CA2 was selected as the alternate OBTS/DTA for Cannon AFB. Comparison of the respective sites is presented in Table 4-8.

CANNON AFB, NEW MEXICO OBTS/DTA

Preferred – Option CA1

Pros

- 1 mile to gas pipeline
- 4 miles to State Highway 330
- Close to proposed IOC location
- Railroad crossing not required

Cons

- 44 miles to DDA
- Proximity to Melrose Air Force Range
- Potentially more environmental impact (rangeland)

Alternate – Option CA2

Pros

- 23 miles to DAA
- 4 miles to railroad
- 4 miles to State Highways 18 and 116

Cons

- Must cross railroad
- More populated area
- High agricultural activity

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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

PREFERRED VS ALTERNATE OBTS/DTA OPTION EVALUATION CANNON AFB, NEW MEXICO
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81 TABLE 4-8

4.5 FIELD SURVEYS

After the development of the layouts, areas for field environmental surveys and geotechnical inspections were established for the preferred and alternative layouts and respective DTNs. These areas include a 1/4-mile (.4-km) buffer around the facilities. The field surveys were performed at four OBTS sites; one at the Coyote Spring MOB, Nevada, one at the Beryl MOB, Utah, and two at the Milford MOB, Utah. An alternate OBTS at the Beryl MOB and two OBTSs near Cannon AFB, New Mexico, MOB were not surveyed because permission to enter onto private land at these sites had not been obtained at the time of the field surveys.

Biological resources surveys and geotechnical inspections were also made along one road corridor from the Coyote Spring MOB to the OBTS and along one OBTS road from the Beryl MOB. The other OBTS road connections could not be surveyed because authorization to enter private land was not granted at the time of the field surveys.

Preliminary results of the studies indicated that the OBTS sites in Nevada and Utah and the DTN segments which were studied were environmentally and geotechnically acceptable.

The Nevada-Utah field inspections were performed on 17 through 19 September 1981. During the inspections, the following was observed.

- At Coyote Spring OBTS/DTA site (Option C1) no serious geotechnical problems were observed; although drainage structures would be required where the DTN for the OBTS crosses

the Pahranagat Wash. Some sheet wash could occur in the general area.

- For the preferred Beryl OBTS/DTA site (Option B2A) various areas of topographic concern were noted in southern Hamlin Valley. Depending on the final layout configuration, both drainage crossings and considerable grading work would be required. However, sheet flooding does not appear to be a problem. The Table Mountain (Option B3) area did show signs of sheet flow across most of the site.

- The Milford OBTS/DTA area around "the Neck" (Option M3) is on alluvial fan deposits. There is some potential for sheet flow. The eastern side of the suitable area is formed by one main drainage. This drainage would require some drainage structures if the DTN were to cross it. Option M3A has a potential for shallow rock, as well as moderate caliche cementation at depth.

Unfortunately, it was not possible to complete the field surveys because of a stop work order issued on 14 October 1981. The directions were to compile data reflecting the status of the program as of 2 October 1981. These data have been compiled in an unfinished report (Ertec, 1981).

Although no surveys were performed in New Mexico, a second field reconnaissance took place on 24 and 25 September 1981. This trip evaluated the OBTS/DTA locations. Both the OBTS/DTA and their connecting DTNs were determined to be acceptable.

4.6 SITING COORDINATION

Beside the OBTS/DTA working group meetings, a series of data exchange meetings were held in order to support the tiered decision-making process. The environmental assessment contractor, coordinating with the AFRCE-MX, obtained from various contractors the available siting data on the Tier IIA facilities and alignments. These contractors were the base

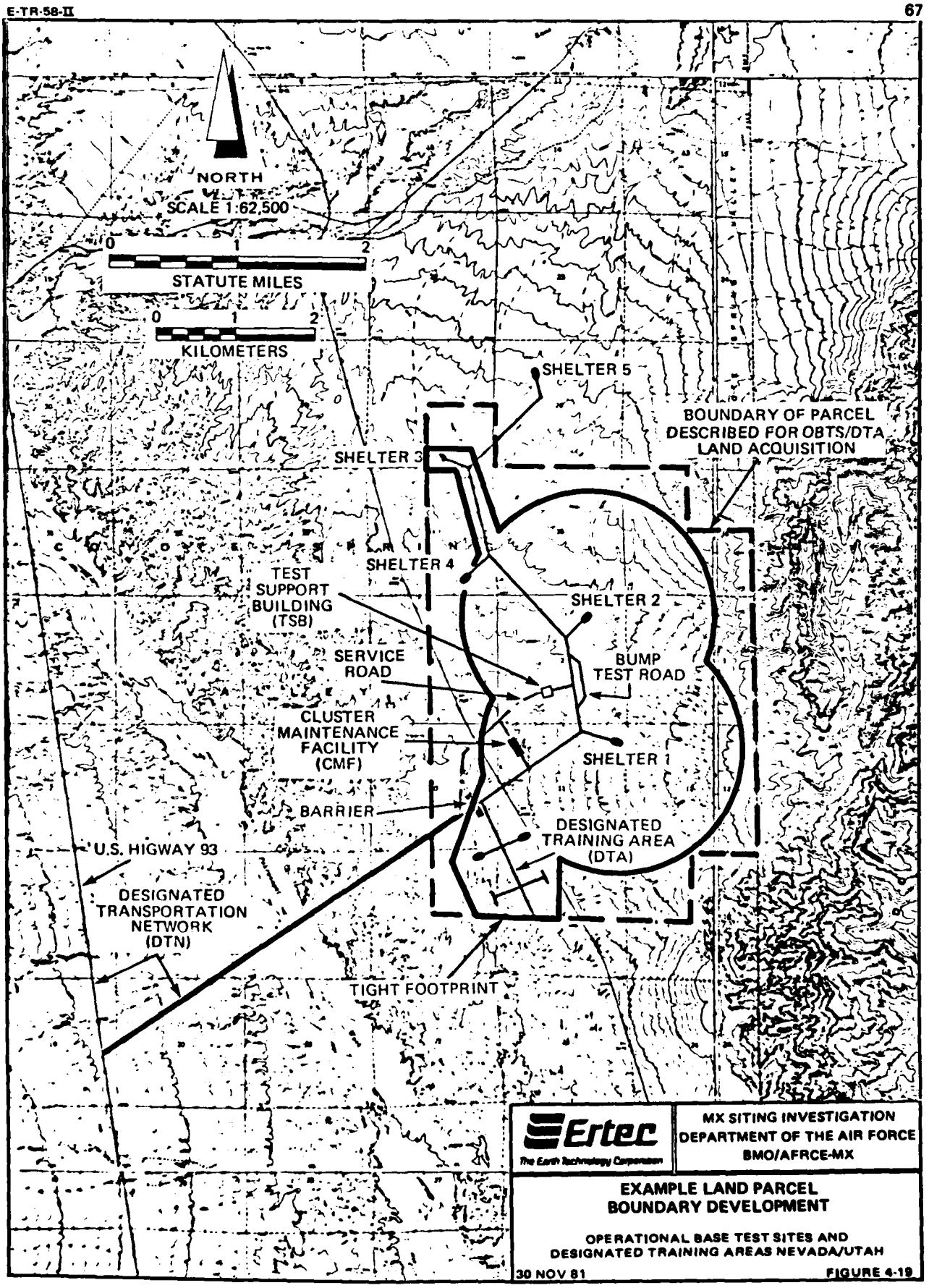
comprehensive planner (EDAW, Inc.), COE, and Ertec as the coordinator at the OBTS/DTA working group.

To support this process, the OBTS/DTA working group provided a series of deliverables to the environmental assessment contractor. The initial deliverable, dated 5 August 1981, contained footprints of the preferred and alternate OBTS/DTA areas with layouts and the DTN access roads. The final deliverable, dated 3 September 1981, contained land acquisition parcels developed from the footprints and the preliminary environmental survey and geotechnical inspection data. Final analysis and completion of a report were suspended as a result of a stop work order.

4.7 LAND ACQUISITION APPLICATION PACKAGE

As part of the land acquisition application package, the preferred and alternate layouts were used to develop areas to be withdrawn for construction. These were the same layouts used for tiering. To determine the land acquisition area, quarter-sectional limits were depicted around a tight footprint for each layout. Figure 4-19 illustrates the land acquisition boundary development around a tight footprint for the southern Coyote Spring layout.

These parcels were depicted on "E" size map sheets at a scale of 1:62,500 for each combination of preferred and alternate MOB and OBTS option (17 September 1981). The parcels were also described by township, range, and quarter section. These depicted and described parcels were then included in the land


NORTH
SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
SHELTER 5
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
SHELTER 3
SHELTER 4
TEST SUPPORT BUILDING (TSB)
SHELTER 2
SERVICE ROAD
BUMP TEST ROAD
CLUSTER MAINTENANCE FACILITY (CMF)
SHELTER 1
BARRIER
DESIGNATED TRAINING AREA (DTA)
U.S. HIGWAY 93
DESIGNATED TRANSPORTATION NETWORK (DTN)
TIGHT FOOTPRINT
Ertec
The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
EXAMPLE LAND PARCEL BOUNDARY DEVELOPMENT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-19

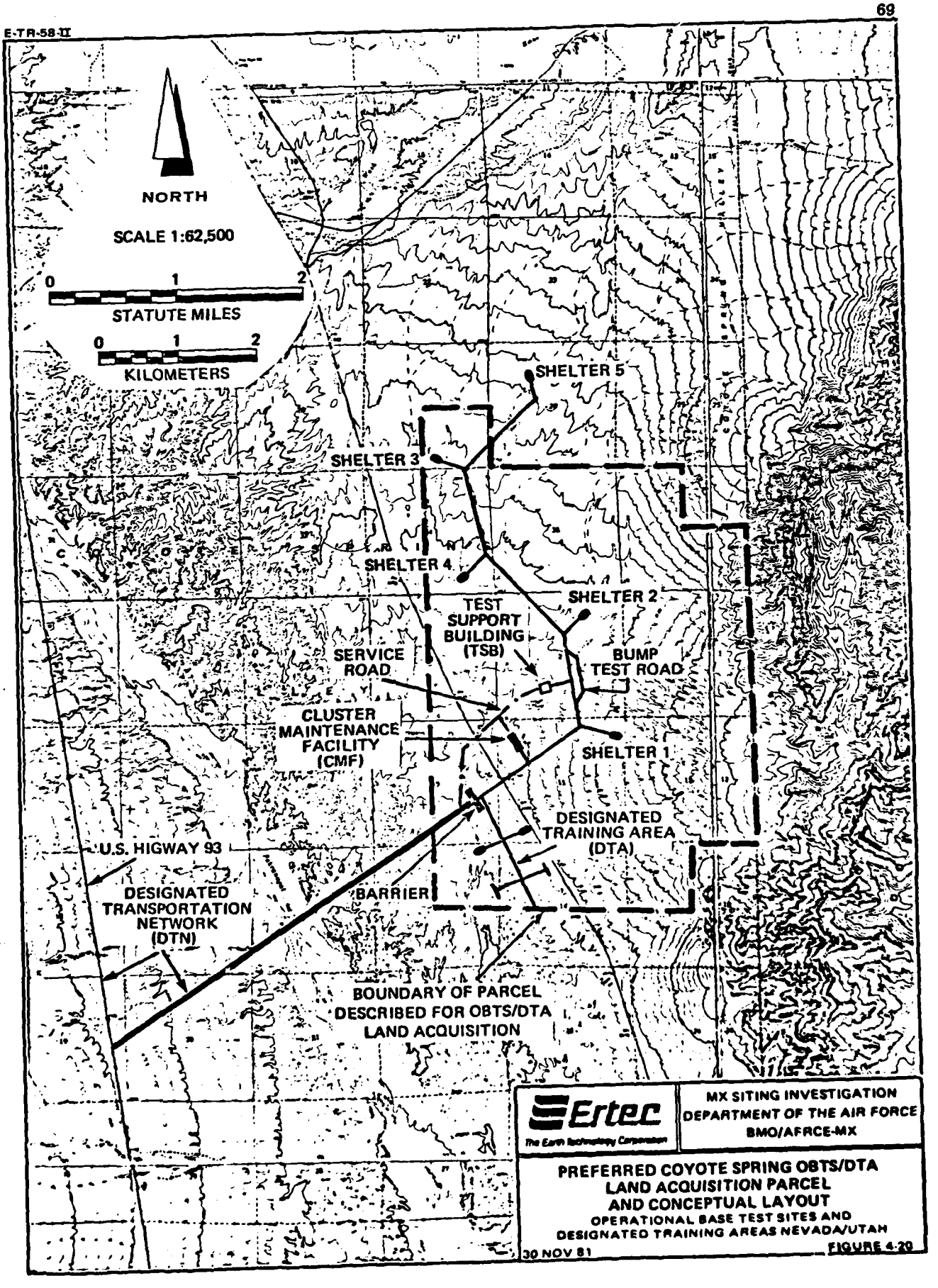
acquisition application package. Figures 4-20 and 4-21 and Table 4-9 are presented as an example of this product. (See Appendix B and C for parcels and descriptions of the other sites). The first increment of the Land Acquisition Package is presented in Volume III. The DTN routes and the OBTS/DTA site relationship to the MOB/DAA is depicted in Figures 4-22 and 4-23 for Nevada and Utah, respectively.

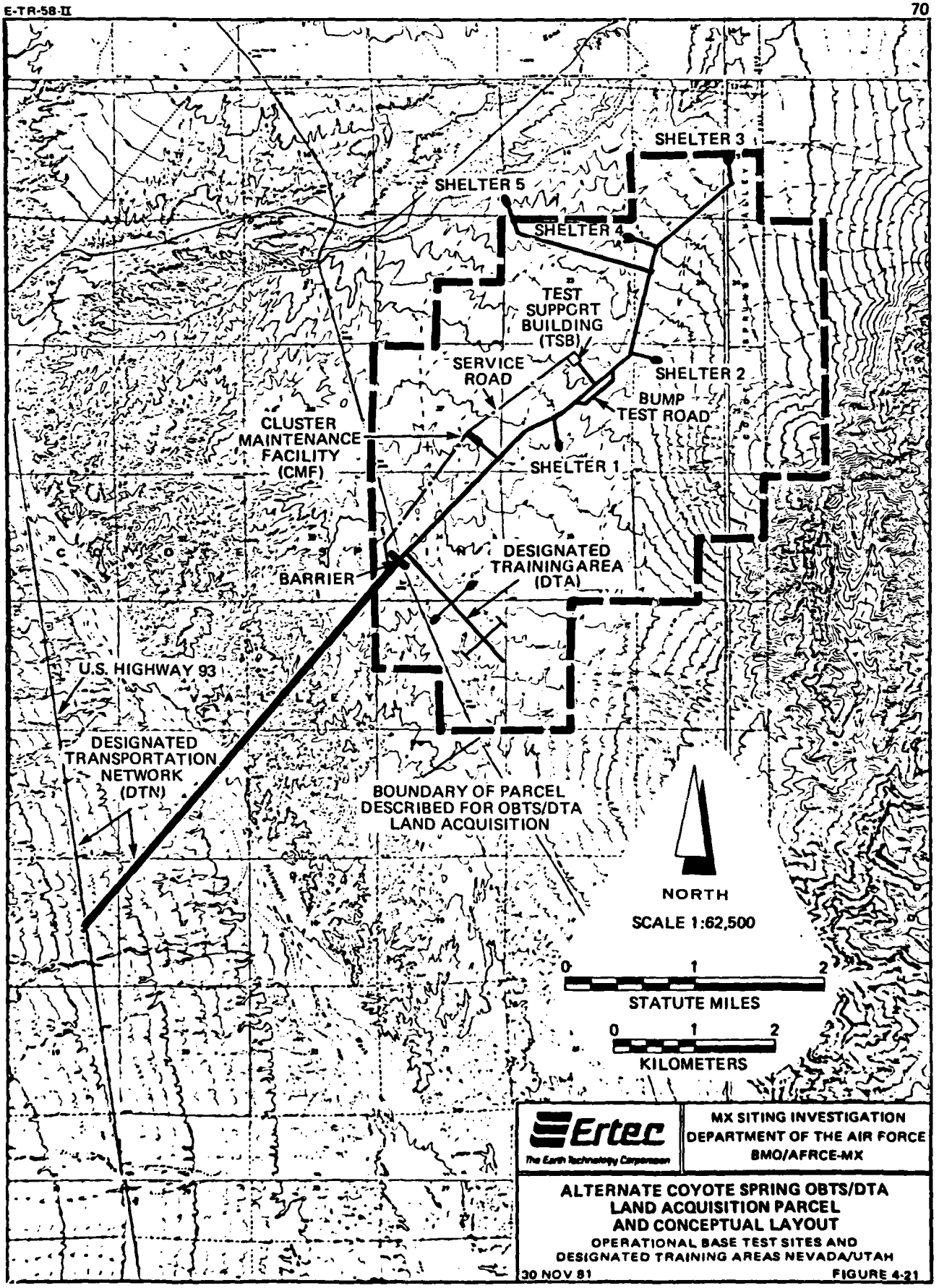
The New Mexico area was not included in the land acquisition application package, but similar quarter-sectional boundaries were developed around the layouts used for tiering (see Appendix B-9 and B-10). The descriptions of the parcel boundaries were also part of the tiering deliverable (see Appendix C-4). The DTN routes and the OBTS/DTA site relationship to the MOB/DAA are depicted in Figure 4-24.

4.8 LAYOUTS AT 1.73-MILE SPACING

An alternate layout option using a 1.73-mile (2.78-km) spacing was performed to determine if this layout could exist within the area designated for land acquisition. For example, at the Coyote Spring site (Option C1), only an extra 1/4-mile (.4-km) area would be necessary to completely contain this larger layout (Figure 4-25).

The Beryl OBTS/DTA layout at the south Hamlin Valley preferred site (Option B2A) was successfully sited within the land acquisition area. The area within the Table Mountain alternate site (Option B3) was marginal prior to this study. The


NORTH
SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
SHELTER 5
SHELTER 3
SHELTER 4
SHELTER 2
TEST SUPPORT BUILDING (TSB)
SERVICE ROAD
BUMP TEST ROAD
CLUSTER MAINTENANCE FACILITY (CMF)
SHELTER 1
DESIGNATED TRAINING AREA (DTA)
U.S. HIGWAY 93
DESIGNATED TRANSPORTATION NETWORK (DTN)
BARRIER
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
Ertec
The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
PREFERRED COYOTE SPRING OBTS/DTA
LAND ACQUISITION PARCEL
AND CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-20


SHELTER 3
SHELTER 5
SHELTER 4
TEST SUPPORT BUILDING (TSB)
SERVICE ROAD
SHELTER 2
BUMP TEST ROAD
CLUSTER MAINTENANCE FACILITY (CMF)
SHELTER 1
DESIGNATED TRAINING AREA (DTA)
BARRIER
U.S. HIGHWAY 93
DESIGNATED TRANSPORTATION NETWORK (DTN)
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
NORTH
SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
Ertec
The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
ALTERNATE COYOTE SPRING OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-21

COYOTE SPRING, PREFERRED SITE

Lincoln County, Nevada
T.11S.R.63E.
Section 27, SE 1/4
Section 34, E 1/2
Section 35, All
Section 36, S 1/2 and NW 1/4

SUBTOTAL 1600 Acres

T.12S.R.63E.
Section 1, All
Section 2, All
Section 3, E 1/2
Section 10, E 1/2
Section 11, All
Section 12, All
Section 13, NW 1/4
Section 14, N 1/2
Section 15, NE 1/4

SUBTOTAL 3840 Acres

TOTAL 5440 Acres

COYOTE SPRING, ALTERNATIVE SITE

Lincoln County, Nevada
T.11S.R.63E.
Section 13, S 1/2
Section 22, SE 1/4
Section 23, All
Section 24, All
Section 25, All
Section 26, All
Section 27, All
Section 34, All
Section 35, All
Section 36, N 1/2 and SW 1/4

