

**MK024PR**

**SECTION 30 MINE**

**(Old Stope Leach)**



NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

MINING AND MINERALS DIVISION  
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Santa Fe, New Mexico 87505  
(505) 827-5970

Jennifer A. Salisbury  
CABINET SECRETARY

Douglas M. Bland  
DIVISION DIRECTOR

May 6, 1999

Peter Luthiger  
Quivira Mining Company  
P.O. Box 218  
Grants, NM 87020

**Re: Determination on Prior Reclamation Sites Sections 17, 19, 22, 24, 30, 30W  
and 33**

Dear Mr. Luthiger:

In accordance with New Mexico Mining Act (NMMA) § 69-36-7U, and § 510 of the NMMA Rules (Rules), the Mining and Minerals Division has made a decision regarding release of the above sites from further requirements of the NMMA.

In order for a site to be released from further requirements of the NMMA under prior reclamation, the standards set in the NMMA Rules § 510.B must be met. The Rule states, "The director shall release the owner or operator from further requirements of the Act and of this Part if, after an inspection of the reclaimed areas, he determines that the reclamation measures satisfy the requirements of the Act and the substantive requirements for reclamation pursuant to this Part." The substantive requirements for reclamation in Part 5 of the Rules in part can be found in § 506.J.3. which states, "the work to be done will reclaim disturbed areas within the permit area to a condition that allows for re-establishment of a self sustaining ecosystem on the permit area following closure, appropriate for the life zone of the surrounding area..."

Inspections including vegetative sampling have been conducted on 3 different occasions: August 1995, October 1997, and October 1998. A variance was granted in April of 1997 until the end of 1998, to allow more time to for the reclamation efforts to show results because the sites were not deemed releasable in 1997. Each inspection was conducted in the presence of a representative from Quivira Mining Company. A summary report of the August 1995, and October 1997 inspections were sent to your office. The summary report for the October 1998 inspection is attached.

Information from all 3 inspections was taken into account, however the results from the October 1998 inspection were more heavily weighed. The sampling technique used in October 1998 was conducted in accordance with scientifically accepted methodologies. The results were compared to the agreed upon standard that perennial cover in the sample

must average at least 75% of perennial cover from the range site description (RSD) for Sandy WP-2 (see attached). The RSD lists an 18% cover value for grasses and forbs, this would mean the average value for each site sampled must be at least 13.5% cover. The only two sites which met or exceeded this criteria for the October 1998 inspection were Section 30, with a value of 15.3 average percent cover and Section 30W with a value of 14.6 average percent cover for grasses and forbs. In both Section 30 and 30W, Crested Wheatgrass is the dominant grass, which is not necessarily desirable, however, it does provide cover and stability to the site. Four other grass species were observed as well as two shrub species. Considering both vegetative cover and diversity, MMD has determined that a self-sustaining ecosystem is likely to be achieved at both sites. In accordance with the agreed upon cover performance standards set and NMMA Rules, Section 30 and Section 30W are deemed released from further requirements of the N M MA.

The remaining Sections 17, 19, 22, 24, and 33, do not meet the criteria for release (see attached 10/98 report), and therefore will need to be permitted according to Rule 5 of the NMMA. Quivira may opt to incorporate these sections into the Old Stope Leach permit revision for a closeout plan which must be approved by August 30, 1999.

If you are not in agreement with this determination, you have the option of re-sampling Section 19. This site had an average percent cover value within 2 percentage points of meeting the RSD criteria, therefore, there is a reasonable possibility that upon re-sampling, the results may meet the criteria. Section 33 also had results within 2 percentage points of 13.5%, however, the southern portion of the site is in such poor condition that it is not eligible of re-sampling. The sampling must be conducted in accordance with approved sampling methodologies, by an experienced range scientist, and our staff must be given an opportunity to attend the sampling. Our office must be contacted at least 2 weeks prior to sampling dates. Also, proposed sampling methodologies should be provided at that time. You will have until November 1, 1999 to provide your own sampling results to our office for review. If you do not choose to exercise this option or we do not receive sampling results by November 1<sup>st</sup>, the determination that these sites are not releasable will be deemed a final order.

Your interests and efforts in voluntary reclamation are appreciated. If you have any questions regarding this decision please feel free to call Fernando Martinez at (505) 827-1173.

Sincerely,

A handwritten signature in dark ink, appearing to read "Douglas M. Bland", written in a cursive style.

Douglas M. Bland  
Division Director

# **PRIOR RECLAMATION INSPECTION REPORT**

## **QUIVIRA MINING COMPANY**

**Section 17, Section 19, Section 22, Section 24, Section 30, Section 30W, Section 33**

**Submitted in Partial Fulfillment of the New Mexico Mining Act Section 69-36-7 U,  
Prior Reclamation**

**New Mexico Energy, Minerals and Natural Resources Department  
Mining and Minerals Division  
Mining Act Reclamation Program**

**October 30, 1998**

## **INTRODUCTION**

On October 1<sup>st</sup> and 2<sup>nd</sup> of 1998, inspections were conducted at Quivira Mining Company's seven unreleased prior reclamation sites. These sites, their locations and the dates of their inspections are presented in Table 1.

MINE	LOCATION	INSPECTION DATE
Section 17	T14N R9W	October 2, 1998
Section 19	T14N R9W	October 2, 1998
Section 22	T14N R10W	October 1, 1998
Section 24	T14N R10W	October 1, 1998
Section 30	T14N R9W	October 1, 1998
Section 30W	T14N R9W	October 2, 1998
Section 33	T14N R9W	October 2, 1998

**Table 1: Quivira Mining Company Prior Reclamation Sites**

These sites had first been seeded in 1994. Each of these sites had been granted a variance from the September 30, 1995 deadline found in Section 510.B of the New Mexico Mining Act Rules (the Rules) for a determination of whether the site should be released. The deadlines for all seven sites had been extended to the end of 1998. The inspections described in this report are in fulfillment of the requirements of the New Mexico Mining Act (NMMA), Section 69-36-7U, and Section 510 of the Rules to determine if these sights qualify for release.

## **METHODS**

All inspections were conducted by Holland Shepherd, Rob Pine and Sandra Maes of MMD. Peter Luthiger of Quivira was present during the inspections. For each prior reclamation site, the sampling locations were selected as follows: a uniform 100 foot grid was drawn on a map of the site, each intersection was numbered and, using a Lotus spreadsheet, a random number generator was used to randomly order the grid points and to select a random direction for each transect. This was done in the presence of Peter Luthiger prior to the actual field inspections.

Due to time constraints, sampling adequacy was not attained at any of the prior reclamation sites. It was decided that somewhere between 7 and 10 transects would be run at each site. If Quivira did not agree with the decision that was based on this number of transects for a particular site, then the site could be reevaluated and sampling adequacy could then be attained.

The Line Intercept method was used to evaluate cover. Each transect was 50 feet long with a sampling interval of one foot, thus there were 50 points per transect. The species was identified at each point where a living plant was sampled. Species was not identified in the case of litter. Each point represents 2% of the cover for a given transect.

The standard for cover for a particular site must be based on either i) a known or predicted cover value for an ecologically comparable and reasonably undisturbed area; ii) direct comparison with a minimally disturbed reference area; or iii) test plots. The area surrounding the Quivira sites has been heavily grazed for some time and so does not provide a suitable reference area. The basis for a cover standard that has been accepted by MMD at the permitted Quivira sites is the appropriate Natural Resource Conservation Service (NRCS) Range Site Description (RSD). The one that best applies to the Quivira prior reclamation sites is the Sandy (WP-2) RSD.

The cover requirements that MMD has adopted for the Quivira prior reclamation sites is that perennial cover must average at least 75% of the perennial cover in the Sandy RSD. The average perennial ground cover for a potential natural plant community in the Sandy (WP-2) RSD is 18%. 75% of this is 13.5%. Because of the small sample size, the data was not analyzed statistically (in terms of confidence limits) so the average cover was expected to equal or exceed 13.5%. The visual inspection of the site factored into the decision making process as well.

The diversity requirement was that there should be at least 4 different grass species, including both warm season and cool season, found at the site. Since shrubs were not part of the original seed mix, there was no shrub requirement.

Because past inspections involved such a small number of transects (4 or less per prior reclamation site) that were apparently not randomly selected, it is not reasonable to compare the results of prior inspections with the 1998 inspection results. In addition, 1998 was a very dry year. Thus, it is difficult to look at trends in vegetation based on previous inspections and so trend was not considered in this evaluation.

## SECTION 17

Eight transects were run at Section 17. The results are summarized in Table 2 below.

COVER TYPE	TRNS 1	TRNS 2	TRNS 3	TRNS 4	TRNS 5	TRNS 6	TRNS 7	TRNS 8	AVG	STD DEV
GRASS & FORB	4	14	12	8	16	2	4	8	8.5	5.1
PERENNIAL	4	14	12	8	16	2	4	8	8.5	5.1
ANNUAL	2	2	2	2	3	4	22	0	5.3	7.2
LITTER	18	20	16	10	12	26	16	22	17.5	5.2
BARE GROUND	76	58	70	80	64	68	58	70	68.0	7.9

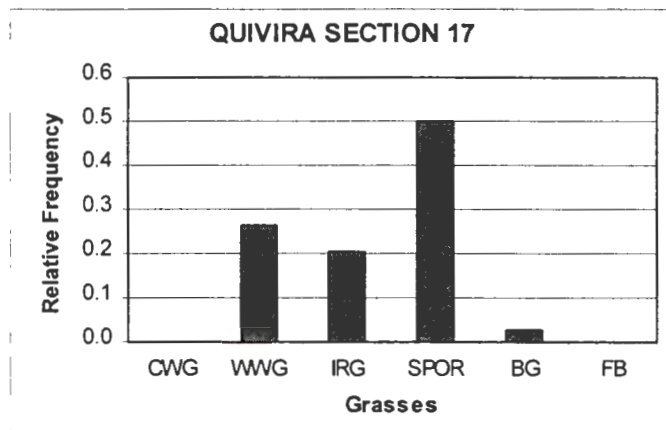


**Table 2. Percent Cover, Section 17 Transects**

The average percent perennial cover from the 8 transects in Section 17 is 8.5%. The majority of the Section 17 prior reclamation site consisted of large areas of bare ground with small amounts of grass and Kochia. The overall range condition was poor. A substantial portion of the site is sloping to the south and some erosion was evident in the form of rills and gullies.

The relative frequency of grass types sampled in all 8 transects are shown in Figure 1 below. In this graph, CWG = Crested Wheatgrass (*Agropyron cristatum*); WWG = Western Wheatgrass (*Agropyron smithii*); IRG = Indian Ricegrass (*Oryzopsis hymenoides*); SPOR = Sporobolus, either Sand Dropseed (*S. cryptandrus*) or Alkali Sacaton (*S. airoides*); BG = Blue Gramma (*Bouteloua gracilis*); and FB = Foxtail Barley (*Hordeum jubatum*).

Percent cover of non-grass perennials can be determined from the table by subtracting the grass percent cover from the perennial percent cover. As can be seen, there were no non-grass perennial plants sampled along the transects. However, in the southwest portion of the site, there were stands of Tamarisk and Russian Olive. Some Rubber Rabbitbrush also occurred at the southern portion of the site.



**Figure 1. Relative Frequency of Grass Types, Section 17**

### SECTION 19

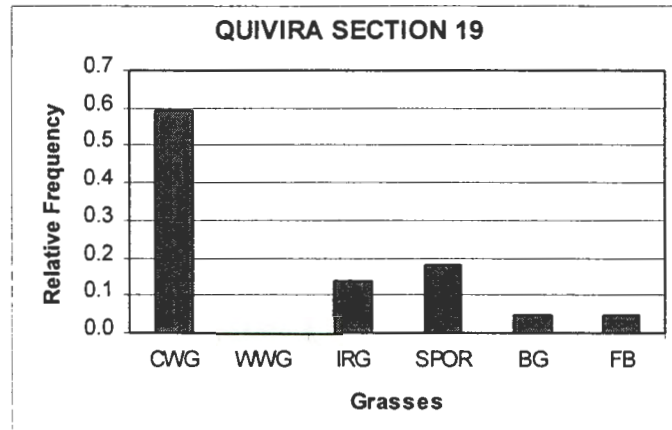
Seven transects were run at Section 19. The results are summarized in Table 3 below.

COVER TYPE	TRNS 1	TRNS 2	TRNS 3	TRNS 4	TRNS 5	TRNS 6	TRNS 7	AVG	STD DEV
GRASS & FORB	20	8	18	12	16	12	6	13.1	5.1
PERENNIAL	20	8	18	12	16	14	6	13.4	5.1
ANNUAL	0	12	0	0	0	0	0	1.7	4.5
LITTER	22	44	28	26	24	26	18	26.9	8.2
BARE GROUND	58	36	54	62	60	60	76	58.0	11.9

**Table 3. Percent Cover, Section 19 Transects**

The average percent perennial cover from the 7 transects in Section 19 is 13.4 % (12.9% being grasses), just at the minimum for release, with a standard deviation of 5.1%. The site overall looked good and fairly uniform in terms of cover, though there were some areas with less cover.

The relative frequency of grass types sampled in all 8 transects are shown in Figure 2 below. Five different grass species were encountered at the site with crested wheatgrass being the dominant species. Rubber rabbitbrush, four-wing saltbush and purple aster were observed at the site (rubber rabbitbrush was sampled once in Transect 6). There was a low occurrence of kochia and russian thistle at the site.



**Figure 2. Relative Frequency of Grass Types, Section 19**

## SECTION 22

Seven transects were run at Section 22. The results are summarized below in Table 4.

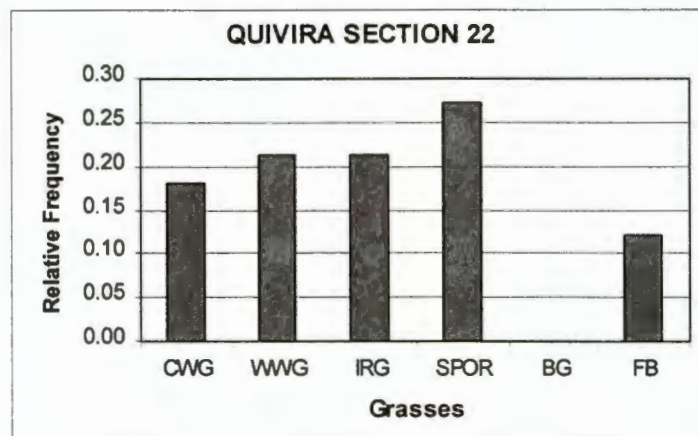
COVER TYPE	TRNS 1	TRNS 2	TRNS 3	TRNS 4	TRNS 5	TRNS 6	TRNS 7	AVG	STD DEV
GRASS & FORB	6	8	8	12	14	18	14	11.4	4.3
PERENNIAL	6	8	8	12	14	34	20	14.6	9.8
ANNUAL	6	20	8	8	2	6	0	6.9	6.5
LITTER	30	34	30	34	32	14	32	29.4	7.0
BARE GROUND	58	38	54	46	52	46	48	48.9	6.5

**Table 4. Percent Cover, Section 22 Transects**



The relative frequency of grass types sampled in all 7 transects are shown in Figure 3 below. Five different grass species were encountered at the site fairly uniformly distributed between the species. Rubber rabbitbrush, four-wing saltbush and purple aster were observed at the site.

This average perennial cover from the 7 transects is 14.6%. However, the average was skewed to the right because Transect 6, had a perennial cover of 34% due to a large clump of four-wing saltbush, (without Transect 6, the average would be 11.3%). Based on the visual inspection of Section 22, Transect 6 was not representative of Section 22 which is generally in poor condition with some areas of good perennial growth.



**Figure 3. Relative Frequency of Grass Types, Section 22**

### SECTION 24

Seven transects were run at Section 24. The results are summarized below in Table 5.

COVER TYPE	TRNS 1	TRNS 2	TRNS 3	TRNS 4	TRNS 5	TRNS 6	TRNS 7	AVG	STD DEV
GRASS & FORB	12	0	6	18	0	0	2	5.4	7.1
PERENNIAL	12	0	16	18	0	0	2	6.9	8.2
ANNUAL	4	16	0	6	20	14	10	10.0	7.1
LITTER	32	20	30	12	18	48	40	28.6	12.8
BARE GROUND	52	64	54	64	62	38	48	54.6	9.6

**Table 5. Percent Cover, Section 24 Transects.**

The relative frequency of grass types sampled in all 7 transects are shown in Figure 4 below. Only two different grass species were encountered along the transects. Indian ricegrass and sand dropseed were encountered at the site, but crested wheatgrass was the dominant species. Four-wing saltbush and purple aster were also observed at the site.

Section 24 generally had poor perennial cover (average 6.9%) consisting primarily of crested wheatgrass. Kochia and russian thistle were the dominant plants in many areas. The overall range condition was poor.

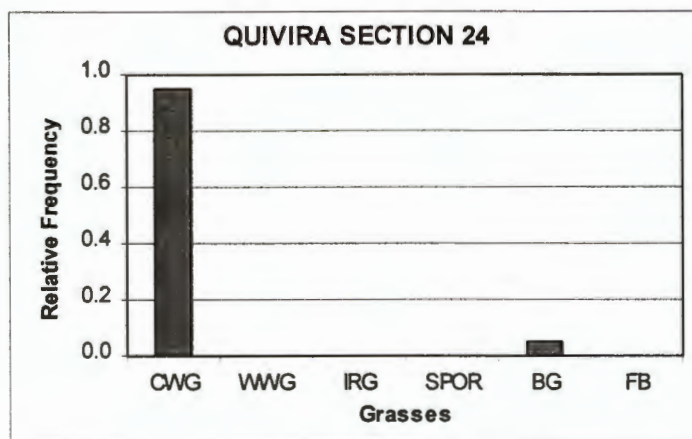


Figure 4. Relative Frequency of Grass Types, Section 24

### SECTION 30

Nine transects were run at Section 30. The results are summarized below in Table 6.

COVER TYPE	TRNS 1	TRNS 2	TRNS 3	TRNS 4	TRNS 5	TRNS 6	TRNS 7	TRNS 8	TRNS 9	AVG	STD DEV
GRASS & FORB	12	14	6	8	26	18	14	18	22	15.3	6.4
PERENNIAL	16	16	6	8	30	18	14	18	30	15.4	7.8
ANNUAL	2	2	8	14	12	12	10	4	0	8.6	4.9
LITTER	10	18	6	16	14	22	24	26	20	15.7	6.4
BARE GROUND	72	64	80	62	44	48	52	52	50	60.3	13.1

Table 6. Percent Cover, Section 30 Transects

The relative frequency of grass types sampled in all 9 transects are shown in Figure 5 below. Five different grass species were encountered at the site with crested wheatgrass being the dominant species. Four-wing saltbush, sage, snakeweed and purple aster were also observed at the site.

Section 30 had an average perennial cover of 15.4%. The visual inspection showed this site to generally be in fair to good range condition with some portions in poor condition.

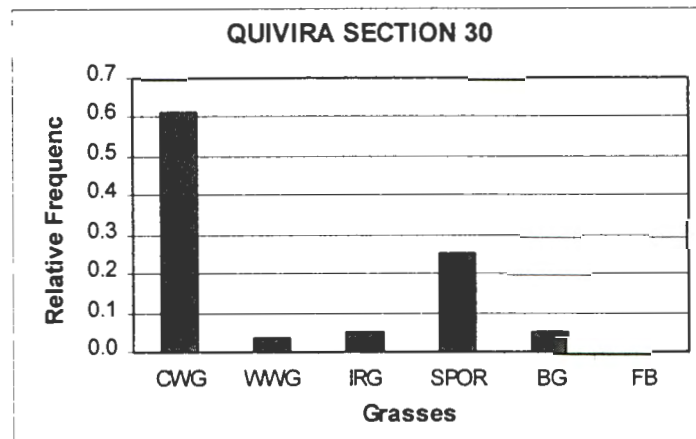


Figure 5. Relative Frequency of Grass Types, Section 30.

### SECTION 30W

Seven transects were run at Section 30W. The results are summarized below in Table 7.

COVER TYPE	TRNS 1	TRNS 2	TRNS 3	TRNS 4	TRNS 5	TRNS 6	TRNS 7	AVG	STD DEV
GRASS & FORB	20	26	10	10	10	14	12	14.6	5.2
PERENNIAL	20	26	10	10	10	14	12	14.6	5.2
ANNUAL	0	0	12	14	10	22	0	8.3	8.0
LITTER	30	14	16	18	10	16	14	16.9	6.3
BARE GROUND	50	60	62	58	70	48	74	60.3	9.6

Table 7. Percent Cover, Section 30W

The relative frequency of grass types sampled in all 7 transects are shown in Figure 6 below. Five different grass species were encountered at the site with crested wheatgrass being the dominant species. Rubber rabbitbrush, salt cedar and purple aster were also observed at the site.

Section 30W had an average perennial cover of 14.6%. The visual inspection showed the range condition of this site to generally be fair to good with some portions in poor condition.

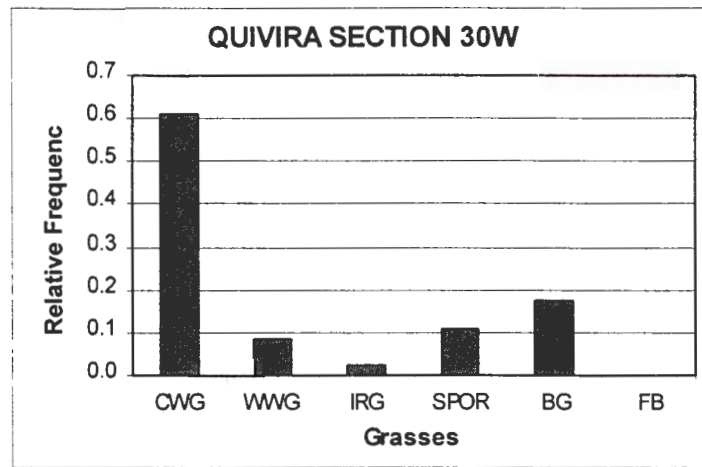


Figure 6. Relative Frequency of Grass Types, Section 30W

### SECTION 33

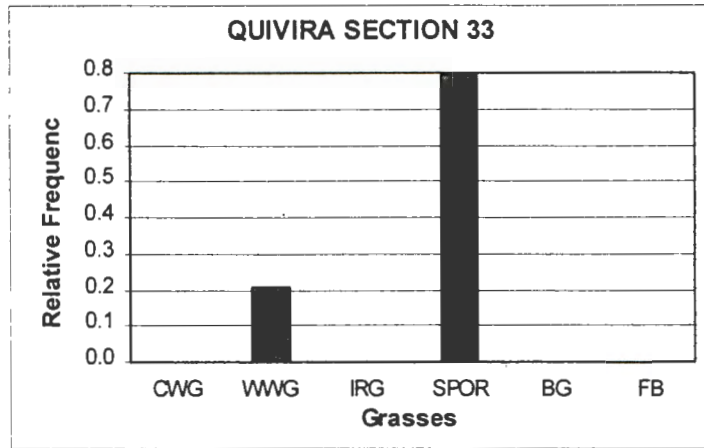
Eight transects were run at Section 33. The results are summarized below in Table 8.

COVER TYPE	TRNS 1	TRNS 2	TRNS 3	TRNS 4	TRNS 5	TRNS 6	TRNS 7	TRNS 8	AVG	STD DEV
GRASS	0	6	10	28	0	12	34	6	12.0	12.6
PERENNIAL	0	6	10	28	0	12	34	6	12.0	12.6
ANNUAL	4	12	8	6	24	12	22	10	12.3	7.2
LITTER	6	30	20	44	24	22	18	44	26.0	13.0
BARE GROUND	90	50	62	22	52	54	26	40	49.5	21.5

Table 8. Percent Cover, Section 33

The relative frequency of grass types sampled in all 8 transects are shown in Figure 7 below. Only two different grass species, western wheatgrass and sand dropseed, were encountered along the transects, though blue grama was also observed. Four-wing saltbush and rubber rabbitbrush were also observed at the site.

The northern portion of Section 33 appeared to be in fair to good condition while the southern portion was in poor condition. The average perennial cover was 12.0% with a standard deviation of 12.6%. Those transects with good perennial cover were found in the northern portion of the site while the transects with inadequate cover were found in the southern portion.



**Figure 7. Relative Frequency of Grass Types, Section 33**

### CONCLUSIONS

None of Quivira's prior reclamation sites can be considered to be in excellent condition. However, some of the sites meet the criteria established for prior reclamation release. All the sites were interseeded by broadcast method in August of 1998 and, if moisture conditions are adequate, this should further improve the condition at all the sites.

Based on the above information, the following prior reclamation sites are recommended for release: Section 30 and Section 30W. The remaining sections, Section 19,17, Section 22, Section 24 and Section 33 are not recommended for release due to inadequate cover and, in some cases, inadequate diversity. Section 17 and the southern portion of Section 33 are in such poor condition that the sites should be reseeded by drill seeding.



## RANGE SITE DESCRIPTION

### Section II E, Technical Guide

A. SITE NO. D36-113-N

Sandy (WP-2)

B. PHYSIOGRAPHIC FEATURES

This site usually occurs on level to gently sloping or undulating topography of upland plains. Slopes average less than 10 percent. Elevations range from about 6,000 feet to just over 7,200 feet.

C. CLIMATIC FEATURES

1. Average annual precipitation varies from about 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold, dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

2. The average frost-free season is about 120 days and extends from approximately mid-May to early or mid-September. Average annual air temperatures are 50° F. or lower, and summer maximums rarely exceed 100° F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70° F. for the period of July and August.

3. Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on a given range site which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm- and cool-season dominants are present.



## D. SOILS

1. The soils of this site are moderately deep to deep, well drained, and may or may not be calcareous throughout. Typically, the surface layer is a sandy loam, fine sandy loam, or loamy fine sand at least 5 or 6 inches thick over sandy loam to clay loam subsoils. Permeability is moderately slow to moderately rapid, and the available water capacity is moderate to high.

The soils of this site are subject to soil blowing.

2. Characteristic soils are:

Telescope loamy fine sand

3. Other soils included are:

Royosa fine sand

## E. POTENTIAL NATURAL PLANT COMMUNITY

1. This site is characterized by both warm- and cool-season grasses, scattered shrubs, half-shrubs, and forbs. Blue grama and western wheatgrass are co-dominants, with Indian ricegrass and dropseed closely associated. Principal shrubs and half-shrubs include fourwing saltbush, winterfat, and sand sagebrush. Rocky Mountain beeplant is often the most noticeable forb. Broom snakeweed is most common in certain wet years and when the plant community deteriorates from its potential.

### 2. Composition of Potential Plant Community

Approximate percentage of total annual herbage production.

Grasses and Grasslike - 75-85%		(Shrubs, half-shrubs, vines and trees)	Forbs - 5-10%	
Western wheatgrass	15-20	Woody - 10-15%		
Blue grama	25-30	Fourwing saltbush)	Perennials	3-8
Indian ricegrass	5-10	Winterfat )	Annuals	1-5
Needleandthread )		Bigelow sagebrush		
Bottlebrush squirreltail)	5-10	Broom snakeweed )		
New Mexico feathergrass )		Rabbitbrush )		
Sand dropseed )		Sand sagebrush )		
Spike dropseed )	10-15	Spineless horsebrush)		
Galleta	1-5			
Ring muhly )				
Sandhill muhly )	3-5			
False buffalograss )				
Threeawns spp. )	1-5			
Black grama	1-5			
Spike muhly	1-3			

### 3. Canopy Cover

Shrubs and half-shrubs - 5%

### 4. Ground Cover (Average Percent of Surface Area)

Grasses, grasslike, forbs	18
Bare ground	69
Surface gravel	1
Surface cobble and stones	0
Litter - percent of area	12
av. depth in cm.	2

## F. TOTAL ANNUAL HERBAGE PRODUCTION (Air-dry, lbs./ac.)

Favorable years - 850 (Average)  
Unfavorable years - 325 (Average)

## G. SITE INTERPRETATIONS

### 1. Grazing

This site is suitable for grazing by most kinds and classes of livestock in all seasons of the year but is poorly suited for continuous year-long grazing if potential natural vegetation is to be maintained. Under such use, cool-season grasses, such as western wheatgrass, Indian ricegrass, and needleandthread, may decline or even disappear. If use is heavy and prolonged, many of the more palatable warm-season species will also decline. The site in a typically deteriorated condition may be characterized by low-vigor, sod-like blue grama and possibly some galleta. Further deterioration is characterized by increasing amounts of bare ground, increases in ring muhly, sandhill muhly, threeawns and rabbitbrush, and by certain annual forbs. Production in these instances may be cut to one-third or less of the potential, and soil blowing may become severe. The site, in certain instances, is subject to invasion by woody species such as pinyon pine and juniper.

### 2. Wood Products

This site has no significant value for wood products.

