

6102396

AUG 17 1979



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Area Geothermal Supervisor's Office  
Conservation Division, MS-92  
345 Middlefield Road  
Menlo Park, CA 94025

AUG 14 1979

Memorandum

To: INTERESTED PARTIES

From: Area Geothermal Supervisor

Subject: Plan of Operation, Amax Exploration, Inc., Dixie Valley Area  
(McCoy Unit), Churchill County, Nevada  
Ref: 2403-01 N-17449 (POO for EA#137-9)

UNIVERSITY OF UTAH  
RESEARCH INSTITUTE  
EARTH SCIENCE LAB.

Amax Exploration, Inc., has submitted a Unit Plan of Operation in accordance with 30 CFR 270.34 to drill six (6) 2000'+ geothermal test wells on Federal leases N-17449, N-17451, N-17452, N-17455, and N-18852 in the Dixie Valley Area, Churchill County, Nevada. A copy of the Plan of Operation is attached for your review and files.

An Environmental Assessment (EA#137-9) will be prepared by the office of the Area Geothermal Supervisor for the proposed action. You are invited to participate in a field inspection of the proposed site to be led by Bernie Moroz, Reno District Geothermal Supervisor, USGS. Participants are asked to meet at the Bonanza Inn Coffee Shop on U.S. 50, Fallon, Nevada at 9:00 a.m., August 29, 1979.

We urge you to send written commentary and will appreciate hearing from you even if you are of the opinion that the existing regulations, lease terms and operational orders provide adequate environmental protection.

All comments concerning the proposed actions should be received no later than September 12, 1979:

Area Geothermal Supervisor  
U.S. Geological Survey-Conservation Division  
345 Middlefield Road  
Menlo Park, CA 94025

Telephone: (415) 323-8111 X2848; (FTS): 467-2848

All comments will be given serious consideration in the preparation of the Environmental Analysis and any subsequent conditions of approval.

The Area Geothermal Supervisor's Office will not send a draft Environmental Analysis to Interested Parties for review for the proposed action. Certain parties, however, such as the surface managing agency, the lessee, GEAP and USFWS will receive a copy of the completed EA. Other interested parties will not receive a copy of the final EA unless such parties comment on the proposed action in writing or request a copy of the particular EA pursuant to the Freedom of Information Act. Copies of Environmental Analyses are available for inspection during normal business hours at the Area Geothermal Supervisor's Office, and the Carson City BLM District Manager's Office.

*Reid Stone*

Enclosure

INTERESTED PARTIES EA #137-9

max Exploration, Inc.  
 OO 6-7000' + test wells

N17449, N17451, N17452, N17455, N18852  
 Dixie Valley

\* \* \* \* \*

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Winnemucca City District Manager  
 Bureau of Land Management  
 1050 E. Williams Street, Suite 335  
 Winnemucca City, Nevada 89701  
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Winnemucca District Manager  
 Bureau of Land Management  
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U.S. Bureau of Reclamation  
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 Post Office Box 640  
 Winnemucca City, Nevada 89701  
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U.S. Fish and Wildlife Service  
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 2800 Cottage Way  
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INTERESTED PARTIES for EA #137-9

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INTERESTED PARTIES for EA #137-9

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Proposed Plan of Operation To  
Drill Geothermal Test Wells At  
McCoy Unit  
Churchill County Nevada

United States Geothermal Leases N-17449, N-17450,  
N-17451, N-17452, N-17454, N-17455, N-17470, N-17471,  
N-18851, N-18852, N-18854, N-18856, N-19924, N-19925,  
N-19926, N-19927, N-19928, N-20073, N-24495, N-24496,  
N-24497, N-24734

Amax Exploration, Inc.