SUBTOTAL 5440 Acres

T.12S.R.63E.
Section 2, W 1/2
Section 3, E 1/2 and NW 1/4

SUBTOTAL 800 Acres

T.11S.R.64E.
Section 19, W 1/2
Section 30, W 1/2

SUBTOTAL 640 Acres

TOTAL 6880 Acres

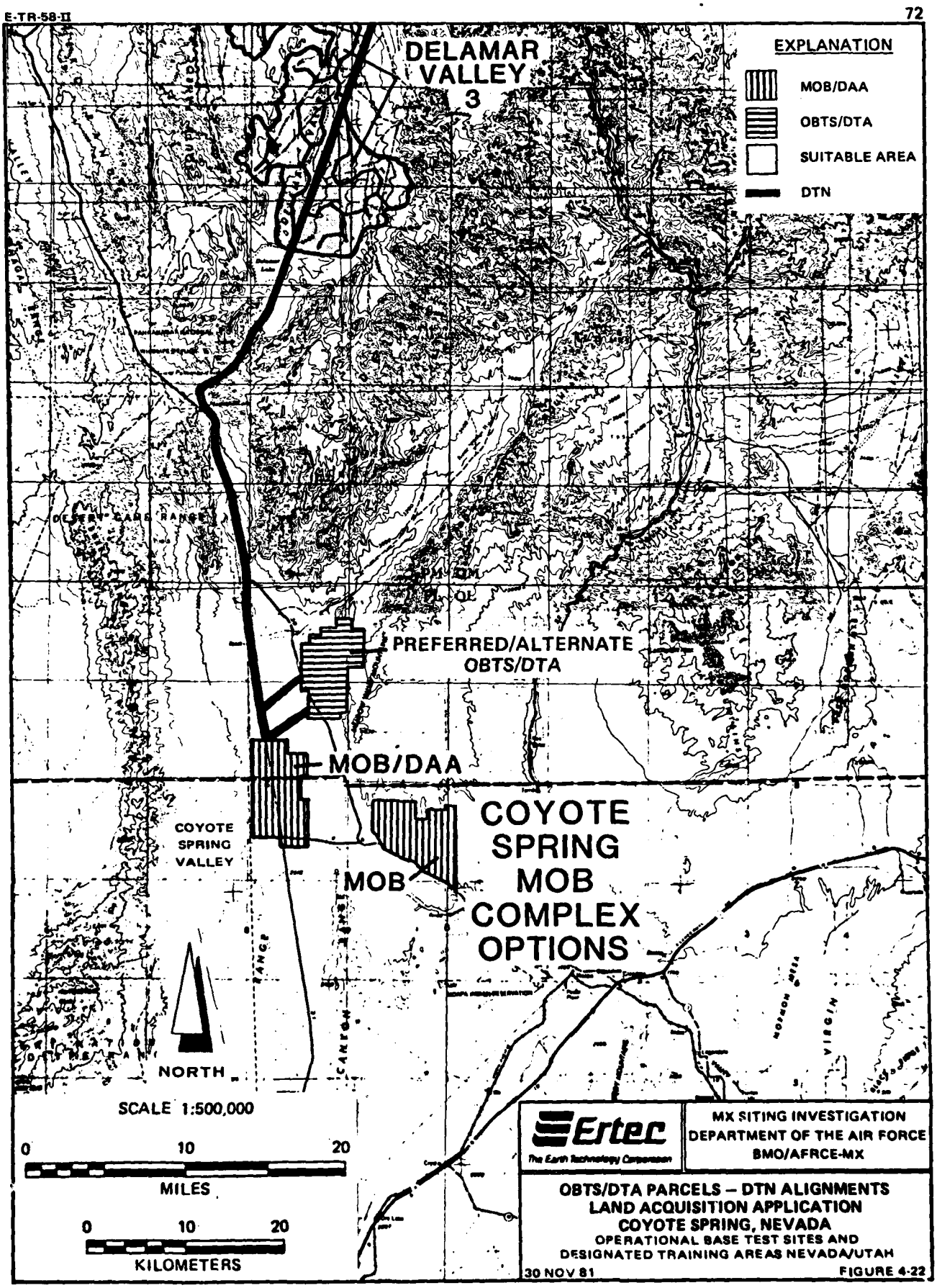
Ertec
The Earth Technology Corporation

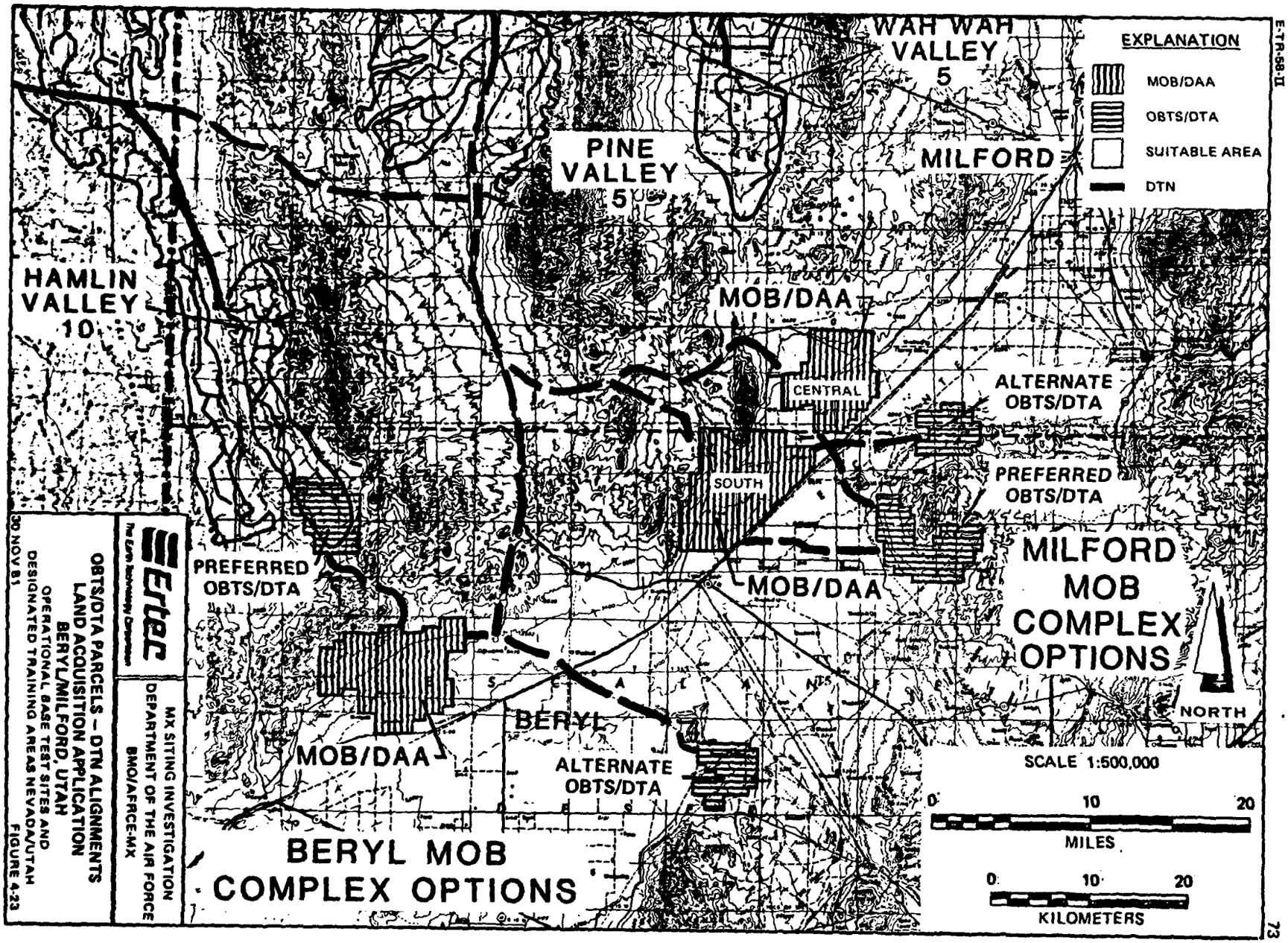
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

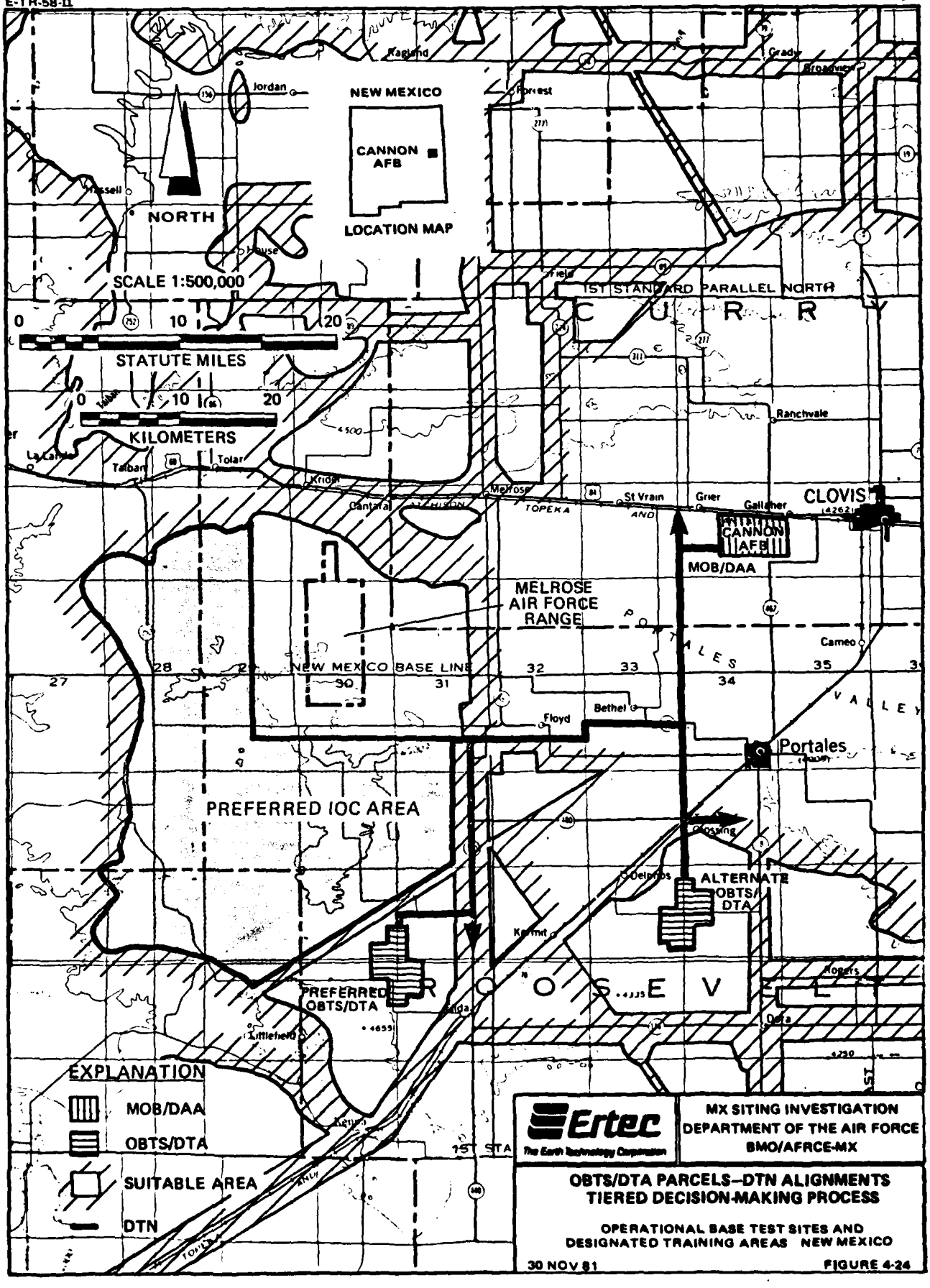
COYOTE SPRING, NEVADA
OBTS/DTA LAND PARCEL DESCRIPTION

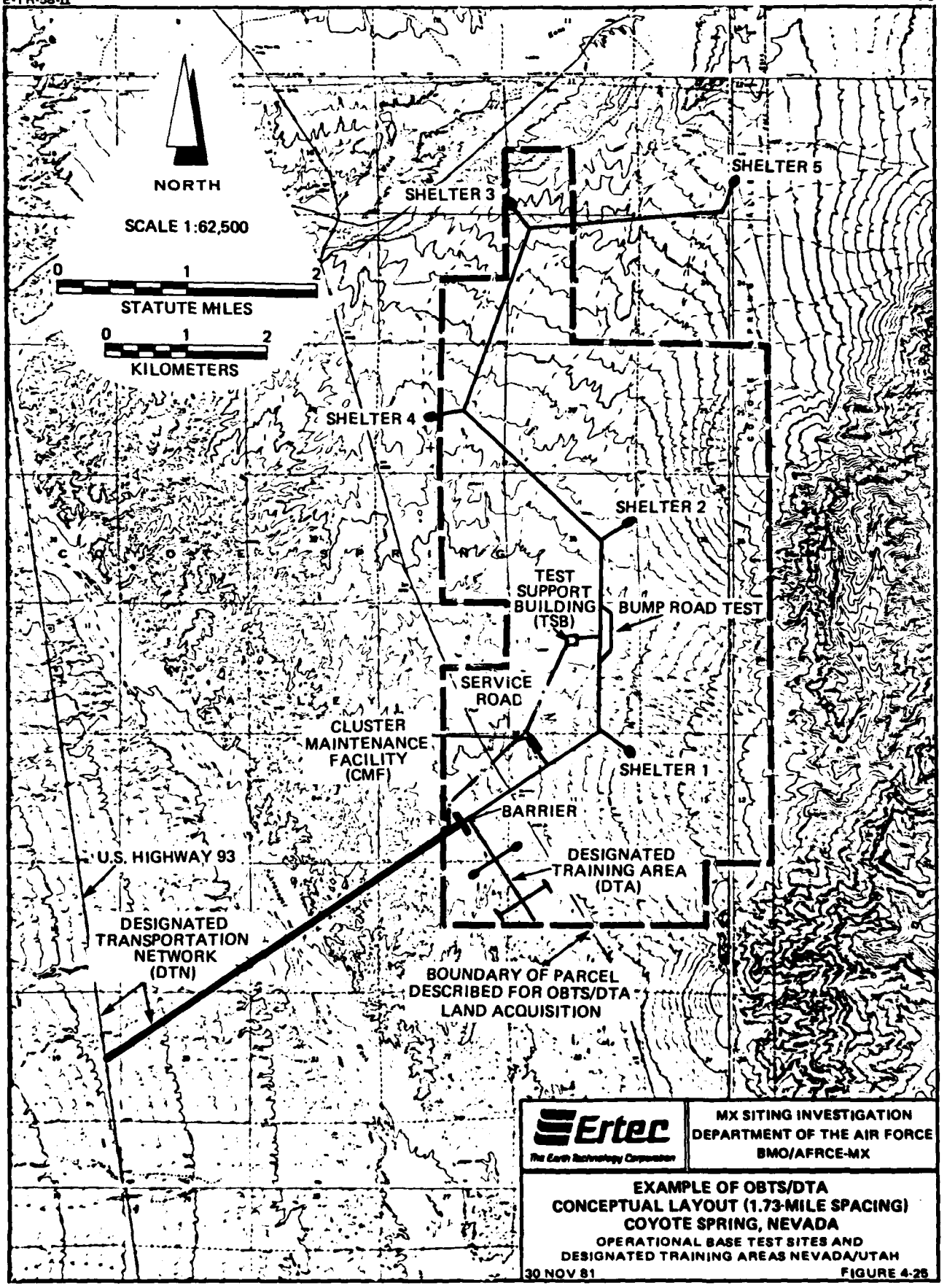
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 TABLE 4-9


DELAMAR VALLEY 3
EXPLANATION
MOB/DAA
OBTS/DTA
SUITABLE AREA
DTN
PREFERRED/ALTERNATE OBTS/DTA
MOB/DAA
COYOTE SPRING VALLEY
MOB
COYOTE SPRING MOB COMPLEX OPTIONS
NORTH
SCALE 1:500,000
0 10 20
MILES
0 10 20
KILOMETERS
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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OBTS/DTA PARCELS – DTN ALIGNMENTS
LAND ACQUISITION APPLICATION
COYOTE SPRING, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-22


WAH WAH VALLEY 5
PINE VALLEY 5
MILFORD
HAMLIN VALLEY 10
MOB/DAA
CENTRAL
ALTERNATE OBTS/DTA
SOUTH
PREFERRED OBTS/DTA
PREFERRED OBTS/DTA
MOB/DAA
MILFORD MOB COMPLEX OPTIONS
NORTH
BERYL
MOB/DAA
ALTERNATE OBTS/DTA
BERYL MOB COMPLEX OPTIONS
EXPLANATION
MOB/DAA
OBTS/DTA
SUITABLE AREA
DTN
SCALE 1:500,000
0 10 20
MILES
0 10 20
KILOMETERS
E-TR-58-II
OBTS/DTA PARCELS – DTN ALIGNMENTS
LAND ACQUISITION APPLICATION
BERYL/MILFORD, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-23
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BMO/AFRCE-MX


NEW MEXICO
CANNON AFB
LOCATION MAP
NORTH
SCALE 1:500,000
0 10 20
STATUTE MILES
0 10 20
KILOMETERS
1ST STANDARD PARALLEL NORTH
CURRY
ROOSEVELT
CLOVIS
CANNON AFB
MOB/DAA
MELROSE AIR FORCE RANGE
NEW MEXICO BASE LINE
PREFERRED IOC AREA
PREFERRED OBTS/DTA
ALTERNATE OBTS/DTA
Portales
Ranchvale
Melrose
Floyd
Bethel
Cameo
Grier
Gallaher
St Vrain
Tolar
Telban
Kragland
Jordan
Forrest
Grady
Broadview
Russell
House
Littlefield
Delphos
Kenmit
Rogers
Dora
EXPLANATION
MOB/DAA
OBTS/DTA
SUITABLE AREA
DTN
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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OBTS/DTA PARCELS–DTN ALIGNMENTS
TIERED DECISION-MAKING PROCESS
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81
FIGURE 4-24


NORTH
SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
SHELTER 5
SHELTER 3
SHELTER 4
SHELTER 2
SHELTER 1
TEST SUPPORT BUILDING (TSB)
BUMP ROAD TEST
SERVICE ROAD
CLUSTER MAINTENANCE FACILITY (CMF)
BARRIER
U.S. HIGHWAY 93
DESIGNATED TRAINING AREA (DTA)
DESIGNATED TRANSPORTATION NETWORK (DTN)
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
Ertec
The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
EXAMPLE OF OBTS/DTA
CONCEPTUAL LAYOUT (1.73-MILE SPACING)
COYOTE SPRING, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
FIGURE 4-25

enlarged layout using any configuration could not fit within the size constraints of the suitable area.

Enlarged layouts were attempted within the Milford OBTS/DTA areas designated for land acquisition. The preferred layout at "the Neck" (Option M3) was totally within the land acquisition area. The alternate Option M3A could not fit within the suitable area for this site regardless of the configuration.

Conceptual layouts at 1.73-mile (2.78-km) spacing were not performed for any option in New Mexico.

5.0 CONCLUSIONS

The OBTS/DTA objectives were generally accomplished as follows:

- o Establish suitable areas;
- o Develop conceptual layouts;
- o Perform field reconnaissance trips;
- o Determine preferred and alternate OBTS/DTA layouts and DTN alignments and produce parcel descriptions; and
- o Depict sites and alignments and other descriptions in the land acquisition application package.

The OBTS/DTA siting evaluations resulted in operationally, geotechnically, environmentally, and geographically acceptable locations in which to produce conceptual layouts for each of the four MOB/DAA options. Conceptual layouts using both open and sectional land options, as appropriate, were developed for all sites. These layouts were reviewed and accepted by BMO/AFRCE-MX. Field reconnaissance trips were taken to all sites and field observations noted.

Based on the above evaluations, the recommended preferred and alternate layouts, site parcels, and road alignments were determined. Also, parcel descriptions for each site were produced. Environmental surveys and geotechnical inspections were performed at the Nevada-Utah sites except the Beryl alternate and the Coyote Spring alternate DTN route. These data were provided to the environmental assessment contractor in support of the tiering process.

The same preferred and alternate parcels and alignments in Nevada-Utah were also depicted on "E" size map sheets for each individual OBTS/DTA and MOB/DAA option combination. These maps, along with the parcel descriptions, were delivered to the AFRCE-MX on 17 September 1981 as the first increment of the land acquisition application package. Data for New Mexico were not part of this package.

Due to the termination of the MPS basing mode by President Reagan, various follow-on activities were not performed. These activities include the finalizing of the environmental field surveys and geotechnical inspections evaluation and report, the performance of preliminary geotechnical field investigations to verify the depth to rock, the production of 1:9600 scale topographic maps, and the development of preconstruction conceptual layouts using the 1:9600 maps for each site.