### 3. Habitat for Wildlife

This range site provides habitat which supports a resident animal community that is characterized by pronghorn antelope, kit fox, badger, desert cottontail, spotted ground squirrel, Ord's kangaroo rat, white-throated woodrat, Botta's pocket gopher, plains pocket mouse, Northern grasshopper mouse, ferruginous hawk, mourning dove, meadowlark, plains spadefoot toad, Eastern fence lizard, plateau whiptail, short-horned lizard and prairie rattlesnake.

Common raven and prairie falcon hunt over the site.

### 4. Hydrologic Interpretations

<u>Soil Series</u>	<u>Hydrologic Groups</u>
Telescope	B
Royosa fine sand	A

Runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

## 5. Recreation and Natural Beauty

This site offers fair potential for hiking, horseback riding, nature observation, photography, camping, and picnicking. It offers good to excellent potential for hunting of pronghorn antelope.

In years of favorable moisture, colorful wildflowers dot the landscape.

## 6. Endangered Plants and Animals

To be added as reliable information becomes available.

## H. OTHER PERTINENT INFORMATION

### 1. Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

<u>Range Condition</u>	<u>Ac/Aum</u>
Excellent (100-76)	3.6-4.7
Good (75-51)	4.5-7.0
Fair (50-26)	6.8-12.0
Poor (25-0)	12.0+

### 2. Relative Quality of Plants for Animal Use 1/

#### (a) Cattle

<u>Primary</u>	<u>Secondary</u>	<u>Low Value</u>
Western wheatgrass	Blue grama	Broom snakeweed
Indian ricegrass	Galleta	Rabbitbrush
Needleandthread	Bigelow sagebrush	Spineless horsebrush
New Mexico feathergrass	Sand dropseed	Sandhill muhly
Winterfat	Threeawns spp.	Ring muhly
Fourwing saltbush	Most perennial forbs	False buffalograss
Black grama		
Bottlebrush squirreltail		

#### (b) Antelope and Sheep

<u>Primary</u>	<u>Secondary</u>	<u>Low Value</u>
Winterfat	Blue grama	Broom snakeweed
Bigelow sagebrush	New Mexico feathergrass	Rabbitbrush
Western wheatgrass	Needleandthread	Sand sagebrush
Indian ricegrass	Threeawns spp.	Sandhill muhly
Fourwing saltbush	Dropseeds	Spineless horsebrush
Most perennial forbs		

I. IDENTIFICATION AND AUTHORIZATION

1. USDA SCS  
Albuquerque, NM  
MLRA 36
2. Field Offices:  
Reserve  
Magdalena/Quemado
3. Field Office Sample Location
4. Approved:

*D. J. Hester* *2/15/80*  
State Range Conservationist Date

*Durwood E. Ball* *3/27/80*  
WTSC Range Conservationist Date

Site Name Quinera Data Sheet No. 1 of 9

Sec 30  
Rng       
Twp     

Date 10-2-98 Location McKinley County

Line Length 50' Investigators R-P/H.S./sm-mm P.L. Q

GRID 42 0 31°

Photo #1

1 BG	21 BG	41 BG		
2 CWG	22 BG	42 BG		
3 BG	23 CWG	43 BG		
4 BG	24 BG	44 BG		
5 BG	25 BG	45 BG		
6 BG	26 BG	46 L		
7 BG	27 BG	47 Sporobolus		
8 L	28 BG	48 BG		
9 BG	29 BG	49 BG		
10 L	30 BG	50 CWG		
11 BG	31 BBST			
12 BG	32 BG			
13 BG	33 BG			
14 CWG	34 BG			
15 BG	35 Salsnd			
16 Salsnd	36 BG			
17 BG	37 BG			
18 BG	38 L			
19 BG	39 Kochia			
20 L	40 BG			

Total Rock (Rck) %       
Total Bare Ground (BG)% 72%  
Total Plant Cover % 16 per 2 annual  
Total Litter (L)% 10

### Plants on Site

Squirrel tail bottle brush  
Crested wheat grass

Sporobolus  
4 wing

Salsnd  
SAGE  
Bl...

Kochia  
Russian Thistle



Site Name Quinera Data Sheet No. 2 of 9

Date 10.2.98 Location McKinley County

Sec 30  
Rng \_\_\_\_\_  
Twp \_\_\_\_\_

Line Length 50' Investigators R.P./H.S./SM-MND P.L. 20

GRID 51 @ 45°

1 L	21 CWG	41 SM/Wd		
2 BG	22 L	42 BG		
3 BG	23 CWG	43 BG		
4 BG	24 B. Gramma	44 BG		
5 BG	25 BG	45 BG		
6 BG	26 BG	46 BG		
7 BG	27 BG	47 L		
8 BG	28 CWG	48 Kochia		
9 BG	29 B. Gramma	49 BG		
10 BG	30 CWG	50 L		
11 L	31 L			
12 BG	32 BG			
13 BG	33 BG			
14 BG	34 BG			
15 BG	35 L			
16 BG	36 L			
17 CWG	37 BG			
18 BG	38 BG			
19 BG	39 BG			
20 L	40 BG			

Total Rock (Rck) % \_\_\_\_\_  
Total Bare Ground (BG) % 64  
Total Plant Cover % 16 per 2 annual  
Total Litter (L) % 18

Site Name Quinera Data Sheet No. 3 of 9

Date 10.2.98 Location Mekinley County

Sec 30  
Rng \_\_\_\_\_  
Twp \_\_\_\_\_

Line Length 50' Investigators RP/H.S./SM - MMS PL Q

GRID 73 @ 358°

1 Kochia	21 BG	41 L		
2 BG	22 BG	42 B		
3 BG	23 BG	43 B		
4 Kochia	24 BG	44 B		
5 BG	25 BG	45 B		
6 BG	26 BG	46 B		
7 BG	27 BG	47 B		
8 BG	28 B	48 L		
9 BG	29 B	49 B		
10 Kochia	30 B	50 B		
11 Kochia	31 B			
12 BG	32 B			
13 BG	33 B			
14 BG	34 WWG			
15 BG	35 WWG			
16 BG	36 B			
17 BG	37 B			
18 BG	38 L			
19 BG	39 B			
20 BG	40 B CW			

Total Rock (Rck) % - 0 -  
Total Bare Ground (BG) % 80%  
Total Plant Cover % 16 per 8 annual  
Total Litter (L) % 6%

Kochia 8% (have been doubled)  
WWG 4%  
GWG 2%  
✓

B = BG  
WWG = Western whorgrass  
CW = Crested whorgrass

Site Name Quinera Data Sheet No. 4 of 9

Date 10.2.98 Location McKinley County

Sec 30  
Rng \_\_\_\_\_  
Twp \_\_\_\_\_

Line Length 50' Investigators R.P/H.S./SM-MMO PL-Q

GRID 119 0 20'

Photo 2 taken between  
6119 + 673

1. 920r	21 L	41 L		
2 920r	22 B	42 B		
3 B	23 B	43 B		
4 B	24 Kochia	44 Kochia		
5 B	25 B	45 B		
6 B CWW	26 Kochia	46 B		
7 CWW	27 B	47 Kochia		
8 B	28 B	48 L		
9 B	29 B	49 B		
10 B	30 B	50 Kochia		
11 L	31 B			
12 B	32 B			
13 B	33 B			
14 B	34 L			
15 L	35 Kochia			
16 B	36 L			
17 B	37 L			
18 B	38 B			
19 B	39 B			
20 B Thistle	40 B			

Total Rock (Rck) % \_\_\_\_\_  
Total Bare Ground (BG) % 62  
Total Plant Cover % 8 per 14 annual  
Total Litter (L) % 16

Sp = 4%  
CWG = 4%  
K = 10%

Sp = Sand Prossed  
CW = Crested Wheatgrass  
K = Kochia  
B = Bare Ground



Site Name

Quinera

Data Sheet No.

5 of 9

Sec

30

Rng

Twp

Date 10-2-98

Location

McKinley County

Line Length

50'

Investigators

R.P./H.S./SM-MMO

P.L.-Q

GRID 123 @ 184°

1 BG	21 Kochia	41 BG		
2 P. Aster	22 L	42 BG		
3 BG	23 Kochia	43 BG		
4 BG	24 BG	44 BG		
5 L	25 CWG	45 L		
6 CWG	26 BG	46 BG		
7 CWG	27 BG	47 BG		
8 L	28 Sporobolus	48 CWG		
9 BG	29 CWG	49 L		
10 P. Aster	30 BG	50 CWG		
11 Kochia	31 CWG			
12 L	32 CWG			
13 Kochia	33 BG			
14 BG	34 BG			
15 BG	35 CWG			
16 BG	36 SAGE			
17 BG	37 SAGE			
18 BG	38 L			
19 Kochia	39 BG			
20 Kochia	40 CWG			

Total Rock (Rck) %

Total Bare Ground (BG) % 44

Total Plant Cover % 30 per 12 annual 22 grass

Total Litter (L) % 14

CWG =

Site Name

Quinera

Data Sheet No.

6 of 9

Sec

30

Date

10-2-98

Location

Makinley County

Rng

Twp

Line Length

50'

Investigators

R.P./H.S./SM-unoP.L.-QG40 131 @ 160'

1 L	21 L	41 BG		
2 L	22 P. Aster	42 BG		
3 BG	23 BG	43 R Thistle		
4 BG	24 BG	44 BG		
5 BG	25 BG	45 BG		
6 BG	26 P. Aster	46 CWG		
7 BG	27 L	47 P Aster		
8 R. Thistle	28 L	48 CWG		
9 Kochia	29 L	49 BG		
10 L	30 CWG	50 BG		
11 BG	31 BG			
12 BG	32 Fin. Pepperc			
13 BG	33 Kochia			
14 CWG	34 BG			
15 BG	35 Kochia			
16 BG	36 BG			
17 R Thistle	37 L			
18 L	38 I BG			
19 L	39 P. Aster			
20 BG	40 L			

Total Rock (Rck) %

Total Bare Ground (BG)% 78Total Plant Cover % 18 per 12 annual 10 grassTotal Litter (L)% 22

Site Name

Quinera

Data Sheet No.

7 of 9

Sec

30

Date

10.2.98

Location

McKinley County

Rng

Twp

Line Length

50'

Investigators

R.P./H.G./SM-mmp

P.L.-Q

Grid 31 0 160°

1. B	21 CWW	41 B		
2. CWW	22 B	42 B		
3. Kochia	23 B	43 Spor		
4. L	24 BL	44 B		
5. B	25 B	45 B		
6. B	26 L	46 B		
7. Kochia	27 CWW	47 B		
8 B	28 BL	48 Spor		
9 L	29 IRG	49 Spor		
10 L	30 L	50 B		
11 L	31 L			
12 B	32 B			
13 B	33 L			
14 Kochia	34 B			
15 B	35 B			
16 B	36 L			
17 L	37 B			
18 B	38 B Thistle			
19 B	39 B Thistle			
20 B	40 B			

Total Rock (Rck) %

Total Bare Ground (BG) % 52

Total Plant Cover % 14 per 10 annual

Total Litter (L) % 24



Site Name

Quinara

Data Sheet No.

8 of 9

Sec

30

Date

10.2.98

Location

McKinley

Rng

Twp

Line Length

50'

Investigators

R.P/H.S/SM-MMD PL-Q

Grid 137 ① 81°

1. L	21 Sporobolus	41 BG		
2. P. Aster	22 Sporobolus	42 BG		
3. BG	23 CWG	43 BG		
4. BG	24 L	44 L		
5. BG	25 BG	45 Kochia		
6. BG	26 CWG	46 Kochia		
7. BG	27 P. Aster	47 L		
8. BG	28 L	48 BG		
9. BG	29 L	49 BG		
10. BG	30 BG	50 BG		
11. BG	31 BG			
12. BG	32 BG			
13. L	33 CWG			
14. L	34 BG			
15. BG	35 L			
16. L	36 BG			
17. BG	37 BG			
18. Sporobolus	38 Sporobolus			
19. L	39 BG			
20. L	40 L			

Total Rock (Rck) %

Total Bare Ground (BG) % 52

Total Plant Cover % 18 per 1 annual 14 grass

Total Litter (L) % 26

Site Name Quinera Data Sheet No. 9 of 9

Sec 30  
Rng \_\_\_\_\_  
Twp \_\_\_\_\_

Date 10-2-98 Location McKinley County

Line Length 50' Investigators RH/HG/sm - MMO P.L. - Q

GR10 A5 ① 11A'

Photo #3 taken on hill S of this spot

1. Snkwd	21 BG	41 Sporobolus		
2. L	22 L	42 L		
3. Snkwd	23 BG	43 L		
4 CWG	24 L	44 BG		
5 BG	25 BG	45 SAGE		
6 CWG	26 BG	46 A-wing		
7 BG	27 BG	47 BG		
8 BG	28 BG	48 BG		
9 CWG	29 BG	49 Sporobolus		
10 BG	30 L	50 Sporobolus		
11 BG	31 BG			
12 BG	32 BG			
13 BG	33 Sporobolus			
14 L	34 L			
15 CWG	35 BG			
16 BG	36 L			
17 BG	37 BG			
18 L	38 BG			
19 B Gramma	39 Sporobolus			
20 BG	40 Sporobolus			

Hill S of transect  
v. 1 AC in size looks terrible

Total Rock (Rck) % \_\_\_\_\_  
Total Bare Ground (BG)% 50  
Total Plant Cover % 30 per 22 grass  
Total Litter (L)% 20

Snkwd = Snakeweed

# Section 30

CELL	DIRECTION
X 26 Roadside	10
-73✓	358
- 119	20
- 114	3
- 51✓	45
- 131✓	160
- 123✓	184
2 OUT OF BOUNDARY	37
44	197
8 ROADSIDE	2
6	305
- 137✓	81
77	284
125	292
7	208
9	123
17	10
32	97
98	174
75	151
→ 42✓	31
36	22
include → 45	114
129	216
118	168
12	20
50	289
135	210
113	106
109	330
117	205
62	310
125	200

Eliminated  
Log Swath of veg wiped out by (direction)  
pipeline on SE corner

# PRIOR RECLAMATION SITE SUMMARY

## UNITED NUCLEAR CORP.

Contact: Juan Velasquez  
1720 Louisiana NE  
262-1800

The 3 UNC sites had a variance until the end of 1998. All that is said is that a determination will be made by MMD whether the release criteria are met.

*Variance  
Till 9/98*  
**Anna Lee Mine (T14N R9W 28):** Total area addressed by Mining Act is 1/10 of an acre. Reseeded in fall, 1994. Inspected July 13, 1995. No perennials growing. Recommendations were to cover slab and reseed. Variance requested by UNC in June, 1997.

**John Bill Mine and Sandstone Mine (T14N R9W 34):** Total area is approximately 8 acres in two areas. Reseeded in fall, 1994. Inspected July 13, 1995. Vegetation was sparse. Steel scrap and buildings found at sites, presumably at request of leasee. Recommendations were to cover slab and submit a letter from leasee requesting that buildings and scrap be left on site. Variance requested by UNC in June, 1997.


## HRI

Contact: Mark Pelizza  
972-387-7777

**Churchrock ISL SEC 17:** Disturbed area is approximately 16 acres. HRI purchased property from UNC who did some reclamation work in 1990 or 1991 (removed head frames and most buildings, recontoured ore pads and covered shafts and vents). This is one of HRI's insitue leaching sites. Inspected on August 29, 1995. There were 5 ponds remaining up to this time. HRI agreed to reclaim these ponds in 1997.

## NEWMONT GOLD (Santa Fe Pacific Gold)

Contact: Rick River  
Idarado Mining Co.  
P.O. Box 584  
Ouray, CO 81427  
(970) 325-4482  
(970) 325-4853



**Poison Canyon Mine (T13N R9W 19):** The only SFPG prior rec site not released or that falls under the act. Site is 30 acres. MMD letter dated July 24, 1996 gives a 5 year variance from the 1995 date. The letter states that at the end of the 5 year variance "the Director will consider whether to extend this variance". Originally reclaimed in 1987 with additional work in 1993 and 1994. Not released due to lack of diversity and poor establishment of grasses and forbes. SFPG purchased by Newmont (303-837-5069). Fence surrounds site. Topsoil depth presumably 4 inches.

## **QUIVIRA**

MMD letter dated April 21, 1997 approving the variance request indicated only that sites will be inspected in the summer of 1997 and that those sites not released would be reinspected during the summer of 1998. MMD letter dated October 31, 1997 says that they must apply for another variance. Quivira response states that this was discussed with Holland and that the existing variance is good until end of 1998. No other correspondence on the matter was found.

**Section 17 (T14N R9W):** 22 acres

**Section 19 (T14N R9W):** 19 acres

**Section 22 (T14N R10W):** 37 acres

**Section 24 (T14N R10W):** 26 acres

**Section 30 (T14N R9W):** 44 acres

**Section 30W (T14N R9W):** 26 acres

**Section 33 (T14N R9W):** 28 acres

Inspected by MMD in 1995, 1997 and 1998.





NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

MINING AND MINERALS DIVISION  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505  
(505) 827-5970

Jennifer A. Salisbury  
CABINET SECRETARY

Kathleen A. Garland  
DIVISION DIRECTOR

October 31, 1997

Peter Luthiger  
Supervisor, Radiation Safety  
and Environmental Affairs  
Quivira Mining Company  
P.O. Box 218  
Grants, NM 87020

**Re: Status of Prior Reclamation Sites Sections 17, 19, 22, 23, 24, 30, 30W and 33**

Dear Mr. Luthiger:

The letter addresses the current status of Quivira's prior reclamation sites identified above. Quivira's approved variance requested that the regulatory deadline of September 30, 1995, for MMD's determination, be extended to allow for further evaluation of revegetation success. The next evaluation of the prior reclamation sites was planned for the 1997 growing season. This evaluation was conducted by Robyn Tierney and Doug Romig from MMD's Coal Mine Reclamation Bureau on October 7, 1997.

We have determined that prior reclamation sites Sections 17, 19, 22, 23, 24, 30, 30W and 33 do not qualify for prior reclamation release, while Section 23 does qualify for release. I have summarized our findings and recommendations below and have attached a copy of the field data collected during the evaluation.

**Findings and Recommendations:**

Section 23 may be released based on the fact that this section had a diverse species composition, including several native grass species that were not in the original seed mix; shrub establishment including winterfat, sage and fourwing saltbush was excellent; and vegetation cover was 25% with no crested wheatgrass.

Grazing is a problem on Section 17. This area lacked an acceptable vegetation cover for reclamation release and also contained major rill and gully erosion. We recommend the cows be removed at this time, because of the lack of adequate cover. There is very little vegetation to support this type of use on this section. However, controlled grazing in the spring and fall may help to reduce competition from the crested wheatgrass, russian thistle and kochia.

A significantly lower species diversity from that observed in 1995, was observed on all of the mines evaluated with the exception of the Section 23 mine. Also of concern is the apparent loss



of many of the shrub seedlings such as winterfat and fourwing saltbush; and the native perennial grasses such as blue grama, alkali sacaton, sand dropseed, sideoats grama, and galleta grass previously observed during the 1995 inspection. These species have largely been replaced by crested wheatgrass. Crested wheatgrass acts much like cheatgrass in that it aggressively competes for early spring and fall moisture. The preponderance of weeds including russian thistle and kochia poses a problem to satisfactory revegetation. One way of overcoming this problem is by burning, reseeding or interseeding when these weeds persist for more than 2-3 years on reclaimed lands.

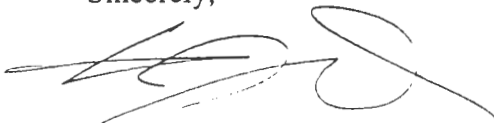
Finally, this survey was concluded in the fall of the fourth growing season for all of the Quivira mines. In spite of the excellent precipitation received in the Grants/Milan area this year, these results are disappointing. Our conclusion is that the sites are not likely to improve over time.

**Conclusion:**

Since the variance has expired for the extension of MMD's determination for these sites, Quivira must apply for another variance or bring these sites under a Mining Act permit. If you choose to request another variance MMD will require a plan to address the reclamation on these sites and the establishment of another time frame to perform a follow-up evaluation. We would also advise that prior to submittal of the plan you discuss proposed approaches with staff who will be able to provide you with options for addressing the reclamation.

Please let us know how Quivira would like to approach this decision and how we can assist you in making it. I can be contacted directly at 505/827-5974.

Sincerely,



Kathleen Garland  
Director  
Mining and Minerals Division

attachments

cc: Holland Shepherd, MARB  
Robyn Tierney, MMD  
Doug Romig, MMD

# Percent Relative Cover at Quivira Mines, October 1997

First hit data collected by Robyn Tierney and Douglas Romig (on October 7, 1997) from each mine, based on averages of four 15 meter point intercept transects. Numbers in parentheses are averages from the MMD surveys conducted in 1995.

Mine No.	Bareground	Litter	Kochia	Salsola	Crested Wheatgrass	Native/Other Species <sup>1</sup>	Rock
17	.38 (.53)	.10 (.11)	.33	.10	0	.08 (0)	.01
19	.47 (-) <sup>2</sup>	.17 (-)	.07	.18	.11	0 (0)	0
22	.37 (.49)	.13 (.16)	.15	.13	.07	.15 (0)	0
23 <sup>3</sup>	.23 (.29)	.10 (0)	.42	0	0	.25 (0)	0
24	.23 (.53)	.12 (.06)	.28	.20	.16	.01 (.03)	0
30	.30 (.55)	.11 (.11)	.13	.17	.27	.02 (.06)	0
33	.40 (.35)	.13 (.08)	.31	.09	.07	0 (.03)	0
30W	.35 (.41)	.07 (.08)	.29	.09	.11	.10 (.08)	0

<sup>1</sup> Includes both introduced and native annual, biennial, and perennial species

<sup>2</sup> Data from 1995 inspection not available

<sup>3</sup> Formerly, Homestake's Section 2C mine. Possible candidate for release

Codes for vegetation recorded on transects at Quivira's mines  
 Inspected by Robyn Tierney and Doug Romig on October 7, 1997

	Common Name	Scientific Name	Code
bg	bare ground		1
litter			2
kocr	ragweed	<i>Kochia scoparia</i> (L.) Schrad.	3
agsm	western wheatgrass	<i>Agropyron smithii</i> Rydb.	4
saka	russian thistle	<i>Salsola kali</i> (L.)	5
spai	alkali sacaton	<i>Sporobulus airoides</i> (Torr.) Torr.	6
atca	fourwing saltbush	<i>Atriplex canescens</i> (Pursh) Nutt.	7
sihy	bottlebrush squirreltail	<i>Sitanion hystrix</i> (Nutt.) J.G. Sm.	8
hija	galleta	<i>Hillaria jamesii</i> (Torr.) Benth.	9
agcr	crested wheatgrass	<i>Agropyron cristatum</i> (L.) Gaertn.	10
muhl	Muhlenbergia species	<i>Muhlenbergia</i> sp.	11
bogr	blue grama	<i>Bouteloua gracilis</i> (Willd. ex Kunth) Lag. ex Griffiths	12
mabi	purple aster	<i>Macarantthera bigelovii</i> (Gray) Greene	13
orhy	indian ricegrass	<i>Oryzopsis hymenoides</i> (Roemer & J.A. Schultes) Ricker ex Piper	14
depu	yellow mustard	<i>Descurainia pinnata</i> (Walt.) Britt.	15
yelc	yellow clover	<i>Melilotus officinalis</i> (L.) Lam.	16
spcr	sand dropseed	<i>Sporobulus cryptandrus</i> (Torr.) Gray	17
arfr	fringed sage	<i>Artemisia frigida</i> Willd.	18
rock			19
grsq	curly cup gumweed	<i>Grindelia squarosa</i> (Pursh) Dunal	20
crpt	cryptogram		21
gusa	snakeweed	<i>Gutierrezia sarothrae</i> (Pursh) Britt. & Rusby	22

MeterNo.	MineNo.	Transect	first	firstcode	second	seccode	third	thirdcode
1	33	1	bg	1				
2	33	1	litter	2				
3	33	1	bg	1				
4	33	1	kocr	3	litter	2		
5	33	1	kocr	3	bg	1		
6	33	1	agsm	4	bg	1		
7	33	1	saka	5	bg	1		
8	33	1	bg	1				
9	33	1	litter	2				
10	33	1	kocr	3	litter	2		
11	33	1	kocr	3	litter	2		
12	33	1	bg	1				
13	33	1	agsm	4	litter	2		
14	33	1	kocr	3	agsm	4	litter	2
15	33	1	bg	1				
1	33	2	kocr	3	bg	1		
2	33	2	bg	1				
3	33	2	saka	5	bg	1		
4	33	2	kocr	3	litter	2		
5	33	2	bg	1				
6	33	2	bg	1				
7	33	2	bg	1				
8	33	2	kocr	3	bg	1		
9	33	2	bg	1				
10	33	2	saka	5	bg	1		
11	33	2	bg	1				
12	33	2	kocr	3	bg	1		
13	33	2	kocr	3	bg	1		
14	33	2	bg	1				
15	33	2	kocr	3	bg	1		
1	33	3	bg	1				
2	33	3	bg	1				
3	33	3	kocr	3	bg	1		
4	33	3	litter	2				
5	33	3	kocr	3	bg	1		
6	33	3	kocr	3	bg	1		
7	33	3	bg	1				
8	33	3	litter	2				
9	33	3	bg	1				
10	33	3	bg	1				
11	33	3	bg	1				
12	33	3	bg	1				
13	33	3	bg	1				
14	33	3	bg	1				
15	33	3	bg	1				
1	33	4	spai	6	spai	6		
2	33	4	mabi	13	bg	1		
3	33	4	mabi	13	bg	1		
4	33	4	agcr	10	agcr	10		
5	33	4	agsm	4	agsm	4		
6	33	4	agsm	4	litter	2		
7	33	4	agsm	4	litter	2		
8	33	4	litter	2				
9	33	4	agsm	4	agsm	4		
10	33	4	litter	2				

11	33	4 bg	1				
12	33	4 agsm	4	agsm	4		
13	33	4 agsm	4	litter	2		
14	33	4 agsm	4	agsm	4		
15	33	4 bg	1				
1	19	1 saka	5	litter	2		
2	19	1 bg	1				
3	19	1 sihy	8	litter	2		
4	19	1 agcr	10	bg	1		
5	19	1 bg	1				
6	19	1 litter	2				
7	19	1 kocr	3	litter	2		
8	19	1 bg	1				
9	19	1 litter	2				
10	19	1 bg	1				
11	19	1 litter	2				
12	19	1 mabi	13	litter	2		
13	19	1 bg	1				
14	19	1 litter	2				
15	19	1 bg	1				
1	19	2 spai	6	bg	1		
2	19	2 bg	1				
3	19	2 yelclover	16	bg	1		
4	19	2 bg	1				
5	19	2 bg	1				
6	19	2 bg	1				
7	19	2 agcr	10	yelclover	16	bg	1
8	19	2 spcr	17	bg	1		
9	19	2 bg	1				
10	19	2 bg	1				
11	19	2 yelclover	16	bg	1	bg	1
12	19	2 spai	6				
13	19	2 litter	2				
14	19	2 bg	1				
15	19	2 litter	2				
1	19	3 bg	1				
2	19	3 bg	1				
3	19	3 yelclover	16	bg	1		
4	19	3 bg	1				
5	19	3 saka	5	bg	1		
6	19	3 saka	5	yelclover	16	bg	1
7	19	3 bg	1				
8	19	3 bg	1				
9	19	3 bg	1				
10	19	3 saka	5	bg	1		
11	19	3 saka	5	bg	1		
12	19	3 bg	1				
13	19	3 saka	5	bg	1		
14	19	3 bg	1				
15	19	3 bg	1				
1	19	4 litter	2				
2	19	4 bg	1				
3	19	4 agcr	10	bg	1		
4	19	4 kocr	3	bg	1		
5	19	4 mabi	13	bg	1		
6	19	4 agcr	10	yelclover	16	litter	2

7	19	4 agcr	10	agcr	10
8	19	4 bg	1		
9	19	4 bg	1		
10	19	4 litter	2		
11	19	4 bg	1		
12	19	4 bg	1		
13	19	4 saka	5	bg	1
14	19	4 bg	1		
15	19	4 saka	5	bg	1
1	17	1 kocr	3	bg	1
2	17	1 bg	1		
3	17	1 bg	1		
4	17	1 saka	5	bg	1
5	17	1 rock	19		
6	17	1 kocr	3	bg	1
7	17	1 kocr	3	litter	2
8	17	1 kocr	3	litter	2
9	17	1 litter	2		
10	17	1 saka	5	bg	1
11	17	1 bg	1		
12	17	1 kocr	3	bg	1
13	17	1 bg	1		
14	17	1 bg	1		
15	17	1 bg	1		
1	17	2 litter	2		
2	17	2 bng	12	bg	1
3	17	2 sihy	8	litter	2
4	17	2 kocr	3	litter	2
5	17	2 kocr	3	bg	1
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8	17	2 kocr	3	litter	2
9	17	2 kocr	3	litter	2
10	17	2 bg	1		
11	17	2 bg	1		
12	17	2 kocr	3	bg	1
13	17	2 saka	5	litter	2
14	17	2 bg	1		
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4	17	3 bg	1		
5	17	3 kocr	3	litter	2
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7	17	3 bg	1		
8	17	3 bg	1		
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11	17	3 spai	6	litter	2
12	17	3 litter	2		
13	17	3 bg	1		
14	17	3 kocr	3	litter	2
15	17	3 litter	2		
1	17	4 kocr	3	litter	2
2	17	4 bg	1		



