F-33 MINE RECLAMATION REPORT

ATLANTIC RICHFIELD COMPANY
HOMESTAKE MINING COMPANY

AUGUST 1994

F-33 Mine Reclamation Report
Atlantic Richfield Company/Homestake Mining Company

1.0 INTRODUCTION

1.1 History

The F-33 Mine is an underground uranium mine that was operated by the Anaconda Company from 1954 to 1959, and by the Homestake Mining Company (HMC) from 1971 to 1976. Through a series of mergers, Anaconda was merged into Atlantic Richfield Company (ARCO) in 1981. No mining activity has occurred since 1976. The mine consists of patented mining claims. Approximately 200,000 tons of uranium ore was extracted from the mine during operations. The uranium ore is contained in the limestone units of the Todilto and Summerville formations of Jurassic age.

The F-33 Mine Portal No. 5 area, is located on the northwest flank of the East Grants Ridge, approximately five miles northeast of Grants, New Mexico in the SW¼, Section 34, Township 12N, Range 9W, N.M.P.M. and the locations of Portals No. 1, No. 2, and No. 4 are in the SE¼, Section 33, Township 12N, Range 9W, N.M.P.M. A small portion of ARCO's F-33 mining claim is located in the NW¼ of Section 3, Township 11N, Range 9W, N.M.P.M. The location of the F-33 Mine Site is shown on Figure 1.1.

Surface disturbance of the mine area consisted of dirt roads, concrete floor slabs of shops and service buildings, excavated entries to the portals, powerlines, mine waste dumps, a vent raise and a ore storage pad. All surface buildings were removed in the mid 1970's. All the mine entries had been temporarily sealed at that time. The area had been fenced and warning signs posted to comply with New Mexico mine safety requirements.

1.2 Reclamation

Atlantic Richfield Company and Homestake Mining Company (ARCO/HMC) have completed permanent closure of Portals No. 1, No. 2, No. 4, and No. 5, closure of the vent raise, and have reclaimed the mine site general area. Portal No. 3 was never developed. Mine waste material has been backfilled into the excavated entry tunnel cut or placed in areas adjacent to the portals as shown in the photographs. All reclaimed waste areas have slopes of 3h:1v or less steep. The building foundations, floors, and miscellaneous debris have been cleaned up and placed in designated areas on site. Disturbed areas have been covered with a minimum of 12 inches of soil from a designated borrow site near the mine. The topsoiled areas have been revegetated, and drainage control features have been constructed to insure erosion protection of the reclaimed areas. The total reclaimed area is approximately 39 acres, which includes the access roads and the borrow area.

Archeological investigations were conducted in the work area to avoid any disturbance of historical sites or localities. Potential historical areas were identified and not disturbed.

Road access permits were obtained from the United States Forest Service for entry to the site to complete the mine reclamation. Access was obtained from the private party landowners.

2.0 Reclamation Goals and Land Use

The reclamation of the F-33 Mine was designed and completed in consultation with the New Mexico Mining and Mineral Division and with the United States Forest Service. The work completed by ARCO/HMC complies with the intent of the requirements of the New Mexico Mining Act and the Energy Minerals and Natural Resources Department regulations for closure of such a site. The reclamation of the F-33 Mine was completed by June 17, 1994. This is within the time frame set forth in the regulations for prior reclamation.

The goals of the reclamation plan were to isolate and stabilize mining wastes from long term erosion, protect water resources, permanently close mine entries, and provide a self-sustaining vegetation stand on the site.

The post mining land use of the site will be for livestock grazing and habitat for wildlife. The revegetation species utilized are native perennial plants that will provide grazing and browse for both livestock and wildlife mammals. The shrub canopy and rock material placed for erosion control will serve as habitat for small mammals and birds. The combination of planted vegetation species and land shaping is consistent with the surrounding environment, and will compliment the local ecosystem.

3.0 Reclamation Work

3.1 Contractor

The contractor selected to complete the project was Gibbons and Reed Company of Salt Lake City, Utah. Gibbons and Reed has completed similar reclamation projects. Dust control was completed by use of water trucks obtaining water from a nearby newly drilled well and from the water source at the Gibbons and Reed quarry on County Road 334. The project was completed without a lost work day case accident.