4704 Harlan Street

Denver, Colorado 80212

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## IV. EXHIBITS

EXHIBIT "D"	Schematic Diagram of Well
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EXHIBIT "H"	Flow Test Equipment

## LOCATIONS AND ROADS

### I. CONSTRUCTION PLANS

AMAX Exploration, Inc., Geothermal Group, proposes to drill up to six geothermal test wells on the Federal leased lands in the McCoy Unit Area, Nevada. The planned well locations are shown in Exhibit "A" which depicts topography, lease boundaries, drainage, and existing roads. The wells will be drilled to a minimum depth of 610 meters (2,000 feet). The general equipment layout, well location, and sump location are shown in Exhibit "B". The surveyed locations and surface contours for each site will be submitted upon completion.

The drill sites were selected to utilize natural topographic features and existing roads to eliminate the need for road construction. The construction areas will be stripped of vegetation, graded, and drilling waste containment sumps constructed at each site.

### II. EXISTING ROADWAYS

Access to the Federal leases is over existing roads. The access to each planned well site is by existing roads. The roads will be upgraded and maintained in an acceptable manner with the addition of culvert pipes and aggregate where advisable.

The proposed drill sites will be constructed adjacent to existing BLM roads as shown in Exhibit "C" and as described below:

Well No. 56-8

Access will be by use of BLM road segment A-1.

Well No. 47-6

Access will be by use of BLM road segment B-1.

Well No. 87-32

Access will be by use of BLM road segment A-2.

Well No. 13-20

Access will be by use of BLM road segment A-3.

Well No. 24-7

Access will be by use of BLM road segment C-1.

Well No. 37-9

Access will be by use of approximately one half mile of unimproved mine road segment D-1.

### III. ARCHEOLOGICAL CLEARANCE

The proposed well sites have all been examined and cleared by the BLM archeologist from the Carson City District Office prior to the issuance of the Federal geothermal leases.

### IV. ENVIRONMENTAL PROTECTION AND RESTORATION

#### A. Fire Control

1. All local, state, and federal fire protection standards applicable to AMAX's activities will be observed.
2. Vegetation at the proposed drill sites is sparse and will be cleared to the extent required for the operations. Smoking will be allowed in designated areas.
3. Exhaust stacks for all engines in service will be equipped with muffling systems recognized and approved for use in the area.
4. Water and suitable fire extinguishing equipment will be available at the drill sites.

## B. Soil Erosion

Culverts will be installed and aggregate applied as needed on the existing access roads. Since the well sites were selected to take advantage of the topography only minimal disturbance will occur during pad construction. The locations will be built in accordance with the recognized engineering requirements as specified in the BLM manual "Roads, Trails and Landing Fields".

## C. Surface and Groundwater

All surface drainage on the drill sites will be confined to the sumps. All necessary precautions will be taken to prevent runoff of impurities from the drill sites into local drainages.

## D. Fish and Wildlife

All requirements of the area regulatory agencies will be complied with to avoid dislocation of wildlife and/or contamination of groundwater.

## E. Noise and Air Quality

Noise levels will be maintained within guidelines specified by Federal Occupational Safety Health Act standards. Air Quality will comply with local Air Pollution control standards. Adequate supplies of water will be maintained for dust control during the operation.

## F. Safeguards to Public Health

All unattended equipment left following the drilling, felt to be of a hazardous nature, will be secured with a chain link fence. Supervisory personnel will be on the sites during the course