6.0 REFERENCES CITED

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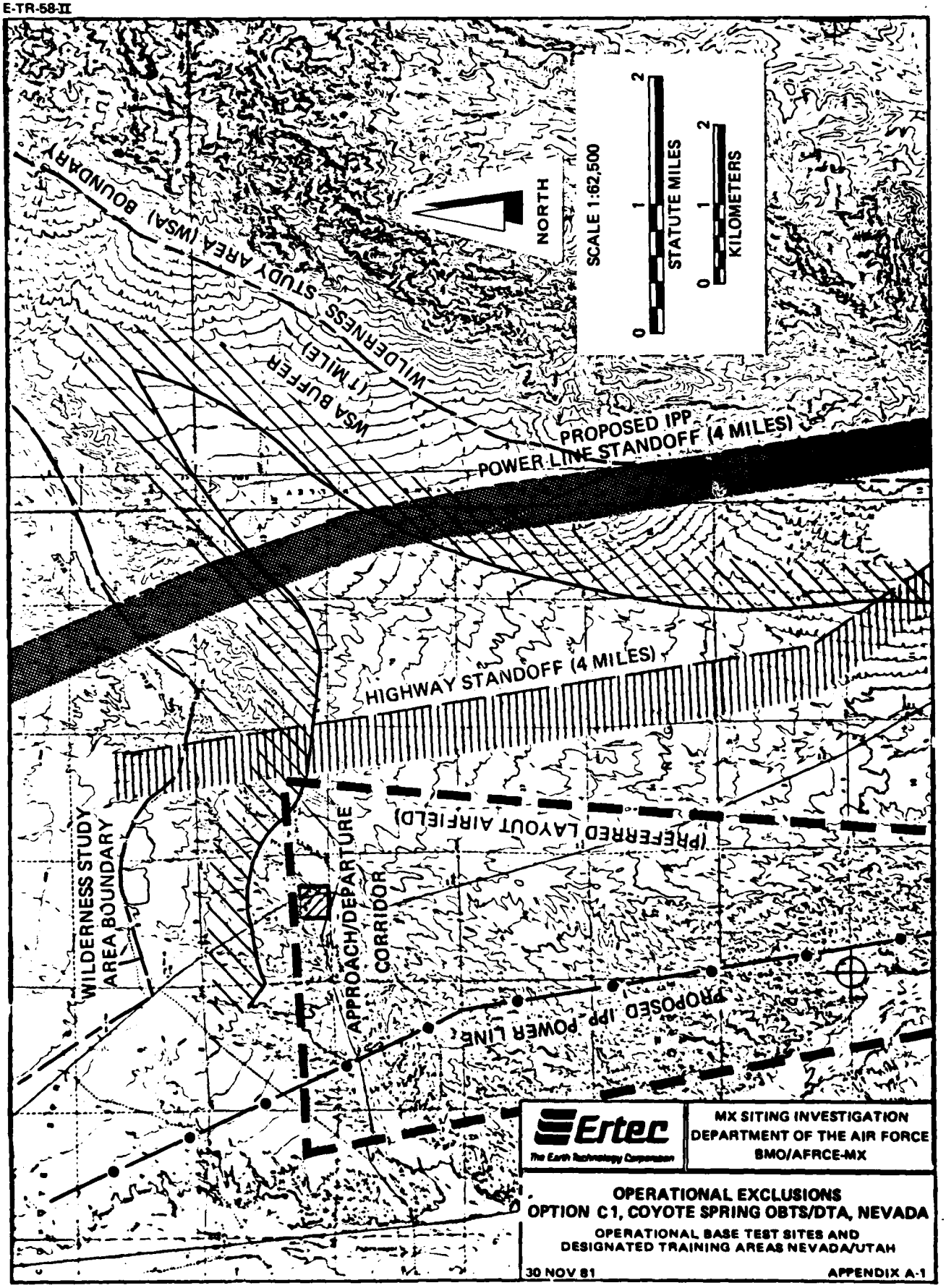
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_____, BMO/AFRCE-MX 1981c, Minutes of OBTS meeting 14 August 1981.

APPENDIX A

SITE-SPECIFIC TOPICAL OVERLAYS/SUITABLE AREA



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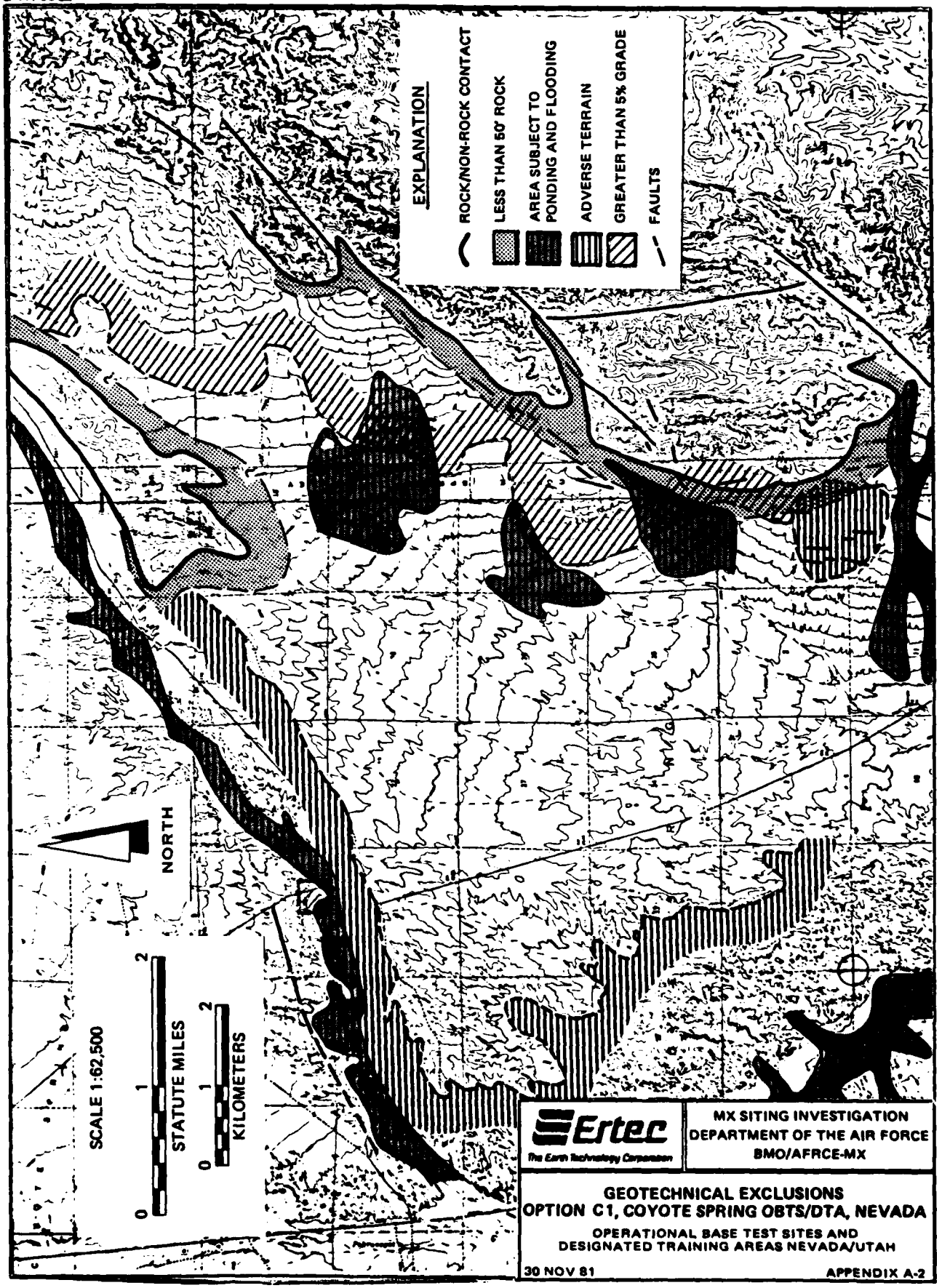
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BMO/AFRCE-MX

OPERATIONAL EXCLUSIONS
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-1



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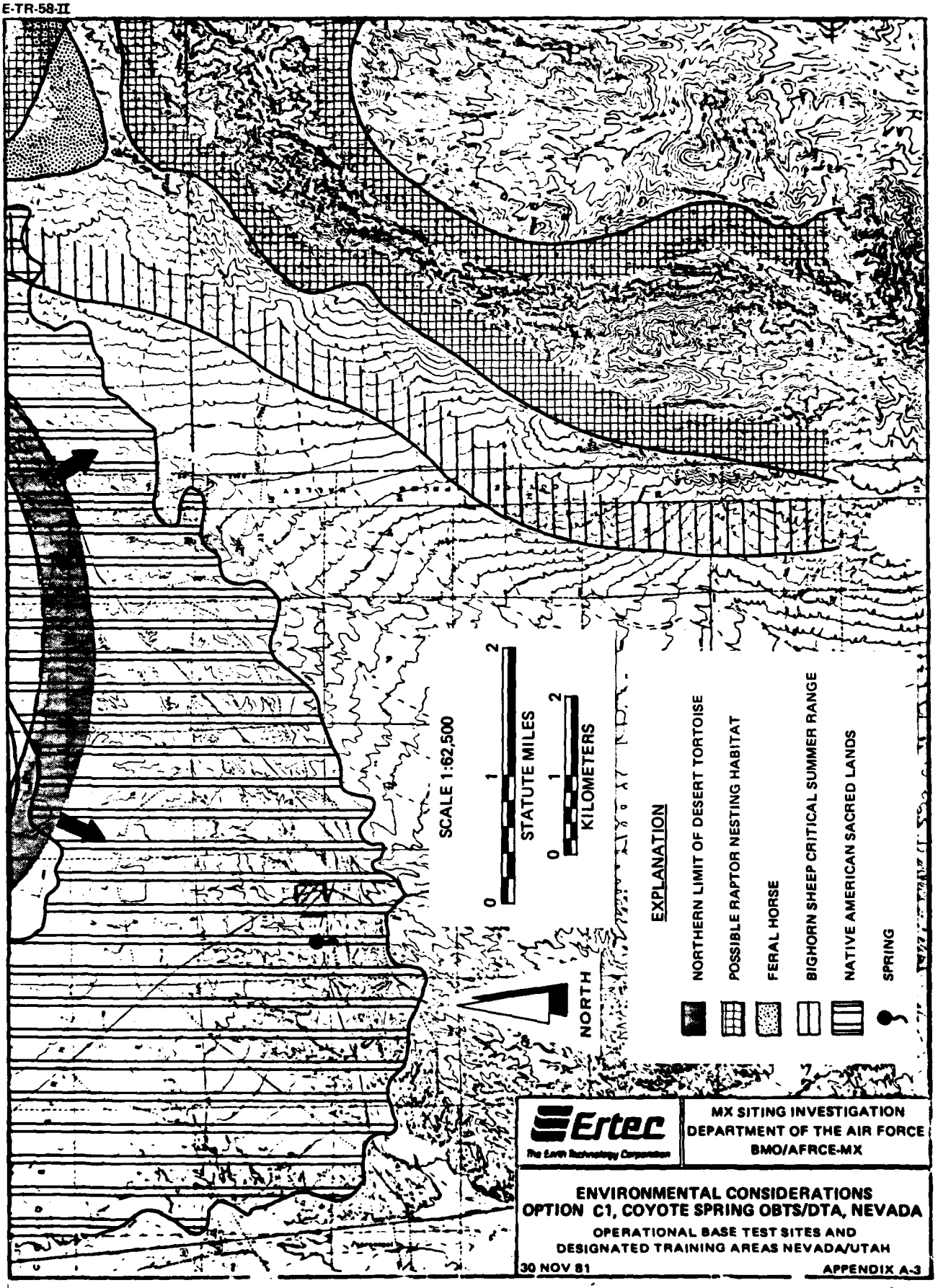
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

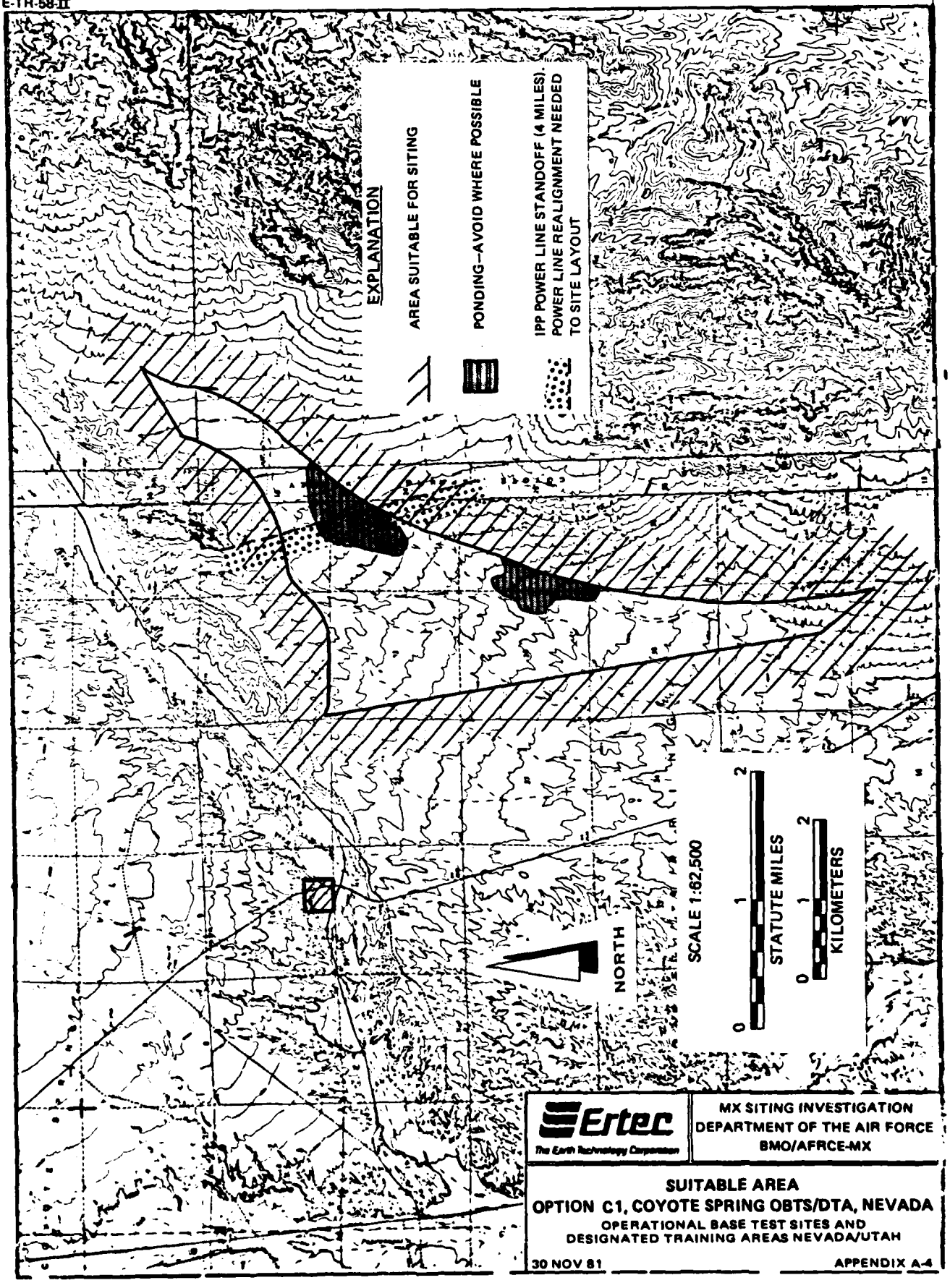
GEOTECHNICAL EXCLUSIONS
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-2


SCALE 1:62,500
0
1
2
STATUTE MILES
0
1
2
KILOMETERS
NORTH
EXPLANATION
NORTHERN LIMIT OF DESERT TORTOISE
POSSIBLE RAPTOR NESTING HABITAT
FERAL HORSE
BIGHORN SHEEP CRITICAL SUMMER RANGE
NATIVE AMERICAN SACRED LANDS
SPRING
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
ENVIRONMENTAL CONSIDERATIONS
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-3

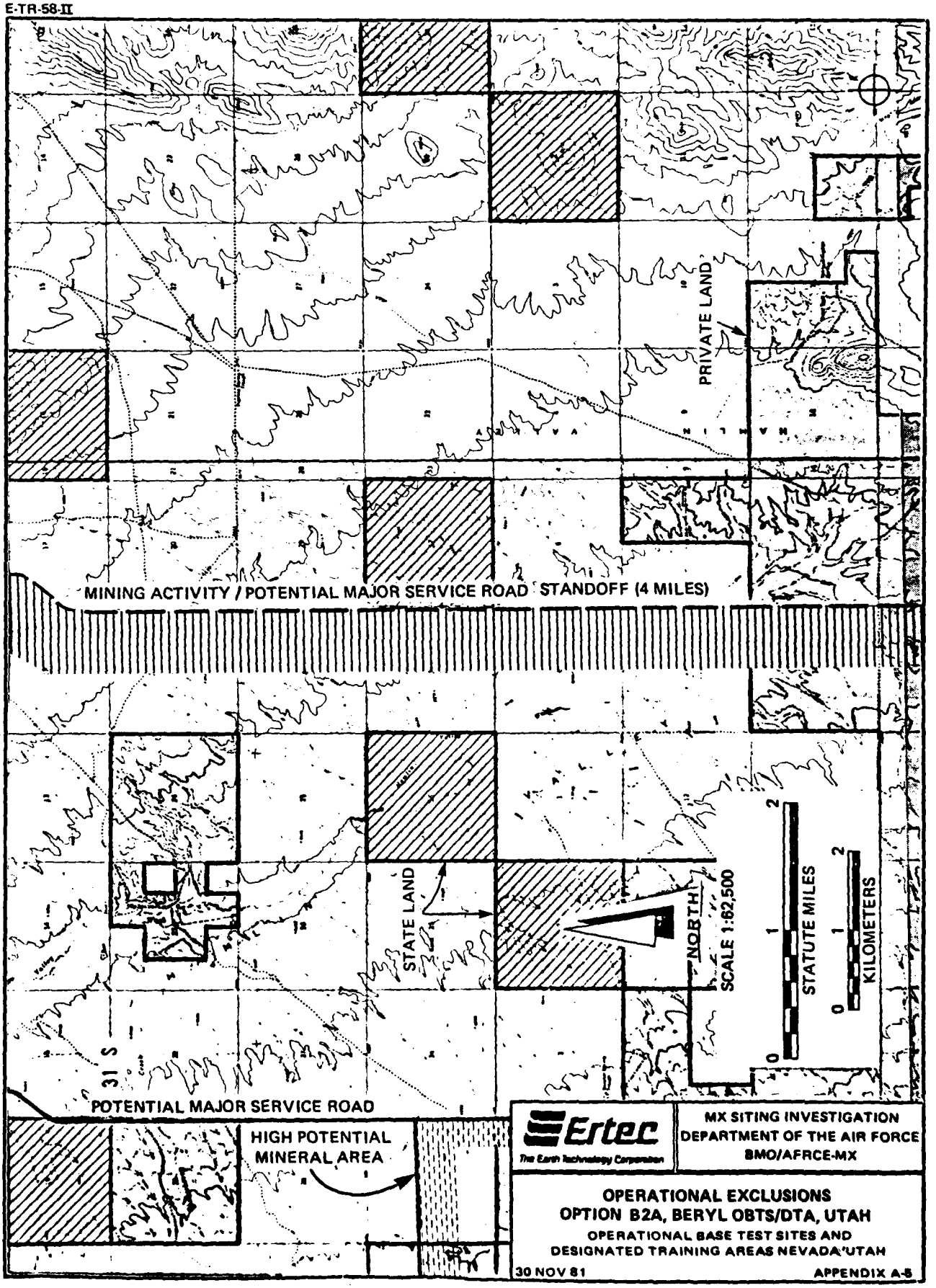


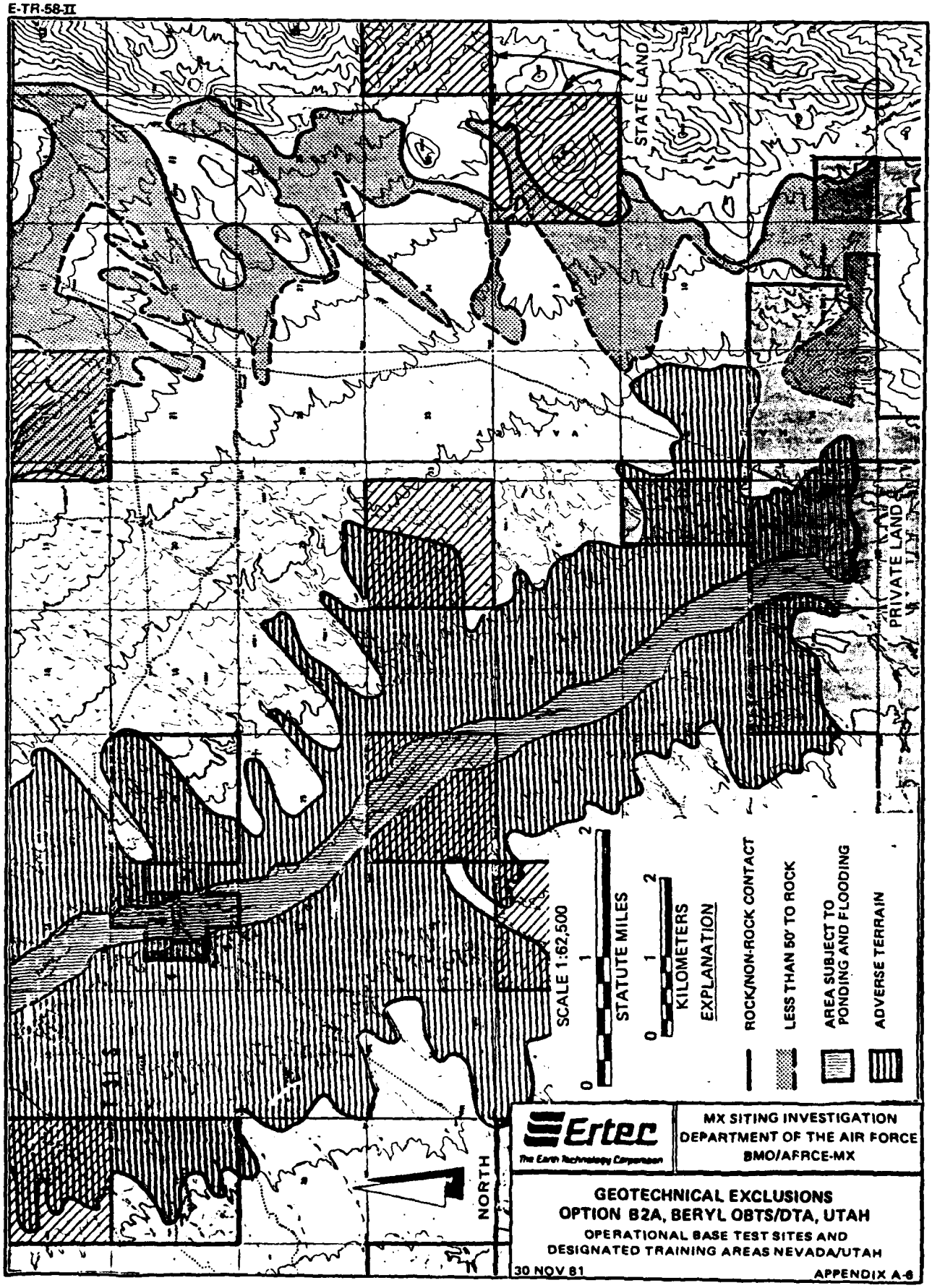
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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SUITABLE AREA
OPTION C1, COYOTE SPRING OBTS/DTA, NEVADA
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81