3.2 Schedule

Work at the F-33 Mine began in the spring of 1994 and continued through early summer. The initial work involved obtaining access, archeological field investigations, field surveys, and road construction. The portals were

drilled and collapsed in May and early June. The mine waste backfilling operation continued from May through June 14, 1994. Topsoil placement began as backfilling and grading activities were completed. Revegetation followed the topsoiling of disturbed areas. Revegetation work was completed on the mine site by June 17, 1994. The site fencing was completed shortly after revegetation.

4.0 Closure of Mine Openings

4.1 Portals

The F-33 Mine consists of four mine portals that access the ore bodies. Portals No. 1 and No. 2 were very shallow portals, approximately 6' X 10' and extended underground between 75' and 125'. Portals No. 4 and No. 5 connect to the underground workings as shown on Figure 4.1. Portal No. 3 was never developed for mining. The main access portals are tunnels driven horizontally into the ore host zone. The external dimensions of the portals were about 10' to 15' wide by 8' high. The mine portals were temporarily sealed prior to the reclamation, and were reopened to locate the exact position of the tunnel for drilling operations and closure.

In order to avoid subsidence to the surface and the possibility of reopening the access tunnels in the future, the tunnels were closed by blasting methods. The roof (often referred to as the "back or top") of the tunnel openings was collapsed by blasting. The charges were set at an adequate depth down the tunnel to close the opening and avoid future subsidence or opening to the surface. Exploratory drilling was completed on Portal No. 4 in order to define the limits of the tunnel for design of the drilling and blasting pattern. The remaining mine workings are at sufficient depth to not open or show significant subsidence to the surface. These workings are expected to collapse and the resulting materials, including the expansion factor, will fill the workings with the rock prior to evidence of significant subsidence at the surface.

The attached study, by Calder and Workman Consultants, describes the portal closure procedures. All F-33 portals were sealed by using this technique. The mine portal areas were then backfilled and graded to blend into the adjacent topography.

4.2 Vent Raise

One vent raise existed at the F-33 Mine at the location shown on Figure 4.2 above Portal No. 4. The vent raise extended approximately 110' below the surface at an angle of about 30° off vertical. The upper portion of the vent is timbered with inside dimensions of about 6' X 8'. The remainder of the raise was untimbered. The vent opening was backfilled with clean

borrow soil from the bottom to within 5'. of the surface. A steel reinforced 2' thick concrete cap was then constructed over the entire vent hole. The concrete cap was then covered with 2'. to 3' of topsoil and the surrounding disturbance was graded and revegetated.

5.0 Structure and Debris Cleanup

All of the general mine areas at the portals have been cleared of building foundations, concrete slab floors, and mine debris. The concrete foundations and slabs were demolished and broken into pieces no larger than 4' square. Three steel water storage tanks were demolished and crushed flat for disposal. The broken concrete, steel, and miscellaneous debris consisting of broken wood, rock bolts, and mine roof netting were placed and compacted into the bottom 3' of mine waste fill areas. The fill areas are within the tunnel ramp cut at Portal No. 5 and the fill area at Portal No. 4. The debris and demolished concrete was set in a horizontal position in the base of the fill areas and manipulated with bulldozers to intermix the debris and fill material to minimize voids. No debris was placed within 3' of the outer edge of the fill material.

6.0 Mine Waste

6.1 Waste Piles

Three mine waste piles were located at Portal No. 5 and one pile at Portal No. 4. The mine waste piles occupied approximately four acres. The locations of the waste piles are shown on Figures 4.2 and 6.1. The waste piles in Portal No. 5 area were excavated and placed into the tunnel ramp cut to the mine entry. The mining waste was excavated to natural ground. Approximately 16,000 cubic yards were transported to the tunnel ramp cut for final placement. The areas of the mine waste dumps were shaped into the adjacent contours by bulldozers and topsoiled with a minimum of 1' of cover.

The mine waste at Portal No. 4 area was excavated from the drainage area and placed against the cut face at mine Portals No. 1, No. 2, and No. 4. The waste was shaped to blend into adjacent contours and to have exterior slopes at 3h:1v or less steep. All mining waste was topsoiled with at least 1' of cover. A surveyed quantity of about 19,450 cubic yards was relocated from waste piles for final placement in the Portal No. 4 area.