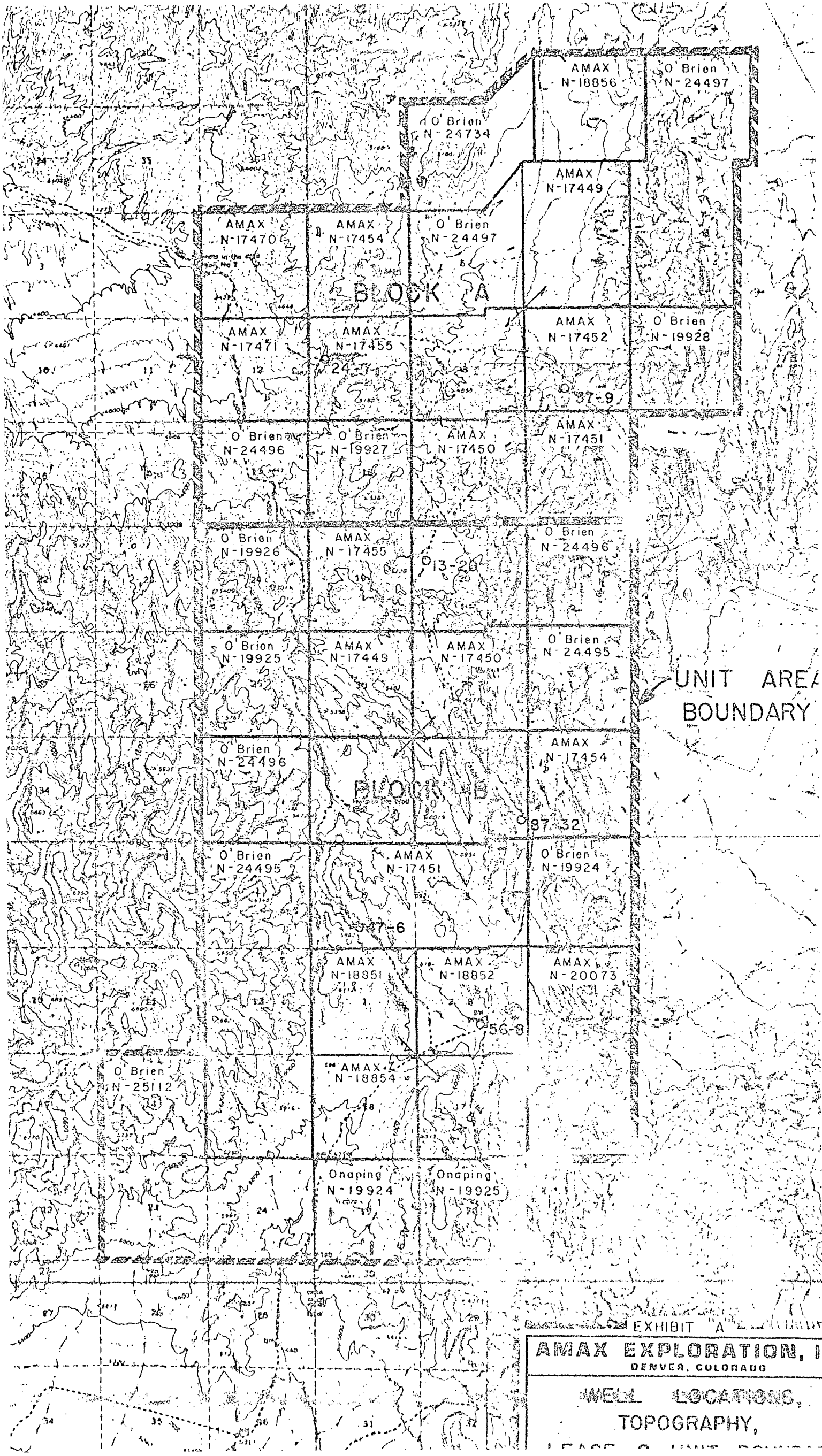
of the operations. All requirements for casing and blowout prevention will be followed.

V. SOLID WASTE DISPOSAL

The area will be kept clean and all solid waste will be removed and transported to an approved dump.