PRIVATE LAND
MINING ACTIVITY / POTENTIAL MAJOR SERVICE ROAD STANDOFF (4 MILES)
STATE LAND
NORTH
SCALE 1:62,500
2
1
0
STATUTE MILES
2
1
0
KILOMETERS
31 S
POTENTIAL MAJOR SERVICE ROAD
HIGH POTENTIAL
MINERAL AREA
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OPERATIONAL EXCLUSIONS
OPTION B2A, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-5



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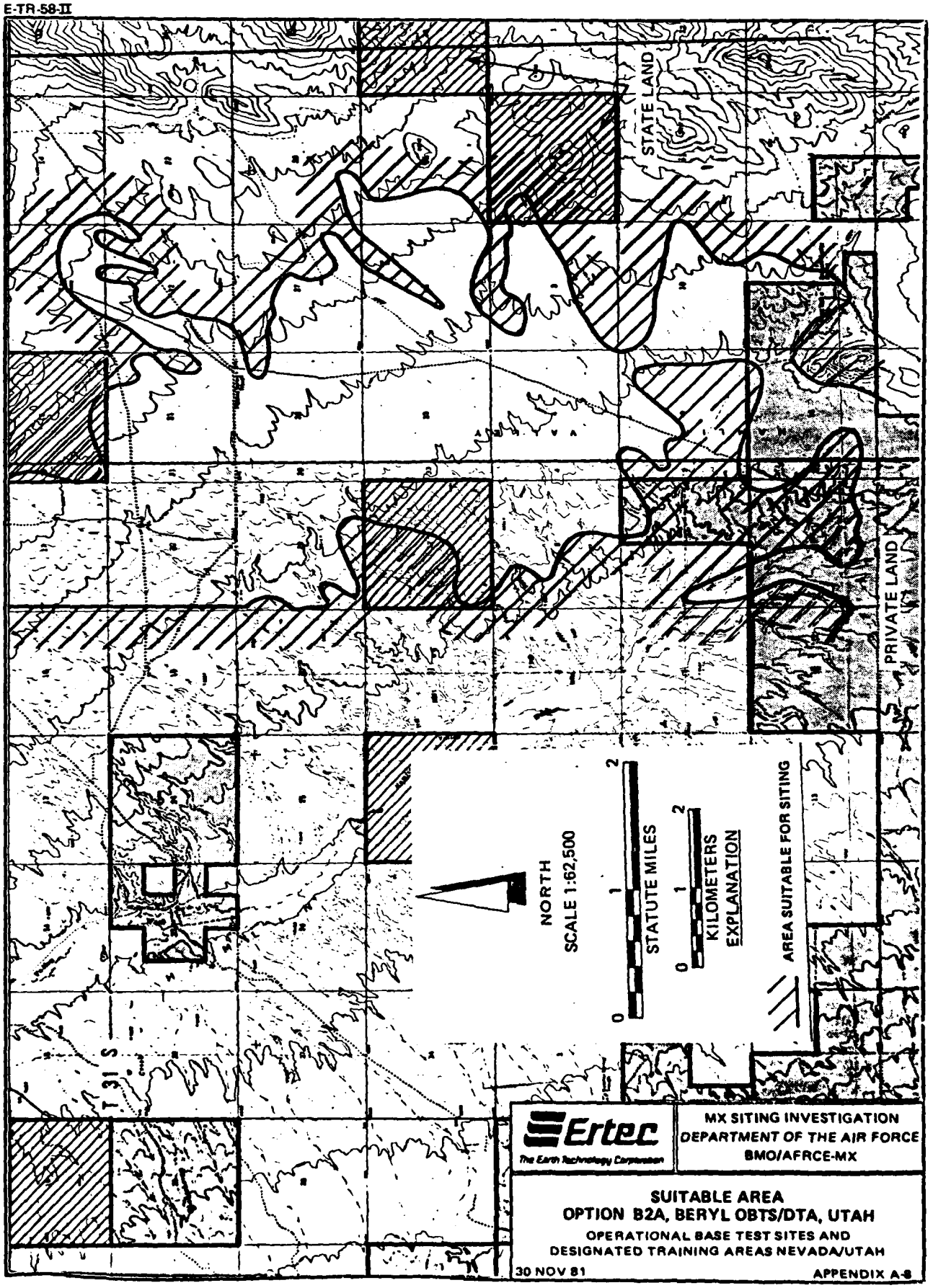
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

GEOTECHNICAL EXCLUSIONS
OPTION B2A, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-6

NORTH
STATE LAND
PRIVATE LAND
SCALE 1:62,500
STATUTE MILES
KILOMETERS
EXPLANATION
GRAZING LANDS (CHAINED AREA)
SAGE GROUSE STRUTTING GROUND
ELK-WINTER RANGE
FERAL HORSE RANGE
FERRUGINOUS HAWK NEST SITE
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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
ENVIRONMENTAL CONSIDERATIONS
OPTION B2A, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-7



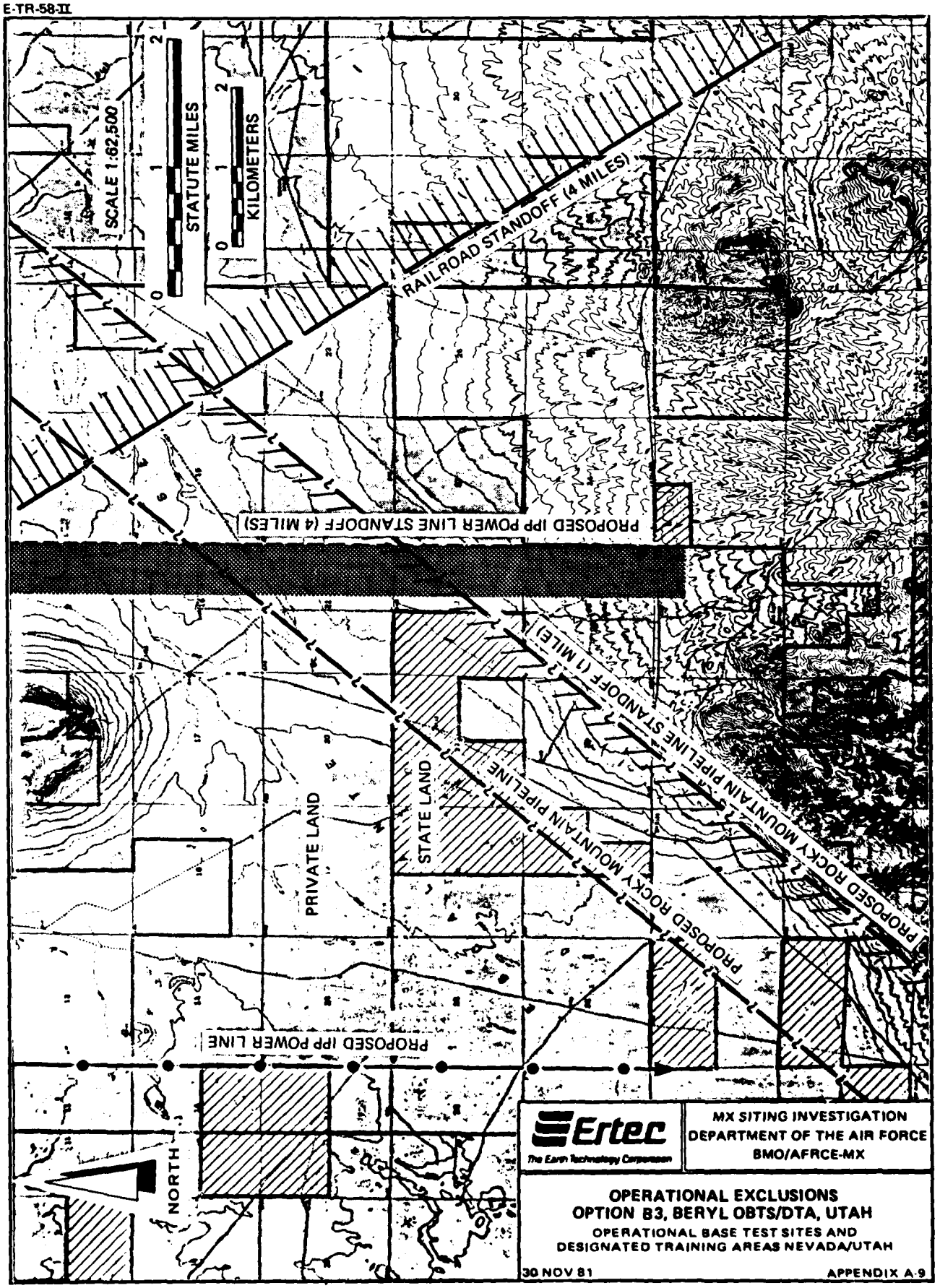
Ertec
The Earth Technology Corporation

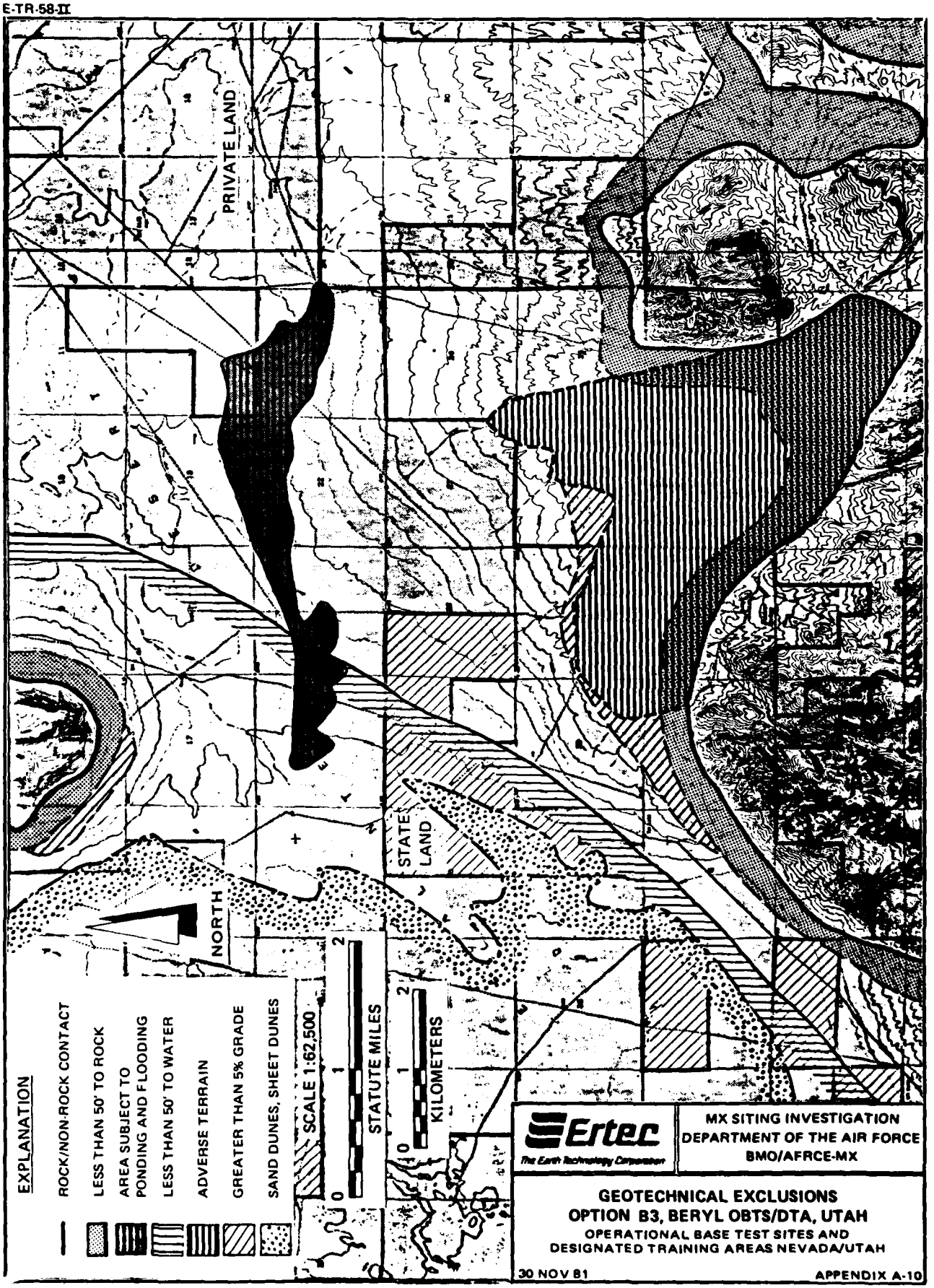
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SUITABLE AREA
OPTION B2A, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

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APPENDIX A-8


SCALE 1:62,500
STATUTE MILES
KILOMETERS
RAILROAD STANDOFF (4 MILES)
PROPOSED IPP POWER LINE STANDOFF (4 MILES)
PROPOSED ROCKY MOUNTAIN PIPELINE STANDOFF (1 MILE)
PROPOSED ROCKY MOUNTAIN PIPELINE
PROPOSED ROCKY MOUNTAIN PIPELINE
PRIVATE LAND
STATE LAND
PROPOSED IPP POWER LINE
NORTH
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OPERATIONAL EXCLUSIONS
OPTION B3, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-9


PRIVATE LAND
STATE LAND
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
EXPLANATION
ROCK/NON-ROCK CONTACT
LESS THAN 50' TO ROCK
AREA SUBJECT TO PONDING AND FLOODING
LESS THAN 50' TO WATER
ADVERSE TERRAIN
GREATER THAN 5% GRADE
SAND DUNES, SHEET DUNES
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
GEOTECHNICAL EXCLUSIONS
OPTION B3, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
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APPENDIX A-10

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ENVIRONMENTAL CONSIDERATIONS
OPTION B3, BERYL OBTS/DTA, UTAH

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-11

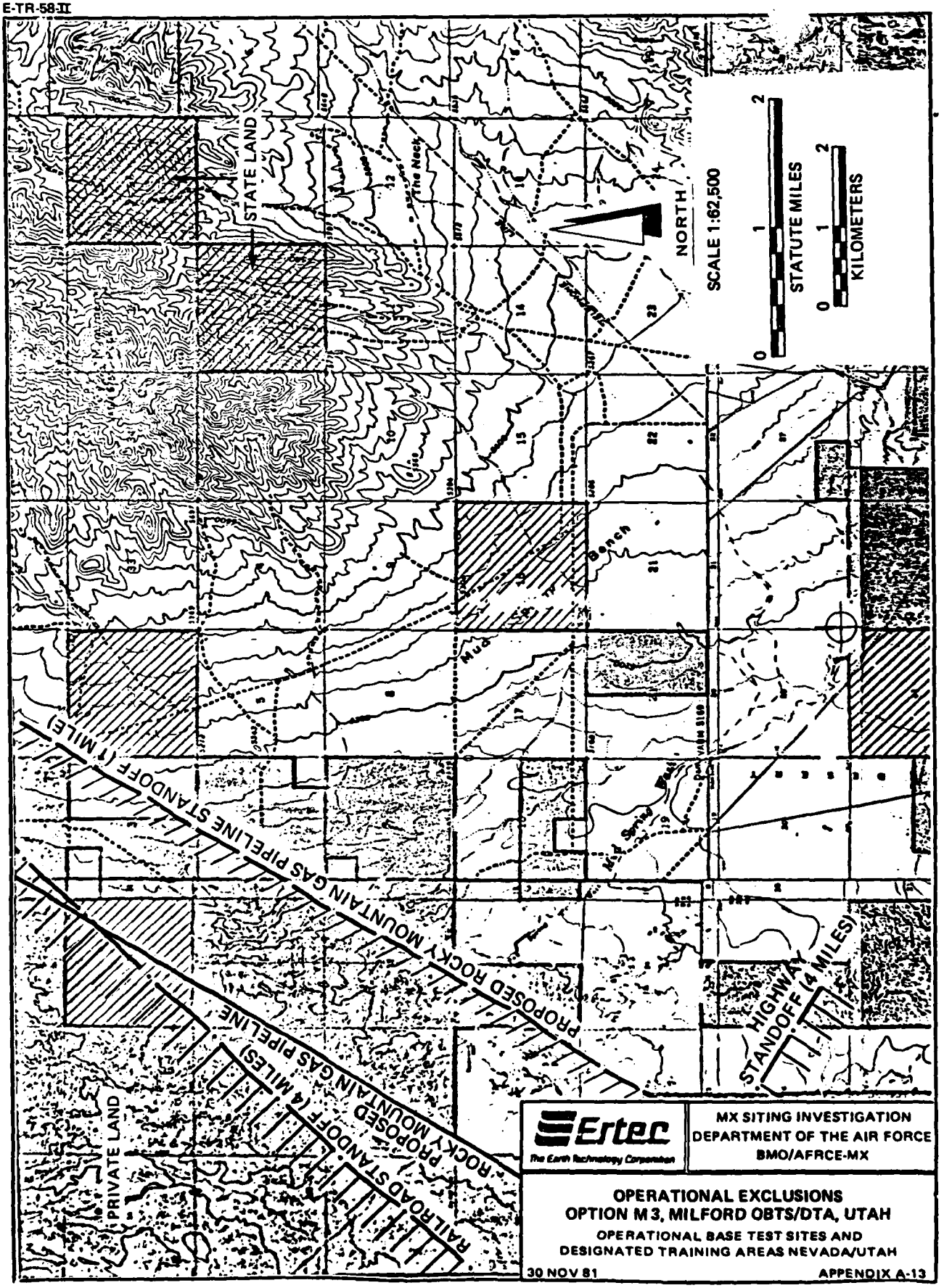
Ertec
The Earth Technology Corporation

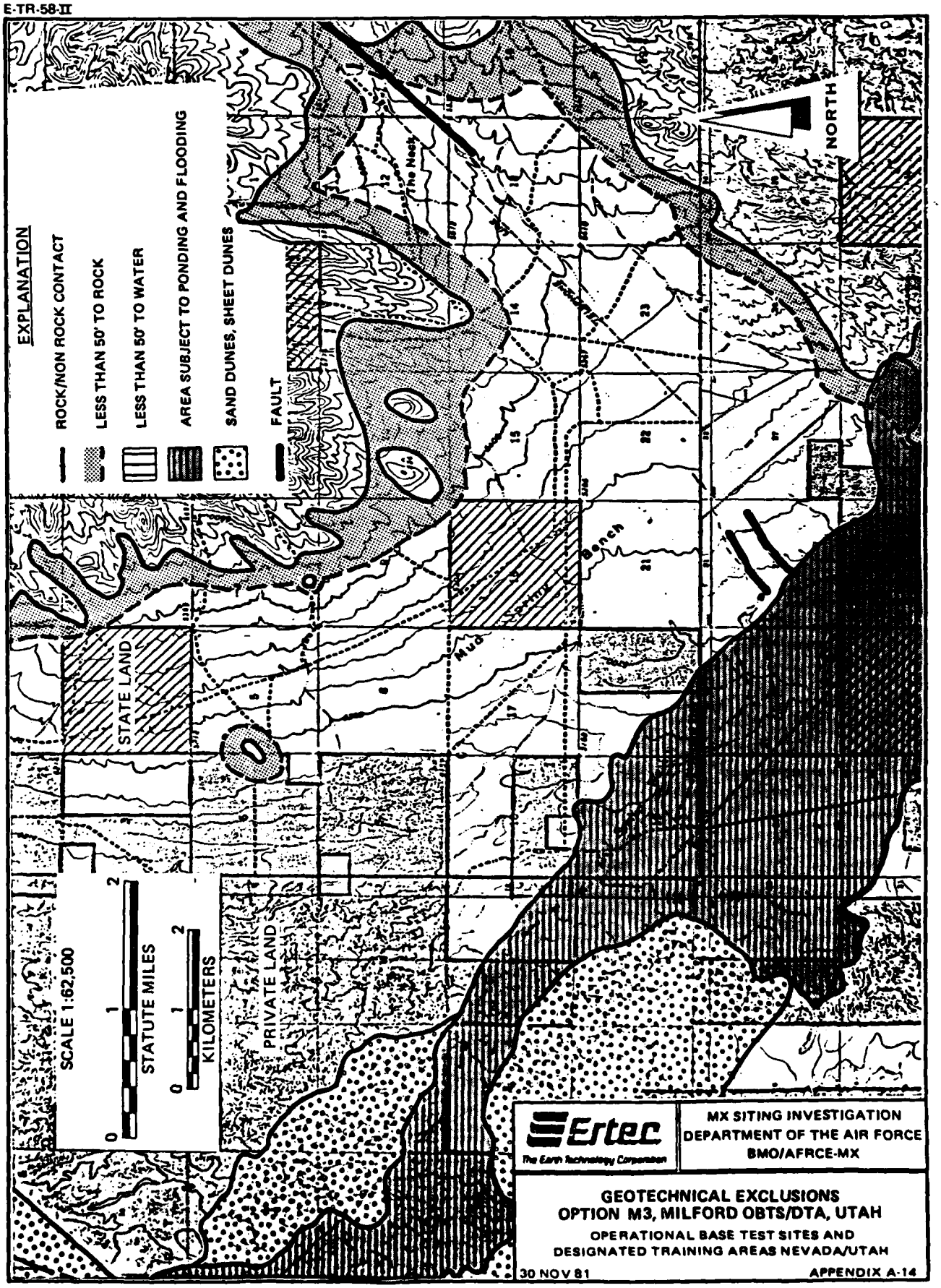
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SUITABLE AREA
OPTION B3, BERYL OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-12