The pre-existing surfaces of both portal areas are shown on Figures 4.2 and 6.1. The post reclamation topography of the mine disturbed areas are shown on Figures 6.2 and 6.3. The cross-sections on Figure 6.4 depict typical mine waste fill areas.

6.2 Stockpile Area

The ore stockpile was located west of Portal No. 4 on top of a small bluff. The residual ore from the F-33 Mine stockpile area near Portal No. 5 was excavated and placed in the fill area over the Portal No. 5 mine entry. The top surface of the stockpile area was excavated to natural ground and rock, and topsoiled with at least 1' of cover and shaped.

6.3 Miscellaneous Waste

Mining waste that had migrated into small drainages or off waste piles as a result of rainfall events was excavated to natural ground. This waste was placed into the nearest fill area. Miscellaneous fill areas that were excavated below adequate topsoil depths were topsoiled with 1' of topsoil material.

7.0 Topsoil

Topsoil was removed from an alluvial valley area near the Mine site. The term "topsoil" in this report refers to soils used as plant growth media. The topsoil borrow area is located on private land west of the Mine. The location provided a soil source easily available to the portal areas (Figure 1.0). The soils used for borrow were supporting native grasses and shrubs mainly consisting of Blue Grama, Alkali Sacaton, Indian Rice Grass, Fourwing Salt Bush, Winterfat, Broom Snake Weed, and some annuals. The topsoil used was a medium textured soil. Soil from the borrow area was excavated 4' to 6' in depth. Adequate topsoil was remaining in the borrow area for revegetation of that area.

Topsoil was placed over all mine waste pile excavation areas, mine waste fill areas, the stockpile area, miscellaneous areas, and some roads as needed for vegetation establishment. The depth of topsoil ranged from 1' to about 3' depending on the site and local grading needs. In no case was topsoil placed less than 1' in depth.

8.0 Erosion Control

Erosion of the reclaimed area will be controlled through the use of a self sustaining vegetative cover. The reclaimed areas have been land shaped to reduce slope angles and eliminate cliffs or cut faces in rock at mined areas. Sheet flow runoff of rainfall is promoted by land shaping the surface into gradual sloping areas without abrupt slope changes. This grading will avoid concentration of flow and thus gullies. Finished reclaimed slopes are at an angle of 3h:1v or less steep. Slopes were track walked to create a roughened surface that serves to capture water and slow water velocity over the topsoiled slopes.

8.1 Rock Channels

The Portal No. 4 area is situated in a watershed drainage area. Given the size of this area, the drainage could not be redirected effectively. In order to prevent the erosion of topsoil within the reclaimed area from runoff, the drainage path was rip-rapped. The rip-rap consists of crushed limestone that is an 8" minus material. In addition to the 8" rock, boulders and large rock obtained locally were placed into the drainage area to serve as water breaks and further slow runoff velocities. Large boulders were also placed at the inlet and at the base of the drainage to serve as water impact aprons and control hydraulic head cutting into the reclaimed area. The rock lined drainage area is shown on Figure 6.2 and also in the attached photographs.

8.2 Revegetation

Seeding of the reclaimed areas was accomplished using two methods, drilling and hydro-seeding. All placed topsoils were scarified by discing or ripping to promote an adequate seedbed. Seed was drilled using a calibrated rangeland type seed drill that had adequate depth and also covered planted seed. Seed was drilled to a depth of 0.25" to 0.5". Broadcast seed was applied by hydroseeding methods.

The seed mixture and rates recommended by the New Mexico Mining and Minerals Division are shown on Table 8.2. All seeding was completed in accordance with these mixtures and rates. Also, the seed broadcast onto topsoiled slope areas was walked with a bulldozer with 2-3 inch track grosers to incorporate the seed into the soil. The seed certifications are contained in the Appendix to this report.

Mulching of the site involved both hydromulching on 3h:1v slopes and straw mulch application. The straw mulch is a grass hay mulch that was applied at a rate of about 2 tons per acre.

The straw was crimped into the topsoil by use of a flat notched disc crimper. The crimping was done twice with one pass 90° to the other in order to keep the mulch in place during windy periods.