3	17	4 bg	1			
4	17	4 kocr	3	bg	1	
5	17	4 litter	2			
6	17	4 yelclover	16	bg	1	
7	17	4 bg	1			
8	17	4 bg	1			
9	17	4 bg	1			
10	17	4 kocr	3	bg	1	
11	17	4 bg	1			
12	17	4 bg	1			
13	17	4 bg	1			
14	17	4 yelclover	16	bg	1	
15	17	4 yelclover	16	bg	1	
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4	30	1 saka	5	bg	1	
5	30	1 spai	6	litter	2	
6	30	1 depu	15	litter	2	
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10	30	1 bg	1			
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2	30	3 bg	1			
3	30	3 bg	1			
4	30	3 bg	1			
5	30	3 bg	1			
6	30	3 litter	2			
7	30	3 bg	1			
8	30	3 bg	1			
9	30	3 mabi	13	bg	1	
10	30	3 bg	1			
11	30	3 bg	1			
12	30	3 agcr	10	litter	2	
13	30	3 bogr	12	litter	2	

14	30	3 mabi	13	litter	2
15	30	3 agcr	10	litter	2
1	30	4 gusa	22	bg	1
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3	30	4 bg	1		
4	30	4 sihy	8	litter	2
5	30	4 bg	1		
6	30	4 litter	2		
7	30	4 bg	1		
8	30	4 agcr	10	bg	1
9	30	4 agcr	10	litter	2
10	30	4 saka	5	bg	1
11	30	4 saka	5	saka	5
12	30	4 bg	1		
13	30	4 litter	2		
14	30	4 saka	5	litter	2
15	30	4 bg	1		
1	301	1 bogr	12	bg	1
2	301	1 saka	5	bg	1
3	301	1 litter	2		
4	301	1 bogr	12	bogr	12
5	301	1 bg	1		
6	301	1 bg	1		
7	301	1 kocr	3	bg	1
8	301	1 depu	15	litter	2
9	301	1 agcr	10	agcr	10
10	301	1 agcr	10	bg	1
11	301	1 kocr	3	bg	1
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3	301	2 litter	2		
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6	301	2 bg	1		
7	301	2 kocr	3	litter	2
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9	301	2 bg	1		
10	301	2 kocr	3	litter	2
11	301	2 sihy	8	sihy	8
12	301	2 agcr	10		
13	301	2 bg	1		
14	301	2 bg	1		
15	301	2 kocr	3	bg	1
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2	301	3 kocr	3	bg	1
3	301	3 saka	5	bg	1
4	301	3 kocr	3	bg	1
5	301	3 kocr	3	bg	1
6	301	3 saka	5	litter	2
7	301	3 bg	1		
8	301	3 bg	1		
9	301	3 bg	1		

10	301	3 agcr	10	agcr	10		
11	301	3 bogr	12	bg	1		
12	301	3 mabi	13	litter	2		
13	301	3 spcr	17	bg	1		
14	301	3 bg	1				
15	301	3 bogr	12	bg	1		
1	301	4 kocr	3	litter	2		
2	301	4 kocr	3	litter	2		
3	301	4 spai	6	bg	1		
4	301	4 bg	1				
5	301	4 kocr	3	bg	1		
6	301	4 kocr	3	litter	2		
7	301	4 kocr	3	bg	1		
8	301	4 bg	1				
9	301	4 kocr	3	bg	1		
10	301	4 kocr	3	bg	1		
11	301	4 bg	1				
12	301	4 bg	1				
13	301	4 bg	1				
14	301	4 bg	1				
15	301	4 kocr	3	litter	2		
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2	24	1 bg	1				
3	24	1 saka	5	bg	1		
4	24	1 kocr	3	bg	1		
5	24	1 kocr	3	bg	1		
6	24	1 bg	1				
7	24	1 bg	1				
8	24	1 saka	5	bg	1		
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10	24	1 agcr	10	agcr	10		
11	24	1 saka	5	bg	1		
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1	24	2 bg	1				
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15	24	2 agcr	10	litter	2		
1	24	3 agsm	4	litter	2		
2	24	3 litter	2				
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8	24	4 kocr	3	bg	1		
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12	24	4 bg	1				
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6	22	1 bg	1				
7	22	1 bg	1				
8	22	1 saka	5	bg	1		
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12	22	1 orhy	14	bg	1		
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14	22	1 agsm	4	bg	1		
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4	22	2 agsm	4	litter	2		
5	22	2 agsm	4	bg	1		
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7	22	2 litter	2				
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11	22	2 bg	1				
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14	22	2 bg	1				
15	22	2 bg	1				
1	22	3 bg	1				

2	22	3 litter	2			
3	22	3 bg	1			
4	22	3 litter	2			
5	22	3 orhy	14	bg	1	
6	22	3 litter	2			
7	22	3 kocr	3			
8	22	3 bg	1			
9	22	3 bg	1			
10	22	3 bg	1			
11	22	3 bg	1			
12	22	3 saka	5	bg	1	
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14	22	3 bg	1			
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2	22	4 saka	5	bg	1	
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7	22	4 bg	1			
8	22	4 kocr	3	bg	1	
9	22	4 kocr	3	litter	2	
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11	22	4 agcr	10	litter	2	
12	22	4 agsm	4	litter	2	
13	22	4 atca	7	agcr	10	litter 2
14	22	4 agsm	4	litter	2	
15	22	4 agsm	4	litter	2	
1	23	1 bogr	12	bogr	12	
2	23	1 r.uhi	11	muhl	11	
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15	23	1 kocr	3	litter	2	
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12	23	2 bg	1			

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15	23	2 litter	2		
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2	23	3 agsm	4	litter	2
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11	23	3 agsm	4	bg	1
12	23	3 bg	1		
13	23	3 bg	1		
14	23	3 bg	1		
15	23	3 bg	1		
1	23	4 spai	6	bg	1
2	23	4 kocr	3	litter	2
3	23	4 litter	2		
4	23	4 kocr	3	bg	1
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8	23	4 kocr	3	bg	1
9	23	4 bg	1		
10	23	4 bg	1		
11	23	4 kocr	3	kocr	3
12	23	4 kocr	3	litter	2
13	23	4 litter	2		
14	23	4 kocr	3	litter	2
15	23	4 kocr	3	bg	1



# **QUIVIRA MINING COMPANY**

POST OFFICE BOX 218 • GRANTS, NEW MEXICO 87020

August 18, 1997

Certified Mail  
Return Receipt Requested (P 268 360 535)

Mr. Holland Shepherd, Chief  
Mining Act Reclamation Bureau  
Mining and Minerals Division  
Energy Minerals and Natural Resources Department  
2040 South Pacheco  
Santa Fe, NM 87505

Re: **Quivira Mining Company**  
**Prior Reclamation Inspections**

Dear Mr. Shepherd,

Pursuant to the April 21, 1997 letter from Ms. Kathleen Garland, Director of the Mining and Minerals Division (MMD), approving Quivira's prior reclamation varaince request; please accept this letter as Quivira's request for MMD to conduct an inspection of the revegetation success in order to obtain final release at the sites listed below:

Section 17 T14N R9W  
Section 19 T14N R9W  
Section 22 T14N R10W  
Section 23 T14N R10W (previous Homestake mine)  
Section 24 T14N R10W  
Section 30 T14N R9W  
Section 30W T14N R9W  
Section 33 T14N R9W

Quivira requests that these inspections occur prior to the end of August 1997; or very early in September 1997.

If you have any questions, please call me at (505) 287-8851.

Regards,



Peter Luthiger  
Supervisor, Radiation Safety  
and Environmental Affairs

xc: T. Fletcher  
M. Freeman  
file



NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

MINING AND MINERALS DIVISION  
2040 South Pacheco Street  
Santa Fe, New Mexico 87305  
(505) 827-6970

Jennifer A. Salisbury  
CABINET SECRETARY

Kathleen A. Garland  
DIVISION DIRECTOR

April 21, 1997

Mr. Marvin Freeman, Vice President  
Quivira Mining Company  
6305 Waterford Boulevard, Suite 325  
Oklahoma City, OK 73118

**Re: Approval of Variance Request for Prior Reclamation, Sections 17, 19, 22, 24, 30,  
30W and 33, Quivira Mining Company, McKinley County, New Mexico**

Dear Mr. Freeman:

This approval addresses the request for variance submitted by Quivira in a letter dated May 31, 1996; and a letter dated March 31, 1997 indicating that Quivira had completed public notice for the variance. The approval covers the following 7 mining units addressed under the requirements for prior reclamation of Section 510 of the Mining Act Reclamation Rules (Rules):

Section 17 T14N R9W  
Section 19 T14N R9W  
Section 22 T14N R10W  
Section 24 T14N R10W  
Section 30 T14N R9W  
Section 30W T14N R9W  
Section 33 T14N R9W

Quivira's request meets the requirements of Section 1002 of the Rules. MMD also finds that the request meets the requirements of Sections 1004.B.6 and 7 of the Rules.

The following conditions shall apply to the variance:

1. MMD will conduct an inspection of the sites, indicated above, during the late summer of 1997, to determine if conditions are present to meet revegetation criteria. If the results do not meet the release criteria, Quivira will develop and implement the appropriate program to meet the release criteria which may include reseeding and/or interseeding. Any areas that remain unreleased after the summer of 1997 will be reevaluated again during the summer of 1998.

2. If old stope leaching takes place on a prior reclamation site before or after the site is released from prior reclamation, those portions of the site redisturbed for mining will be addressed under an existing mine permit by Quivira.

Please contact me directly or Holland Shepherd of my Division if you have any questions concerning this approval letter.

Sincerely,

A handwritten signature in black ink, appearing to read 'KATHLEEN GARLAND', with a long horizontal line extending to the right.

KATHLEEN GARLAND, Director  
Mining and Minerals Division

cc: John McKay, Permit Coordinator  
Fernando Martinez, Permit Manager Section 35 Mine

# **QUIVIRA MINING COMPANY**

POST OFFICE BOX 218 • GRANTS, NEW MEXICO 87020

March 31, 1997

Mr. Holland Shepherd  
Chief, Mining Act Reclamation Bureau  
Energy, Minerals and Natural Resources Department  
Mining and Minerals Division  
2040 South Pacheco  
Santa Fe, NM 87505



Re: **Quivira Mining Company**  
**Variance Request**  
**Public Notice Requirements**

Dear Mr. Shepherd:

Please accept the following information which demonstrates compliance with the public notice requirements of the Mining Act Rules.

## Rule 9.3.A

Based on several conversations with County Assessor's Office staff in both Cibola County and McKinley County, the necessary information was obtained on all property owners within a ½ mile of areas associated with the variance request. A sample letter and notice is attached. Owners of record who were notified via certified mail on December 2, 1996 are:

Property Owner  
United Nuclear Corporation  
Mr. Jerry Elkins  
Mr. Dave Elkins  
State of New Mexico  
Bureau of Land Management  
Isabel Marquez

## Rule 9.3.B

Based on several conversations with County Assessor's Office staff in both Cibola County and McKinley County, the necessary information was obtained on all municipalities, counties and tribal organizations within a ten mile radius of areas associated with the variance request. Entities meeting this condition and who were notified via certified mail are:

Entity  
McKinley County  
Cibola County  
Navajo Nation

Rule 9.3.C

The public notice, approved by the Mining and Minerals Division, appeared in the *Gallup Independent* on December 12, 1996, in both english and spanish. The notice appeared in the legal section as well as within the local section of the newspaper. The pertinent sections of the December 12, 1996 edition of the *Gallup Independent* as well as the affidavit of publication are attached.

Rule 9.3.D

The public notice, in both english and spanish, was posted in four (4) publicly accessible locations in the vicinity of the proposed permit area. As a result of the entrance to the mining operation not being accessible to the public due to locked gates, posting at the entrance to the mine was not performed. Listed below are the public places where the notice was posted.

Posting Location  
Post Office - Grants, NM  
Post Office - Milan, NM  
Post Office - Prewitt, NM  
Post Office - Thoreau, NM

Rule 9.3.E

As a result of Quivira holding the mineral leases on the areas associated with the variance, no notification was necessary.

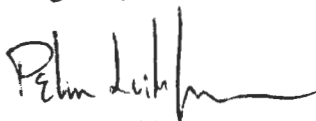
Rule 9.3.F and 9.3.G

Notice was provided via certified mail to those individuals and entities on the list provided by MMD. This list is attached.

Mr. Holland Shepherd  
March 31, 1997  
Page 3 of 3

If you have any questions regarding this information, please do not hesitate to contact me at (505) 287-8851, extension 205.

Regards,

A handwritten signature in black ink, appearing to read "Peter Luthiger", with a long horizontal flourish extending to the right.

Peter Luthiger

Attachments: As Stated

xc: file



**QUIVIRA MINING COMPANY**

POST OFFICE BOX 218 • GRANTS, NEW MEXICO 87020

December 2, 1996

Certified Mail  
Return Receipt Requested [P 268 360 568]

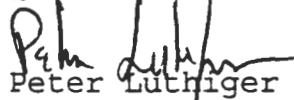
Ms. Maxine Goad  
P.O. Box 2503  
Santa Fe, NM 87504

Dear Ms. Goad,

Pursuant to the New Mexico Mining Act [NMSA 1978, § 69-36-7.K] and Subpart 903 of the New Mexico Mining Act Rules, Quivira Mining Company is providing you with public notice that Quivira Mining Company has submitted a variance request to the Mining and Minerals Division and is requesting approval of the variance request. The public notice sheet enclosed with this letter shall be published once in the *Gallup Independent* by December 20, 1996.

Regards,

QUIVIRA MINING COMPANY



Peter Luthiger  
Supervisor, Radiation Safety  
and Environmental Affairs

Enclosure: As Stated

xc: file

## PUBLIC NOTICE

(To be published in the Gallup Independent on or before December 20, 1996)

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Pursuant to the New Mexico Mining Act Regulations [19 NMAC 10.2 Subpart 10], Quivira Mining Company, P.O. Box 218, Grants, NM, 87020, has submitted an application for a variance and requests approval of the variance for lands within mining units located on Section 17 T14N R9W, Section 19 T14N R9W, Section 22 T14N R10W, Section 24 T14N R10W, Section 30 T14N R9W, and Section 33, T14N R9W.

The purpose of Quivira Mining Company submitting a variance request is to provide two (2) additional growing seasons before the determination is made by the Mining and Minerals Division that the site meets the criteria for release from additional vegetation requirements.

Quivira's above referenced mining units were conventional underground uranium mines in the Ambrosia Lake mining district. Reclamation measures completed at these mine units have successfully satisfied all of the other requirements of the New Mexico Mining Act and the substantive requirements for reclamation pursuant to the Mining Act Regulations.

A copy of the variance request is available for public viewing during normal business hours at the address listed below. Individuals may submit written comments regarding this variance request to:

Ms. Kathleen Garland, Director  
Energy, Minerals, and Natural Resources Department  
Mining and Minerals Division  
2040 South Pacheco  
Santa Fe, NM 87505

Any interested person may request that the Director conduct a public hearing on the variance request. Such request must be made within 30 days of the date of the newspaper publication of the notice of application. If a hearing is timely requested, the Director shall set a hearing unless the request is clearly frivolous. The Director may hold a public hearing absent any request.

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# Affidavit of Publication

STATE OF NEW MEXICO

) SS

COUNTY OF MCKINLEY

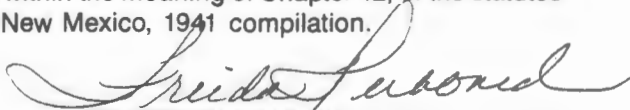
HUBBARD, Freida being duly sworn upon oath, deposes and says:

As Legal Clerk of The Independent, a newspaper published in and having a general circulation in McKinley County, New Mexico and in the City of Gallup, New Mexico and having a general circulation in Cibola County, New Mexico and in the City of Grants, New Mexico and having a general circulation in Apache County, Arizona and in the City of St. Johns and in the City of Window Rock, Arizona therein: that this affiant makes this affidavit based upon personal knowledge of the facts herein sworn to. That the publication, a copy of which is hereto attached was published in said newspaper during the period and time of publication and said notice was published in the newspaper proper, and not in a supplement thereof,

for one time, the first publication being on the 12th day of December, 1996 the second publication being on the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_ the third publication on the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

and the last publication being on the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_.

That such newspaper, in which such notice or advertisement was published, is now and has been at all times material hereto, duly qualified for such purpose, and to publish legal notices and advertisements within the meaning of Chapter 12, of the statutes of the State of New Mexico, 1941 compilation.

  
Affiant.

Sworn and subscribed to before me this 20th day of December, A.D., 1996.

  
Notary Public

My commission expires  
November 27, 2000

## LEGAL NOTICE

Grants New Mexico  
Cibola County

Pursuant to the New Mexico Mining Act Regulations (19 NMAC 10.2 Subpart 10), Quivira Mining Company, P.O. Box 218, Grants, NM 87020, has submitted an application for a variance and requests approval of the variance for lands within mining units located on Section 17 T14N R9W, Section 19 T14N R9W, Section 22 T14N R10W, Section 24 T14N R10W, Section 30 T14N R9W, and Section 33, T14N R9W.

The purpose of Quivira Mining Company submitting a variance request is to provide two (2) additional growing seasons before the determination is made by the Mining and Minerals Division that the site meets the criteria for release from additional vegetation requirements.

Quivira's above reference mining units were conventional underground uranium mines in the Ambrosia Lake mining district. Reclamation measures completed at these mine units have successfully satisfied all of the other requirements of the New Mexico Mining Act and the substantive requirements for reclamation pursuant to the Mining Act Regulations.

A copy of the variance request is available for public viewing during normal business hours at the address listed below. Individuals may submit written comments regarding this variance request to: Ms. Kathleen Garland, Director, Energy, Minerals, and Natural Resources Department, Mining and Minerals Division, 2040 South Pacheco, Santa Fe, NM 87505.

An interested person may request that the Director conduct a public hearing on the variance request. Such request must be made within 30 days of the date of the newspaper publication of the notice of application. If a hearing is timely requested, the Director shall set a hearing unless the request is clearly frivolous. The Director may hold a public hearing absent any request.

## AVISO PUBLICO

De acuerdo a la Acta Minera de Nuevo Mexico (19 NMSA 10.2 Subparte 10), Quivira Mining Company, P.O. Box 218, Grants, NM, 87020 ha sometido una petición para una variación y solicita consentimiento para una variación para los terrenos mineros localizados en sección 17 T14N R9W, sección 19 T14N R9W, sección 22 T14N R10W, sección 24 T14N R10W, sección 30 T14N R9W, sección 33 T14N R9W.

El propósito de Quivira Mining Company sometiendo esta petición para disponer dos (2) estaciones de vegetación antes de que se determine por la agencia Mining and Minerals Division que el sitio cumple con los requisitos y exonera de requisitos adicionales de vegetación.

Los minas mencionados fueron minas de uranio clásicas del distrito minero de Ambrosia Lake. Los recursos de restauración en las dichas minas han cumplido con todos los otros requisitos de la Acta Minera de Nuevo Mexico Y los requisitos substantivos de acuerdo con los relamentos de la acta minera de restauración.

Una copia de la solicitud para esta variación está disponible para que el pueblo inspeccione durante las horas de trabajo en el domicilio indicado. Los interesados pueden someter comentarios pertinentes a esta petición a:

Ms. Kathleen Garland, Director, Energy, Minerals, and Natural Resources Department, Mining and Minerals Division, 2040 South Pacheco, Santa Fe, NM 87505.

Personas interesadas pueden solicitar que el Director haga una audiencia pública concerniente a esta petición. Esta solicitud debe sea se dentro de 30 días de la fecha de esta periódico en que está publicado el anuncio de esta petición. El Director fechará una audiencia pública solamente si la solicitud se hace a tiempo y es seria. El Director puede hacer una audiencia sin una solicitud.

Legal #13571 Published in The Independent December 12, 1996.

# QUIVIRA MINING COMPANY

POST OFFICE BOX 218 • GRANTS, NEW MEXICO 87020

## CERTIFICATE OF POSTING

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This is to certify that on the date identified below, Mr. Peter Luthiger of Quivira Mining Company posted the public notice sheet for the prior reclamation variance request in the United States Post Office. The notice was provided in both English and Spanish.

Jeremiah per Burk  
POSTMASTER

Milam Station  
POST OFFICE BRANCH

Jerrie L Burk  
SIGNATURE



\_\_\_\_\_  
DATE



# QUIVIRA MINING COMPANY

POST OFFICE BOX 218 • GRANTS, NEW MEXICO 87020

## CERTIFICATE OF POSTING

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This is to certify that on the date identified below, Mr. Peter Luthiger of Quivira Mining Company posted the public notice sheet for the prior reclamation variance request in the United States Post Office. The notice was provided in both English and Spanish.

*Barbara J. Hatten - Clerk*  
POSTMASTER

*Prewitt hr 87045*  
POST OFFICE BRANCH

*Barbara J. Hatten*  
SIGNATURE



DATE \_\_\_\_\_

# QUIVIRA MINING COMPANY

POST OFFICE BOX 218 • GRANTS, NEW MEXICO 87020

## CERTIFICATE OF POSTING

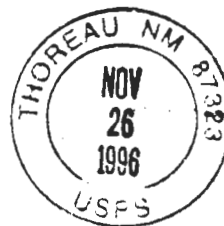
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This is to certify that on the date identified below, Mr. Peter Luthiger of Quivira Mining Company posted the public notice sheet for the prior reclamation variance request in the United States Post Office. The notice was provided in both English and Spanish.

Roy Jaquez  
POSTMASTER

Thoreau, N.M. 87323  
POST OFFICE BRANCH

Roy Jaquez  
SIGNATURE



                      
DATE



# **QUIVIRA MINING COMPANY**

POST OFFICE BOX 218 • GRANTS, NEW MEXICO 87020

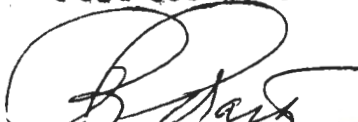
## **CERTIFICATE OF POSTING**


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\_\_\_\_\_  
POSTMASTER

\_\_\_\_\_  
**POST OFFICE BRANCH**

  
\_\_\_\_\_  
SIGNATURE

  
NOV 25 1996  
\_\_\_\_\_  
DATE

State of New Mexico  
Mining and Minerals Division  
2040 South Pacheco St.  
Santa Fe, NM 87505

Fax Cover Sheet

Date: 11/15/96

To: Peter Luthiger

From: Fernando Martinez

Company:

Agency: Mining and Minerals Division

Telephone:

Telephone: (505) 827-5970

Fax #: 243-0418

Fax #: (505) 827-7195

Number of Pages: 3 (including cover sheet)

Message:

*I think this list should cover the folks  
you need to provide notice to. If you have any  
questions, give me a call.*

Original will be sent by mail ☐ yes ☒ no

**STATE AGENCIES**

Dr. Glenna Dean, Staff Archeologist  
Office of Cultural Affairs  
228 E. Palace Ave.  
Santa Fe, NM 87503

Mrs. Maxine Goad, Mining Coordinator  
Environment Department  
PO Box 26110  
Santa Fe, NM 87502

Mr. Toby Martinez, State Forester  
State Forestry Division  
PO Box 1948  
Santa Fe, NM 87504-1948

Mr. Bob Rogers  
State Engineer's Office  
PO Box 844  
Deming, NM 88031

Mr. Andrew V. Sandoval, Chief  
Conservation Services Division  
Villagra Building  
PO Box 25112  
Santa Fe, NM 87504

**PERSONS REQUESTING NOTICE**

Ms. Maxine Goad  
PO Box 2503  
Santa Fe, NM 87504

Mr. Grove Burnett/Mr. Eric Ames  
Western Environmental Law Center  
PO Box 1507  
Taos, NM 87571

505 827 7195

NOV-15-1996 15:55

FROM MINING & MINERALS DIV

TO

915052855550

P.03

Mr. Doug Meiklejohn/Mr. Doug Wolf  
N.M. Environmental Law Center  
103 Cienega St.  
Santa Fe, NM 87501

Mr. Paul Robinson  
Research Director  
Southwest Research & Information Center  
PO Box 4524  
Albuquerque, NM 87106

Rio Grande Chapter of the Sierra Club  
945 Camino De Chelly  
Santa Fe, NM 87501



NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

MINING AND MINERALS DIVISION  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505  
(505) 827-6870

Jennifer A. Salisbury  
CABINET SECRETARY

Kathleen A. Garland  
DIVISION DIRECTOR

July 1, 1996

Mr. Marvin Freeman  
Rio Algom Mining Corp.  
6305 Waterford Boulevard, Suite 325  
Oklahoma City, OK 73118

**Re: Public Notice for Prior Reclamation Variance Application**

Dear Mr. Freeman:

Pursuant to my conversation with Bill Ferdinand on June 26, 1996 and your letter dated May 31, 1996, please go ahead with public notice of <sup>Quivira</sup> Calvaria's prior reclamation variance application. Please follow the public notice requirements as outlined in Subpart 9 of the Mining Act Rules. I have attached a list of entities that have requested notification concerning public notice type actions. Please include these names with the others that you will be notifying.

Thank you for your attention to this procedure.

Sincerely,

HOLLAND SHEPHERD, Bureau Chief  
Mining Act Reclamation Bureau  
Mining and Minerals Division

HS/fg

Attachment

# Rio Algom Mining Corp.

Marvin D. Freeman  
Vice President

May 31, 1996

Certified Mail  
Return Receipt Requested P 144 785 062

Dr. Kathleen Garland, Director  
Mining and Mineral Division  
Energy, Minerals and Natural Resources Department  
2040 South Pacheco  
Santa Fe, NM 87505

4  
JUN 1 1996  
RECEIVED  
Mining & Minerals  
Division

Re: Application For Prior Reclamation Variance  
Petition For Review

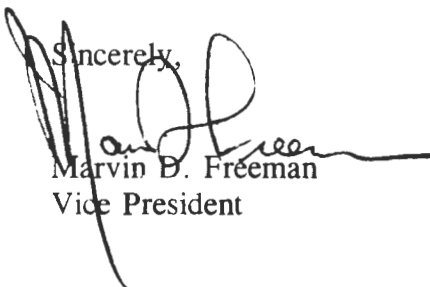
Dear Dr. Garland:

Enclosed please find Quivira Mining Company's Application for Variance. This Application is being submitted by Quivira pursuant to and in reliance upon your letters of September 29, 1995, and January 31, 1996, as clarified in later discussions and negotiations between us which are summarized in Quivira's letter of February 13, 1996, MMD's letter of March 15, 1996, Quivira's letter of May 1, 1996, and MMD's letter of May 23, 1996.

We have not had an opportunity since receiving your May 23 letter (facsimile received on May 29), to make a full review of all issues on seeking early dismissal of Quivira's Petition to Review Order relating to your September 29, 1995 letter. This review is now in progress and should be completed shortly.

Quivira has appreciated the opportunity to meet with MMD to discuss and mutually resolve the issues relating to this matter. If you have questions regarding the letter, please call myself (405) 848-1187 or Mr. Bill Ferdinand at (405) 842-1773.

Sincerely,

  
Marvin D. Freeman  
Vice President

Attachments: As Stated

cc: B. Ferdinand  
T. Fletcher  
R. Luke  
P. Luthiger  
J. Robb  
File



**APPLICATION FOR VARIANCE  
(19 NMAC 10.2 Subpart 10)**

Applicant's Name and Address

Quivira Mining Company  
P.O. Box 218  
Grants, New Mexico 87020

Contact person: Mr. Terry Fletcher

Telephone (505) 287-8851 ext. 200

Facsimile (505) 287-8851 ext. 295

Date of Application

May 31, 1996

Mining Operation For Which Variance Is Sought

Quivira Mining Company  
Ambrosia Lake Facility

Location of Property

Lands Within Mining Units: Section 17 T14N R9W  
Section 19 T14N R9W  
Section 22 T14N R10W  
Section 24 T14N R10W  
Section 30 T14N R9W  
Section 30W T14N R9W  
Section 33 T14N R9W

Section of Part Which Variance Is Sought

19 NMAC 10.2 Subpart 5, Section 510.B

Extent To Which The Applicant Wants To Vary From Applicable Part

Pursuant to 19 NMAC 10.2 Subpart 5, Section 510.B, MMD representatives conducted inspections on previously reclaimed lands contained within the mining units described above. MMD determined by letters dated September 29, 1995 (received November 17, 1995), and as amended by letter dated January 16, 1996, that insufficient time had elapsed since re-vegetation of the reclaimed lands to determine whether these areas meet the environmental conditions for successful re-vegetation to allow for their release. All other reclamation aspects at these areas satisfactorily meet the reclamation requirements of the New Mexico Mining Act as confirmed by MMD letter dated March 15, 1996.