EXHIBIT "A"

Well Locations, Topography and Lease Boundaries



AMAX  
N-18856

O'Brien  
N-24497

O'Brien  
N-24734

AMAX  
N-17449

AMAX  
N-17470

AMAX  
N-17454

O'Brien  
N-24497

BLOCK A

AMAX  
N-17471

AMAX  
N-17455

AMAX  
N-17452

O'Brien  
N-19928

O'Brien  
N-24496

O'Brien  
N-19927

AMAX  
N-17450

AMAX  
N-17451

O'Brien  
N-19926

AMAX  
N-17455

O'Brien  
N-24496

O'Brien  
N-19925

AMAX  
N-17449

AMAX  
N-17450

O'Brien  
N-24495

UNIT AREA  
BOUNDARY

O'Brien  
N-24496

AMAX  
N-17454

BLOCK B

O'Brien  
N-24495

AMAX  
N-17451

O'Brien  
N-19924

O'Brien  
N-25112

AMAX  
N-18851

AMAX  
N-18852

AMAX  
N-20073

AMAX  
N-18854

Onaping  
N-19924

Onaping  
N-19925

EXHIBIT "A"

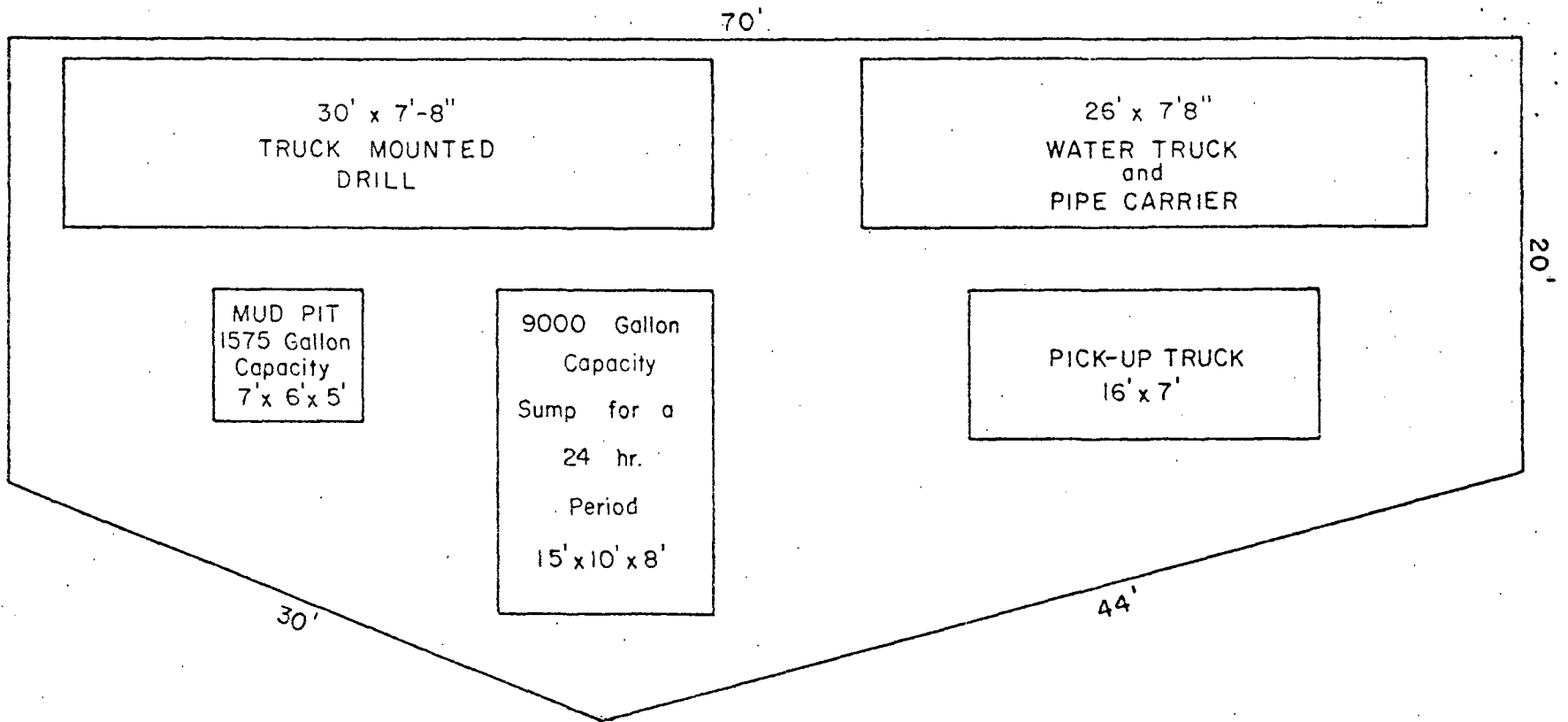
AMAX EXPLORATION, I  
DENVER, COLORADO

WELL LOCATIONS,  
TOPOGRAPHY,

EXHIBIT "B"