The revegetated areas were fertilized with 40 lbs. of Nitrogen per acre and 30 lbs. of Phosphorus per acre. An agricultural fertilizer product was used and applied by the use of spin spreader to the ground surface, prior to mulching.

In order to protect revegetation establishment, the reclaimed areas have been fenced. The fencing will remain in place until such time as the vegetative stand is well established and can withstand grazing pressure. Agreements have been established with the private land owners for

adequate fencing periods to obtain vegetation establishment. The fencing will remain on the property that is owned by ARCO. The fencing specification is contained in the Appendix to this report.

9.0 Environmental and Safety Concerns

The reclamation of the F-33 Mine Site is designed to consider environmental issues and public safety. The air quality at the Mine has been addressed with the consolidation and capping of mining waste materials. Distribution of the mining waste particles into the air by wind is controlled with the topsoil cover. The topsoil cover will be stabilized against wind and water erosion by the use of vegetation and rock lining of drainage areas. The plant species utilized in the revegetation mix are native perennials, and are expected to provide stabilization similar to that on surrounding natural ground surfaces. Any emissions from the mine openings and vents have also been addressed by permanent closure of the openings by blasting and backfilling. These areas have also been capped with topsoil and revegetated.

No onsite surface water exists in the mine area other than surface water runoff from percipatation, which will not come into contact with mining waste due to the topsoil cap and rock lined drainage areas. The capping with topsoils will prevent mining waste materials from being transported down stream by water erosion. As described previously, the vegetative cover is designed to serve as erosion protection for the topsoil cap with self-sustaining plant species.

The F-33 underground mine workings are considered to be a dry mine. The local aquifers in the vicinity of the F-33 Mine are the Alluvial Aquifer, the Chinle Aquifer and the deeper San Andres/Glorietta Aquifer. The Alluvial Aquifer is generally limited to the historical channel of the Rio San Jose and its tributary drainages, and is a low producing aquifer. The F-33 Mine is located well away from the historical river channel and drainages that exist to the south and west. The central units and some isolated coarse grained lenses of the Chinle Formation yield limited quantities of poor to fair quality water. The Chinle Formation is located within the Triassic sedimentary units which are below the Jurassic units that contain the ore extracted at the F-33 Mine. The San Andres/Glorietta Aquifer is located within these formations. In the vicinity of the Mine the San Andres/Glorietta Aquifer is well below the mine workings. The mine workings are within the Todilto limestone at an average elevation of 6,900'. The structural contours of the above referenced aquifers are shown in the Appendix to this report. The F-33 Mine is not located in the saturated zones of these aquifers.

The F-33 Mine has been reclaimed in a manner so as to eliminate health and safety hazards to the public. All mine openings have been permanently sealed. The depth of the underground workings eliminates massive subsidence issues. Mine waste materials and all structures and debris have been isolated and capped. The site roads have been reclaimed and the area has been fenced to discourage trespassing.

In summary, the reclamation of the F-33 Mine was designed and implemented to address public health and safety and the environment. ARCO and Homestake believe that the reclamation is protective of human health and the environment and is consistent with the protections provided under the department's regulations.