The conclusions of MMD's letter dated September 29, 1995, read:

*"Based on oral and written communication (letter from Quivira, September 14, 1995) with the operator, and on the condition of these seven remaining reclaimed sites as documented by this inspection report, it is clear that the operator has made a good effort to complete all of the required reclamation. It is recommended that the Director of MMD give a variance to Quivira Mining Company from meeting the deadline of September 30, 1995 for prior reclamation under the New Mexico Mining Act and Rules for the Section 17, 19, 22, 24, 30, 30W, and 33 mine sites. This variance would stipulate that inspections will be conducted by MMD during the late summer of 1997 at each of the remaining sites to determine if the conditions necessary for development of a 'sustainable ecosystem' are then present on-site, and if any further actions including (but not limited to) reseeding or interseeding by the operator are necessary."; [emphasis added]*

Therefore, consistent with these MMD conclusions, Quivira proposes that MMD conduct an inspection at each applicable site, during the late summer of 1997, to determine if conditions are present to meet the release criteria. If the results do not meet the release criteria, Quivira would develop and implement the appropriate program to meet the release criteria which may include reseeding and/or interseeding.

#### Evidence To Prove That Failure To Grant Variance Will Impose Undue Economic Burden

If the requested variance is not granted, Quivira will be forced to apply for a permit pursuant to Subpart 5. The economic burden that could potentially be imparted to Quivira as a result is estimated to be approximately \$390,000. These costs are presented below.

● Permit Application/Closeout Plan

Rule 201.A.1	\$ 1,000
Rule 201.A.2	\$ 2,000
Rule 201.A.4	\$ 4,500
Rule 205.A	<u>\$ 338</u>
Total Permit Costs	<u>\$ 7,838</u>

● Annual Fee

Rule 202.A.1	\$ 1,000
Rule 202.A.2	\$ 4,000
Rule 205.A	<u>\$ 225</u>
Annual Costs	\$ 5,225

Total Annual Cost for potentially 12 years	<u>\$62,700</u>
--	-----------------

● Associated Costs

Performance Bond - Based on re-vegetation @ \$246/acre (3/1996\$)	
at 8% of bond face amount	
for potentially 12 years	\$70,848
Management/Oversight Costs (\$5,000 per year)	\$60,000
Initial Permit Preparation/Submittal Costs	\$40,000
 Sub-total costs	 <u>\$241,386</u>
 Loss of Investment	
\$241,386 * 0.05 (return of investment) * 12 years	\$144,832

**TOTAL OVERALL POTENTIAL COSTS**

**\$386,218**

Quivira believes these costs would be an undue economic burden on Quivira which is unnecessary given current conditions at the site which come near to meeting release criteria, the recommendations of MMD, and realizing that the expenditure would not expedite the establishment of vegetation cover.


**Evidence To Prove That Granting A Variance Would Not Result In Significant Threat To Human Health, Safety or the Environment**

As documented by the MMD inspection report of September 29, 1995, and MMD's letter dated March 15, 1996, all reclamation requirements other than re-vegetation, have been approved as satisfactorily meeting all reclamation requirements of the New Mexico Mining Act that include health, safety and environmental concerns. Approval of this variance application would not alter this conclusion.

Rather, the granting of the variance as requested, would continue to provide assurance that the area addresses and meets health, safety and the environment concerns through on-going MMD inspection of the re-vegetation success. Therefore, granting of this variance would not result in a significant threat to human health, safety or the environment.

**Variance Application Fee**

Please find enclosed the variance application fee in accordance with 19 NMAC 10.2 Subpart 2, Sections 201.K and 205.A in the amount of \$522.50.

  
Marvin D. Freeman  
Vice President

# Quivira Mining Company

Marvin D. Freeman  
Vice President

May 1, 1996



Certified  
Return Receipt Requested P 144 785 021

Dr. Kathleen Garland, Director  
Mining and Mineral Division  
Energy, Minerals and Natural Resources Department  
2040 South Pacheco  
Santa Fe, NM 87505

Dear Dr. Gariand:

Thank you for meeting with us on April 18, 1996 to discuss the remaining concerns regarding Quivira's Ambrosia Lake Old Stope Leaching program. The purpose of this letter is to state our understanding of MMD's position regarding old stope leaching and to request that MMD confirm this understanding is correct, if that is the case.

Specifically in regards to our uranium old stope leaching program and the applicability of the MMD regulations to this program, we understand MMD's conclusion to be:

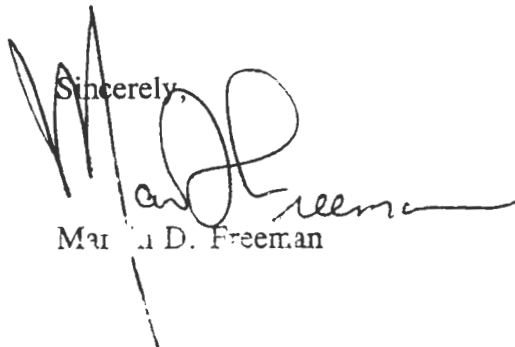
1. All of Quivira's present, past and future old stope leaching areas and its unreclaimed conventional underground mine sites can be included in a single mine permit as an existing mine.
2. Installation and operation of the old stope leaching wells are permitted under New Mexico Environmental Department (NMED) regulations and not by MMD; however, MMD is required to ensure that all surface disturbances within a MMD permit area, due to mining related activities, are properly reclaimed prior to permit release.
3. As part of MMD bonding requirements, MMD would require bonding for recontouring, if applicable, and revegetation of the disturbed surface, but not for the plugging and capping of the old stope leaching production/injection wells permitted by NMED.
4. After a MMD permit was issued, the only requirement of Quivira under the MMD permit, relative to the operation of its old stope leaching program would be the annual updating of its reclamation bond and reclamation of the related surface disturbances.
5. Areas under "prior reclamation variances" can be included within the mine permit area but would be restricted from Quivira access for old stope leaching purposes, until the prior reclamation is accepted and released by MMD. At that time, however, such released areas would be considered undisturbed areas under the MMD mine permit. These areas would be subject to the existing mine reclamation and bonding requirements if they are subsequently disturbed by mining activities

*new units*

Dr. Kathleen Garland  
May 1, 1996  
Page 2 of 2

6. Quivira could include the areas on which it controls the minerals, but which were formerly operated by Homestake, within its permit area as part of its "existing mining permit" including Homestake's "prior reclamation variances" areas and those areas approved by MMD meeting prior reclamation standards. Quivira would only be responsible for new surface disturbances caused by its mining activities. These areas would otherwise be administered under the permit in the same manner as Quivira's other existing mine properties.

We appreciated the opportunity to meet with you and discuss how these concerns might be resolved in a mutually satisfactory manner such that Quivira might withdraw the appeals it has filed with the Mining Commission. Your response is important to us as we would incorporate these understandings as stipulations in a withdrawal of the appeals should this course be taken. We look forward to hearing from you soon.

Sincerely,  
  
Marjorie D. Freeman

MDF:kb

cc: Bill Ferdinand  
Terry Fletcher  
Rob Luke  
John Robb  
File



**RIO ALGOM MINING CORP.**

6305 WATERFORD BLVD. • SUITE 325  
OKLAHOMA CITY, OKLA. 73118  
PH. (405) 848-1190

BOATMEN'S FIRST NATIONAL BANK  
OF OKLAHOMA  
OKLAHOMA CITY, OKLA.

39-1  
1030

**028501**

CHECK AMOUNT

**\$522.50**

DATE

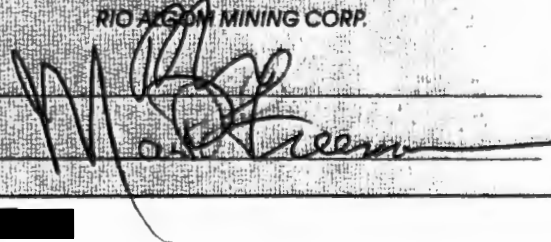
05/31/96

CHECK  
NO.

PAY Five Hundred Twenty Two & 50/100-----DOLLARS

RIO ALGOM MINING CORP.

TO THE  
ORDER  
OF Mining & Minerals Division  
Energy, Minerals and Natural Resources Dept







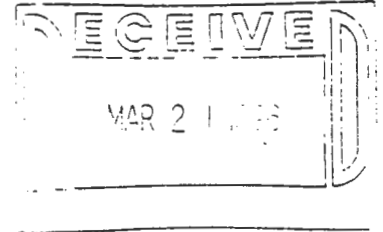
NEW MEXICO ENERGY, MINERALS  
& NATURAL RESOURCES DEPARTMENT

OFFICE OF THE SECRETARY  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505  
(505) 827-5950

Jennifer A. Salisbury  
CABINET SECRETARY

March 15, 1996

Marvin D. Freeman, Vice President  
Quivira Mining Company  
6305 Waterford Boulevard, Suite 325  
Oklahoma City, Oklahoma 73118



RE: Prior Reclamation/Old Stope Leaching Permit Requirements for  
Quivira's Ambrosia Lake Operations

Dear Mr. Freeman:

Thank you for your letter dated February 13, 1996. I apologize for my delay in replying, and hope we will now be able to move forward expeditiously to resolve our permitting dilemma at your Ambrosia Lake sites.

In regards to the prior reclamation, your letter accurately restates the Division's position. As stated in our prior reclamation inspection reports, we were unable to determine that the plant community at these sites had achieved a viable or self-sustaining condition. I will consider a variance request to the September, 1995 deadline for completion of prior reclamation for these sites. That variance request may contain inspection schedules and mitigation plans to address plant re-establishment at these sites. MMD concurs with a 2-3 year time period to evaluate these sites, with annual inspections to be conducted by MMD personnel.

In regards to old stope leaching, the Division's position is as follows:

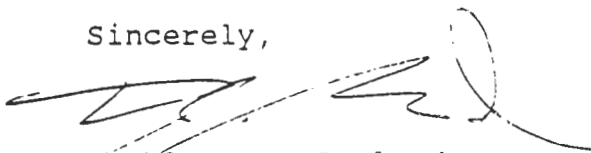
1. Areas disturbed by conventional mining, whether in use for old stope leaching or not, are subject to the Mining Act unless they have been reclaimed and released under the prior reclamation requirements of the Mining Act Rules.
2. Disturbances covered by an NRC license that includes a reclamation plan for the disturbances, including items such as closure of shafts, regrading, and revegetation, are excluded from the Mining Act. Well fields and portions of old stope leaching sites are excluded if they are covered by such a reclamation plan under an NRC license.
3. Quivira's disturbed areas not excluded from the Act by

virtue of NRC license requirements may be permitted as one existing mine. This permit would exclude areas under a variance for prior reclamation release.

I believe we may disagree slightly in our understanding of how well fields will be handled. If we do, please contact me at (505) 827-5974 so we can discuss and, I hope, resolve any differences. If we are in agreement, I recommend that Quivira proceed with the permitting process for the areas covered by the Act.

I sincerely appreciate Quivira's willingness to negotiate these issues with the Division, and hope you will not need to pursue your appeals.

Sincerely,

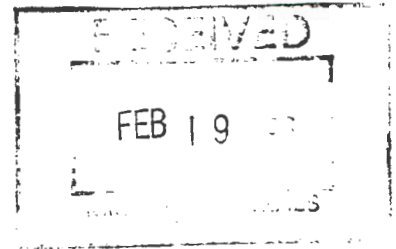
A handwritten signature in black ink, appearing to read 'K. Garland', with a large, stylized loop at the end.

Kathleen A. Garland  
Director  
Mining and Minerals Division

cc: Carol Leach, General Counsel, EMNRD  
Holland Shepherd, Chief, MARB

# Quivira Mining Company

Marvin D. Freeman  
Vice President



February 13, 1996

Certified Mail  
Return Receipt Requested Z 271 353 324

Dr. Kathleen Garland, Director  
Mining and Mineral Division  
Energy, Minerals and Natural Resources Department  
2040 South Pacheco  
Santa Fe, NM 87505

Re: Prior Reclamation/Old Stope Leaching  
MMD/Quivira Meeting of January 30, 1996

Dear Dr. Garland:

We recognize this is a very busy time for you and we appreciate your meeting with us on January 30 to discuss our questions on the Mining and Minerals Division (MMD) letters dated September 29 and November 9, 1995. These letters were in regards to prior reclamation and old stope leaching at Quivira's Ambrosia Lake operations.

This letter is to confirm our understanding of the issues based on the discussions with MMD regarding our Ambrosia Lake prior reclamation and old stope leaching.

Specifically, in regards to the prior reclamation, we understand MMD's conclusion to be:

1. All reclamation requirements at Quivira's mining units, specifically Section 17, 19, 22, 24, 30, 30W and 33, satisfactorily meet the reclamation requirements of the New Mexico Mining Act with the sole exception of re-vegetation.
2. It is MMD's position that although these units were re-vegetated, it was too early to make a determination on the viability of the perennial grasses. Thus, because the viability of these grasses is the only open issue, Quivira could request a variance to extend the time frame for the re-vegetation and for release under its prior reclamation request.
3. Quivira could request a two or three-year extension with annual inspections by MMD. In that case, MMD would conduct annual inspections and a site would be released as soon as an inspection shows the site meets MMD's re-vegetation criteria.
4. MMD, as part of the variance approval, would include language specifically indicating that all reclamation requirements of the New Mexico Mining Act, with the exception of re-vegetation, had been met. The variance would also specify the inspection time frames and the further actions that Quivira might have to initiate to meet the re-vegetation requirements, such as re-seeding or interseeding as indicated by MMD's letter of September 29.

In regards to the old stope leaching issues and the letter of November 9, the following is Quivira's understanding of MMD's conclusions.

1. The letter of November 9, 1995, states "The Division has come to the conclusion that portions of the in-situ or old stope leaching facilities operated by Quivira Mining Company fall under the New Mexico Mining Act. Such portions would consist of those sections of a leaching operation developed during conventional mining and not currently addressed under a U.S. Nuclear Regulatory Commission (NRC) License."

This language means that those areas which were developed and used for the conventional underground mining operations such as the shafts and ventholes are subject to permitting under the Act, but old stope leaching wellfields and areas not associated with the conventional mining operation are not subject to MMD permitting requirements. It was MMD's position, however, that if there were any future surface disturbances by Quivira within an area permitted under the Act, MMD would require re-vegetation of those areas.

2. All areas or disturbances that are covered by a NRC license that includes a reclamation plan for the disturbances, including items such as the closure of shafts, re-grading, and re-vegetation are excluded from the Act.
3. Quivira's conventional underground mining disturbance areas at the seven mining units not covered by a NRC license may be permitted as one existing mine should Quivira decide to do so. The permit area would need to exclude areas on which Quivira is requesting release under prior reclamation and those areas covered by the NRC license.

In closing, we sincerely appreciate the opportunity to meet with you and your staff to better understand MMD's concerns and to discuss how the issues might be resolved in a mutually satisfactory manner. Quivira's understanding of the issues is as stated above, however, we are requesting MMD's confirmation that this understanding is correct so that we may proceed in trying to properly address the items of concern.

As per our discussion, Quivira has filed appeals to the Mining Commission on both of the above items to preserve Quivira's rights under the appeal process. As I think you know, we feel strongly about our position in the appeals. We are hopeful, however, that the concerns of both Quivira and MMD can ultimately be addressed such that our appeals can be withdrawn.

Sincerely,



Marvin Freeman

MDF:kb

xc: B. Ferdinand (QMC-OKC)  
T. Fletcher (QMC-Ambrosia Lake)  
R. Luke (QMC-OKC)

J. Robb (Rodey, Dickason, Sloan, Akin & Robb)  
File

RODEY, DICKASON, SLOAN, AKIN & ROBB, P. A.

COUNSELLORS AND ATTORNEYS AT LAW  
ALBUQUERQUE PLAZA  
201 THIRD STREET NW, SUITE 2200  
ALBUQUERQUE, NEW MEXICO 87102  
P. O. BOX 1888  
ALBUQUERQUE, NEW MEXICO 87103

TELEPHONE (505) 765-5200

FACSIMILE (505) 768-7395

COUNSEL  
JEFFREY W. THURTELL  
RICHARD C. MINER  
GARY D. EISENBERG  
JOHN W. GARNER

OF COUNSEL  
OWEN L. DICKASON  
JACKSON G. ANN  
MAT H. HUDET

PEARCE C. ROBBY (1954-1958)  
WILLIAM A. SLOAN (1950-1953)

SANTA FE OFFICE  
MARCY PLAZA, SUITE 101  
123 EAST MARCY STREET  
P. O. BOX 1357  
SANTA FE, NM 87504-1357  
TELEPHONE 984-0100  
FACSIMILE 984-7512

WHICH'S DIRECT NUMBER

January 31, 1996

768-7216

Dr. Kathleen A. Garland, Director  
Energy Minerals and Natural  
Resources Department  
Mining and Minerals Division  
P.O. Box 6429  
Santa Fe, New Mexico 87505-6429

Re: Letters of September 29, 1995 and November 9, 1995 Re: No  
Release for Sections 17, 19, 22, 24, 30, 30W and 33, Quivira  
Mining Company, McKinley County, New Mexico and the Status of  
In-Situ Leaching Facilities, Ambrosia Lake

Dear Ms. Garland:

Our client, Quivira Mining Company has this date filed Petitions to  
Review the above letters and the determinations or "orders" contained  
within them. Quivira Mining Company respectfully requests the Mining  
and Minerals Division to enter a stay of these orders or for an  
extension of time to comply pending completion of that review by the  
Commission and if necessary, by the New Mexico Court of Appeals.

In support thereof, Quivira Mining Company states that the prepara-  
tions necessary to file either a petition for a variance or for an  
existing mining permit will be required under the terms of those  
letters while the petitions are pending before the Commission; that  
this will require substantial effort and cost on the part of Quivira  
which may prove to be unnecessary should the requirements of that  
letter either be reversed or substantially modified on appeal; that  
the Mining and Minerals Division has already inspected the properties  
and operations involved; that no significant damage will result to the  
environment from the granting of stays or extension orders and that  
it would be unfair to require Quivira Mining Company to expend this  
time and effort until it has been first determined on review that the  
requirements of those letters are proper or valid.

Sincerely yours,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

By *John D. Robb*  
John D. Robb  
CSD:dr



*Handwritten:*  
New Mexico  
MMD

**RODEY, DICKASON, SLOAN, AKIN & ROBB, P. A.**

COUNSELORS AND ATTORNEYS AT LAW

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January 31, 1996

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DEBORAH S. MANN  
ALICE L. NYSTEL

Mr. Doug Bland, Clerk  
New Mexico Mining Commission  
2040 South Pacheco  
Santa Fe, NM 87505

Re: Petition of Quivira Mining Company

Dear Mr. Bland:

Enclosed please find an original and 12 copies of two Petitions of Quivira Mining Company to the New Mexico Mining Commission, together with a check for \$25 for each petition. We do not know whether either of the letters from the Mining and Minerals Division constitute appealable rulings, but we are filing these petitions out of an abundance of caution. Hard copies of petitions and filing fees have been placed in overnight mail. Please acknowledge receipt of same.

Sincerely yours,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

By *John D. Robb*

John D. Robb

JDR:erl

encs.



NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
MINING AND MINERALS DIVISION

January 16, 1996

Mr. John D. Robb  
Rodey, Dickason, Sloan, Akin & Robb, P.A.  
P. O. Box 1888  
Albuquerque, NM 87103

Re: Letters Dated September 29, 1995 and November 9, 1995  
Addressed To Quivira Mining Company Regarding Prior  
Reclamation Release For Section 36 Mine, No Release For  
Sections 17, 19, 22, 24, 30, 30W and 33 And The Status Of In-  
situ Leaching Facilities, Ambrosia Lake, Quivira Mining  
Company, McKinley County, New Mexico.

Dear Mr. Robb:

This letter is addressed to you as attorney for Quivira Mining  
Company. The effective date of the above letters from the Director  
of the Mining and Minerals Division to your client, Quivira Mining  
Company and the Notice of the Determinations or Orders contained  
therein are extended to December 2, 1995 so that appeals, if any,  
from such determinations or Orders may be taken to the Mining  
Commission to and including January 31, 1996.

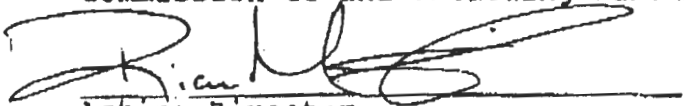
  
Acting Director  
Mining and Minerals Division

EXHIBIT C

November 9, 1995

Mr. Bill Ferdinand  
 Manager of Regulatory Compliance  
 Quivira Mining Company  
 6305 Waterford Boulevard, Suite 325  
 Oklahoma City, OK 73118

**Re: Status of In-situ Leaching Facilities, Ambrosia Lake, Quivira Mining Company, McKinley County, New Mexico**

Dear Mr. Ferdinand:

The Division has come to the conclusion that portions of the in-situ or old stope leaching facilities operated by Quivira Mining Company fall under the New Mexico Mining Act. Such portions would consist of those sections of a leaching operation developed during conventional mining and not currently addressed under a U.S. Nuclear Regulatory Commission (NRC) License.

The site currently under license is Section 24 in Section 24, T14N, R10W. Other Quivira sites which may be brought into the in-situ leaching process include:

Section 17	Section 17, T14N, R9W
Section 19	Section 19, T14N, R9W
Section 22	Section 22, T14N, R10W
Section 30	Section 30, T14N, R9W
Section 30 West	Section 30, T14N, R9W
Section 33	Section 33, T14N, R9W

Until the sites listed above are brought under an NRC license, they have to be permitted. If the NRC license is extended, those portions of a site which it addresses can be removed from an established Mining Act permit.

Quivira sent this Division a letter dated August 28, 1995 indicating that an NRC license currently addresses the environmental regulation of the Section 24 mine. The Division has contacted the NRC and spoken to Mr. Ken Hooks of that agency regarding the question of the Section 24 license (#SUA-1473). According to Mr. Hooks, the Section 24 license only covers that portion of the operation impacted by the leaching solutions to be injected and circulated in the underground mine workings. The license does not require reclamation of the surface facilities associated with conventional mining. Such items as closing shafts, regrading, retopsoiling, and revegetation of those facilities are not addressed in the NRC license. The Division will exclude any portion of the mining operation covered by an NRC permit, but must require compliance with the Mining Act for the remaining disturbance.

In previous correspondence you have indicated to us that these sites should be exempt because all environmental permitting issues would be addressed under an NRC license or a UIC permit administered by the New Mexico Environment Dept. (ED). ED has indicated that ED does not have jurisdiction over surface reclamation as intended by the Mining Act. In addition, ED regards this situation as not unlike other operations which have existing environmental permits but are also in the process of obtaining Mining Act permits.

Quivira has requested that the sites listed above be considered under the prior reclamation section of the Mining Act. The Division has inspected these sites and concluded that we are not yet able to release them. We have advised Quivira that the sites can be permitted under the Mining Act or Quivira can request a variance from the September 30, 1995 deadline established by the Mining Act Rules. Areas eligible for release involve only those portions which have been reclaimed prior to the effective date of the Mining Act Rules. Areas that would not be eligible include: roads, staging areas, ponds, buildings, shafts, boreholes, etc., which have not been reclaimed, or areas reclaimed after the effective date of the Mining Act Rules.

We suggest that Quivira consider permitting the seven sites above as one site under a regular existing mining operation permit. Quivira will need to specifically exclude those areas which can be addressed under prior reclamation or an NRC license from such a permit.

Please contact us to discuss a schedule for permitting these sites.

Sincerely,

A handwritten signature in black ink, appearing to read 'K. Garland', with a long, sweeping horizontal line extending to the right.

Kathleen Garland  
Director  
Mining and Minerals Division

cc: Holland Shepherd, Bureau Chief, Mining Act Reclamation Bureau  
John McKay, Permit Coordinator, Mining Act Reclamation Bureau  
Maxine Goad, New Mexico Environment Dept.  
Ken Hooks, Nuclear Regulatory Commission

September 29, 1995

Mr. Peter Luthiger  
Supervisor, Radiation Safety and Environmental Affairs  
Quivira Mining Company  
P.O. Box 218  
Grants, NM 87020

**RE: Prior Reclamation Release for Section 36 Mine, No Release for Sections 17, 19, 22, 24, 30, 30W and 33, Quivira Mining Company, McKinley County, New Mexico**

Dear Mr. Luthiger:

The Mining and Minerals Division (MMD) has completed inspection of reclamation measures as requested by Quivira Mining Company.

Based on findings in the enclosed inspection reports, reclamation measures at the Section 36 Mine satisfy the requirements of the New Mexico Mining Act (NMMA) and the substantive requirements for reclamation pursuant to the NMMA Rules. Therefore, Quivira is hereby released from further requirements of the NMMA on the Section 36.

Based on findings in the enclosed inspection reports, reclamation measures at the following mines do not satisfy the requirements of the New Mexico Mining Act (NMMA) and the substantive requirements for reclamation pursuant to the NMMA Rules. However, since Quivira has completed most reclamation measures at the following mines, Quivira may apply for variances from the provisions of the NMMA Rules pursuant to Rule 10. Otherwise, pursuant to NMMA Rule 5.10.B Quivira must submit permit applications and closeout plans for existing mining operations within six months of receipt of this letter:

Section 17 T14N R9W  
Section 19 T14N R9W  
Section 22 T14N R10W  
Section 24 T14N R10W  
Section 30 T14N R9W  
Section 30W T14N R9W  
Section 33 T14N R9W

Page 2

Quivira Prior Reclamation

The enclosed prior reclamation inspection report details the findings of the inspection but does not include the photos/slides contained in the MMD file copy.

MMD appreciates your efforts to comply with the NMMA and commends you for your safeguarding and reclamation efforts. If you have any questions please contact Holland Shepherd of the Mining Act Bureau, (505) 827-5971.

Sincerely,

A handwritten signature in black ink, appearing to read 'K. Garland', with a stylized flourish at the end.

Dr. Kathleen A. Garland, Director  
Mining and Minerals Division

cc: Ms. Maxine Goad, Environment Department  
Mr. Mark Schmidt, New Mexico State Land Office

Enclosure

**PRIOR RECLAMATION INSPECTION REPORT  
AND  
RECOMMENDATION FOR RELEASE OR PERMIT REQUIREMENT**

**Quivira Mining Company**

**Section 17 (T 14N, R 9W), Section 19 (T 14N, R 9W), Section 22 (T 14N, R 10W),  
Section 24 (T 14N, R 10W), Section 30 (T 14N, R 9W), Section 30W (T 14N, R 9W),  
Section 33 (T 14N, R 9W), and Section 36 (T 14N, R 9W) Mines**

**Submitted in Partial Fulfillment of the New Mexico Mining Act  
Section 69-36-7 U., Prior Reclamation**

**New Mexico Energy, Minerals and Natural Resources Department  
Mining and Minerals Division  
Mining Act Reclamation Bureau**

**September 25, 1995**

## Introduction

The purpose of these inspections was to determine if reclamation measures at Quivira Mining Company's Section 17, Section 19, Section 22, Section 24, Section 30, Section 30W, Section 33, and Section 36 Mines satisfy the requirements of the New Mexico Mining Act (Section 69-36-7, Prior Reclamation) and other substantive requirements for prior reclamation pursuant to the New Mexico Mining Act Rules. The sites, their locations, and dates of inspections by the New Mexico Mining and Minerals Division are presented in Table 1.