STATE LAND
PRIVATE LAND
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
PROPOSED ROCKY MOUNTAIN GAS PIPELINE STANDOFF (1 MILE)
PROPOSED ROCKY MOUNTAIN GAS PIPELINE
RAILROAD STANDOFF (4 MILES)
HIGHWAY STANDOFF (4 MILES)
The Neck
Bench
Mud
Spring
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The Earth Technology Corporation
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
OPERATIONAL EXCLUSIONS
OPTION M3, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-13



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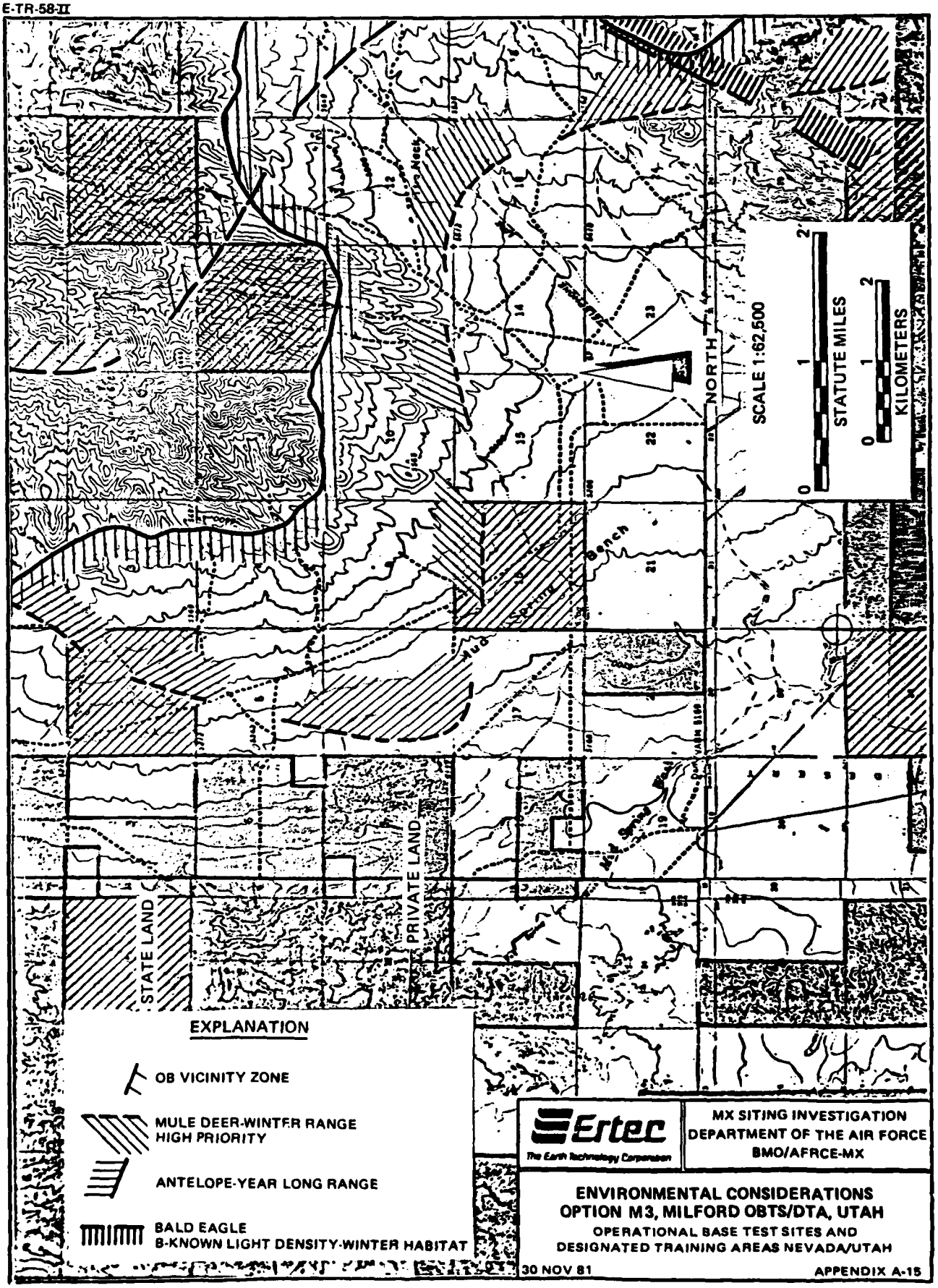
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

GEOTECHNICAL EXCLUSIONS
OPTION M3, MILFORD OBTS/DTA, UTAH

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-14



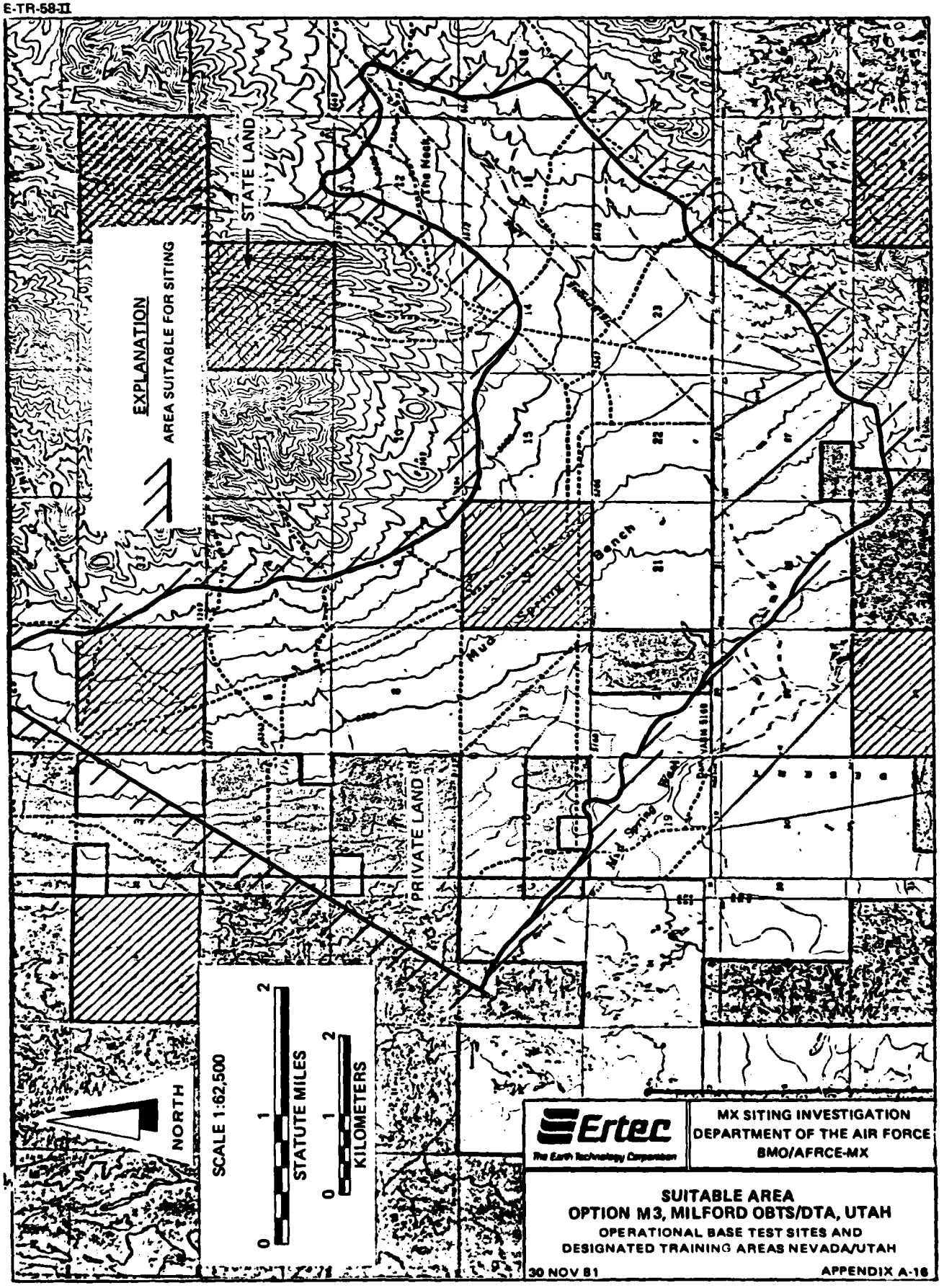
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

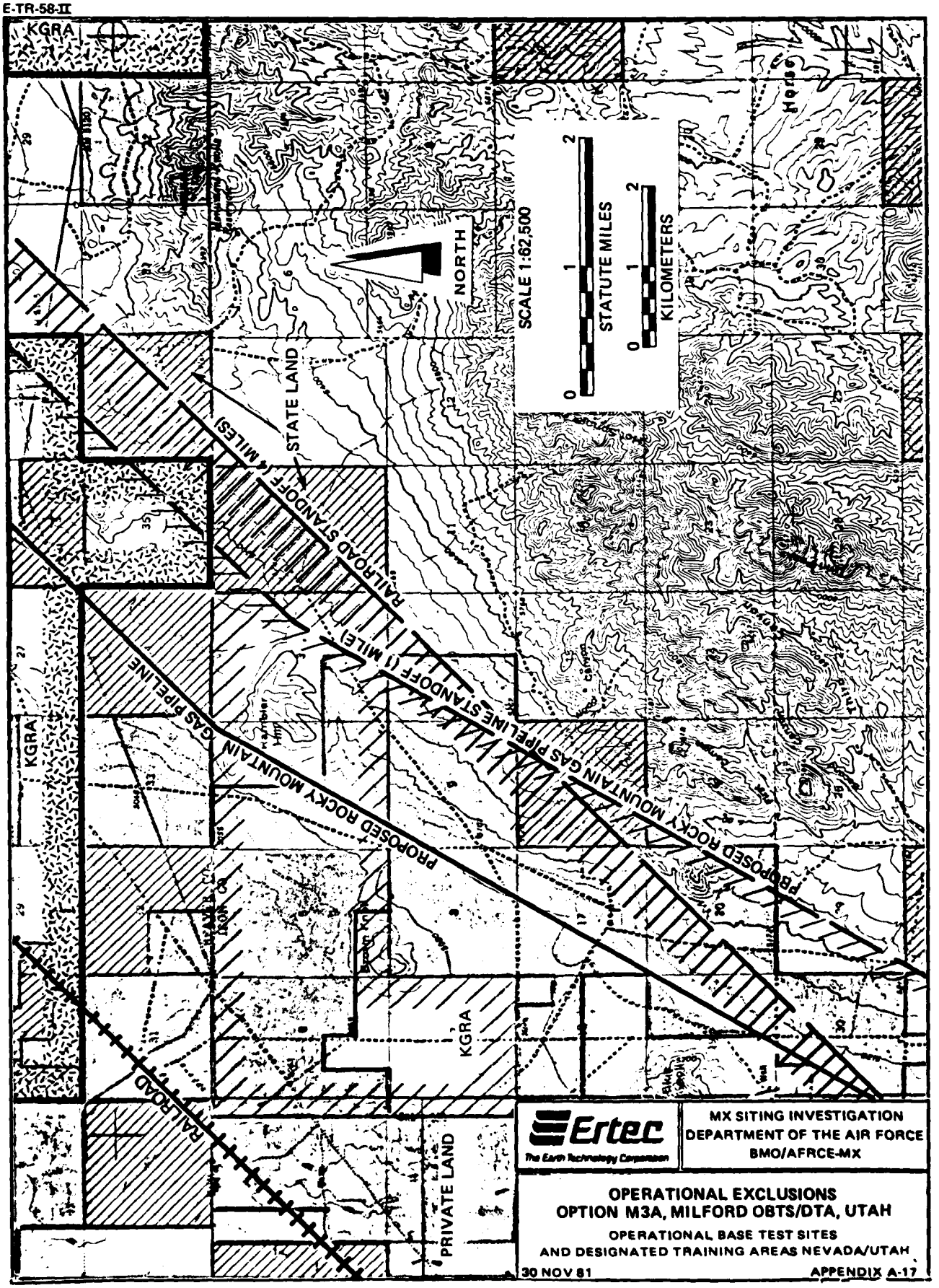
ENVIRONMENTAL CONSIDERATIONS
OPTION M3, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-15


STATE LAND
PRIVATE LAND
EXPLANATION
AREA SUITABLE FOR SITING
The Neck
Bench
Mud
Mid Spring Wash
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
0
1
2
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The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
SUITABLE AREA
OPTION M3, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-16

E-TR-58-II



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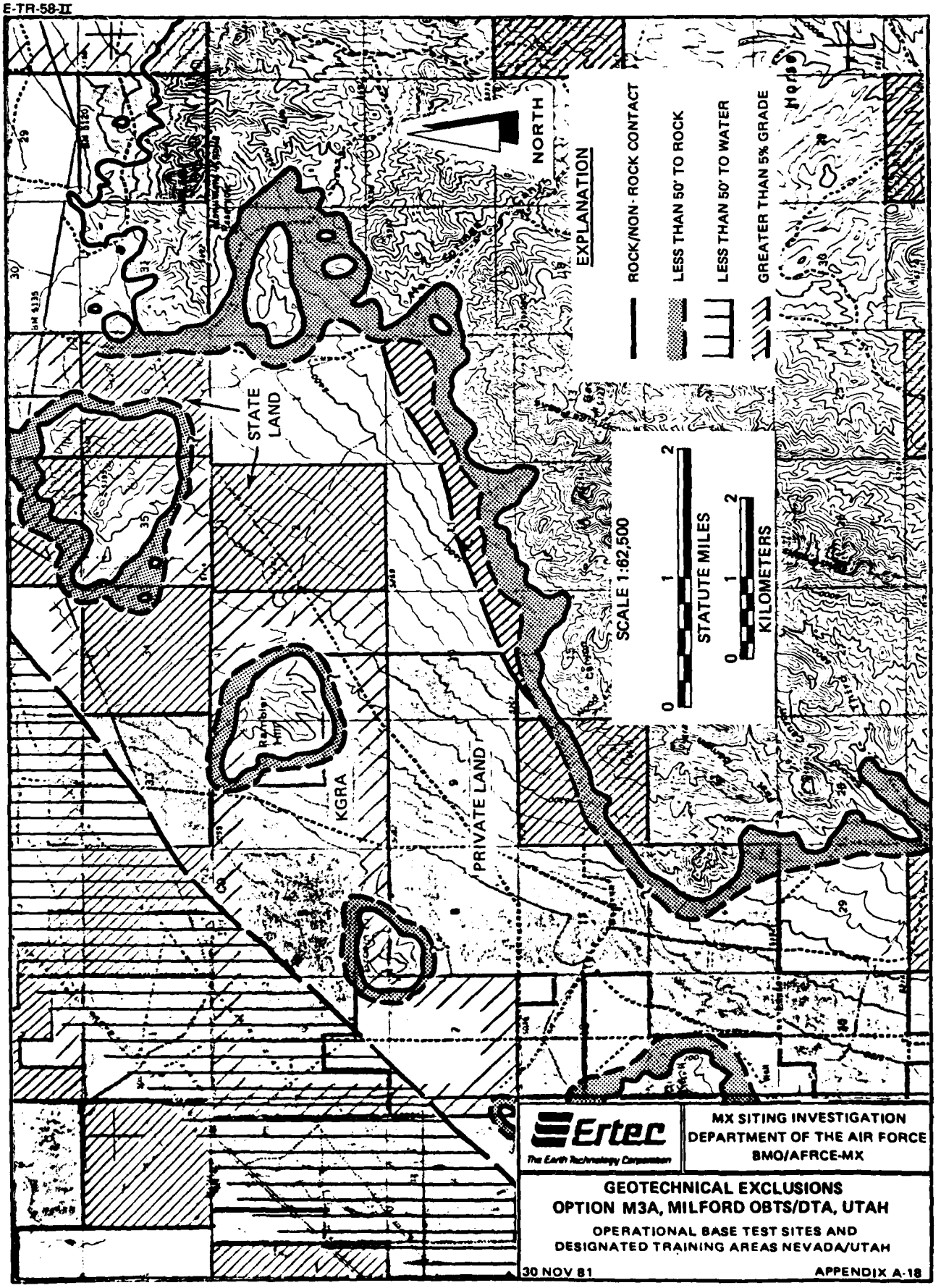
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

OPERATIONAL EXCLUSIONS
OPTION M3A, MILFORD OBTS/DTA, UTAH

OPERATIONAL BASE TEST SITES
AND DESIGNATED TRAINING AREAS NEVADA/UTAH

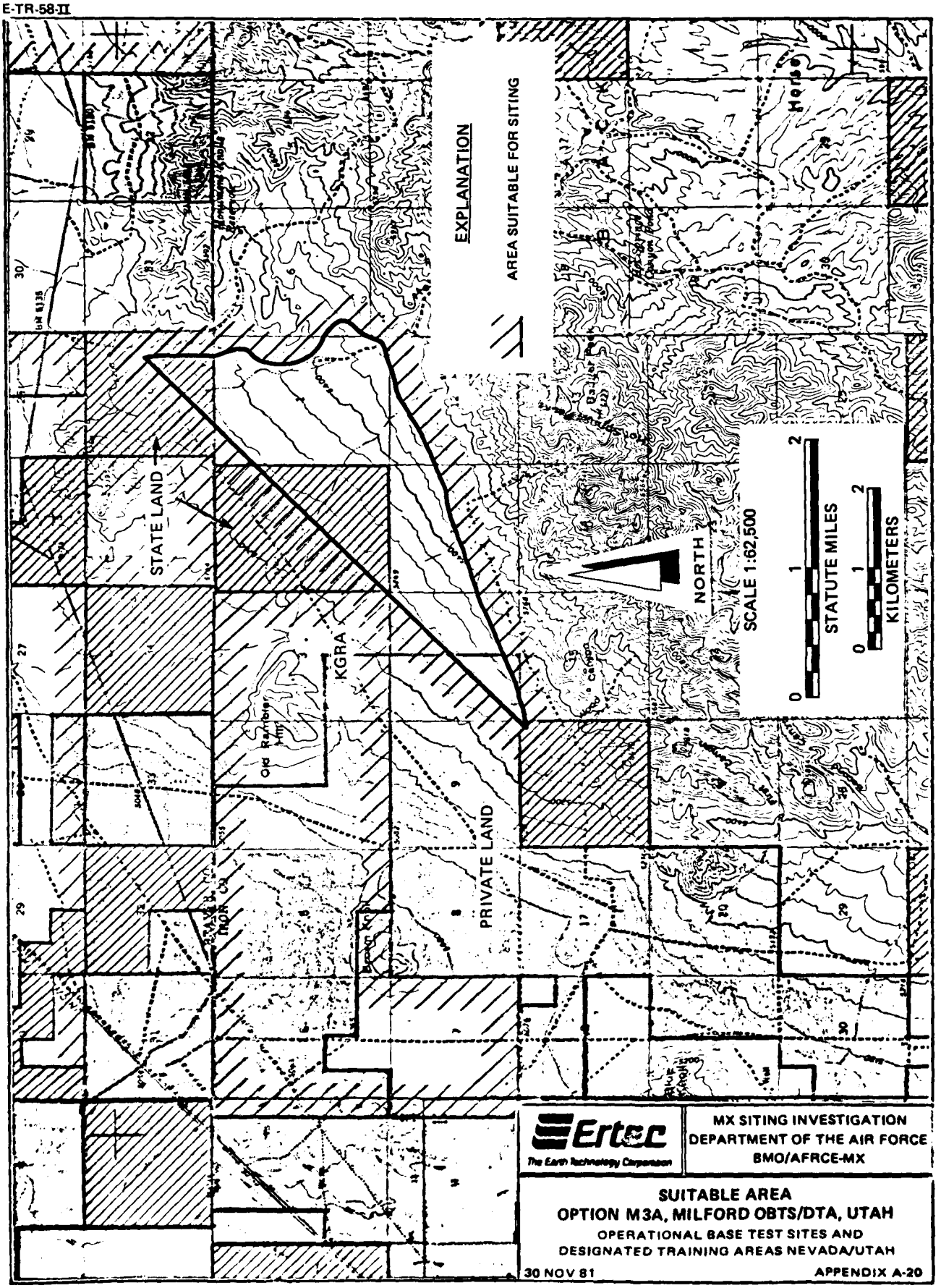
30 NOV 81

APPENDIX A-17


NORTH
EXPLANATION
ROCK/NON-ROCK CONTACT
LESS THAN 50' TO ROCK
LESS THAN 50' TO WATER
GREATER THAN 5% GRADE
SCALE 1:62,500
STATUTE MILES
KILOMETERS
STATE LAND
KGRA
PRIVATE LAND
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
GEOTECHNICAL EXCLUSIONS
OPTION M3A, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-18

NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
STATE LAND
PRIVATE LAND
KGRA
EXPLANATION
OB VICINITY
MULE DEER – WINTER RANGE – HIGH PRIORITY
ANTELOPE – YEAR LONG RANGE
SAGE GROUSE WINTER RANGE – HIGH PRIORITY
SPRINGS
POTENTIALLY SIGNIFICANT ARCHAEOLOGICAL AREA
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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
ENVIRONMENTAL CONSIDERATIONS
OPTION M3A, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX A-19

E-TR-58-II



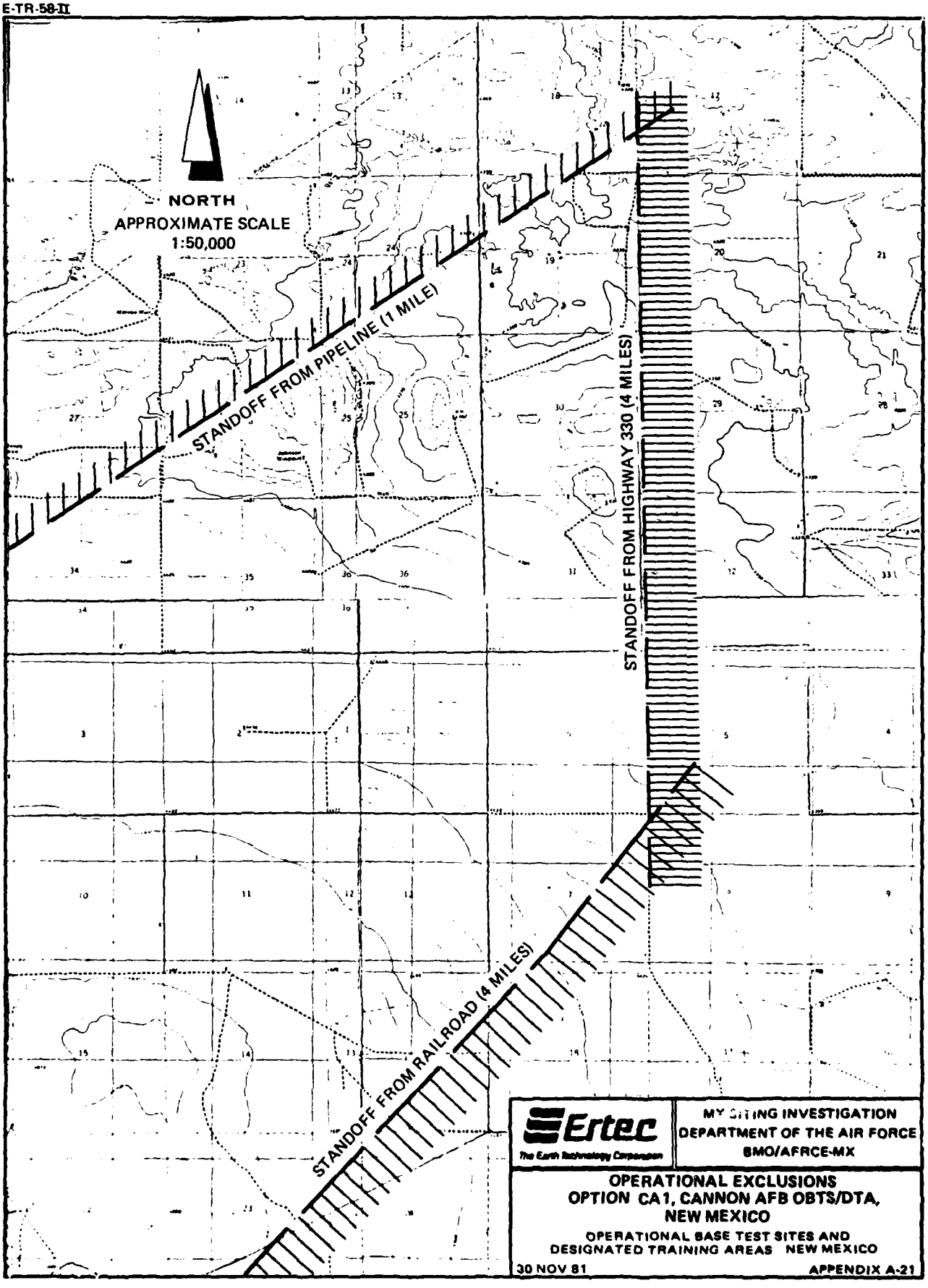
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The Earth Technology Corporation

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SUITABLE AREA
OPTION M3A, MILFORD OBTS/DTA, UTAH
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX A-20



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The Earth Technology Corporation

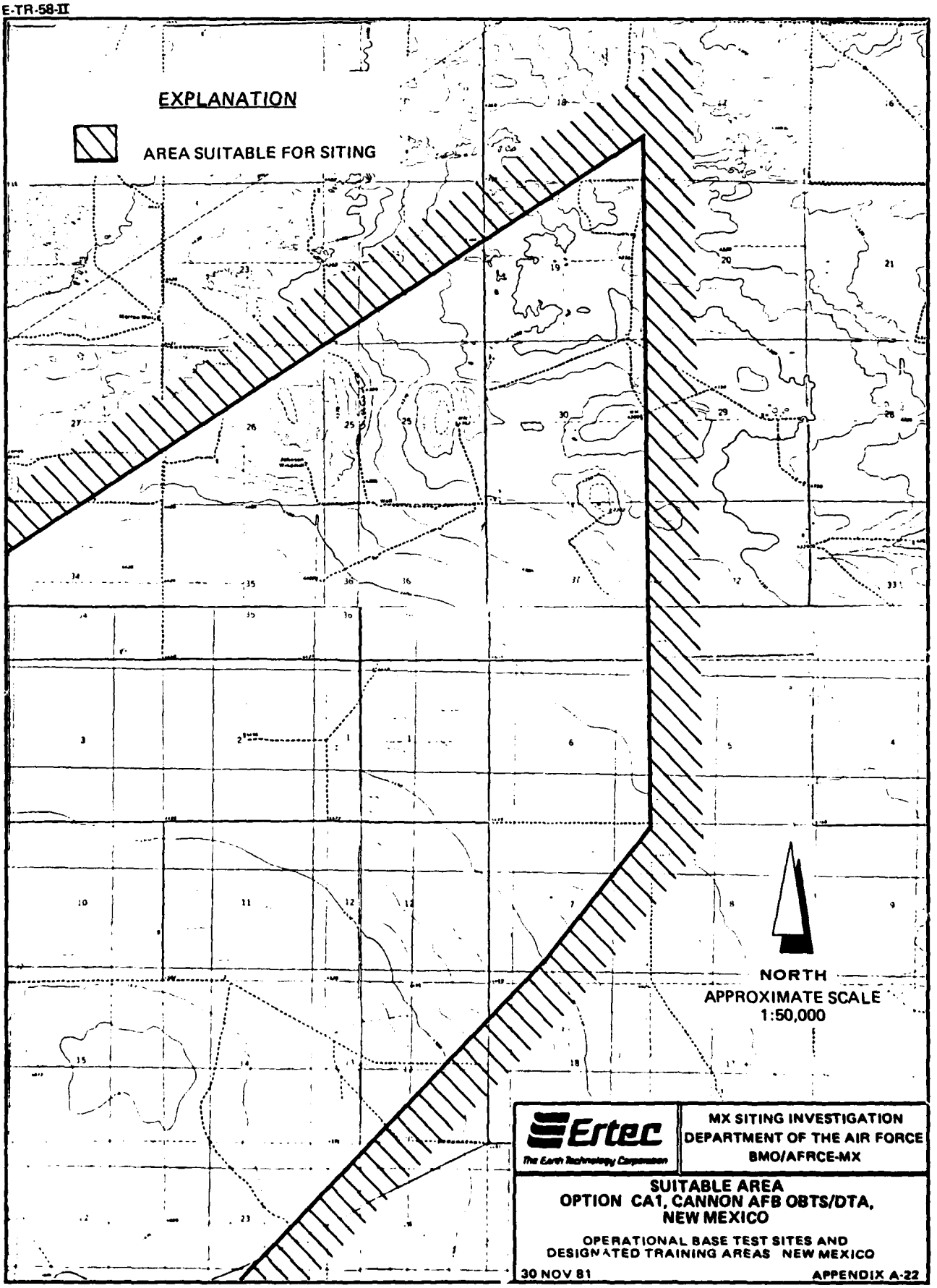
MISSILE SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

OPERATIONAL EXCLUSIONS
OPTION CA1, CANNON AFB OBTS/DTA, NEW MEXICO

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81

APPENDIX A-21



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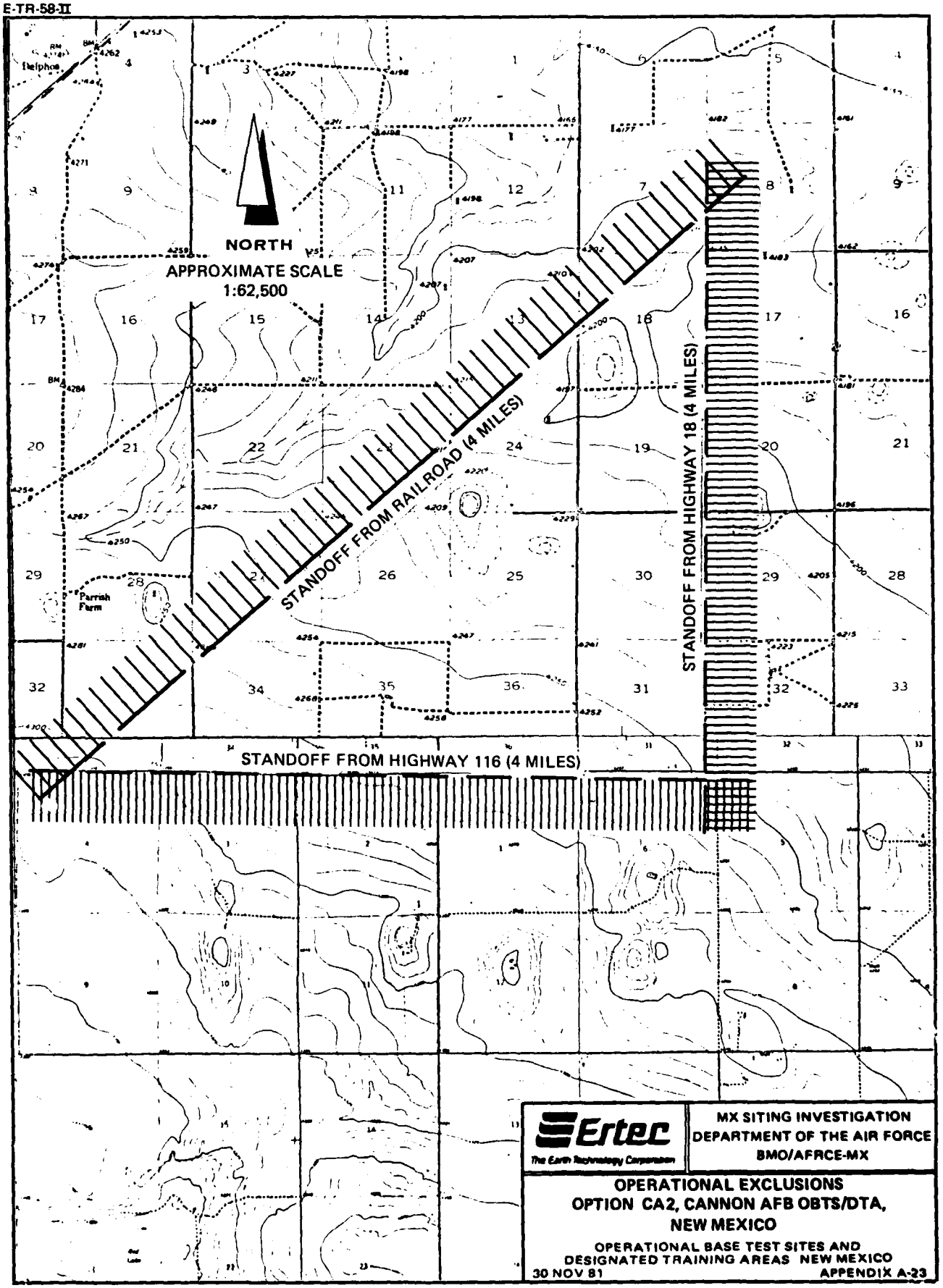
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SUITABLE AREA
OPTION CA1, CANNON AFB OBTS/DTA, NEW MEXICO

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81

APPENDIX A-22



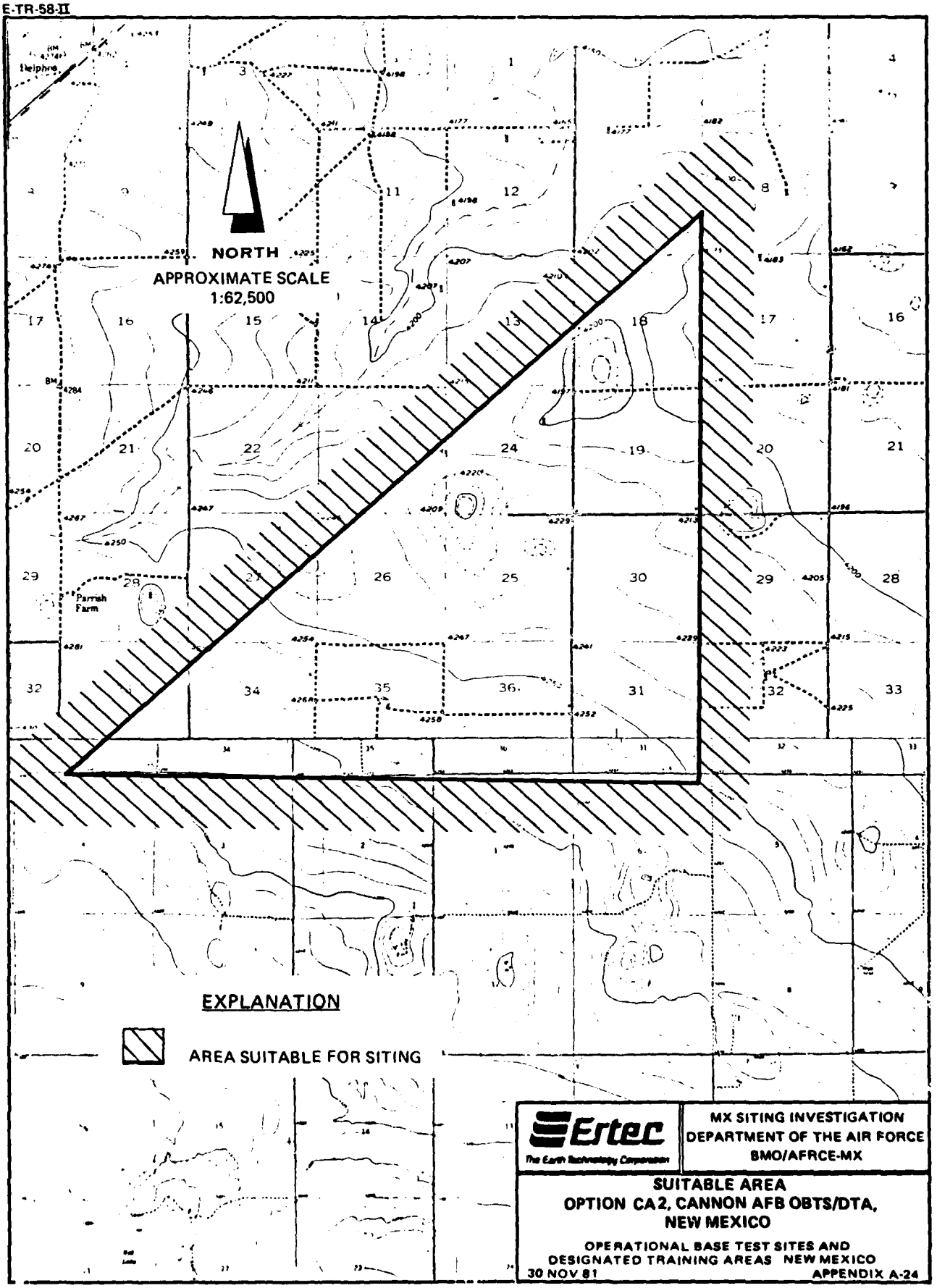
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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

OPERATIONAL EXCLUSIONS
OPTION CA2, CANNON AFB OBTS/DTA, NEW MEXICO

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

30 NOV 81 APPENDIX A-23



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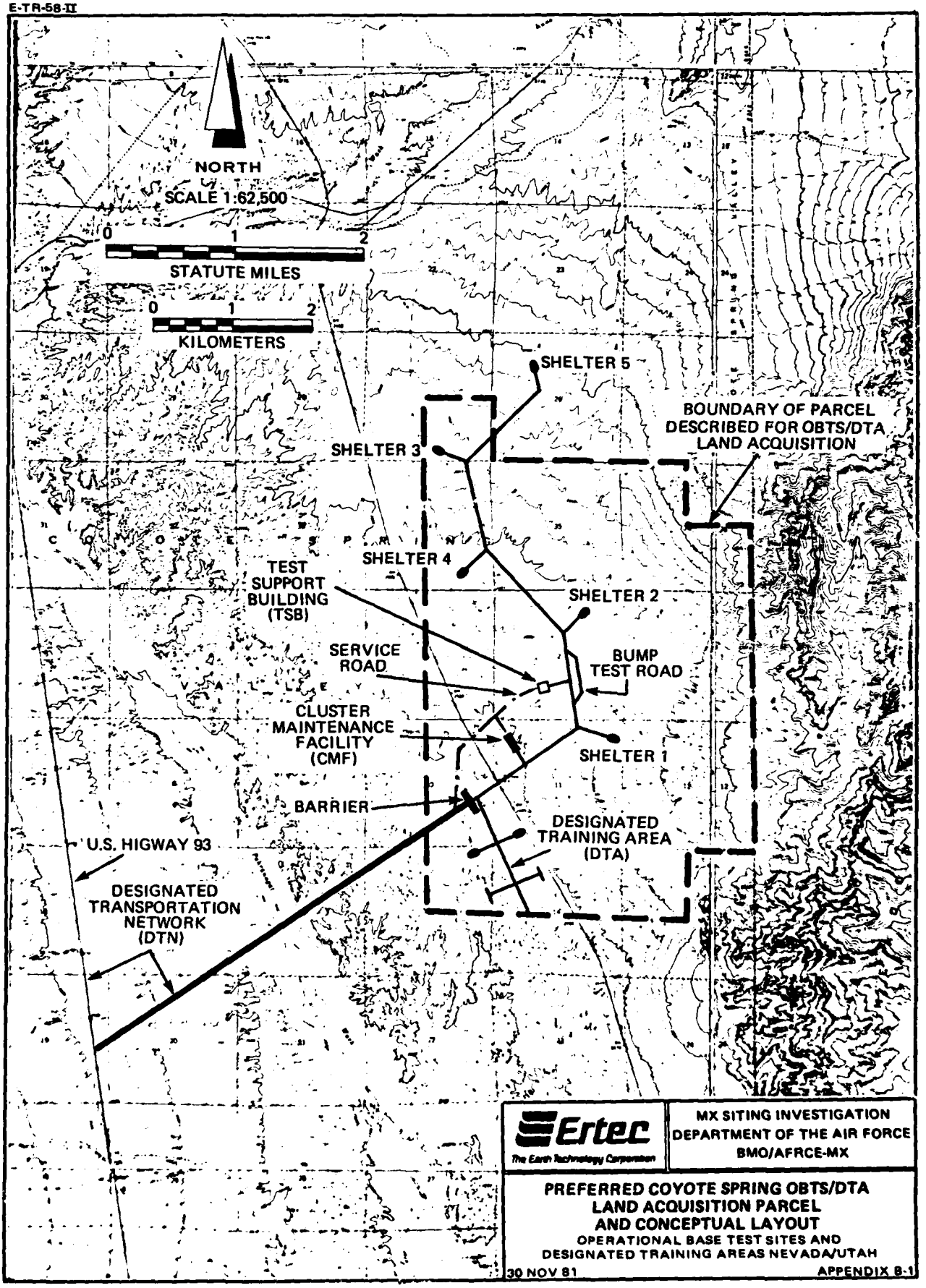
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SUITABLE AREA
OPTION CA2, CANNON AFB OBTS/DTA, NEW MEXICO