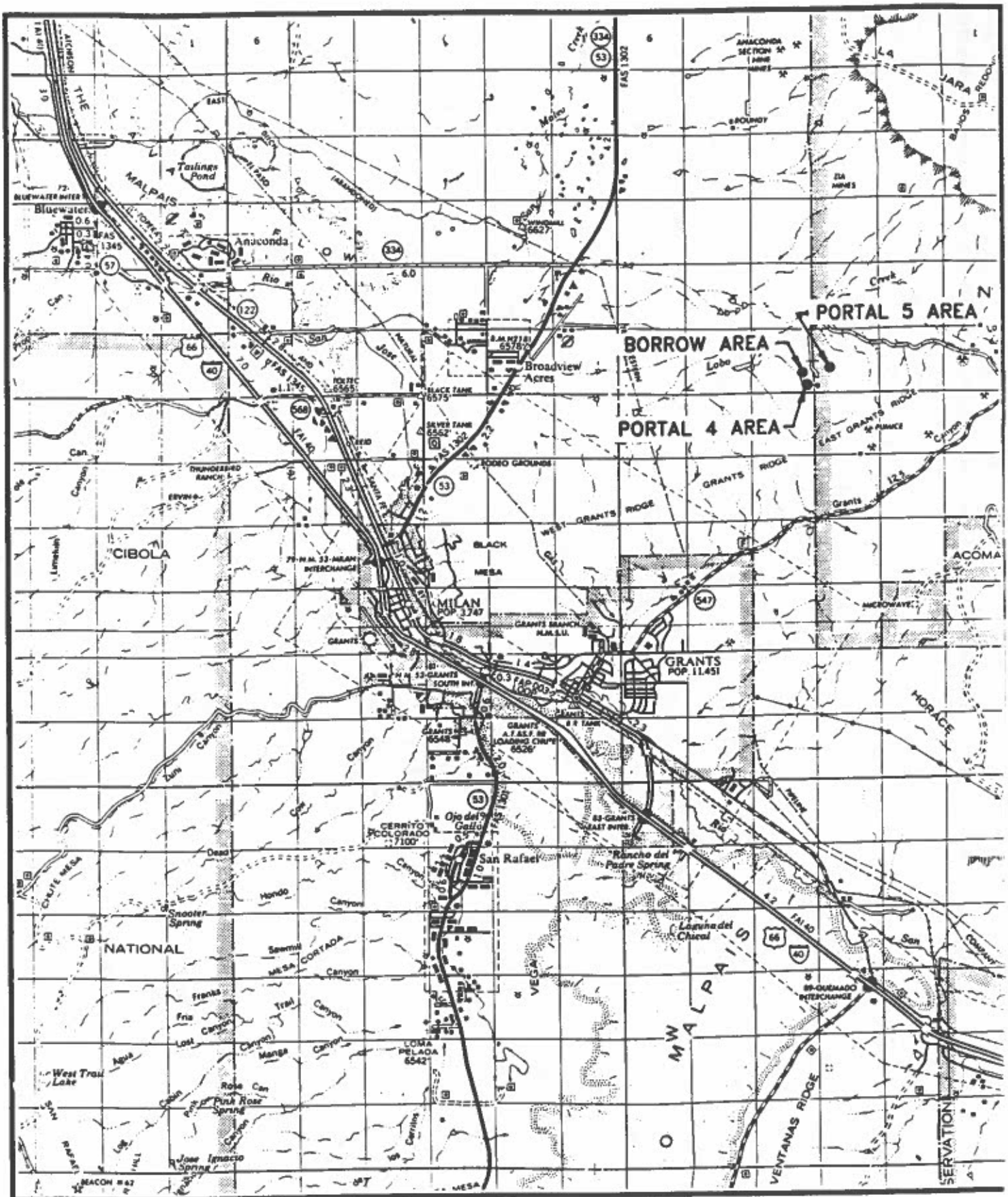
TABLE 8.2

RECLAMATION SEEING MIXTURE AND SEEDING RATES

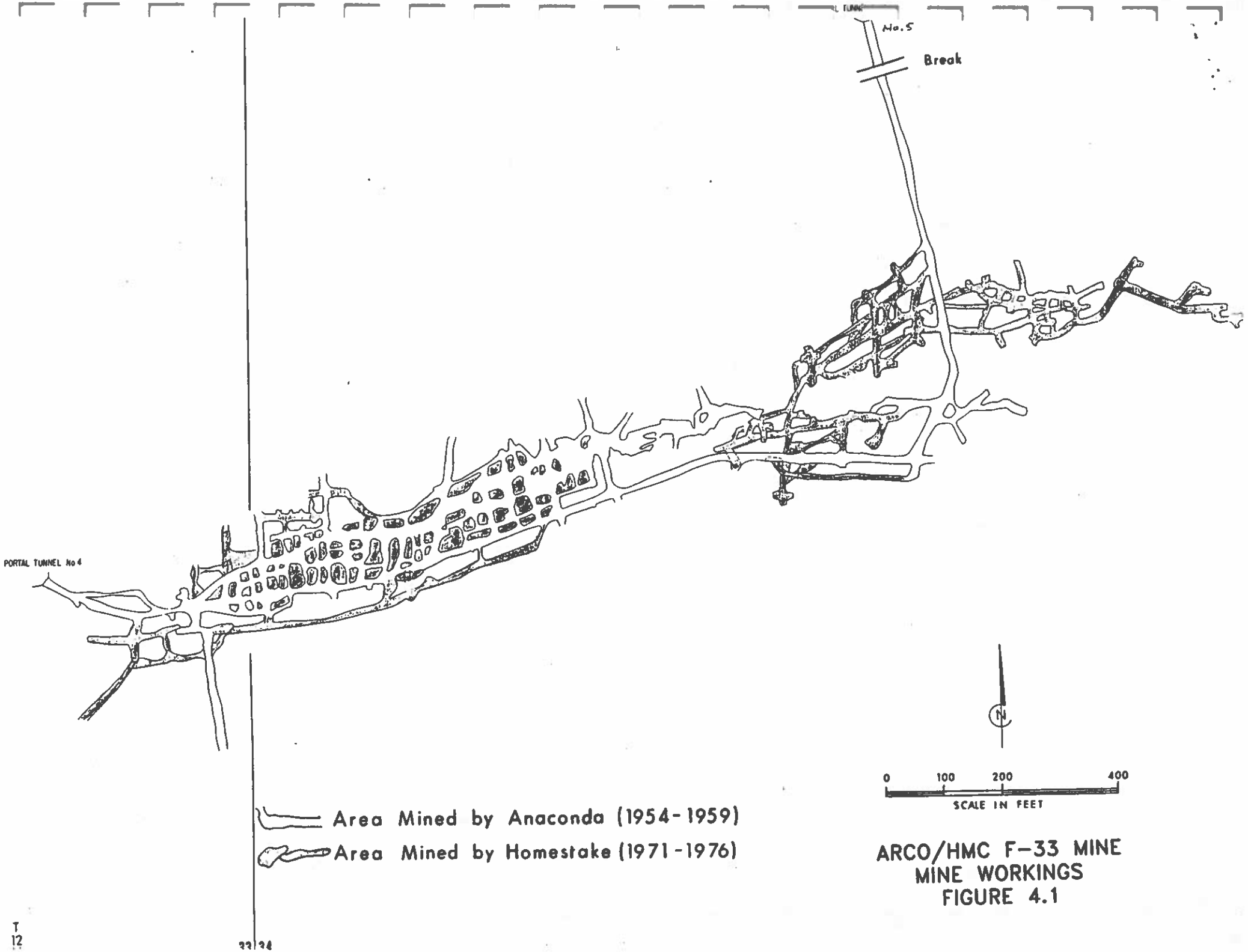
Seed Type	Growth Form	PLS[1]/lb	PLS/Ac
Drill Mixture:			
Indian ricegrass	Cool	122,839	1.77
Western wheatgrass	Cool	110,000	1.00
Blue grama	Warm	825,000	0.26
Galleta	Warm	470,000	0.37
Fourwing saltbush	Shrub	52,000	0.83
	Subtotal broadcast mixture:		4.23
Broadcast Mixture:			
Alkali sacaton	Warm	1,758,000	0.07
Sand dropseed	Warm	5,298,000	0.02
Blue flax	Forb	293,000	0.15
Scarlet globemallow	Forb	500,000	0.17
Winterfat	Shrub	56,000	1.91
	Subtotal broadcast mixture:		1.83

Pure live seed (PLS)

F-33 MINE RECLAMATION REPORT
FIGURES



ARCO/HMC
F-33 MINE
VICINITY MAP
FIGURE 1.1



ARCO/HMC F-33 MINE
MINE WORKINGS
FIGURE 4.1

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Figure 1 Portal No. 5 Prior to Permanent Closure