Generalized Drill Pad Layout





AMAX EXPLORATION, INC.  
DENVER, COLORADO

EXHIBIT "B"

GENERALIZED DRILL  
PAD LAYOUT

EXHIBIT "C"

Well Location Map and Access Roads

DETAILS OF WORK



## 1. EARTHWORK AND CONSTRUCTION

### A. Introduction

1. General: The following specifications will be followed for drill site and road construction at AMAX Exploration, Inc., drill sites at the McCoy Prospect. These specifications are of a general nature and may require deviations on a case-by-case basis. Special construction requirements shall be described on the plans for individual drill sites.

2. Supervision: Work proposed will be under the supervision of a Civil Engineer and/or an Engineering Geologist to inspect earthwork construction and to assure that suitable materials are placed to design requirements and in conformance with these specifications.

### B. Planning

1. Drill Site Locations: Drill sites shall be selected utilizing natural topographic features such as ridges, benches, shoulders and valleys which provide relatively flat areas of sufficient size to accommodate the drilling facility. The site shall be engineered to balance cuts and fills, thereby minimizing changes in natural contours, excavation operations and disturbance of vegetation. Areas of both inactive and active landslides are to be avoided, or if unavoidable, engineered in such a manner to insure the safe drilling and operation of geothermal wells.

2. Road Locations: Access roads shall follow existing trails where possible, in keeping within good design and construction practices. Road widths shall be limited to the width required for use and for safe equipment operation. In general, road widths shall be 15 feet and designated to accommodate single-lane traffic. Turnouts shall be provided at strategic locations. Roads shall follow natural contours of the land.

## C. Earthwork

1. Clearing shall consist of the removal of organic growth such as brush, grass, weeds, and other vegetation and debris and the disposal of such material designated for removal including timber, brush, rubbish, and matter occurring within the areas to be cleared. Construction areas for excavation and fill operations at the drill site shall be stripped of all vegetation and organic soils. Brush and tree growth shall be stockpiled and burned, or buried in spoil areas.

2. Earth Fills: All fill areas shall be benched and keyed into undisturbed ground. Embankments shall be placed in six to eight inch lifts, moistened as required, and compacted by tamping rollers or other approved compacting equipment to 90% of ASTM D-1557-70, "Moisture Density Relations Test for Soils". Road fill slopes shall not exceed 3:1 and drill site fill slopes shall not exceed 2:1.

3. Excavations: The engineer will determine in the field the disposition of excavated material, including stockpiling of certain materials excavated for later use. Excavated materials free of organic materials and debris may be used in berms and for mud sump-disposal site liners, providing such materials are approved by the engineer.

Cut slopes shall not exceed 1.5:1. Steeper slopes may be employed on a case-by-case basis by the engineer where sound and durable rock is encountered. The top portion of the cut shall be rounded to eliminate a sharp break between the cut and the existing vegetation. The face of the cut shall be roughened or benched to enhance revegetation.

D. Drainage and Erosion Control

1. Access Road and Drill Site Pad: Access road surfaces shall be out-sloped or sloped toward the fill side so that there will be a minimum interruption of natural drainage patterns. All slopes shall be seeded for erosion control as provided herein. The portion of drill pad which will contain equipment capable of dripping oil or fuel shall be sloped toward the sump. The remaining drill pad shall be sloped to drain toward the cut. The slopes shall be approximately two feet per one hundred feet. Drainage swales on the upslope side of the drill site shall be sloped to drain at a gradient between 1% and 2%, or greater with approval by the engineer.