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81 APPENDIX A-24

APPENDIX B

OBTS/DTA LAND ACQUISITION PARCELS FOR EACH MOB/ PREFERRED AND ALTERNATE LAYOUTS FOR EACH OPTION



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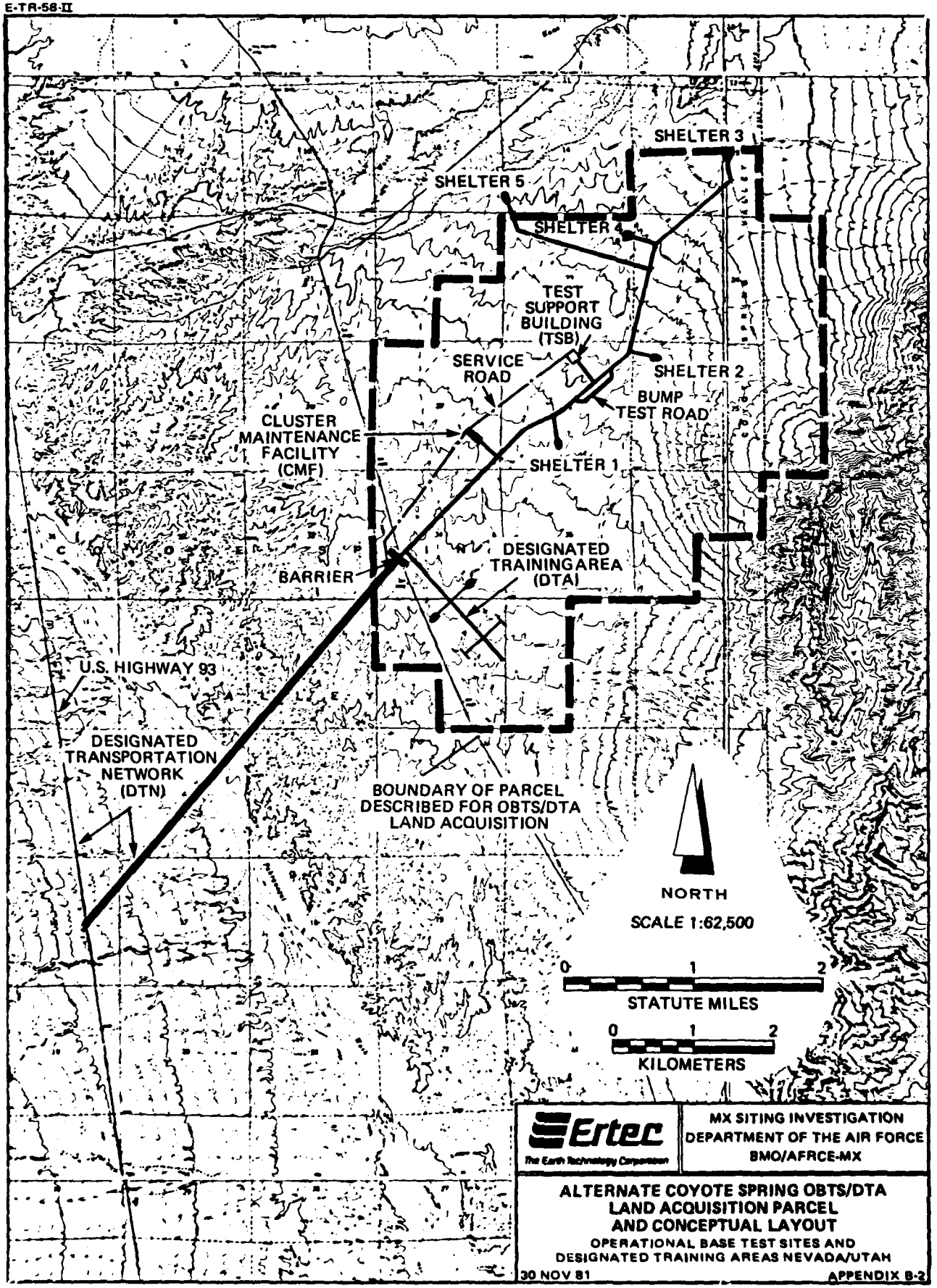
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

PREFERRED COYOTE SPRING OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX B-1



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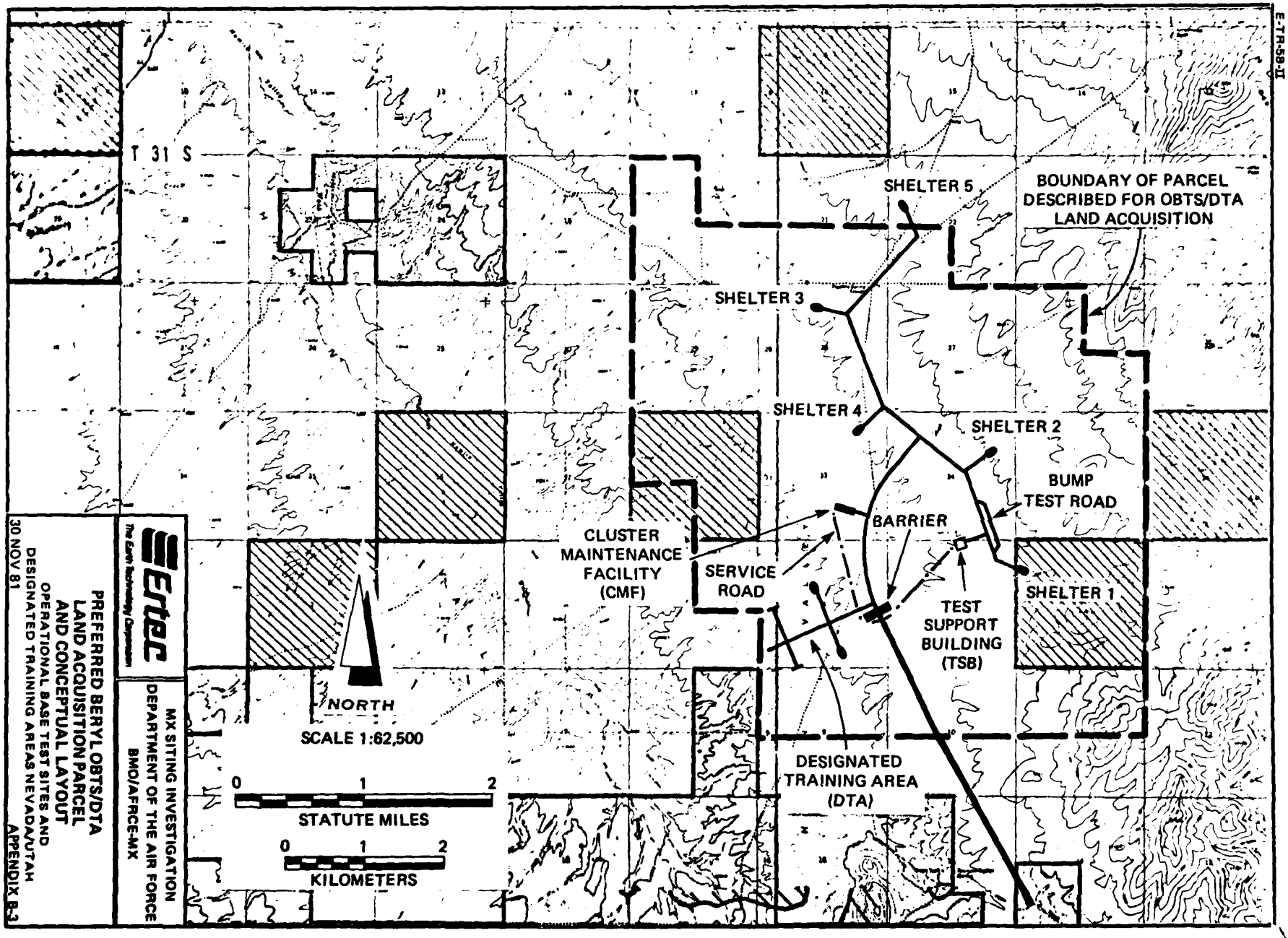
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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

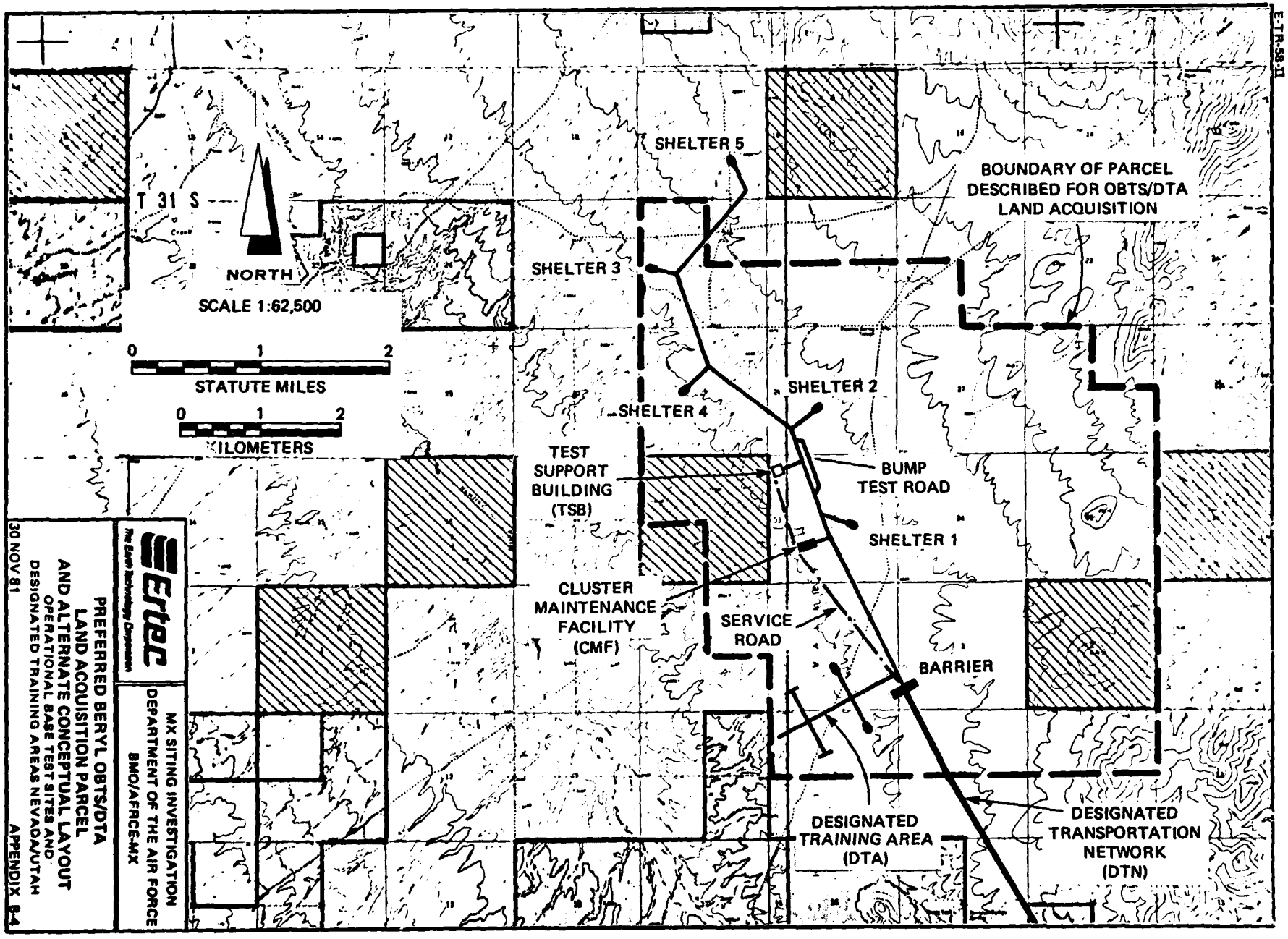
ALTERNATE COYOTE SPRING OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT

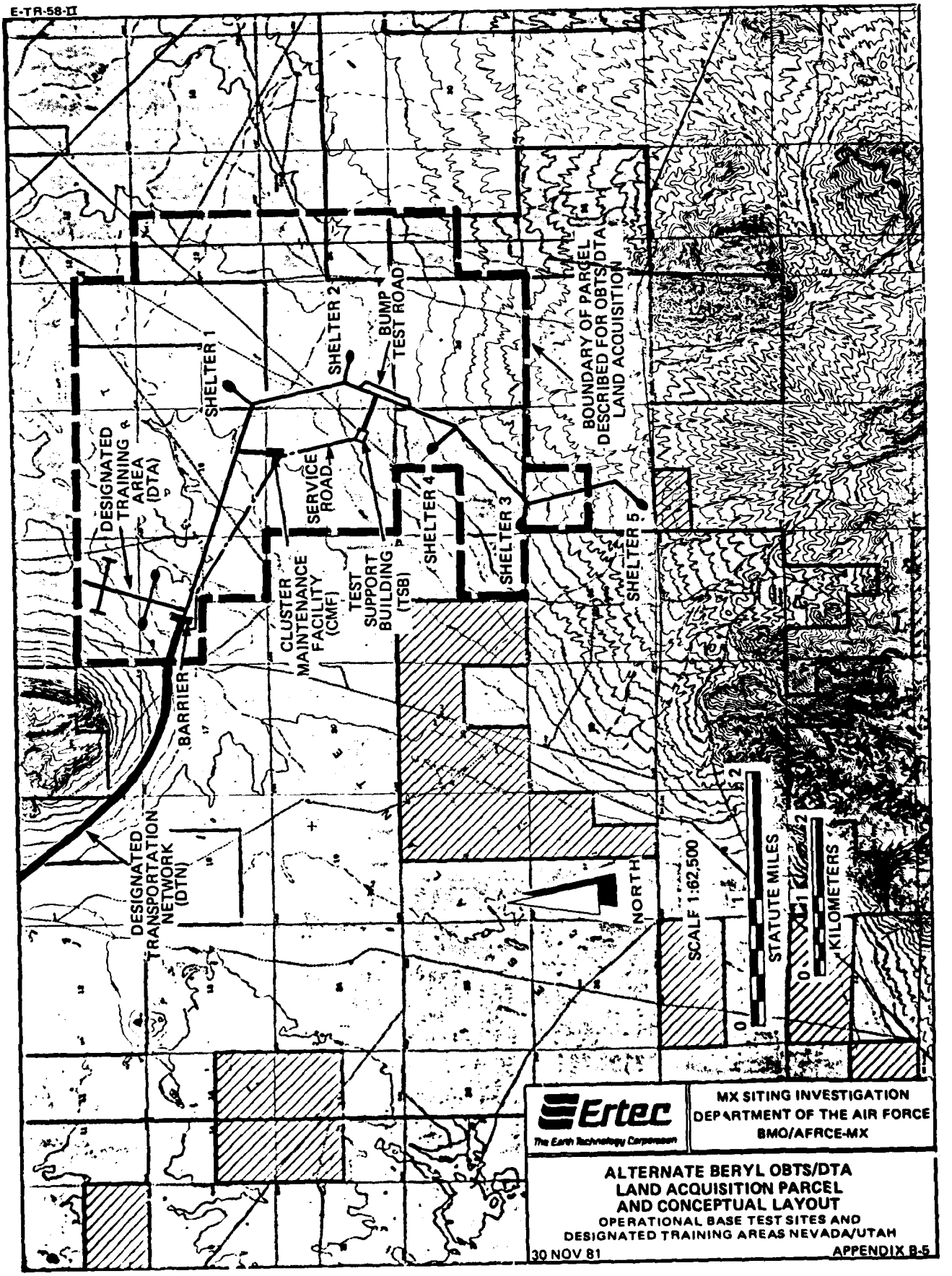
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX B-2


T 31 S
SHELTER 5
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
SHELTER 3
SHELTER 4
SHELTER 2
BUMP TEST ROAD
BARRIER
CLUSTER MAINTENANCE FACILITY (CMF)
SERVICE ROAD
SHELTER 1
TEST SUPPORT BUILDING (TSB)
DESIGNATED TRAINING AREA (DTA)
NORTH
SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
E-TR-58-II
PREFERRED BERYL OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX B-3
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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX


E-TR-58-11
SHELTER 5
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
T 31 S
NORTH
SCALE 1:62,500
SHELTER 3
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
SHELTER 2
SHELTER 4
TEST SUPPORT BUILDING (TSB)
BUMP TEST ROAD
SHELTER 1
CLUSTER MAINTENANCE FACILITY (CMF)
SERVICE ROAD
BARRIER
DESIGNATED TRAINING AREA (DTA)
DESIGNATED TRANSPORTATION NETWORK (DTN)
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The Earth Technology Corporation
PREFERRED BERYL OBTS/DTA LAND ACQUISITION PARCEL AND ALTERNATE CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX B-4
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX



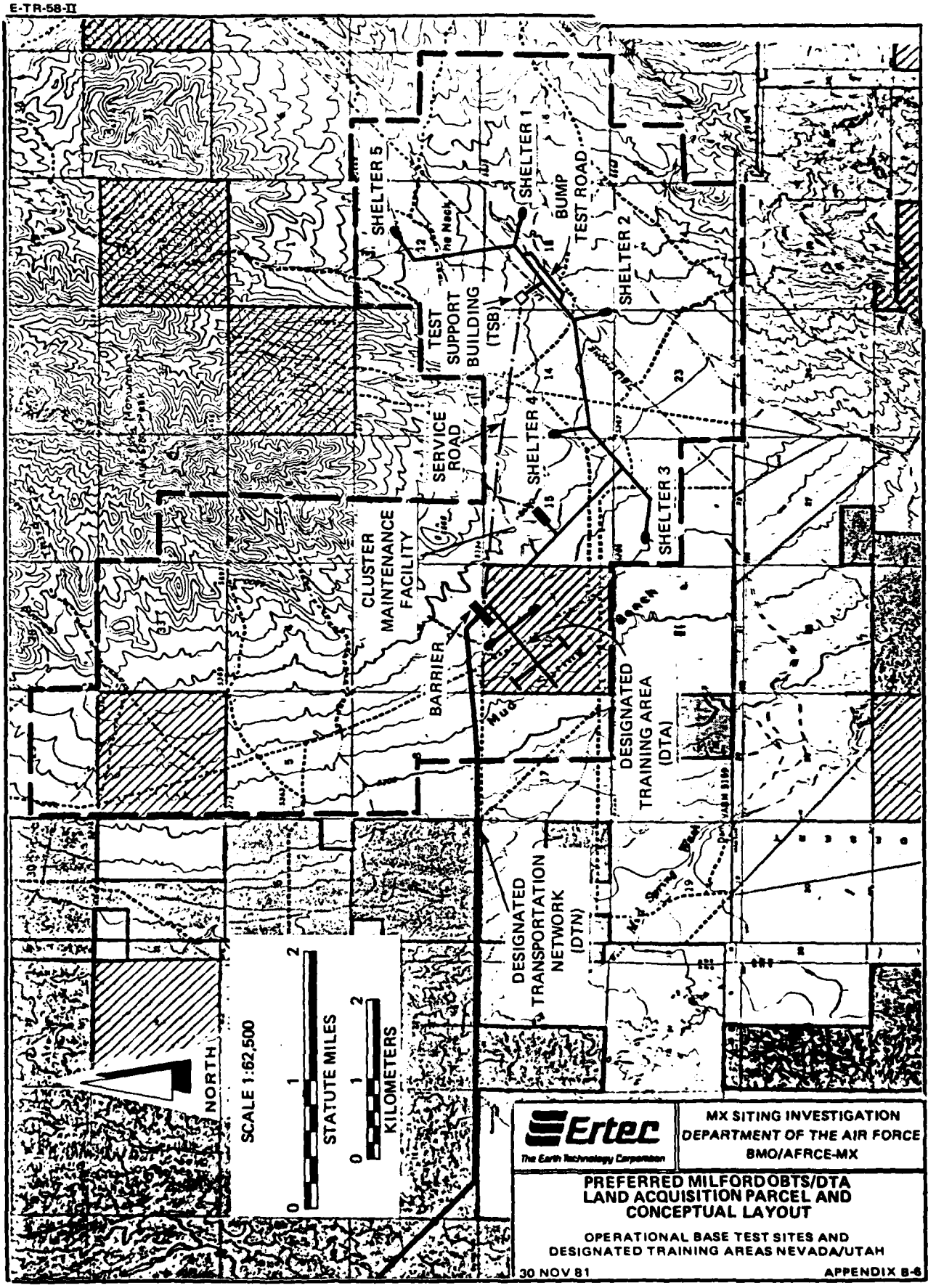
Ertec
The Earth Technology Corporation

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

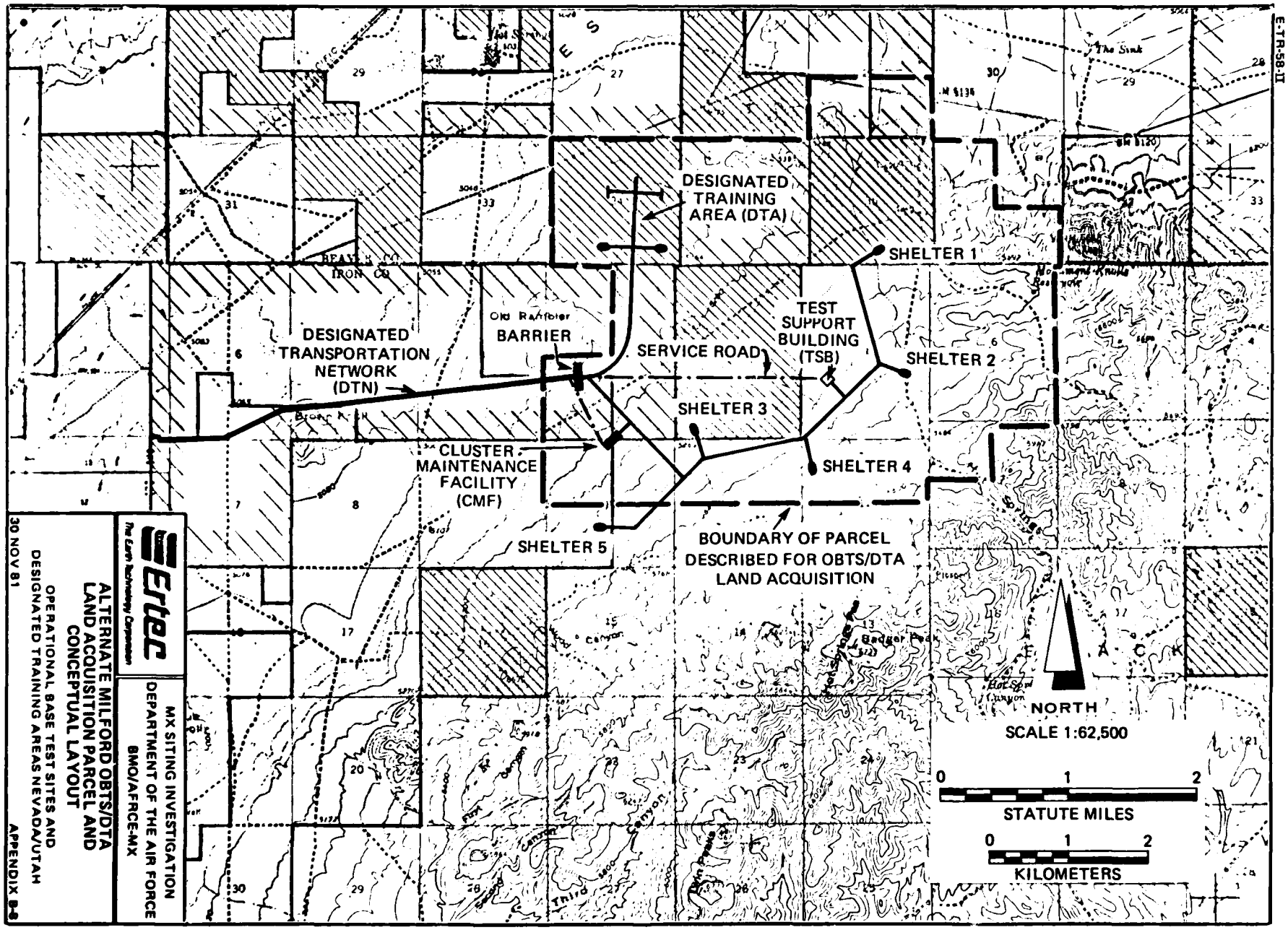
ALTERNATE BERYL OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81