**Table 1.** Quivira Mining Company's Prior Reclamation Sites.

Name of Mine	Location of Mine	Date of Inspection
Section 17	T 14N, R 9W	August 30, 1995
Section 19	T 14N, R 9W	August 29, 1995
Section 22	T 14N, R 10W	August 30, 1995
Section 24	T 14N, R 10W	August 30, 1995
Section 30	T 14N, R 9W	August 30, 1995
Section 30W	T 14N, R 9W	August 30, 1995
Section 33	T 14N, R 9W	August 29, 1995
Section 36	T 14N, R 9W	August 29, 1995



## Inspection Procedures

Inspections by the Mining and Minerals Division of prior reclamation sites were conducted on the following mine sites: Section 17 (T 14N, R 9W), Section 19 (T 14N, R 9W), Section 22 (T 14N, R 10W), Section 24 (T 14N, R 10W), Section 30 (T 14N, R 9W), Section 30W (T 14N, R 9W), Section 33 (T 14N, R 9W), and Section 36 (T 14N, R 9W). All inspections were conducted and completed on August 29 and 30, 1995. Persons present during the August 29, 1995 inspection of the Section 36 Mine included: Mr. Peter Luthiger, representing Quivira Mining Company; Mr. Jim Nordstrom, Mr. Mark Schmidt, and Mr. Michael Landon, all of the New Mexico State Land Office; Ms. Mary Ann Menetery and Mr. Dennis Slifer of the New Mexico Environment Department; and, Ms. Robyn Tierney and Mr. Robert Young of the New Mexico Mining and Minerals Division. Mr. Peter Luthiger of Quivira Mining Company, Ms. Mary Ann Menetery and Mr. Dennis Slifer of the New Mexico Environment Department; and, Ms. Robyn Tierney and Mr. Robert Young of New Mexico Mining and Minerals Division were present during the August 29, 1995 inspections of the Section 33 and Section 19 Mines. Mr. Terry Anderson of Quivira Mining accompanied Ms. Robyn Tierney and Mr. Robert Young on the August 30, 1995 inspections of the Section 17, Section 22, Section 24, Section 30, and Section 30W Mines. The author of this inspection report was Ms. Robyn Tierney.

Inspections of each mine site consisted of a review of information submitted by the mine operator, subsequent discussion with the operator pertaining to mining and reclamation at each site, inspection of the condition of the reclaimed mine sites, line-intercept sampling for estimates of vegetative cover, compilation of plant species lists, measurement of reclaimed soil depths, and photo-documentation. Each of the mine sites were visually inspected for erosion features and hydrologic stability. During a walkover of each site, all slopes, areas of water concentration (ponds, diversions and areas where disturbed areas enter undisturbed lands) were visually inspected for stability. Topsoil placement and distribution also was evaluated at each site. Sampling for topsoil depth consisted of randomly digging a series of holes to identify the depth of topsoil and the presence or absence of potentially toxic wasterock at rooting depth. Grading of all wasterock piles and borrow areas was visually inspected. Placement and closure of portals and vent shafts was verified in the field. Structures (including concrete pads, buildings, shaft collars, and pump houses) remaining at each site were also identified during the course of the inspections.

The establishment and relative percent cover of reseeded and native plant species were evaluated in randomly placed transects. Four 50' transects were evaluated at each mine site using the line intercept method (Bonham 1989). These transects were used to estimate the relative percent cover of each plant species intercepted at 3' intervals along a transect. A total of 17 points per transect were recorded. In addition, a list of species present within a 50' X 6' belt transect adjacent to each transect was compiled. These sampling procedures, however, do not meet sample adequacy. Rather, these procedures were conducted to estimate the relative percent cover and to evaluate the diversity of species present at each of the eight mine sites. Additional resources would be needed to fully evaluate the vegetation of these prior reclamation sites to a level of sample adequacy and would require at least 24 additional man-hours of inspection time per site.

## Results and Discussion

Maps of the eight mine sites were submitted by Quivira. The detail in these maps is sufficient to describe conditions and facilities that were present on each site prior to reclamation. Details of the reclamation activities at each site were further verified in discussions with Mr. Luthiger and Mr. Fletcher of Quivira Mining Company and by the on-site inspections conducted on August 29 and August 30, 1995.

### Section 36, T 14N, R 9W

This section was reclaimed in 1990. At the request of the surface owner, the New Mexico State Land Office, the seed mixture used in the reclamation of the Section 36 Mine contained a large percentage of crested wheatgrass (*Agropyron cristatum*). Although this introduced species has achieved near co-dominance with the native sand dropseed (*Sporobolus cryptandrus*), portions of the mine site are still covered with ragweed (*Kochia scoparium*) and Russian thistle (*Salsola kali*). The following table (Table 2) contains a list of all species identified on the reclaimed Section 36 mine site. This list is not inclusive of all the plant species that may be present on this site at other times of the year.

**Table 2.** List of Species at Quivira's Section 36 Mine

COMMON NAME	Genus & species <sup>1</sup>
Alkali sacaton	<i>Sporobolus airoides</i>
Crested wheatgrass	<i>Agropyron cristatum</i>
Western wheatgrass	<i>Agropyron smithii</i>
Blue grama grass	<i>Bouteloua gracilis</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Bigelow's Aster	<i>Aster bigelovii</i>
Beeweed	<i>Cleome serrulata</i>
Ragweed	<i>Kochia scoparium</i>
Golden crownbeard	<i>Verbesina encelioides</i>
Annual sunflower	<i>Helianthus annuus</i>
Hairy goldenaster	<i>Heterotheca villosa</i>
Russian thistle	<i>Salsola kali</i>

COMMON NAME	Genus & species <sup>1</sup>
Winterfat	<i>Ceratoides lanata</i>
Blue Gilia	<i>Ipomopsis sp.</i>
Yellow clover	<i>Melilotus sp.</i>
Stickleaf	<i>Mentzelia albicaulis</i>
Fringed Sage	<i>Artemisia frigida</i>
Fourwing saltbush	<i>Atriplex canescens</i>
Yellow snakeweed	<i>Gutierrezia sarothrae</i>

1 Nomenclature after: Martin, W. C. and C. R. Hutchins. 1980. *A Flora of New Mexico*. J. Cramer, Vaduz, Germany.  
Welsh, S.L. *et al.* 1987. *A Utah Flora*. Great Basin Naturalist Memoir No. 9.

Facilities remaining on the middle portion of the site included three cased vent holes. These will remain on the site as monitoring wells. The collars and casing of these wells appear to be stable. Although there was some evidence of sheet and debris flow on the southeast corner of the mine permit area, the overall site appeared to be stable. Concerns about surface water quality have been addressed with the adequate topdressing (average depth of four test pits was 2 feet) over the tailings and wasterock pads and with extensive seeding over the entire disturbance area. Further, the entire site had been graded with slopes configured to minimize soil loss. The large depression area in the north area of the permit held some standing water, but there was no evidence of rill or gully formation on any of the slopes rimming this impoundment.

While the data presented above indicates that the Section 36 (T 14N R 9W) Mine has been revegetated with a sufficient species diversity, there was considerable evidence of grazing -- both by domestic cattle and elk. The site has been fenced from grazing and has sufficient vegetative cover (Table 3) to be stabilized. There is also a good mix of perennial plant species appearing throughout the site (Table 2) .

**Table 3.** Summary of Relative Cover Data at Quivira's Section 36 Mine.

Transect #1	Value (%)
Perennial Cover:	0
Litter Cover	6
Rock Cover	0
Bare Ground	53
Number of perennial species present in belt transect	0



Transect #2	Value (%)
Perennial Cover:	18
Litter Cover	12
Rock Cover	0
Bare Ground	59
Number of perennial species present in belt transect	2
Transect #3	Value (%)
Perennial Cover:	12
Litter Cover	12
Rock Cover	0
Bare Ground	41
Number of perennial species present in belt transect	1
Transect #4	Value (%)
Perennial Cover:	0
Litter Cover	35
Rock Cover	0
Bare Ground	35
Number of perennial species present in belt transect	0

**Maintenance Items:**

None.

**Photographs of Quivira's Section 36 Mine**

The following photographs were taken during the site inspection on August 29, 1995 to document the condition of the Section 36 Mine.

**#1:** This photograph was taken from east of the shaft area. Looking north across the topsoiled tailings pad, this photograph identifies the tie-in between the undisturbed (left and right margins of photo) and the disturbed (midground of photo) portions of the mine site. The natural vegetation and areas adjacent to the mine site remain largely undisturbed as seen at the margins of the site.

**#2 #3:** These photographs also were taken east of the shaft area. The photographs are panoramic views across the topsoiled tailings pad looking northwest (#2, right photograph) and west (#3, left photograph). Mr. Dennis Slifer and Mary Ann Menetery of the New Mexico Environment Department are at right in photograph #3.

**#4 #6:** These photographs also were taken east of the shaft area, and provide a panoramic view of the southwest (#4, right photograph) and south (#6, left photograph) quadrants of the mine permit area. The large shrub in the foreground of the photograph is saltbush (*Atriplex canescens*).

**#5:** This photograph is of the west-southwest quadrant of the mine permit area in the vicinity of the reclaimed ore pad.

### Section 33, T 14N, R 9W

This section was reclaimed in June of 1994. The seed mixture used in the reclamation of the Section 33, the Section 30, Section 30W, Section 24, Section 22, Section 19 and Section 17 mine sites is presented in Appendix A of this report. Most of the reclaimed Section 33 mine site is covered with the annual weeds, ragweed (*Kochia scoparium*) and Russian thistle (*Salsola kali*). However, these weeds are characteristic of early succession and typically found on newly disturbed sites. The following table (Table 4) contains a list of all the species identified on the reclaimed Section 33 mine site. This list is not inclusive of all the plant species that may be present on this site at other times of the year.

**Table 4.** List of Species at Quivira's Section 33 Mine

COMMON NAME	Genus & species <sup>1</sup>
Western wheatgrass	<i>Agropyron smithii</i>
Crested wheatgrass	<i>Agropyron cristatum</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Bigelow's Aster	<i>Aster bigelovii</i>
Beeweed	<i>Cleome serrulata</i>
Ragweed	<i>Kochia scoparium</i>
Composite species	<i>Unknown Aster? sp.</i>
Russian thistle	<i>Salsola kali</i>
Conyza	<i>Conyza sp.</i>
Evening primrose	<i>Oenothera caespitosa</i>
Pepperweed	<i>Lepidium sp.</i>
Curlycup gumweed	<i>Grindelia squarosa</i>
Fringed Sage	<i>Artemisia frigida</i>
Fourwing saltbush	<i>Atriplex canescens</i>
Threadleaf groundsel	<i>Senecio longilobus</i>
Yellow snakeweed	<i>Gutierrezia sarothrae</i>

<sup>1</sup> Nomenclature after: Martin, W. C. and C. R. Hutchins. 1980. *A Flora of New Mexico*. J. Cramer, Vaduz, Germany.  
Welsh, S.L. *et al.* 1987. *A Utah Flora*. Great Basin Naturalist Memoir No. 9.

Facilities remaining on the north edge of the site included a transformer unit and a shaft. The shaft had recently been reinforced with concrete (Luthiger, pers. comm.). The Department of Energy (DOE) had borrowed topsoil materials from the northern portion of the mine permit, then reseeded that area in February-March of 1994. DOE used this borrow material to topdress portions of their mill tailings site located directly north (across the road) of the Section 33 Mine. Concerns about surface water quality have been addressed with the adequate topdressing (average depth of two test pits was 6 inches) over the orebody stockpile area and the equipment storage area with extensive seeding over the entire disturbance area. Further, the entire site had been graded to minimize soil loss and is largely flat with no slopes or depressions.

The data presented in Table 5 indicates that the reclamation of the Section 33 (T 14N R 9W) Mine is beginning to develop with an average of 3% perennial vegetative cover in the disturbed areas. The species diversity of the surrounding and on-site vegetation (Table 4), and the relative isolation from grazing are indicative of the good growth potential at this site.

**Table 5.** Summary of Relative Cover Data at Quivira's Section 33 Mine.

Transect #1	Value (%)
Perennial Cover	0
Litter Cover	0
Rock Cover	0
Bare Ground	29
Number of perennial present in belt transect	1.00
Transect #2	Value (%)
Perennial Cover	6
Litter Cover	6
Rock Cover	0
Bare Ground	24
Number of perennial species present in belt transect	0
Transect #3	Value (%)
Perennial Cover	6
Litter Cover	12
Rock Cover	0
Bare Ground	41
Number of perennial species present in belt transect	1



Transect #4	Value (%)
Litter Cover	12
Rock Cover	0
Bare Ground	47
Number of perennial species present in belt transect	0

**Maintenance Items:**

None.

**Photographs of Quivira's Section 33 Mine**

The following photographs were taken during the site inspection on August 29, 1995 to document conditions at the Section 33 Mine.

**#1, #2:** These two photographs form a panoramic view spanning the north quadrant (#1 or right photograph) to the west-northwest quadrant (#2 or left photograph). The photographs were taken from the reclaimed pad of the wasterock pile.

**#3, #4, #5:** Photographs #3, #4, and #5 were taken from the same wasterock pad and span the west quadrant (#3 or right photograph), the west-southwest quadrant (#4 or middle photograph) to the south quadrant (#5 or left photograph).

**#6:** This photograph is of the permit area in the vicinity of the ore pad.

## Section 30, T 14N, R 9W

This section also was reclaimed in June of 1994. The seed mixture used in the reclamation of the Section 30 Mine is presented in Appendix A of this document. Table 6 contains a list of other species identified on the reclaimed Section 30 mine site. The list is not inclusive of all the plant species that may be present on the site at other times of the year.

**Table 6.** List of Species at Quivira's Section 30 Mine

COMMON NAME	Genus & species <sup>1</sup>
Sand dropseed	<i>Sporobolus cryptandrus</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Bigelow's Aster	<i>Aster bigelovii</i>
Beeweed	<i>Cleome serrulata</i>
Ragweed	<i>Kochia scoparium</i>
Composite species	Unknown (Aster? sp.)
Russian thistle	<i>Salsola kali</i>
Scarlet globemallow	<i>Sphaeralcea coccinea</i>
Hairy goldenaster	<i>Heterotheca villosa</i>
Yellow clover	<i>Melilotus sp.</i>
Evening primrose	<i>Oenothera caespitosa</i>
Fourwing saltbush	<i>Atriplex canescens</i>
Yellow snakeweed	<i>Gutierrezia sarothrae</i>

1 Nomenclature after: Martin, W. C. and C. R. Hutchins. 1980. *A Flora of New Mexico*. J. Cramer, Vaduz, Germany.  
Welsh, S.L. *et al.* 1987. *A Utah Flora*. Great Basin Naturalist Memoir No. 9.

Average perennial vegetative cover at this site is 6% -- twice that of the Section 33 site (Table 7). As in the case of the Section 33 Mine, however, vegetative cover is still dominated by the annual weeds, ragweed (*Kochia scoparium*) and Russian thistle (*Salsola kali*). Permanent facilities remaining on the Section 30 site include an electrical substation, a pumping pad and a reclaimed wasterock pile. Quivira owns the both surface and mineral rights on this section.

**Table 7.** Summary of Relative Cover Data at Quivira's Section 30 Mine.

<b>Transect #1</b>	<b>Value (%)</b>
Perennial Cover	12
Litter Cover	0
Rock Cover	0
Bare Ground	53
<b>Number of perennial species present in belt transect</b>	<b>2</b>
<b>Transect #2</b>	<b>Value (%)</b>
Perennial Cover	0
Litter Cover	24
Rock Cover	0
Bare Ground	47
<b>Number of perennial species present in belt transect</b>	<b>0</b>
<b>Transect #3</b>	<b>Value (%)</b>
Perennial Cover	0
Litter Cover	6
Rock Cover	0
Bare Ground	77
<b>Number of perennial species present in belt transect</b>	<b>0</b>
<b>Transect #4</b>	<b>Value (%)</b>
Perennial Cover	12
Litter Cover	12
Rock Cover	0
Bare Ground	41
<b>Number of perennial species present in belt transect</b>	<b>2</b>

**Maintenance Items:**

None.

**Photographs of Quivira's Section 30 Mine**

The following photographs were taken during the site inspection on August 29, 1995 to document the condition of the Section 30 Mine.



## Section 30W, T 14N, R 9W

A single pumping pad is the only permanent facility remaining on the Section 30W mine site. Quivira Mining Company owns both surface and mineral rights. Grading and reclamation on this site was generally similar to that on the Section 30 mine. Water from recent rains has collected in small depression over portions of the wasterock pad. Although vegetative cover is dominated by the annual weeds, Russian thistle and ragweed (Table 8 and Table 9) there is good establishment of perennial species at this site. Average percent perennial vegetative cover (Table 9) was 12% -- the highest percent cover of these seven recently reclaimed sites. Part of this success may be attributed to the fenced exclosure of the entire site from grazing.

**Table 8.** List of Species at Quivira's Section 30W Mine

COMMON NAME	Genus & species <sup>1</sup>
Sand dropseed	<i>Sporobolu cryptandrus</i>
Crested wheatgrass	<i>Agropyron cristatum</i>
Western wheatgrass	<i>Agropyron smithii</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Bigelow's Aster	<i>Aster bigelovii</i>
Beeweed	<i>Cleome serrulata</i>
Ragweed	<i>Kochia scoparium</i>
Blanket flower	<i>Gaillardia pulchella</i>
Russian thistle	<i>Salsola kali</i>
Blue Gilia	<i>Ipomopsis sp.</i>
Yellow clover	<i>Mellotus sp.</i>

<sup>1</sup> Nomenclature after: Martin, W. C. and C. R. Hutchins. 1980. *A Flora of New Mexico*. J. Cramer, Vaduz, Germany.  
Welsh, S.L. et al. 1987. *A Utah Flora*. Great Basin Naturalist Memoir No. 9.

**Table 9.** Summary of Relative Cover Data at Quivira's Section 30W Mine.

Transect #1	Value (%)
Perennial Cover	6
Litter Cover	6
Rock Cover	0
Bare Ground	59

<b>Transect #1</b>	<b>Value (%)</b>
<b>Number of perennial species present in belt transect</b>	<b>2</b>
<b>Transect #2</b>	<b>Value (%)</b>
<b>Perennial Cover</b>	<b>24</b>
<b>Litter Cover</b>	<b>6</b>
<b>Rock Cover</b>	<b>0</b>
<b>Bare Ground</b>	<b>12</b>
<b>Number of perennial species present in belt transect</b>	<b>2</b>
<b>Transect #3</b>	<b>Value (%)</b>
<b>Perennial Cover</b>	<b>12</b>
<b>Litter Cover</b>	<b>6</b>
<b>Rock Cover</b>	<b>0</b>
<b>Bare Ground</b>	<b>47</b>
<b>Number of perennial species present in belt transect</b>	<b>2</b>
<b>Transect #4</b>	<b>Value (%)</b>
<b>Perennial Cover</b>	<b>6</b>
<b>Litter Cover</b>	<b>12</b>
<b>Rock Cover</b>	<b>0</b>
<b>Bare Ground</b>	<b>47</b>
<b>Number of perennial species present in belt transect</b>	<b>2</b>

**Maintenance Items.**

None.

**Photographs of Quivira's Section 30W Mine**

The following photographs were taken during the site inspection of the Section 30W Mine on August 29, 1995.

## Section 24 Mine, T 14N R10W

Quivira owns the mineral rights, while Homestake Mining Company of California owns the surface rights to the Section 24 Mine. Permanent structures on the Section 24 Mine include an active mixing facility (regulated by the Nuclear Regulatory Commission), a pump substation, and approximately 1000 feet of graded dirt road to these facilities. The diversity of forbs and grasses on this site was low (Table 10). The perennial vegetative cover of 3% also was lower (Table 11) than that at the other mines. Much of this site had evidence of compacted soils. Average soil depth (based on three test pits) was 12 inches.

**Table 10.** List of Species at Quivira's Section 24 Mine

COMMON NAME	Genus & species <sup>1</sup>
Crested wheatgrass	<i>Agropyron cristatum</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Ragweed	<i>Kochia scoparium</i>
Russian thistle	<i>Salsola kali</i>
Winterfat	<i>Ceratoides lanata</i>

<sup>1</sup> Nomenclature after: Martin, W. C. and C. R. Hutchins. 1980. A Flora of New Mexico. J. Cramer, Vaduz, Germany. Welsh, S.L. et al. 1987. A Utah Flora. Great Basin Naturalist Memoir No. 9.

**Table 11.** Summary of Relative Cover Data at Quivira's Section 24 Mine.

Transect #1	Value (%)
Perennial Cover	0
Litter Cover	12
Rock Cover	0
Bare Ground	65
Number of perennial species present in belt transect	0.00
Transect #2	Value (%)
Perennial Cover	0
Litter Cover	12
Rock Cover	0
Bare Ground	65
Number of perennial species present in belt transect	0



<b>Transect #3</b>	<b>Value (%)</b>
Perennial Cover	6
Litter Cover	0
Rock Cover	0
Bare Ground	53
Number of perennial species present in belt transect	0
<b>Transect #4</b>	<b>Value (%)</b>
Perennial Cover	6
Litter Cover	12
Rock Cover	0
Bare Ground	29
Number of perennial species present in belt transect	1

**Maintenance Items.**

None.

**Photographs of Quivira's Section 24 Mine**

The following photographs were taken during the site inspection of the Section 24 Mine on August 29, 1995.

## Section 22, T 14N, R 9W

Surface and minerals rights for the Section 22 mine site are owned by Quivira Mining Company. A pump house, approximately 1000 feet of graded dirt road, and a H<sub>2</sub>SO<sub>4</sub> lixiviant tank remain as permanent features at this site. A small subsidence area approximately 15 feet in width and 20 feet in length was observed in the south central portion of the mine area. Average soil depth over the reclaimed ore pile and wasterock areas was 11 inches. Although some rill formation was observed on the slopes of the wasterock pile, these rills appeared to be armored with coarsely fragmented sandstone materials. There was some evidence of encroachment from the surrounding native vegetation (Table 12), but perennial vegetative cover on the reclaimed portions of this site was very low (Table 13). This site, however, is currently being grazed by approximately 13 head of cattle (Terry Fletcher, pers. comm.). The cattle appear to be feeding mainly on new vegetative growth and regrowth.

**Table 12.** List of Species at Quivira's Section 22 Mine

COMMON NAME	Genus & species <sup>1</sup>
Alkali sacaton	<i>Sporobolus airoides</i>
Crested wheatgrass	<i>Agropyron cristatum</i>
Foxtail barley	<i>Hordeum jubatum</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Western wheatgrass	<i>Agropyron smithii</i>
Beeweed	<i>Cleome serrulata</i>
Ragweed	<i>Kochia scoparium</i>
Mustard	<i>Brassica sp.</i>
Russian thistle	<i>Salsola kali</i>
Nightshade	<i>Solanum sp.</i>
Morning glory	<i>Convolvulus sp.</i>
Stickleaf	<i>Mentzelia albicaulis</i>
Fourwing saltbush	<i>Atriplex canescens</i>
Yellow snakeweed	<i>Gutierrezia sarothrae</i>

<sup>1</sup> Nomenclature after:

Martin, W. C. and C. R. Hutchins. 1980. A Flora of New Mexico. J. Cramer, Vaduz, Germany. Welsh, S.L. et al. 1987. A Utah Flora. Great Basin Naturalist Memoir No. 9.

<b>Transect #1</b>	<b>Value (%)</b>
Perennial Cover	0
Litter Cover	29
Rock Cover	0
Bare Ground	35
<b>Number of perennial species present in belt transect</b>	<b>0</b>
<b>Transect #2</b>	<b>Value (%)</b>
Perennial Cover	0
Litter Cover	18
Rock Cover	0
Bare Ground	47
<b>Number of perennial species present in belt transect</b>	<b>0</b>
<b>Transect #3</b>	<b>Value (%)</b>
Perennial Cover	0
Litter Cover	12
Rock Cover	6
Bare Ground	35
<b>Number of perennial species present in belt transect</b>	<b>1</b>
<b>Transect #4</b>	<b>Value (%)</b>
Perennial Cover	0
Litter Cover	6
Rock Cover	0
Bare Ground	82
<b>Number of perennial species present in belt transect</b>	<b>0</b>

**Maintenance Items:**

None.

**Photographs of Quivira's Section 22 Mine**

The slides contained in the following page were taken during the site inspection on August 29, 1995.



## Section 19, T 14N R 9W

The Section 19 mine site is an open flat area (approximately 50-60 acres in size). A headframe, 2 explosives magazines, 1 vent shaft, and a pumping station with a large gravelled parking area on the southwest corner of the property remain as permanent features. A large wasterock pile was topsoiled and revegetated in June 1994. Average soil depth on this site was 14 inches.

**Table 14.** List of Species at Quivira's Section 19 Mine

COMMON NAME	Genus & species <sup>1</sup>
Alkali sacaton	<i>Sporobolus airoides</i>
Crested wheatgrass	<i>Agropyron cristatum</i>
Blue grama grass	<i>Bouteloua gracilis</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Bigelow's Aster	<i>Aster bigelovii</i>
Ragweed	<i>Kochia scoparium</i>
Composite species	<i>Unknown (Aster? sp.)</i>
Russian thistle	<i>Salsola kali</i>
Rubber rabbitbrush	<i>Chrysothamnus nauseous</i>
Conyza	<i>Conyza sp.</i>
Yellow clover	<i>Melilotus sp.</i>
Stickleaf	<i>Mentzelia albicaulis</i>
Fourwing saltbush	<i>Atriplex canescens</i>
Yellow snakeweed	<i>Gutierrezia sarothrae</i>

<sup>1</sup> Nomenclature after: Martin, W. C. and C. R. Hutchins. 1980. A Flora of New Mexico. J. Cramer, Vaduz, Germany. Welsh, S.L. et al. 1987. A Utah Flora. Great Basin Naturalist Memoir No. 9.

**Table 15.** Summary of Relative Cover Data at Quivira's Section 19 Mine.

Transect #1	Value (%)
Perennial Cover	12
Litter Cover	6
Rock Cover	0

<b>Transect #1</b>	<b>Value (%)</b>
<b>Bare Ground</b>	65
<b>Number of perennial species present in belt transect</b>	1
<b>Transect #2</b>	<b>Value (%)</b>
<b>Perennial Cover</b>	18
<b>Litter Cover</b>	6
<b>Rock Cover</b>	0
<b>Bare Ground</b>	35
<b>Number of perennial species present in belt transect</b>	1
<b>Transect #3</b>	<b>Value (%)</b>
<b>Perennial Cover</b>	12
<b>Litter Cover</b>	0
<b>Rock Cover</b>	0
<b>Bare Ground</b>	47
<b>Number of perennial species present in belt transect</b>	0
<b>Transect #4</b>	<b>Value (%)</b>
<b>Perennial Cover</b>	6
<b>Litter Cover</b>	6
<b>Rock Cover</b>	0
<b>Bare Ground</b>	77
<b>Number of perennial species present in belt transect</b>	0

**Maintenance Items:**

None.

**Photographs of Quivira's Section 19 Mine**

The photographs contained in the following pages were taken during the site inspection on August 29, 1995 of the Section 19 Mine. The below numbered descriptions identify the current condition of the site.

Section 17, T 14N, R 9W

**Table 16.** List of Species at Quivira's Section 17 Mine

COMMON NAME	Genus & species <sup>1</sup>
Crested wheatgrass	<i>Agropyron cristatum</i>
Galleta	<i>Hilaria jamesii</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Beeweed	<i>Cleome serrulata</i>
Ragweed	<i>Kochia scoparium</i>
Scarlet globemallow	<i>Sphaeralcea coccinea</i>
Russian thistle	<i>Salsola kali</i>
Yellow clover	<i>Melilotus sp.</i>
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>

<sup>1</sup> Nomenclature after: Martin, W. C. and C. R. Hutchins. 1980. A Flora of New Mexico. J. Cramer, Vaduz, Germany. Welsh, S.L. et al. 1987. A Utah Flora. Great Basin Naturalist Memoir No. 9.

**Table 17.** Summary of Relative Cover Data at Quivira's Section 17 Mine.

Transect #1	Value (%)
Perennial Cover	0
Litter Cover	12
Rock Cover	0
Bare Ground	47
Number of perennial species present in belt transect	1
Transect #2	Value (%)
Perennial Cover	0
Litter Cover	12
Rock Cover	0
Bare Ground	47
Number of perennial species present in belt transect	1



<b>Transect #3</b>	<b>Value (%)</b>
<b>Perennial Cover</b>	<b>0</b>
<b>Litter Cover</b>	<b>6</b>
<b>Rock Cover</b>	<b>0</b>
<b>Bare Ground</b>	<b>59</b>
<b>Number of perennial species present in belt transect</b>	<b>2</b>
<b>Transect #4</b>	<b>Value (%)</b>
<b>Perennial Cover</b>	<b>0</b>
<b>Litter Cover</b>	<b>12</b>
<b>Rock Cover</b>	<b>0</b>
<b>Bare Ground</b>	<b>59</b>
<b>Number of perennial species present in belt transect</b>	<b>0</b>

**Maintenance Items:**

None.

**Photographs of Quivira's Section 17 Mine**

The following photographs of the Section 17 Mine were taken during the site inspection on August 29, 1995.

<b>Transect #2</b>	<b>Value (%)</b>
Bare Ground	47
Number of perennial species present in belt transect	1
<b>Transect #3</b>	<b>Value (%)</b>
Perennial Cover	0
Litter Cover	6
Rock Cover	0
Bare Ground	59
Number of perennial species present in belt transect	2
<b>Transect #4</b>	<b>Value (%)</b>
Perennial Cover	0
Litter Cover	12
Rock Cover	0
Bare Ground	59
Number of perennial species present in belt transect	0

**Maintenance Items:**

None.