Sand/cement filled bags shall be installed as energy dissipaters where required to reduce flow velocities and prevent erosion. Culverts where necessary shall be installed with sand/cement-filled sand bag headwalls at the entrance, stilling basins at the exit, and shall be extended to existing natural drainage areas.

E. Revegetation of Graded Areas

1. General: Access road and drill site cut and fill slopes and other areas exposed by grading shall be revegetated shall be determined by the engineer.

The revegetative effort shall be done in late summer or early fall, prior to winter snows.

2. Fertilizers: For areas to be revegetated, 14-14-14 granular fertilizer shall be applied at the rate of 300 lbs per acre.

3. Grasses: Grass seeds shall be applied at 60 lbs per acre. The seed mix shall be as follows, depending on availability:

Blando Brome, Wymera Ryegrass  
or Common Ryegrass

50 lbs. per acre

Red Leafed Clover

10 lbs. per acre

F. Mud Sump

1. General: The disposal site will have the natural characteristics or will be engineered in such a manner to preclude the seepage or migration of any leached and deleterious materials contained within the sump to usable surface and groundwater.

2. Impervious Liner: An impervious soil lining conforming to the inside pit configuration shall be placed in such a manner to resist accidental damage from pumping and other operations. The soil in the sump shall be thoroughly compacted to 90% of ASTM D-1557-70 prior to placement of the liner. A two-foot-thick clay lining of materials approved by the engineer shall then be applied. The lining will be placed in six-inch layers using soil having a suitable clay content. The lining material shall be moistened to optimum moisture content and compacted to at least 95% of ASTM D-1557-70. Each layer will be compacted by means of a sheepsfoot or other suitable compacting roller. The surface of the clay lining will be finished by track-walking with a track-laying tractor. The permeability of the lining as placed shall not exceed  $1 \times 10$  centimeters per second.

The slopes of the containment areas shall not exceed 2:1 and the bottom width shall not be less than five feet. A minimum three foot freeboard shall be maintained at all times.

3. Abandonment: Upon completion of drilling operations at drill site locations, the mud sump-waste disposal area shall be dewatered by solar evaporation or by pumping with the final drying of the waste material by solar evaporation. When the moisture content of the waste material is reduced to

30% or less, the sump contents shall be mixed with native soils and the sump bank-filled. A two-foot-high compacted berm shall be installed between the sump area and the drill site location pad to prevent water from running off the pad onto the sump. The surface of the disposal area shall be sloped to drain, graded for an attractive appearance, and revegetated as specified herein.

## II. DRILLING PROGRAM

Well: 610 meter (2,000 foot) Geothermal Test Wells

Location: McCoy Unit Area

Elevation: \_\_\_\_\_ Ground: \_\_\_\_\_

### A. Tubular Goods Required:

- + 20 ft. of 13-3/8", H-40 conductor pipe
- + 500 ft. of 8-5/8", 24#/ft., K-55, LT&C casing
- + 2800 ft. of 4-1/2", 9-1/2#/ft., K-55, LT&C casing
- + 200 ft. of 4-1/2" casing as above, but slotted for production

### B. Casing Equipment Required:

- 8-5/8" - Cement float shoe with flapper valve, 2 centralizers, one 5 ft. above shoe and the other 10 ft. below surface
- 4-1/2" - Differential fill float collar with top and bottom cement plug, 2 cement baskets, 1 baffle plate, 14 centralizers, 10 ft. off bottom, then one every 200 ft. plus one at 20 ft.

### C. Wellhead:

- 8-5/8" - S. O. W. x 8", 300#R.F. flange, with two 2" 300#R.F. flanged side outlets, and two 2", 300#R.F. gate valves
- 4-1/2" - S. O. W. x 6", 300#R.F. flange, with two 2", 300#R.F. flanged side outlets, and with two 2", 300#R.F. gate valves