APPENDIX B-5


SHELTER 5
SHELTER 1
BUMP
TEST ROAD
SHELTER 2
TEST SUPPORT BUILDING (TSB)
SERVICE ROAD
SHELTER 4
SHELTER 3
CLUSTER MAINTENANCE FACILITY
BARRIER
DESIGNATED TRAINING AREA (DTA)
DESIGNATED TRANSPORTATION NETWORK (DTN)
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
Ertec
The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
PREFERRED MILFORD OBTS/DTA
LAND ACQUISITION PARCEL AND
CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX B-6

DESIGNATED TRAINING AREA (DTA)
CLUSTER MAINTENANCE FACILITY (CMF)
SHELTER 1
BUMP TEST ROAD
SHELTER 2
SHELTER 5
SHELTER 3
SHELTER 4
TEST SUPPORT BUILDING (TSB)
SERVICE ROAD
BARRIER
DESIGNATED TRANSPORTATION NETWORK (DTN)
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
The Neck
Mud
NORTH
SCALE 1:62,500
STATUTE MILES
KILOMETERS
Ertec
The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
PREFERRED MILFORD OBTS/DTA LAND ACQUISITION PARCEL AND ALTERNATE CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX B-7

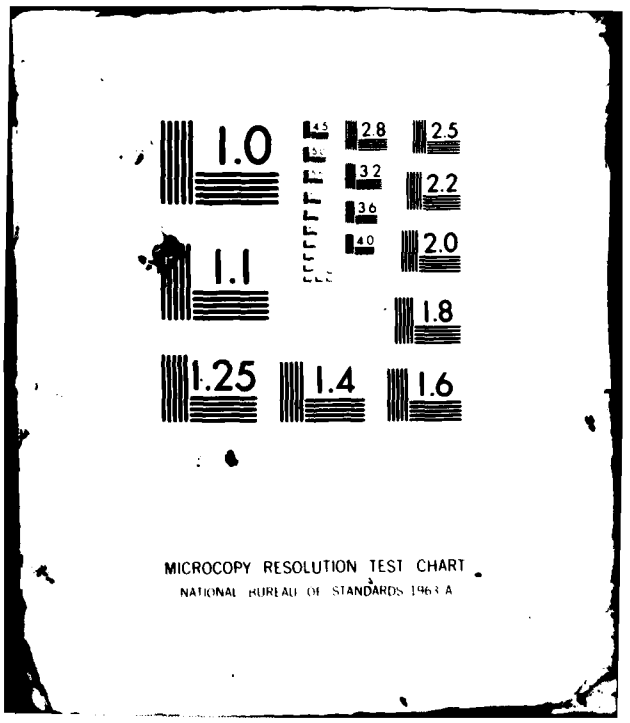

DESIGNATED TRAINING AREA (DTA)
SHELTER 1
TEST SUPPORT BUILDING (TSB)
SHELTER 2
DESIGNATED TRANSPORTATION NETWORK (DTN)
Old Railroad BARRIER
SERVICE ROAD
SHELTER 3
CLUSTER MAINTENANCE FACILITY (CMF)
SHELTER 4
SHELTER 5
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
NORTH
SCALE 1:62,500
0 1 2
STATUTE MILES
0 1 2
KILOMETERS
E-TR-58-II
Ertec
The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
ALTERNATE MILFORD OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEVADA/UTAH
30 NOV 81
APPENDIX B-8

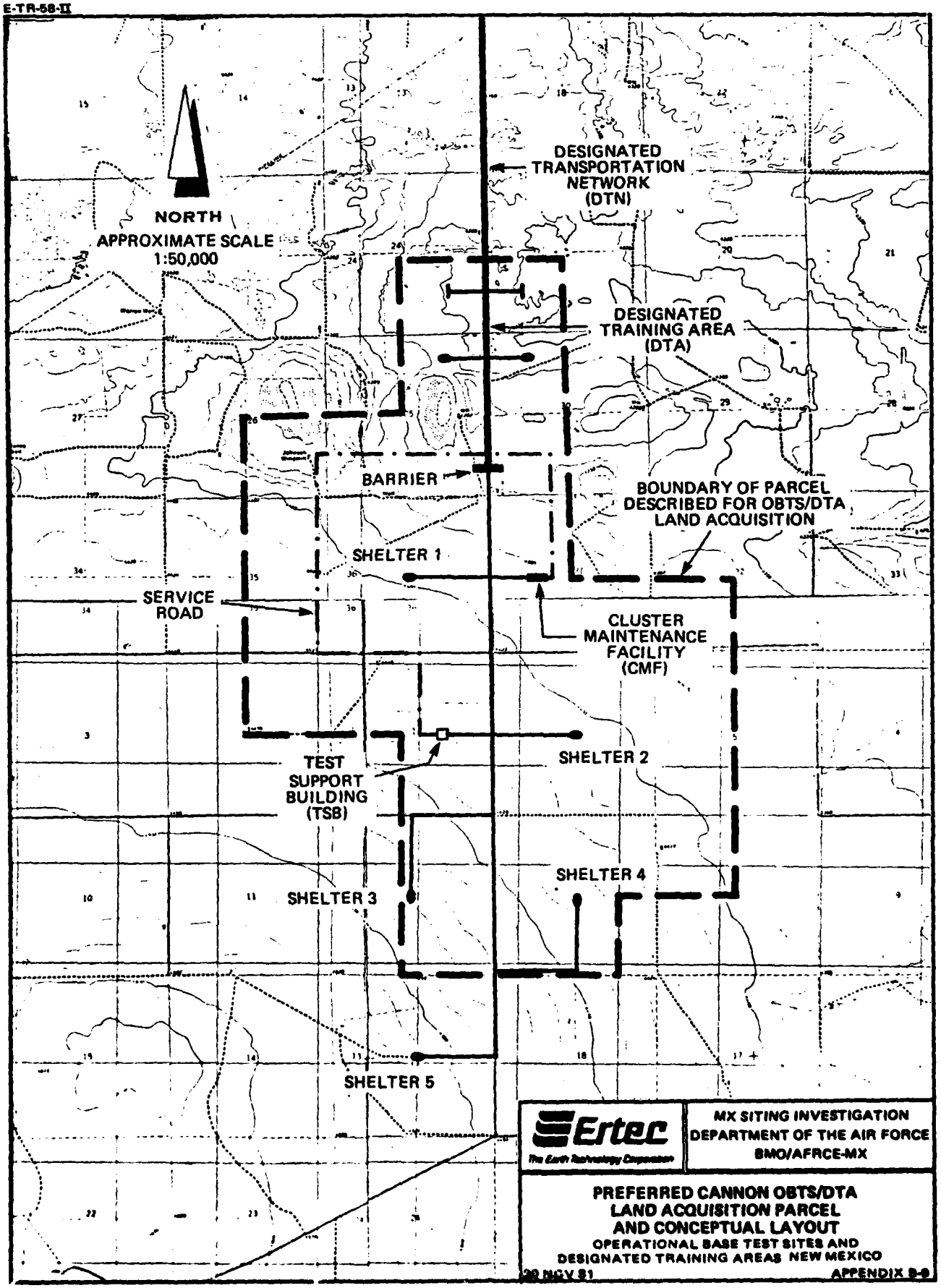
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JAN 82 F04704-80-C-0006
UNCLASSIFIED E-TR-58-VOL-2 NL

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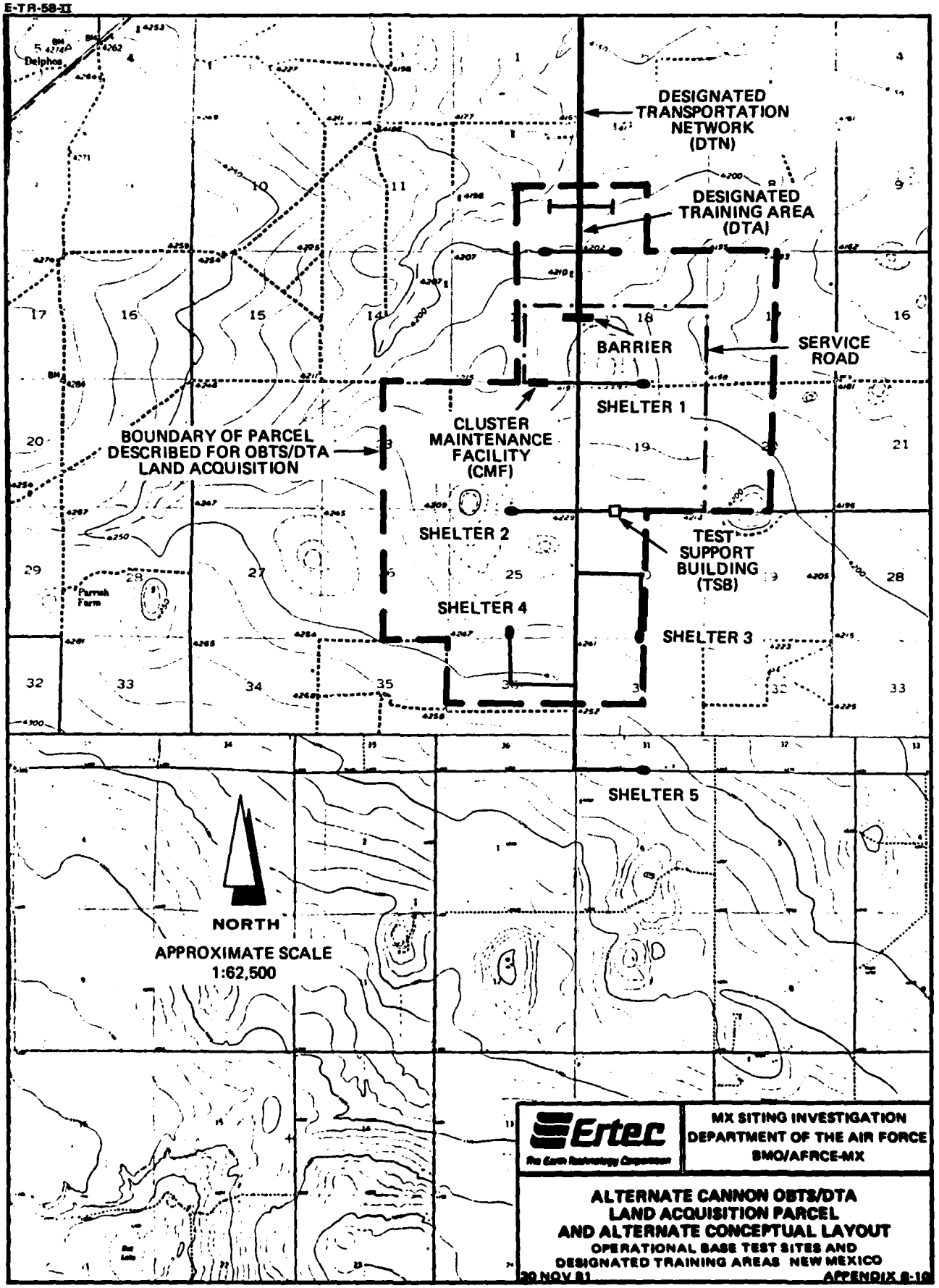


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2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A


NORTH
APPROXIMATE SCALE
1:50,000
DESIGNATED TRANSPORTATION NETWORK (DTN)
DESIGNATED TRAINING AREA (DTA)
BARRIER
BOUNDARY OF PARCEL DESCRIBED FOR OBTS/DTA LAND ACQUISITION
SHELTER 1
SERVICE ROAD
CLUSTER MAINTENANCE FACILITY (CMF)
TEST SUPPORT BUILDING (TSB)
SHELTER 2
SHELTER 3
SHELTER 4
SHELTER 5
Ertec
The Earth Technology Corporation
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX
PREFERRED CANNON OBTS/DTA LAND ACQUISITION PARCEL AND CONCEPTUAL LAYOUT
OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO
30 NOV 81
APPENDIX B-6

E-TR-58-II



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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

ALTERNATE CANNON OBTS/DTA LAND ACQUISITION PARCEL AND ALTERNATE CONCEPTUAL LAYOUT

OPERATIONAL BASE TEST SITES AND DESIGNATED TRAINING AREAS NEW MEXICO

29 NOV 81

APPENDIX C

OBTS/DTA LAND ACQUISITION PARCEL DESCRIPTION FOR EACH MOB

COYOTE SPRING, PREFERRED SITE

Lincoln County, Nevada
T.11S.R.63E.
Section 27, SE 1/4
Section 34, E 1/2
Section 35, All
Section 36, S 1/2 and NW 1/4

SUBTOTAL 1600 Acres

T.12S.R.63E.
Section 1, All
Section 2, All
Section 3, E 1/2
Section 10, E 1/2
Section 11, All
Section 12, All
Section 13, NW 1/4
Section 14, N 1/2
Section 15, NE 1/4

SUBTOTAL 3840 Acres

TOTAL 5440 Acres

COYOTE SPRING, ALTERNATIVE SITE

Lincoln County, Nevada
T.11S.R.63E.
Section 13, S 1/2
Section 22, SE 1/4
Section 23, All
Section 24, All
Section 25, All
Section 26, All
Section 27, All
Section 34, All
Section 35, All
Section 36, N 1/2 and SW 1/4

SUBTOTAL 5440 Acres

T.12S.R.63E.
Section 2, W 1/2
Section 3, E 1/2 and NW 1/4

SUBTOTAL 800 Acres

T.11S.R.64E.
Section 19, W 1/2
Section 30, W 1/2

SUBTOTAL 640 Acres

TOTAL 6880 Acres

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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

COYOTE SPRING, NEVADA
OBTS/DTA LAND PARCEL DESCRIPTION

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 APPENDIX C-1

BERYL, PREFERRED SITE

Iron County, Utah
T.31S.R.18W.
- Section 20, S1/2 and NW 1/4
- Section 21, S 1/2
- Section 22, SW 1/4
- Section 26, S 1/2 and NW 1/4
- Section 27, All
- Section 28, All
- Section 29, All
- Section 32, N 1/2 and SE 1/4
- Section 33, All
- Section 34, All
- Section 35, All

SUBTOTAL 5760 Acres

T.32S.R.18W.
- Section 2, All
- Section 3, All
- Section 4, All
- Section 5, NE 1/4
- Section 9, N 1/2
- Section 10, N 1/2
- Section 11, N 1/2

SUBTOTAL 3040 Acres

TOTAL 8800 Acres

BERYL, ALTERNATIVE SITE

Iron County, Utah
T.34S.R.14W.
- Section 9, S 1/2
- Section 10, S 1/2
- Section 11, S 1/2
- Section 13, W 1/2
- Section 14, All
- Section 15, All
- Section 16, N 1/2 and SE 1/4
- Section 22, All
- Section 23, All
- Section 24, W 1/2
- Section 25, NW 1/4
- Section 26, All
- Section 27, S 1/2 and NW 1/4
- Section 28, SE 1/4
- Section 34, NW 1/4

TOTAL 6240 Acres

Ertec
The Earth Technology Corporation

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

BERYL,UTAH,OBTS/DTA
LAND PARCEL DESCRIPTION

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 APPENDIX C-2

MILFORD, PREFERRED SITE

Iron County, Utah
T.31S.R.12W.
Section 29, S 1/2
Section 32, All
Section 33, All
Section 34, SW 1/4

SUBTOTAL 1760 Acres

T.32S.R.12W.
Section 3, W 1/2
Section 4, All
Section 5, All
Section 8, N 1/2 and SE 1/4
Section 9, All
Section 10, W 1/2
Section 11, SE 1/4
Section 12, All
Section 13, All
Section 14, All
Section 15, All
Section 16, All
Section 17, E 1/2
Section 22, N 1/2
Section 23, All
Section 24, All

SUBTOTAL 8320 Acres

T.32S.R.11W.
Secion 7, S 1/2 and NE 1/4
Section 18, All
Section 19, NW 1/4

SUBTOTAL 1280 Acres

TOTAL 11,360 Acres

MILFORD, ALTERNATIVE SITE

Beaver County, Utah
T.30S.R.12W.
Section 25, S 1/2
Section 34, All
Section 35, All
Section 36, All

SUBTOTAL 2240 Acres

T.30S.R.11W.
Section 31, S 1/2 and NW 1/4

SUBTOTAL 480 Acres

Iron County, Utah
T.31S.R.12W.
Section 1, All
Section 2, S 1/2 and NE 1/4
Section 11, N 1/2
Section 12, N 1/2

SUBTOTAL 1760 Acres

T.31S.R.11W.
Section 6, All
Section 7, NW 1/4

SUBTOTAL 800 Acres

TOTAL 5280 Acres

Ertec
The Earth Technology Corporation

MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

MILFORD,UTAH,OBTS/DTA
LAND PARCEL DESCRIPTION

OPERATIONAL BASE TEST SITES AND
DESIGNATED TRAINING AREAS NEVADA/UTAH

30 NOV 81 APPENDIX C-3

CANNON AFB, PREFERRED SITE

Roosevelt County, New Mexico

T.3S.R.30E.
- Section 24, SE 1/4
- Section 25, S 1/2 and NE 1/4
- Section 26, SE 1/4
- Section 35, E 1/2
- Section 36, All

SUBTOTAL 1760 Acres

T.4S.R.30E.
- Section 1, N 1/2 and SE 1/3
- Section 2, NE 1/4
- Section 12, E 1/2

SUBTOTAL 960 Acres

T.4S.R.31E.
- Section 19, SW 1/4
- Section 30, W 1/2
- Section 31, S 1/2 and NW 1/4
- Section 32, SW 1/4

SUBTOTAL 1120 Acres

T.4S.R.31E.
- Section 5, W 1/2
- Section 6, All
- Section 7, All
- Section 8, NW 1/4

SUBTOTAL 1760 Acres

TOTAL 5600 Acres

CANNON AFB, ALTERNATIVE SITE

Roosevelt County, New Mexico

T.3S.R.33E.
- Section 12, SE 1/4
- Section 13, E 1/2
- Section 23, E 1/2
- Section 24, All
- Section 25, All
- Section 26, E 1/2
- Section 36, N 1/2

SUBTOTAL 2720 Acres

T.3S.R.34E.
- Section 7, SW 1/4
- Section 17, W 1/2
- Section 18, All
- Section 19, All
- Section 20, W 1/2
- Section 30, W 1/2
- Section 31, NW 1/4

SUBTOTAL 2560 Acres

TOTAL 5280 Acres


DAT
FILM