**Photographs of Quivira's Section 17 Mine**

The following photographs of the Section 17 Mine were taken during the site inspection on August 29, 1995.

**Summary and Conclusions**

Based on the inspection of the Sections 17, 19, 22, 24, 30, 30W, 33 and 36 mine sites, review of inspection information with Mining and Minerals Division staff and MMD's resources to conduct these inspections, it is recommended that the Section 36 Mine site operated by Quivira Mining Company (Quivira) be released from further requirements of the New Mexico Mining Act. The other mine sites (*i.e.* Sections 17, 19, 22, 24, 30, 30W, and 33) were reclaimed in June-July of 1994 and cannot be released at this time. Staff has concluded that is too early to determine whether or not these sites meet the environmental conditions that allow for the development of a 'self-sustaining ecosystem' as defined in Rule 1. and put forth in Rule 5.7A of the New Mexico Mining Act. Annual weeds such as ragweed and Russian thistle predominate on these sites, while perennials are much less numerous. Such plant communities are characteristic of early succession, but do not

provide enough information to make the determination that the site will one day become self-sustaining.

Based on oral and written communication (letter from Quivira, September 14, 1995) with the operator, and on the condition of these seven remaining reclaimed sites as documented by this inspection report, it is clear that the operator has made a good effort to complete all of the required reclamation. It is recommended that the Director of MMD give a variance to Quivira Mining Company from meeting the deadline of September 30, 1995 for prior reclamation under the New Mexico Mining Act and Rules for the Section 17, 19, 22, 24, 30, 30W, and 33 mine sites. This variance would stipulate that inspections will be conducted by MMD during the late summer of 1997 at each of the remaining sites to determine if the conditions necessary for development of a 'sustainable ecosystem' are then present on-site, and if any further actions including (but not limited to) reseeding or interseeding by the operator are necessary.

### Literature Cited

- Bonham, C. D. 1989. Measurement of Terrestrial Vegetation. Wiley-Interscience. 338 pp.
- Craft, Fred. 1995. Resident Manager, Homestake Mining Company. Personal Communication
- Martin, P. C., and C. R. Hutchins. 1980. A Flora of New Mexico. J. Cramer Press, Vaduz, Germany. 2591 pp.
- Welsh, S. L. et al. 1989. A Utah Flora. Great Basin Naturalist Memoir No. 9. Brigham Young University Press. 898 pp.

Section 17 Min  
# 1



17 Mine  
#2



17 Mine  
#3





17 Mine  
#4



Borrow  
Area

High pile - pushed

Section 19 Mine

≡ 19 acres  
≡ 30000 c.y.  
@ 1' thick

Vent 2  
O

Vent 1  
O

Borrow Area

Quivira's Settlement  
19 Mine  
#4



Quivira Section  
19 Mine  
#1 (R), #2 (M),  
#3 (L)



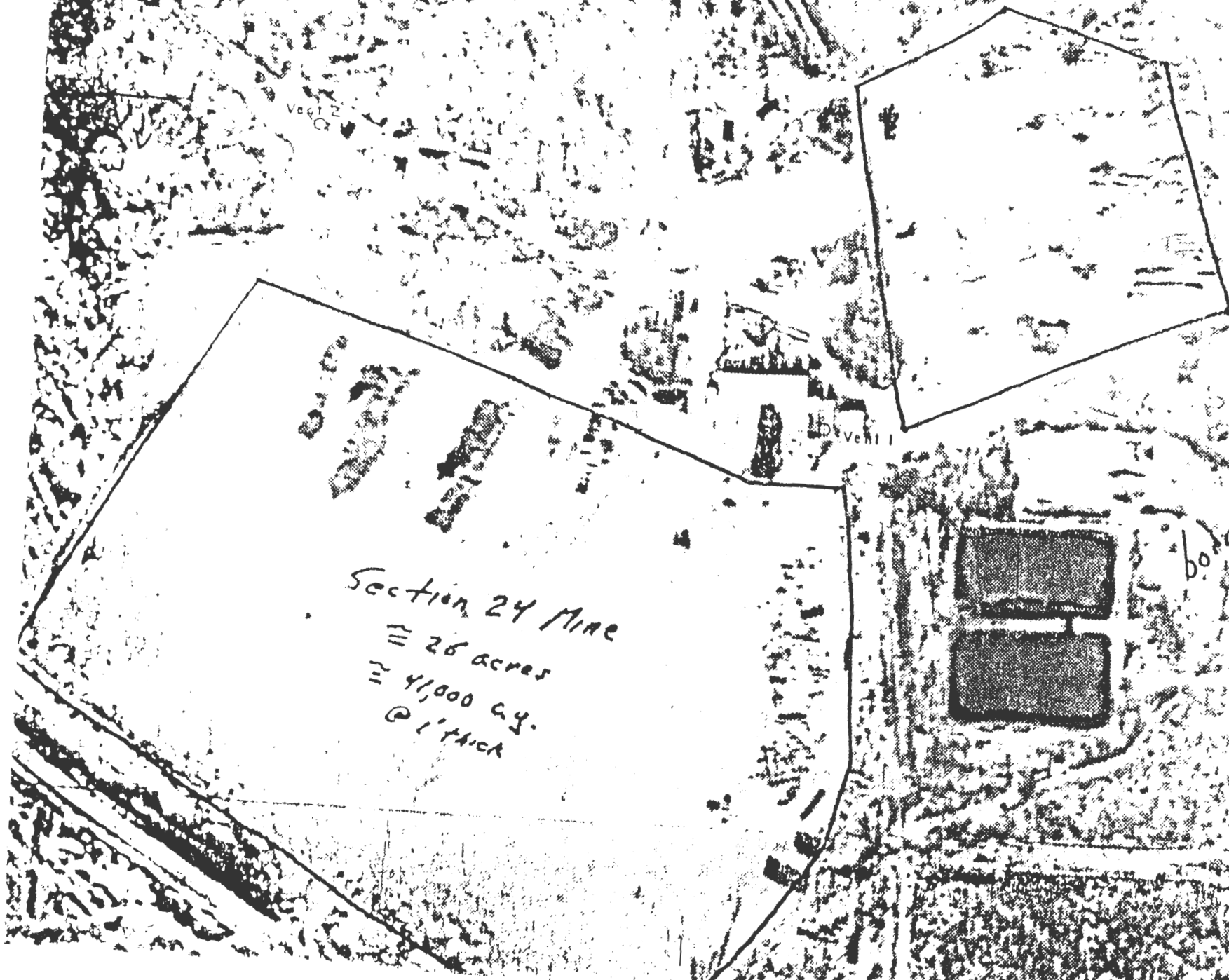
Veget 2

borrow

Veget 1

borrow

Section 24 Mine  
≅ 26 acres  
≅ 4,000 cu.  
@ 1' thick





5610818

Section 30/4ne

≅ 4.11" cns

≅ 71,900 cy

@ 1" thick

Vent. J.



30 June  
21



Quirica, 7001, 01, 20  
Mino  
#2



Quivira's Section  
30 Mine  
#3



cutting section  
30 Mine

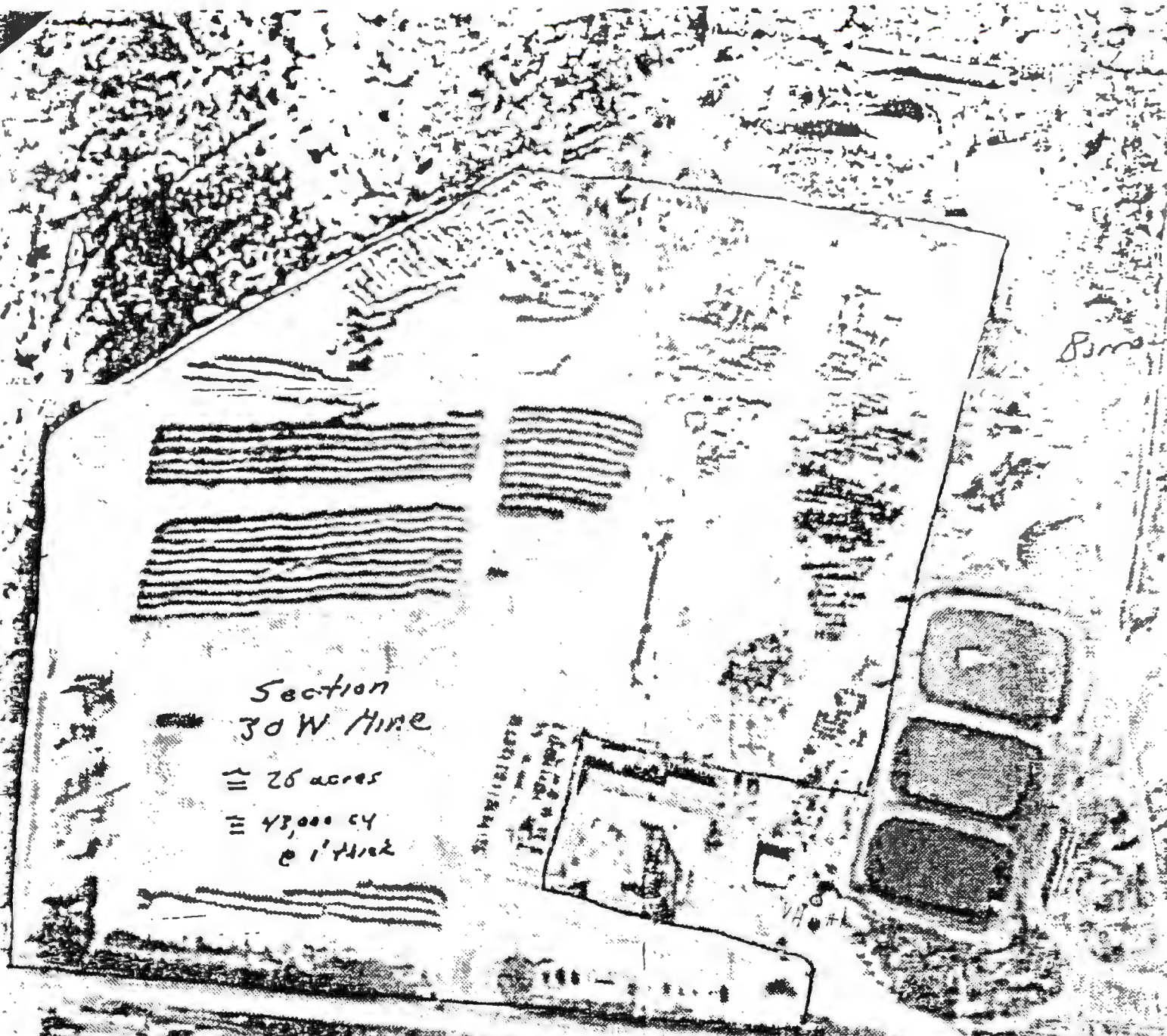
#4



30 Mine  
#5









university station  
30 W Mine  
#1



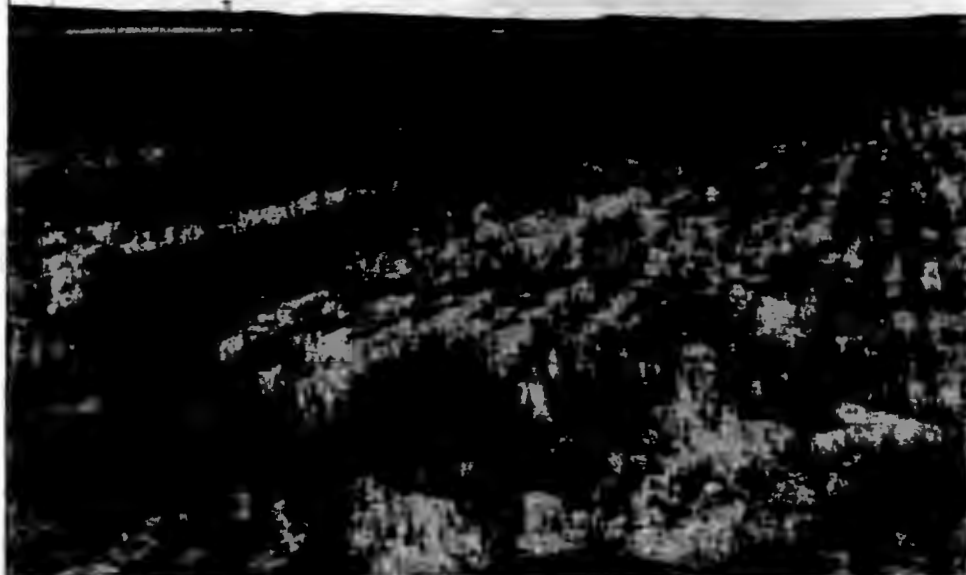
SHANLEY SECTION  
30W Mine  
#2



Quivira section  
30 W Mine  
#3






Quivira Section  
30 W Mine  
#4

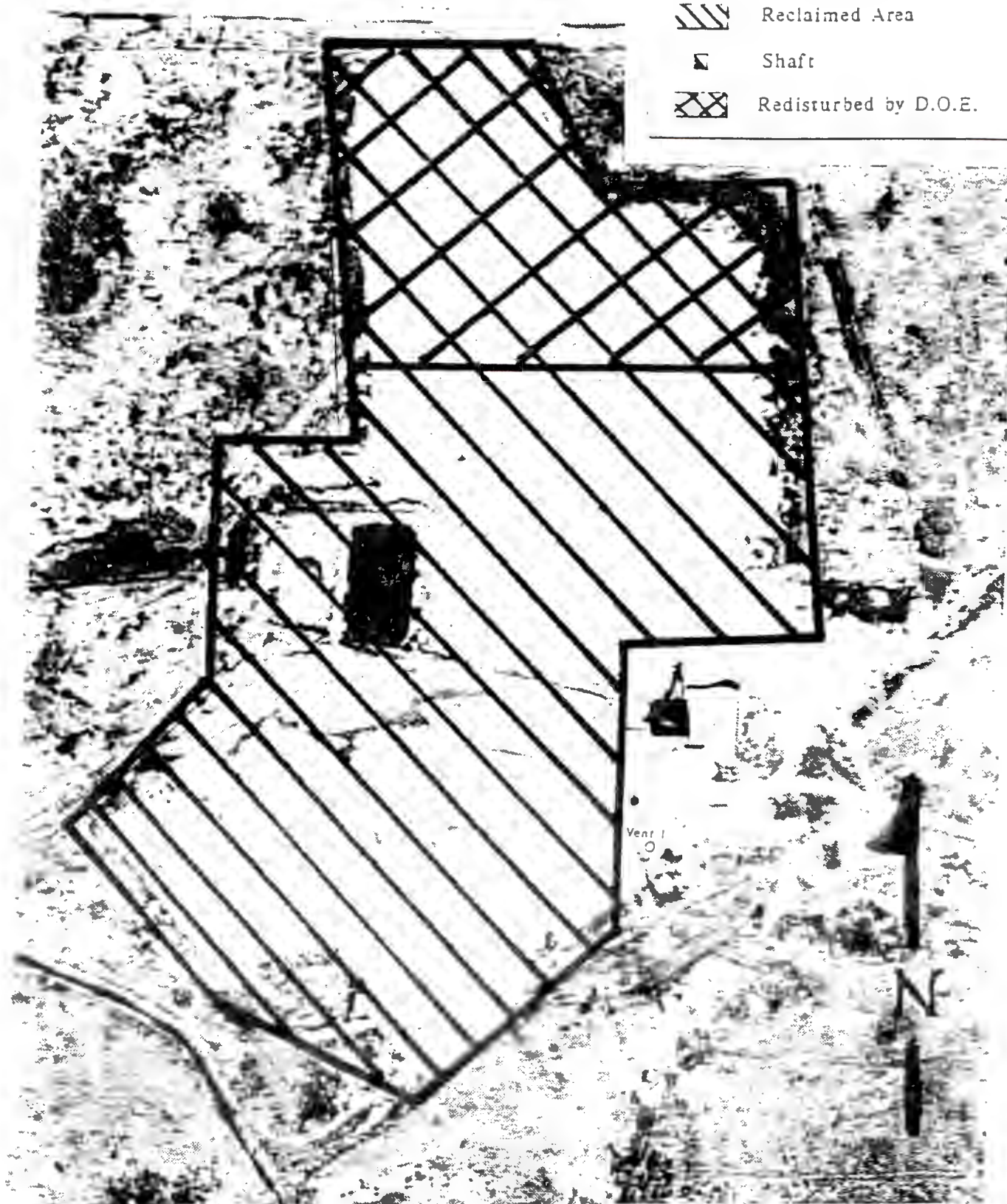


Quivira  
Inspector  
8/29/91

# SECTION 33 MINE

Figure 6 -  
LEGEND

-  Reclaimed Area
-  Shaft
-  Redisturbed by D.O.E.



Rajonais  
Section 33 Mine  
#1 & 2

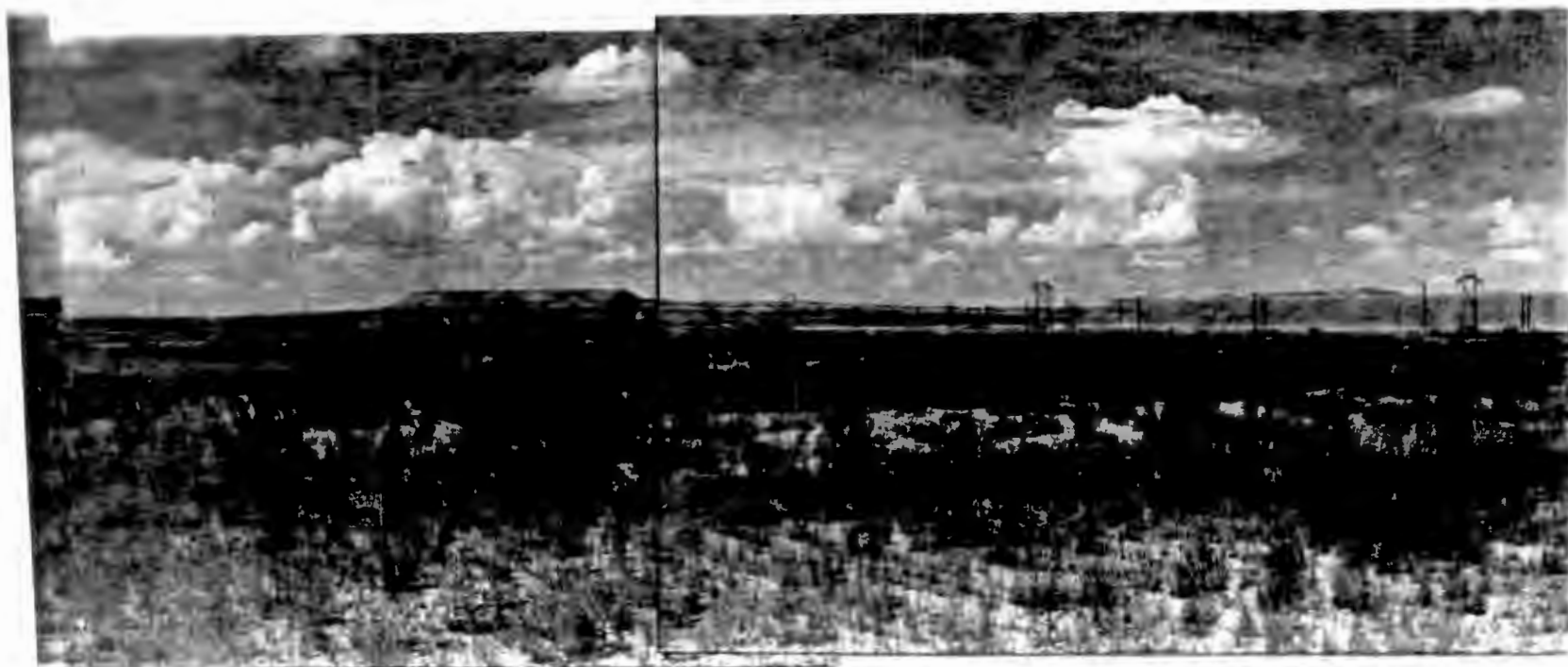




Quivira Section 36  
#2 & 3  
Hire



35 Mine  
#3,45



YUUVIRA  
Inspected  
8/29/95

# SECTION 36 MINE



Figure\_5

## LEGEND



Reclaimed Area

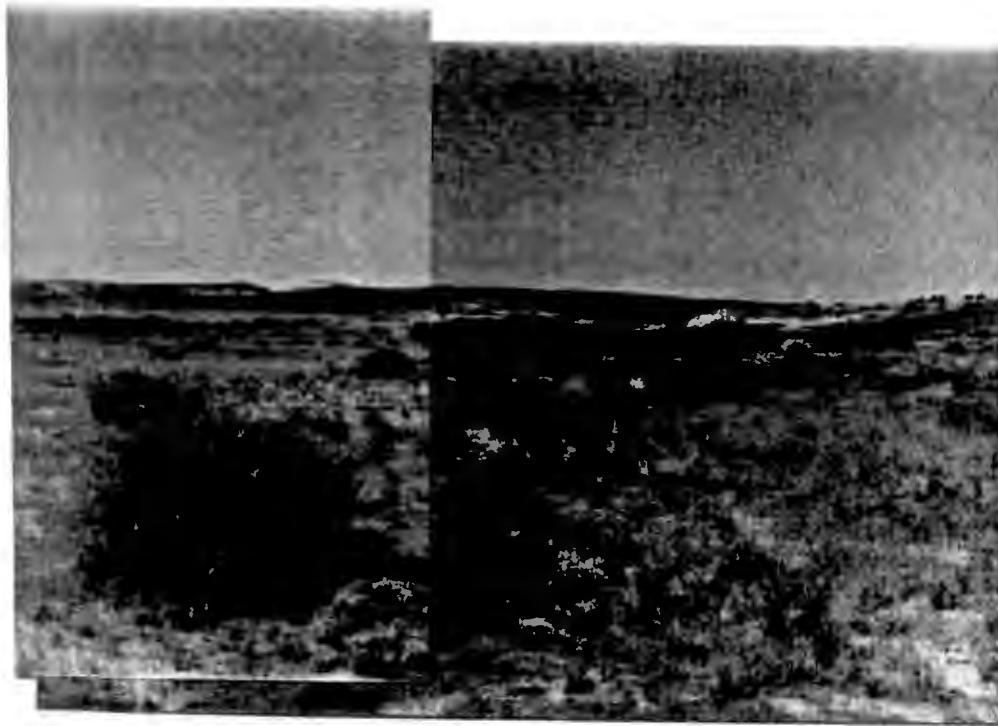


Shaft

Quivira's Section 36 Mo  
#1



Quinn's Section 36  
# 986  
Pine



# Quivira Mining Company

September 14, 1995

SEP 15 1995

Certified Mail  
Return Receipt Requested (P 762 964 259)

Dr. Robin Tierney  
Mining and Minerals Division  
Energy, Minerals and Natural Resources Department  
2040 South Pacheco  
Santa Fe, NM 87505

Re: **Quivira Mining Company**  
**Prior Reclamation Request**

Dear Dr. Tierney,

This letter represents a confirmation of our telephone conversation on September 14, 1995 regarding prior reclamation at the Ambrosia Lake site. As we discussed, although the areas have been successfully reclaimed and revegetated consistent with the requirements of the Act and Rules, due to the time period that has transpired since the areas were revegetated, the Mining and Minerals Division (MMD) would like to subsequently re-verify the successful reclamation efforts.

Therefore, pursuant to our discussion, Quivira's prior reclamation application would be approved by MMD; and in conjunction with this approval, the area would receive a one-time field re-verification review.

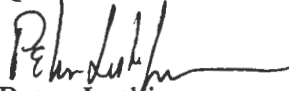
The objective of this one time field review would be to re-verify that the conditions to allow for establishment of a self sustaining ecosystem consistent with the surrounding area has been met for the post mining land use of grazing. This one time review would be conducted after two (2) additional growing seasons. Upon re-verification, the area would again be acknowledged by MMD as meeting the prior reclamation requirements. If the result of this review is contrary to this, then Quivira would develop and implement a program to address the issues raised by MMD.



I would like to thank you for your effort and cooperation in this matter. If you have any questions, please do not hesitate to contact me at (505) 287-8851, extension 205.

Sincerely,

QUIVIRA MINING COMPANY

A handwritten signature in dark ink, appearing to read "Peter Luthiger", with a long horizontal flourish extending to the right.

Peter Luthiger  
Supervisor, Radiation Safety  
and Environmental Affairs

xc: B. Ferdinand  
T. Fletcher  
file

## PRIOR RECLAMATION INSPECTION

DATE: 8/30  
 CONDITIONS: wet mud  
permanent substrate w/ shells, pump pad, waste rock pile was reclaimed in 1994  
Quivira was fully operational / surface, 2:30  
 SITE: Section 30  
 OPERATOR: Quivira  
 PRESENT: Terry Fletcher, Robert Young

Visual / Belt	waste pile (N end) Transect # 1	medial borrow / pile Transect # 2	Transect # 3	Transect # 4
Alca Arfr	Gusa	BG	BG	Kosc
Hogu Kosc Orly	yel. clowr	BG	BG	Kosc
Ater Denothm	yel. clowr	Kosc	BG	Litter
Yel. clowr Astor erio.	BG	Litter	Litter	BG
Saka Chrysopsis	Kosc	Kosc	BG	Litter
Macromphla Spharalera	BG	BG	BG	Sper
Soil #1 Soil is clay sand over 12" to grey waste rock	BG	Kosc	BG	Kosc
Saka	BG	BG	Kosc	BG
Sper	BG	Kosc	Kosc	Kosc
	BG	BG	BG	BG
	Kosc	BG	BG	BG
	Kosc	Litter	BG	BG
	Kosc	Kosc	BG	Kosc
	BG	Litter	BG	BG
	Kosc	BG	BG	BG
	BG	BG	BG	Gusa
	BG	Litter	Kosc	Kosc

c:\priorec.tab

- 5 #1 to N waste piles  
 6 #2 to E  
 7 #3 to SW - ore pile  
 8 #4 to NW - ore pile  
 #9 to SE from NW corner of waste pile

# Quivira Mining Company

September 14, 1995

SEP 15

Certified Mail  
Return Receipt Requested (P 762 964 259)

Dr. Robin Tierney  
Mining and Minerals Division  
Energy, Minerals and Natural Resources Department  
2040 South Pacheco  
Santa Fe, NM 87505

Re: **Quivira Mining Company**  
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The objective of this one time field review would be to re-verify that the conditions to allow for establishment of a self sustaining ecosystem consistent with the surrounding area has been met for the post mining land use of grazing. This one time review would be conducted after two (2) additional growing seasons. Upon re-verification, the area would again be acknowledged by MMD as meeting the prior reclamation requirements. If the result of this review is contrary to this, then Quivira would develop and implement a program to address the issues raised by MMD.

Dr. Robin Tierney  
September 14, 1995  
Page 2 of 2

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Sincerely,

QUIVIRA MINING COMPANY

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Peter Luthiger  
Supervisor, Radiation Safety  
and Environmental Affairs

xc: B. Ferdinand  
T. Fletcher  
file

**QUIVIRA MINING COMPANY**

POST OFFICE BOX 218 • GRANTS, NEW MEXICO 87020

September 1, 1995

Dr. Robin Tierney  
Mining and Minerals Division  
Energy, Minerals and Natural Resources Department  
2040 South Pacheco  
Santa Fe, NM 87505

**Re: Prior Reclamation Request**

Dear Dr. Tierney,

Pursuant to your request, I have enclosed the remaining maps of Quivira Mining Company's prior reclamation sites that you visited on August 29-30, 1995.

If you have any questions regarding this matter, please do not hesitate to contact me at (505) 287-8851, extension 205.

Regards,

QUIVIRA MINING COMPANY



Peter Luthiger  
Supervisor, Radiation Safety  
and Environmental Affairs

xc: B. Ferdinand  
T. Fletcher  
file

SECTION 17 MINE

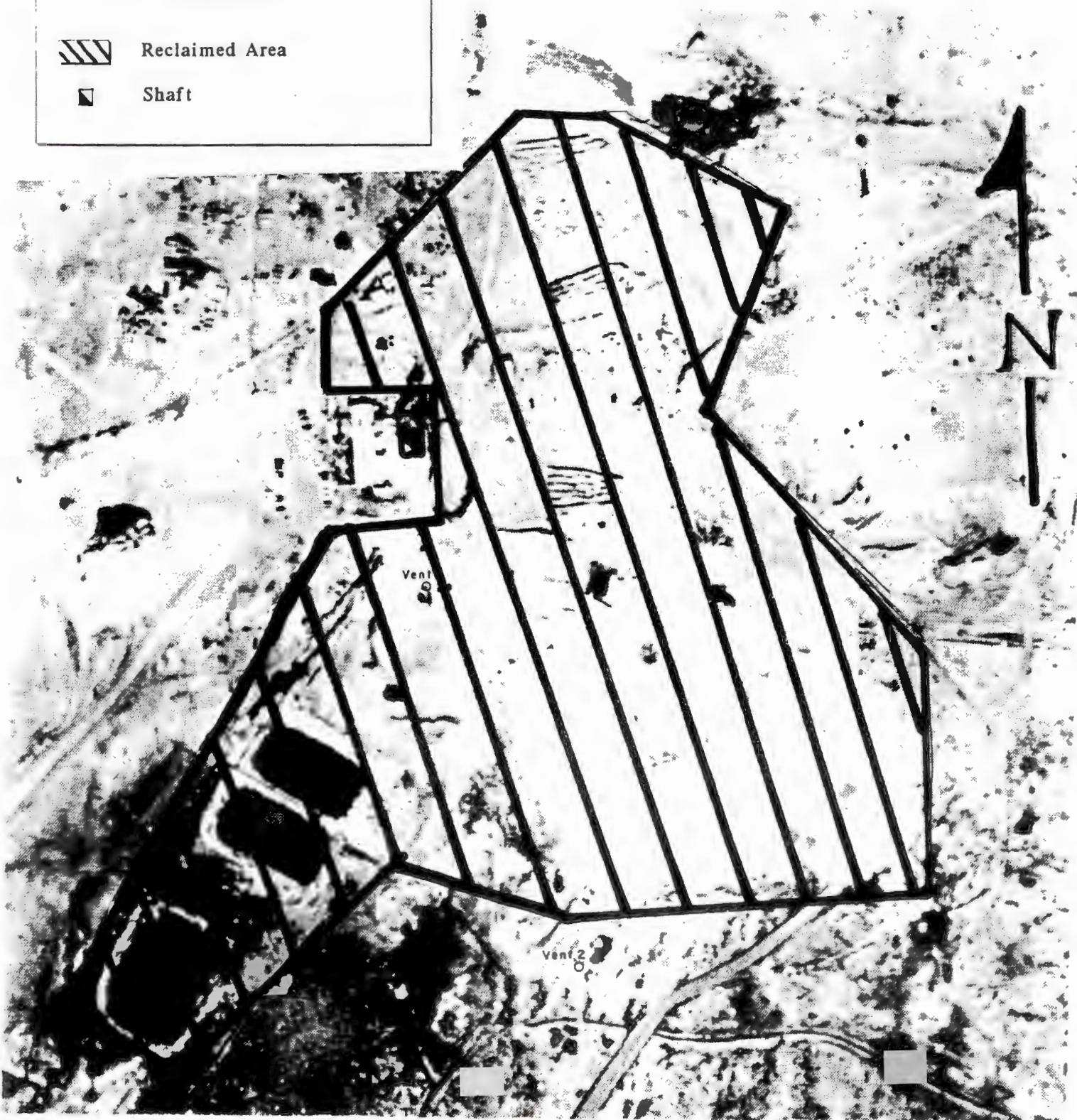
LEGEND



Reclaimed Area

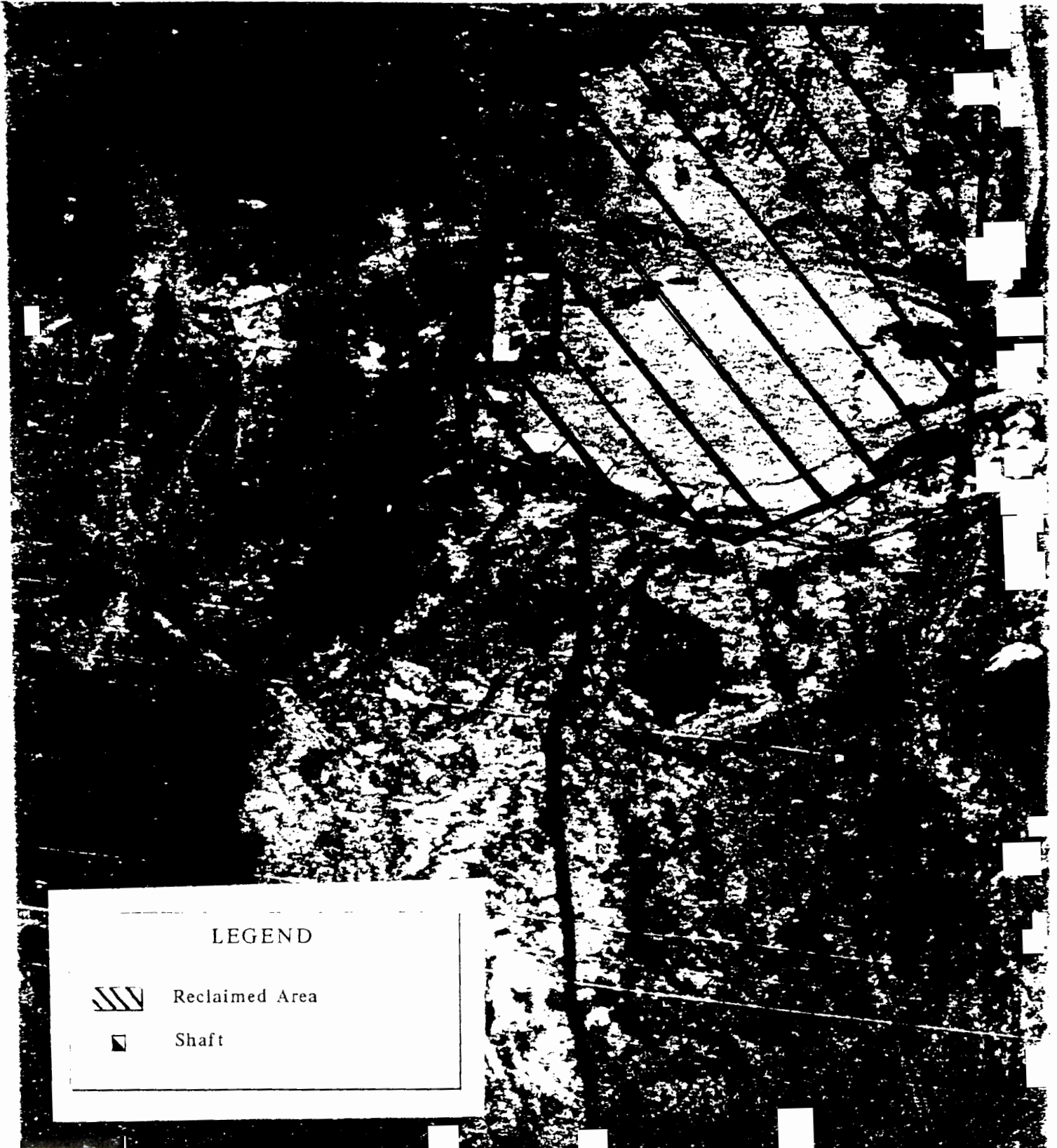


Shaft





## SECTION 22 MINE



# SECTION 33 MINE

## LEGEND



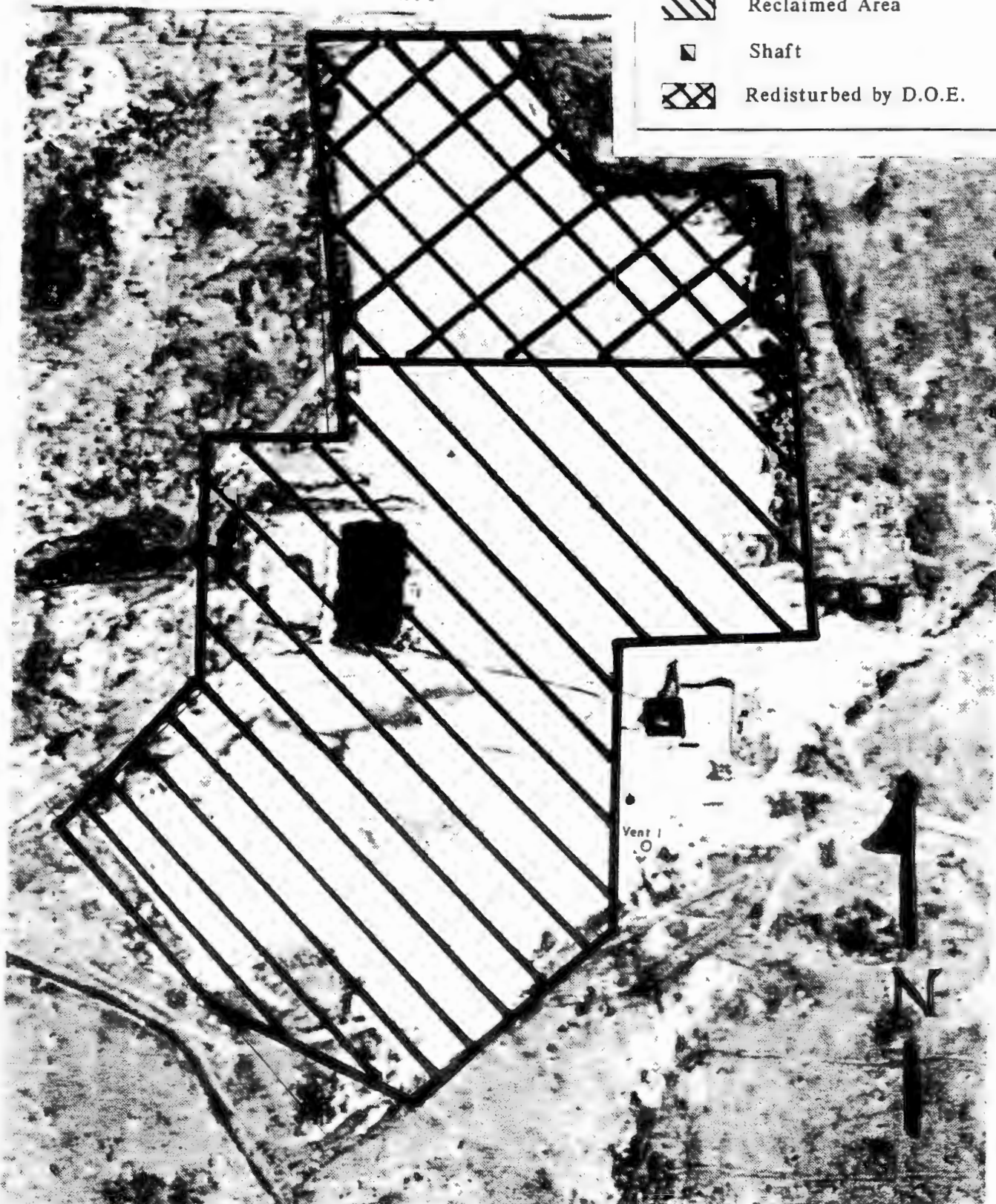
Reclaimed Area



Shaft



Redisturbed by D.O.E.





# SECTION 36 MINE



# Quivira Mining Company

File under Section 17 mine  
Inter sec  
Pacheco County

February 14, 1995



Certified Mail  
Return Receipt Requested (P 762 964 235)

Mr. Holland Shepherd  
Chief, Mining Act Reclamation Bureau  
Energy, Minerals and Natural Resources Department  
Mining and Minerals Division  
2040 South Pacheco  
Santa Fe, NM 87505

Re: **Quivira Mining Company**  
**Prior Reclamation Application**

Dear Mr. Shepherd:

In response to your January 22, 1995 request regarding Quivira Mining Company's prior reclamation application, please find attached a map identifying the land sections where the shafts of Quivira's various mining units are located. These units, referred to as Section 17, 19, 22, 24, 30, 30 West, 33, and 36, comprise Quivira's Ambrosia Lake mining operation included within the prior reclamation application. As clearly indicated on the map, these units are all in close proximity to each other and should be treated as a single mining entity.

The legal section, township, and range for these mining units are as follows:

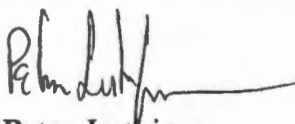
<u>Mining Unit</u>	<u>Specific Location</u>
Section 17	Section 17, T14N, R9W
Section 19	Section 19, T14N, R9W
Section 22	Section 22, T14N, R10W
Section 24	Section 24, T14N, R10W
Section 30	Section 30, T14N, R9W
Section 30 West	Section 30, T14N, R9W
Section 33	Section 33, T14N, R9W
Section 36	Section 36, T14N, R9W

Mr. Holland Shepherd  
February 14, 1995  
Page 2 of 2

If you have any questions regarding this information, please do not hesitate to contact me at (505) 287-8851, extension 205.

Regards,

QUIVIRA MINING COMPANY



Peter Luthiger  
Supervisor, Radiation Safety  
and Environmental Affairs

Attachment: As stated

xc: B. Ferdinand  
T. Fletcher  
file

*Quivira*

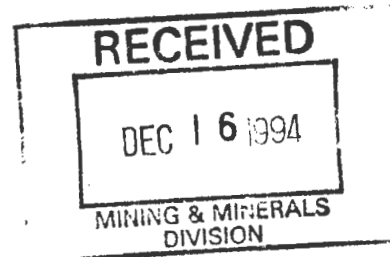
DP- 362	Sec. 24, et al
67	Sec. 36
71	Sec. 4 Evap. Ponds
169	Tailings (NRC)
264	Sec. 35 + 36 (mine de...)

DP- 362 Ex. Dec. 5, 1977  
Ind. Sec. 19, 22, 24,  
17, 30, 30W, 33, 35  
11, 15, 17, 1707, H2SO4

# Quivira Mining Company

December 14, 1994

Certified Mail  
Return Receipt Requested (762 964 212)



Mr. Holland Shepherd  
Chief, Mining Act Reclamation Bureau  
Energy, Minerals, and Natural Resources Department  
Mining and Minerals Division  
2040 South Pacheco  
Santa Fe, NM 87505

Re: **Quivira Mining Company**  
**Prior Reclamation Application**

Dear Mr. Shepherd,

Quivira Mining Company is in receipt of the letter dated September 13, 1994 from the Mining and Minerals Division (MMD) regarding the prior reclamation application submitted by Quivira on August 30, 1994.

However, Quivira disagrees with MMD's interpretation of Rule 2.1.I of the Mining Act Regulations that the fee adopted by the New Mexico Mining Commission applies to each mine site. Rule 2.1.I states,

*"The application fee to determine whether a mine or a portion of a mine qualifies for prior reclamation shall not exceed \$250 and shall be determined by the Director based on the estimated cost for investigation and issuance."*

Quivira interprets this as each application submitted for a mine operation requires a \$250 fee. Quivira believes this to be the correct interpretation considering other interrelated portions of the Mining Act regulations, specifically Rule 5.2.F. This rule states:

*"Where physically separate but interrelated mining operations are located in close proximity to each other and are under the control of the same owner or operator, the applicant may request or the Director may determine to issue one permit for all of the operations and require only*



Mr. Holland Shepherd  
December 14, 1994  
Page 2 of 2

*one permit application and closeout plan."*

Additionally, recognizing that Quivira's facilities are either adjacent to or in very close proximity to each other and were operated as a single mining unit, Quivira believes a single application fee for its operation is prudent and justified.

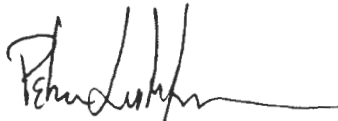
Quivira believes that since its properties meet the requirements as a single operation, and has in fact operated the facilities as a single operation, one fee for the mining unit is applicable. Further, although reclamation has been completed at these sites, a single permit will be sought if, for some reason, Quivira must permit any of these areas. As such, Quivira maintains its position that the proper application fee for the August 30, 1994 prior reclamation application has been submitted to MMD.

Quivira is currently compiling the additional information requested by MMD in order to assist the Director in determining release pursuant to Rule 5.10 of the Mining Act Regulations.

If you have any questions, please contact me at (505) 287-8851, extension 246.

Regards,

QUIVIRA MINING COMPANY

A handwritten signature in black ink, appearing to read 'Peter Luthiger', with a long horizontal flourish extending to the right.

Peter Luthiger  
Supervisor, Radiation Safety  
and Environmental Affairs

xc: B. Ferdinand  
T. Fletcher  
M. Freeman  
file

# Quivira Mining Company

August 30, 1994

Certified Mail  
Return Receipt Requested (P 340 643 879)

Mr. Holland Shepherd  
Chief, Mining Act Reclamation Bureau  
Energy, Minerals and Natural Resources Department  
Mining and Minerals Division  
2040 South Pacheco  
Santa Fe, NM 87505

Re: **Quivira Mining Company**  
**Prior Reclamation Application**



Dear Mr. Shepherd:

Pursuant to Section 5 of the New Mexico Mining Act [NMSA 69-36-5.E] and Rule 5.10.A of the New Mexico Mining Act Rules dated July 12, 1994, Quivira hereby submits this application for prior reclamation and requests approval of the prior reclamation application for the Section 17, 19, 22, 24, 30, 30 West, 33, and 36 mining areas.

In addition to this, please find attached a check in the amount of \$250.00 as required by Rule 2.1.I of the New Mexico Mining Act Rules dated July 12, 1994.

Pursuant to Section 7.J of the New Mexico Mining Act [NMSA 1978, 69-36-7.J] and Rule 13.3 of the New Mexico Mining Act Rules dated July 12, 1994, all areas and facilities under the jurisdiction of other federal or state regulatory entities are exempt from regulation by the Mining and Minerals Division under the New Mexico Mining Act and therefore, are not included within this prior reclamation application.

The submittal of this prior reclamation application by Quivira Mining Company does not alter Quivira's contention as presented during the May 12, 1994 New Mexico Mining Commission hearings, that uranium mines may not be subject to the New Mexico Mining Act pursuant to the definition of "Mineral" and/or "Mining" because uranium is a commodity, byproduct material or waste that is regulated by the Nuclear Regulatory Commission (NRC) and/or involves the extraction, processing or disposal of same or of

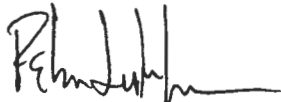
Mr. Holland Shepherd  
August 30, 1994  
Page 2 of 2

activities regulated by NRC; and also because of the extensive federal and state duplicative regulations and preemption of regulatory power over uranium and over the above listed activities. With this submittal, Quivira does not waive or prejudice its position that its operations may be excluded from the applicability of the Act.

If you have any questions, please call me at (505) 287-8851.

Regards,

QUIVIRA MINING COMPANY

A handwritten signature in black ink, appearing to read 'Peter Luthiger', with a horizontal line extending to the right.

Peter Luthiger  
Supervisor, Radiation Safety  
and Environmental Affairs

Attachment: As stated

xc: B. Ferdinand  
T. Fletcher  
M. Freeman  
file

TO: FIRST NATIONAL BANK OF GRANTS  
GRANTS, NEW MEXICO

95-220  
1022

**QUIVIRA MINING COMPANY**

P.O. BOX 218  
GRANTS, NEW MEXICO 87020

**No. 2556**

MO	DAY	YEAR	PAY EXACTLY	DOLLARS	CENTS	DOLLARS	CENTS
08	30	94	*****250*****	**00**		250	00

QUIVIRA MINING COMPANY  
GENERAL ACCOUNT

TO  
THE  
ORDER  
OF

State of New Mexico  
Mining and Minerals Division

*Terry J. Fletcher*  
*Kathy J. Lovett*



is

Number cells  
85

Number cells  
52

on 30

Section 30W

Section 33

DIRECTION

CELL DIRECTION

CELL DIRECTION

10	40	104
250	63	193
37	25	193
340	9	246
299	85	221
333	63	151
165	52	322
29	32	9
147	52	65
223	48	328
253	85	223
347	62	150
113	15	238
100	69	194
72	2	24
233	57	357
119	34	252
359	11	208
239	61	301
81	78	51
152	80	332
185	23	223
338	61	106
33	33	285
36	49	220
209	33	310
83	52	242

3	17
11	332
34	279
34	226
34	140
15	12
8	329
35	127
X	15
46	10
39	262
11	335
44	261
26	218
21	257
3	47
26	166
30	59
36	309
3	240
20	233
11	91
37	274
51	330
29	281
41	345
1	6
43	121

is

Number cells  
85

Number cells  
52

on 30

Section 30W

Section 33



**RECLAMATION REPORT**  
**SECTION 13 MINE**  
**HOMESTAKE MINING COMPANY OF CALIFORNIA**

**SUBMITTED TO**  
  
**MINING AND MINERALS DIVISION**  
**ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT**  
**STATE OF NEW MEXICO**

**AUGUST 29, 1994**

**COMPILED BY**  
**AK GeoConsult, Inc.**

**REPORT OF RECLAMATION OF AN EXISTING MINE PRIOR TO JUNE 18, 1994**  
**HOMESTAKE MINING COMPANY OF CALIFORNIA**  
**SECTION 13 MINE**

---

**1.0 INTRODUCTION**

Homestake Mining Company of California (HMC) submits the following information on the closure of their Section 13 mine located in McKinley County, New Mexico (Figure 1). This information is provided to comply with Section 69-36-1B(3) of the New Mexico Mining Act and Section 5.10 of the new New Mexico Mining Rules and Regulations. The Section 13 mine is considered an "Existing Mining Operation" because it produced marketable minerals (uranium) for a total of at least two years between January 1, 1970 and the effective date of the act.

HMC Section 13 mine is located in the Ambrosia Lake valley in T14N, R10W as shown on Figure 1. The owner of the surface estate is Mr. Jerry Elkins. The owner of the mineral rights is Cerrillos Land Company (Santa Fe Pacific Railroad). The mine was in operation from 1977 to 1981.

**1.1 History of Operation**

The HMC Section 13 mine went into operation in October 1977 under the United Nuclear-Homestake Partners under a lease from Santa Fe Pacific Railroad. This partnership was subsequently dissolved in February 1981 and the operator became Homestake Mining Company - Grants, later renamed Homestake Mining Company of California.

**1.2 Mine Site Description**

**1.2.1 Climatology**

The climate is typical of High Sonoran Desert areas with average precipitation of about 9 to 10 inches at elevations of less than 6000 feet to more than 12 inches at elevations above 7000 feet. Annual air temperature range is about 54 degrees F at lower elevations and about 47 degrees F at higher elevations and the average frost-free period is 115 to 145 days. The prevailing wind is from the southwest. The rainy season is in the summer. About half of the annual precipitation falls during the period July through September, mostly during brief thunder storms (SCS, 1993).

### **1.2.2 Ecology**

The soil and vegetation in and surrounding Section 13 were mapped and classified by the local Soil Conservation Service (SCS, 1994). Three basic soil complexes are within the site and surrounding areas. These are:

- A. Penistaja - Tintero complex, 1 to 10 percent slopes
- B. Sparank-San Mateo - Zia complex, 0 to 5 percent slopes
- C. Hagerman - Bond fine sandy loams, 1 to 8 percent slopes

These soil complexes are found at elevations of 6200-7100 feet on dip slopes of cuestras, fan terraces, valley sides, flood plains and drainage ways. The vegetation communities consist mainly of blue grama, western wheatgrass, sand dropseed and alkali sacaton, bottlebrush squirreltail, fourwing saltbush and indian ricegrass. The soil and vegetation types are favorable for livestock grazing and wildlife habitat (SCS, 1994). The wildlife in the area is limited to species of small mammals and bird species typical of grassland/desert shrub communities.

### **1.2.3 Geology**

Section 13 is located in the Ambrosia Lake District of northwestern New Mexico. This district occupies a portion of the southern limb of the San Juan Basin, called the Chaco Slope (Figure 2), and is bordered on the south by the Zuni uplift and on the east by the Mt. Taylor Volcanic Plateau.

The stratigraphic unit underlying Section 13 is shown on Figure 3 (Kelley, 1963). This shows the Cretaceous system of Mancos shale and Dakota sandstone overlying the Jurassic System of the Morrison Formation. Uranium ore is found in the A through D sandstone units of the Westwater Canyon member of the Morrison Formation.

Two distinctly different types of ore occur in Section 13. These are the coffinite and uraninite minerals of which coffinite represents 99 percent of the ore. The primary ore bodies consist of uriferous blankets of humic organic matter which fills the intergranular space in the host rock. The blanket occurs along several trends, like beads on a string.

#### **1.2.4 Topography**

The topography in Section 13 consists of very gentle slopes of about 0.6 to 1.5 percent. Because of mining these gentle slopes have been altered due to the recontouring and borrow soil removal for reclamation purposes. The reclaimed waste pile has created a small mound with side slopes of 10:1 to 5:1 that blend into the natural landscape.

#### **1.2.5 Hydrology**

There are no perennial or intermittent streams in the mine area. All surface runoff drains to ephemeral water courses. Drainage in the area flows southeast to the San Mateo Drainage.

### **2.0 MINING OPERATION DESCRIPTION**

The Section 13 mine was a typical underground mine (Figure 4) which used the modified room and pillar method to recover the primary and redistributed ore. The mine began operation in 1977 and ceased in 1981 due to the declining uranium market. In addition to the modified room and pillar method it was common to blast an opening in the lower part of the ore body which left it unsupported. When the ore fell to the bottom of the opening or stope it was removed by the miner using a machine called a slusher. This ore then was transferred by truck to the main shaft for transport to the surface.

To support the underground mining operation, several support facilities were constructed on the surface. These included the hoist, headframe, administrative building, parking lot and various other small facilities. A layout of these facilities is shown on Figure 5. All these support facilities were removed during reclamation as discussed in Section 3.0.

### **3.0 RECLAMATION**

HMC reclamation of Section 13 consisted of three phases conducted by contractors which included:

1. Removal of buildings, headframes, equipment; shaft and borehole sealing.
2. Earthwork for site and waste pile recontouring.
3. Revegetation.

### **3.1 Reclamation Procedures**

Reclamation procedures began in August 1991 and included the following activities, some of which are shown in photos 13A-13F:

1. removal of office, hoist and change room buildings
2. removal of compressor building
3. demolition and scrapping of headframe and related equipment
4. removal of hoist and hoisting equipment
5. vertical shaft sealing
6. borehole sealing
7. scrap/trash removal

All buildings were removed down to the concrete foundations. All building material and equipment was buried on site, removed from the site for disposal in approved land fill, or salvaged by the contractor. Any trash on the site was also buried or removed.

Boreholes were backfilled to within five (5) feet of the surface and the casing was cut off 4-8 feet below the original ground surface. Each borehole has a 2.0 foot thick, reinforced concrete cap that was installed as shown on Figure 6. The vertical shaft was backfilled to within two (2) feet of the surface and capped with a reinforced concrete cap as shown in Figure 7.

This work was completed in approximately four weeks after start-up.

The earthwork phase for the reconfiguration and cover of the waste piles began in May 1992. This work consisted of waste pile reshaping, placement of top soil from borrow area and recontouring for natural drainage. The cut and fill areas are shown on Figure 8. This work was completed in June 1992.

The third and final phase of reclamation was reseeding twenty (20) acres in the disturbed area of the site. This began in late June 1992 and was completed the early part of July 1992. The area was reseeded using a drill seeder and mulched at 1000 pounds per acre with the mulch crimped into the soil. The seed mixture used is shown on Table 1. The reseeded area was fenced to prevent livestock entry and enhance the reclamation process. The post-reclamation conditions of the site are shown in photographs photos 13G and 13H taken in June 1994. Additional color slides showing the reclamation procedures are available for the Division's review at HMC's Grants office.

The reclamation procedures described above have removed or sealed mine-related features that might pose hazards to the public health and safety. The shaft and borehole plugging was successful and in the time period since sealing there is no evidence of any subsidence. There are no known environmental impacts associated with ground or surface water from the reclamation procedures. The reseeding has established a vegetation cover that appears to be similar to that on surrounding undisturbed ground. The anticipated post-mining land use is grazing and wildlife habitat.

There are no other permits, licenses, or other regulatory requirements that affect this mine site.

HMC will continue to monitor the revegetation success until release by the MMD Director as outlined in Section 5.10 of the Rules.

### **3.2 Achievement of Reclamation Requirements**

Through the procedures described above, HMC has achieved the reclamation requirements as outlined in Section 69-36-11B(3) of the New Mexico Act. In accordance with the provisions of 5.10, Prior Reclamation, of the Rules, HMC is requesting an inspection of the reclaimed area by the Division.



## REFERENCES

Kelley, V.C., 1963; "Geology and Technology of the Grants Uranium Region", Memoir 15, New Mexico  
Bureau of Mines and Mineral Resources

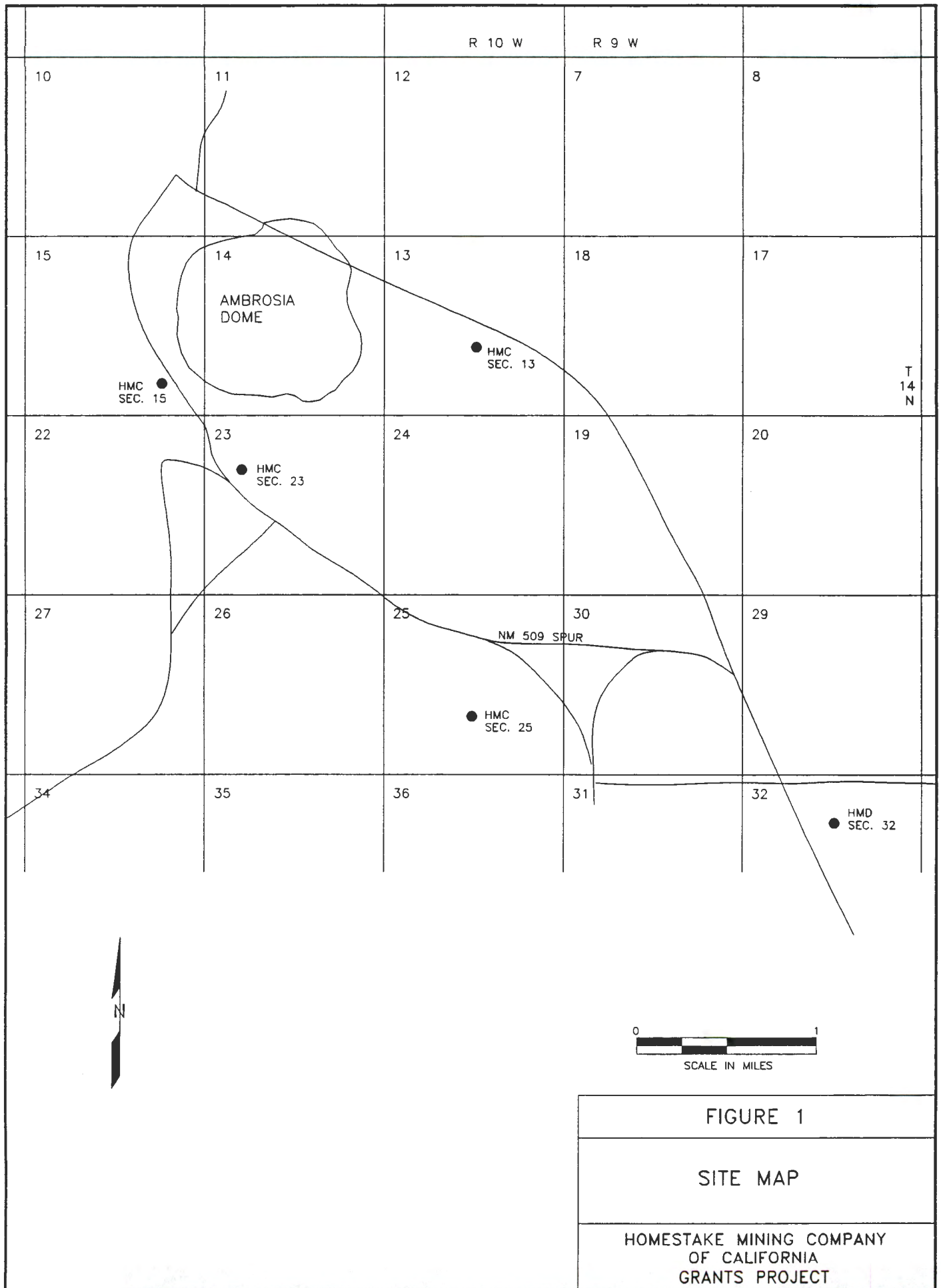
Soil Conservation Service, 1993; "Soil Survey, McKinley County, New Mexico", Grants, New Mexico

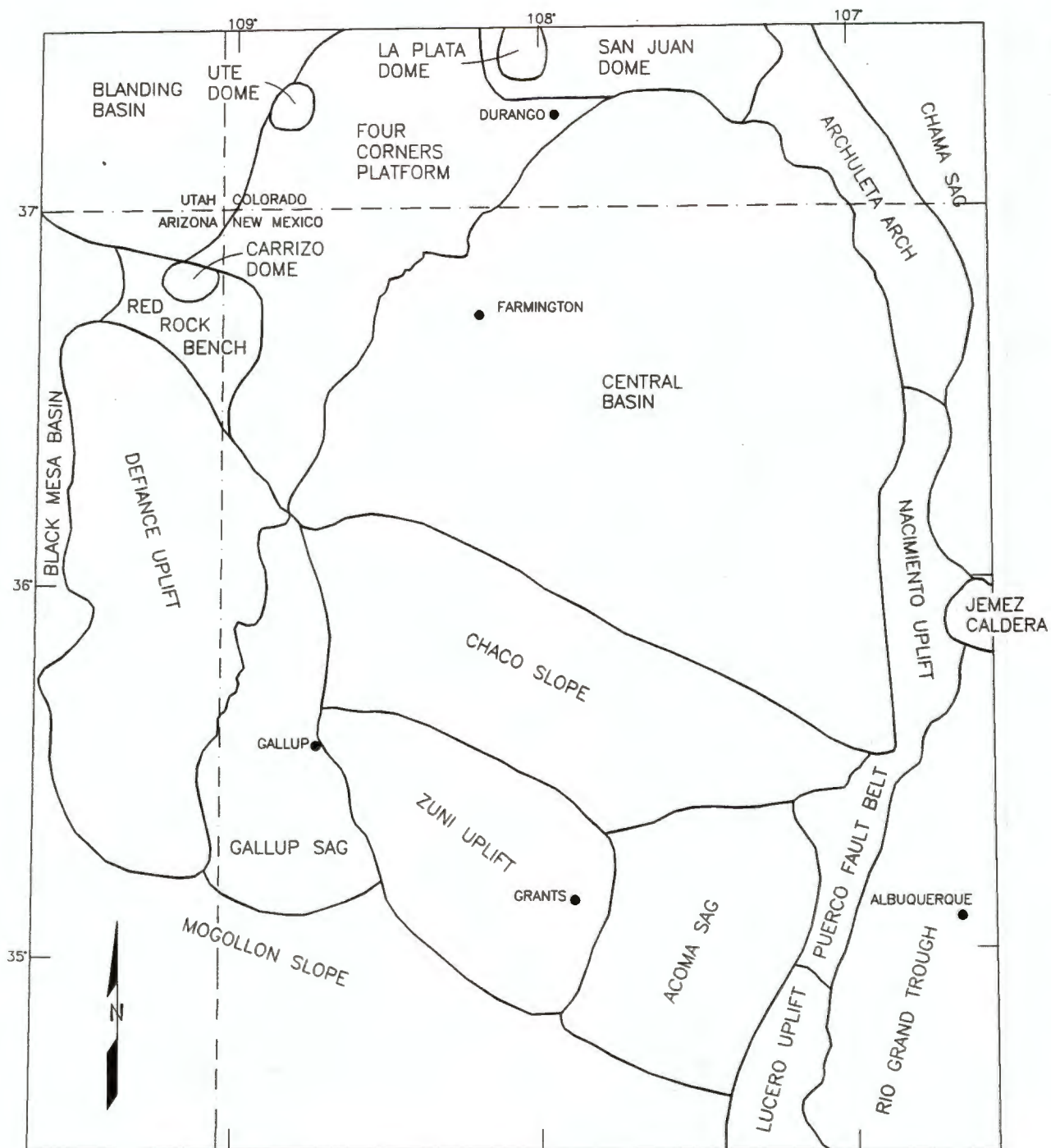
Soil Conservation Service, 1994; oral communication with W.E.Jenkins

**TABLE 1**  
**RECLAMATION SEED MIXTURE**

Common Name	Variety	Pounds Pure Live Seed/Acre
Western Wheatgrass	Arribu	3.2
Blue Grama	Lovington	0.5
Sand Dropseed		1.0
Galleta	Caryopsis	0.5
Galleta	Florets	1.2
Alkali Sacaton	Salado	1.5
	Total	7.9

Seed obtained from Curtis & Curtis, Clovis, New Mexico.





(from Kelly, et al, 1963)



FIGURE 2

TECTONIC MAP OF  
SAN JUAN BASIN  
AND ADJACENT AREAS

HOMESTAKE MINING COMPANY  
OF CALIFORNIA  
GRANTS PROJECT

SYSTEM	STRATIGRAPHIC UNIT	
CRETACEOUS	MANCOS SHALE	
	DAKOTA SANDSTONE	
JURASSIC	MORRISON FORMATION	BRUSHY BASIN MEMBER
		"A" SANDSTONE
		"K" SHALE
		"B" SANDSTONE
		"K <sub>1</sub> " SHALE
		"C" SANDSTONE
		"K <sub>2</sub> " SHALE
		"D" SANDSTONE
		RECAPTURE MEMBER

FIGURE 3

DIVISIONS OF  
WESTWATER CANYON MEMBER

HOMESTAKE MINING COMPANY  
OF CALIFORNIA  
GRANTS PROJECT

(from Kelly, et al, 1963)

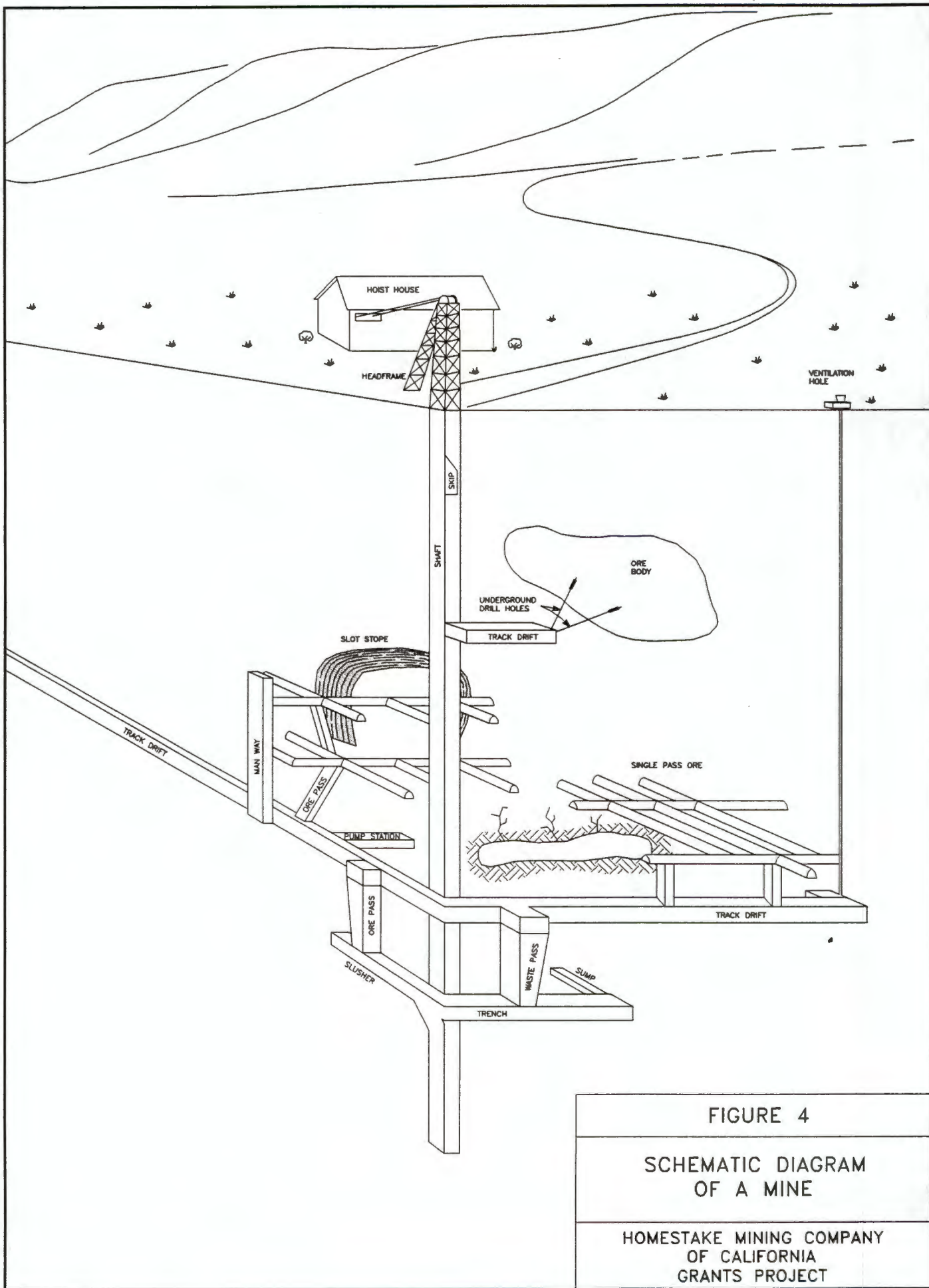
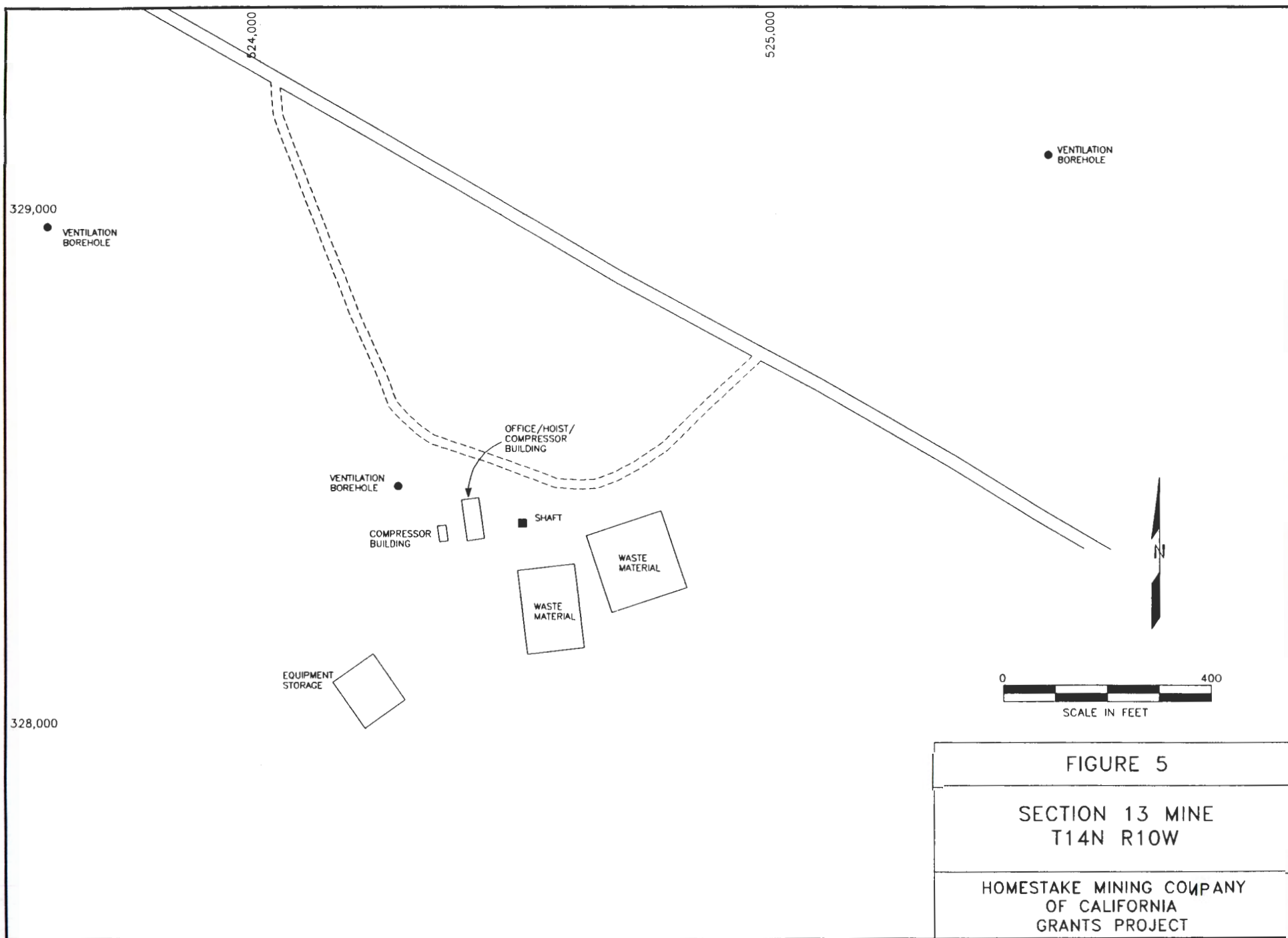


FIGURE 4

SCHEMATIC DIAGRAM  
OF A MINE

HOMESTAKE MINING COMPANY  
OF CALIFORNIA  
GRANTS PROJECT





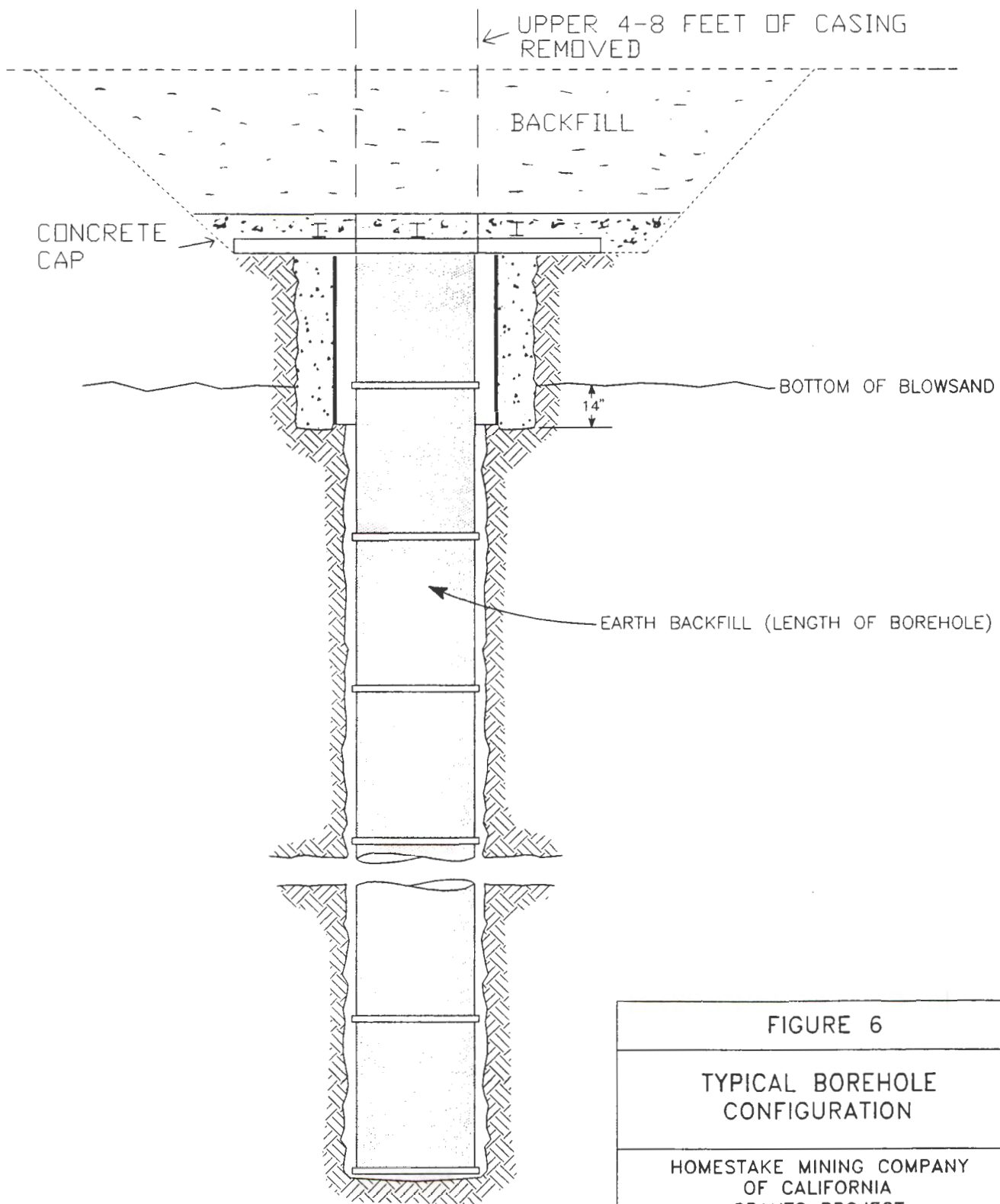


FIGURE 6

TYPICAL BOREHOLE  
CONFIGURATION

HOMESTAKE MINING COMPANY  
OF CALIFORNIA  
GRANTS PROJECT

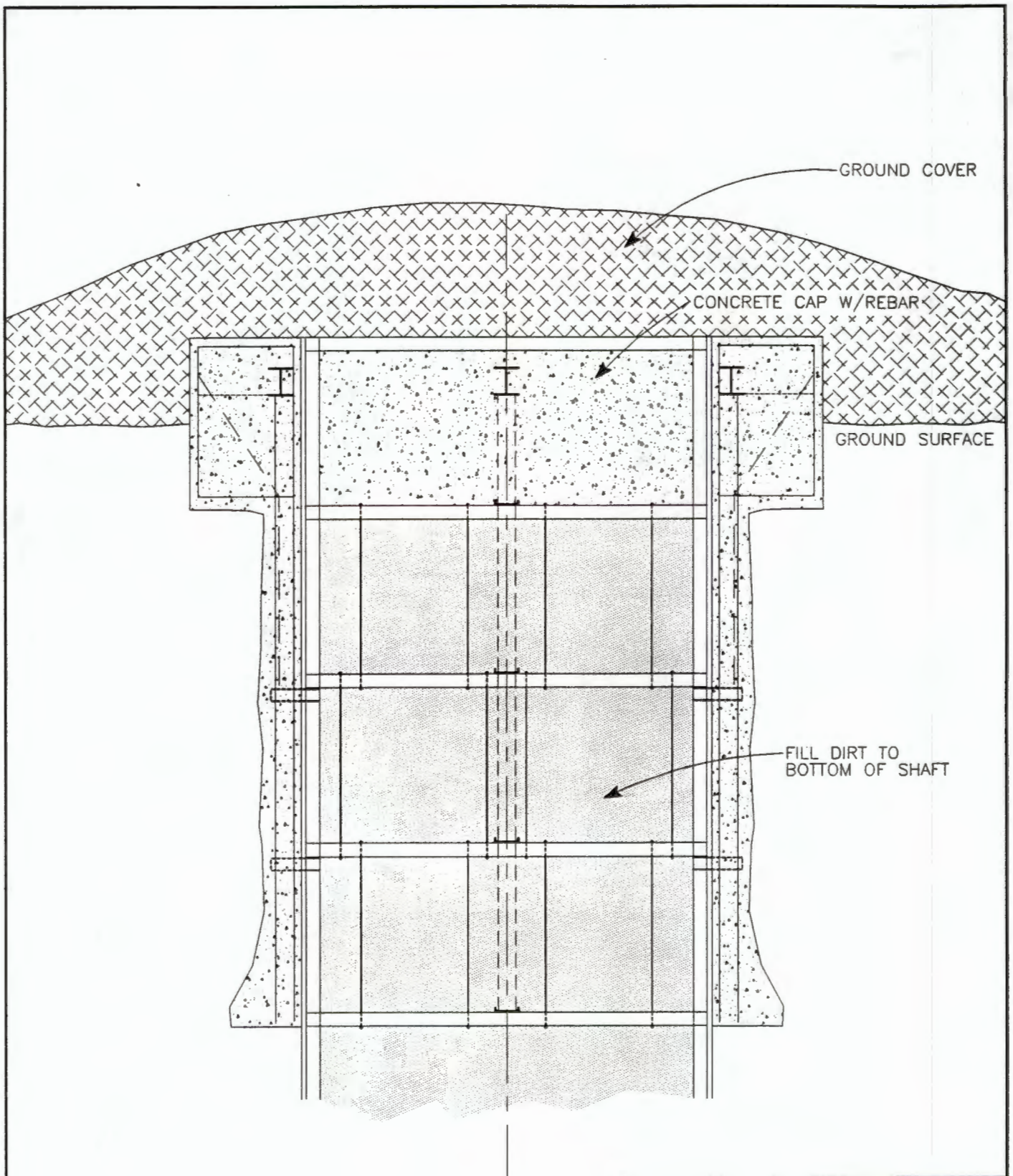
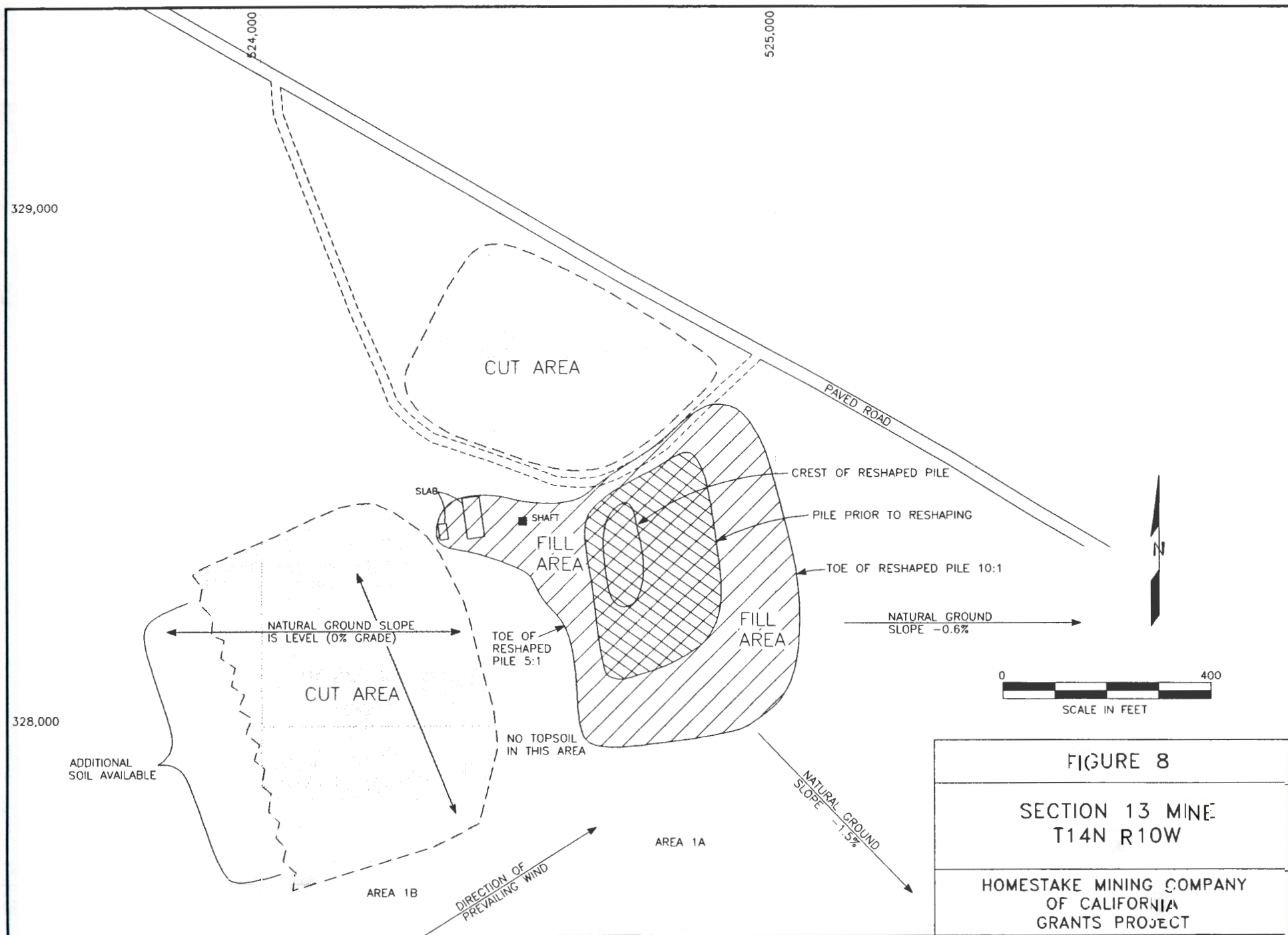


FIGURE 7

TYPICAL SHAFT  
CONFIGURATION

HOMESTAKE MINING COMPANY  
OF CALIFORNIA  
GRANTS PROJECT



## **PHOTO LOG - SECTION 13 MINE RECLAMATION**

- 13A: Aerial view of mine site prior to reclamation.
- 13B: Mine site viewed from the northwest prior to reclamation.
- 13C: Recontouring work on mine waste pile.
- 13D: Vent borehole after backfilling and prior to cutoff and plugging.
- 13E: Concrete cap in place over mine shaft.
- 13F: Contractor placing soil over mine site.
- 13G: North outslope of waste pile after reclamation.
- 13H: View of north borrow area after reclamation, reseeding and revegetation.





PHOTO 13A



PHOTO 13B





PHOTO 13C



PHOTO 13D



PHOTO 13E



PHOTO 13F





PHOTO 13G



PHOTO 13H