Figure 2 Portal No. 2 Prior to Permanent Closure

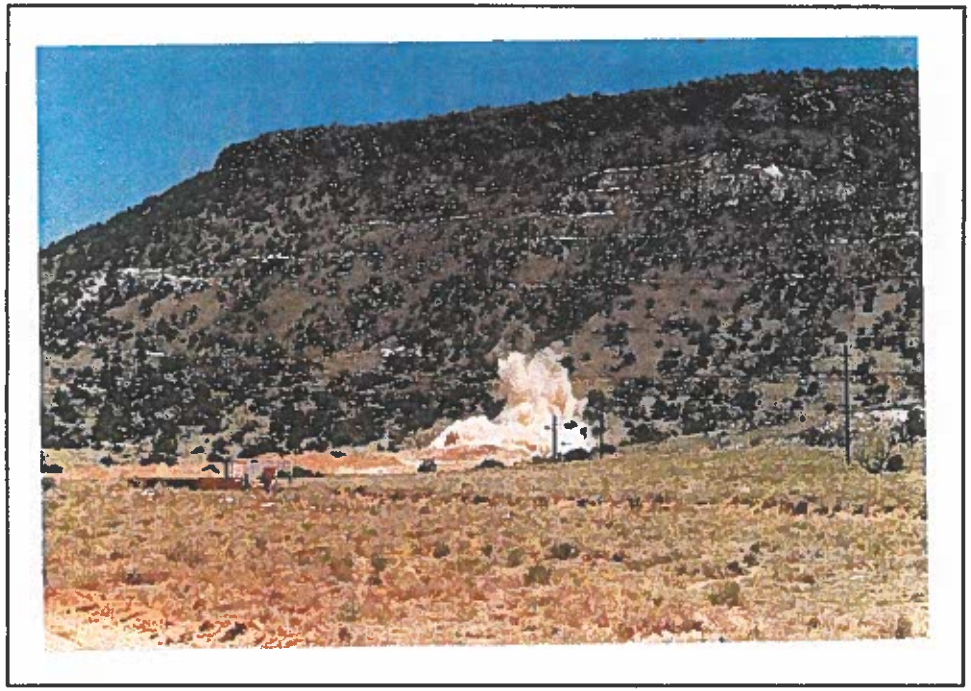


Figure 3 Closure of Portal No. 5

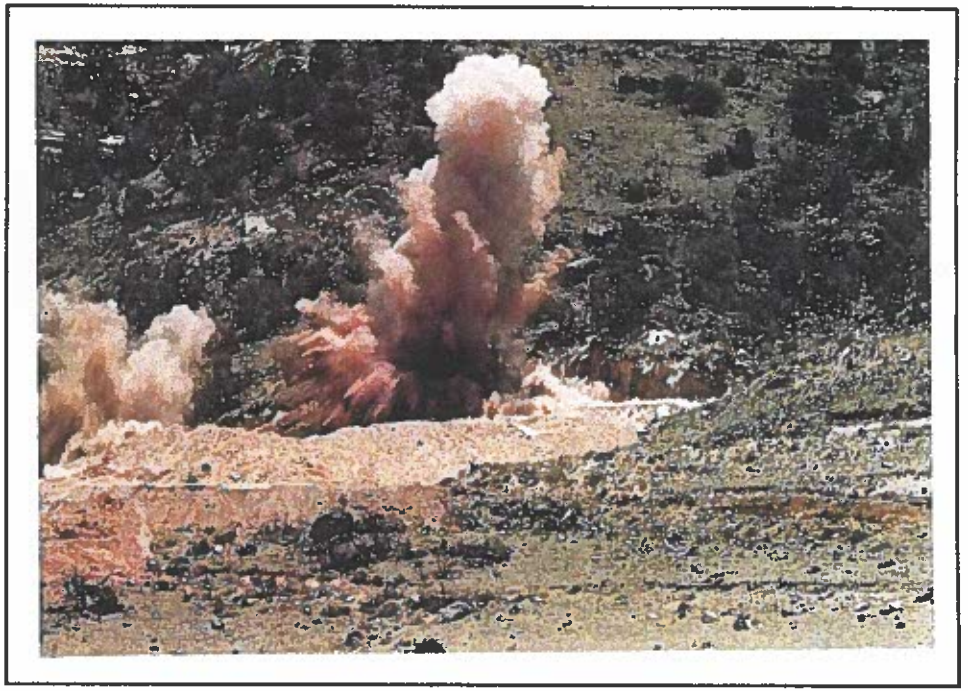


Figure 4 Closure of Portals No. 1 and 2

Figure 5 Excavation of Mining Waste Portal No. 4 Area

Figure 6 Backfill of Portal No. 5 Cut Area

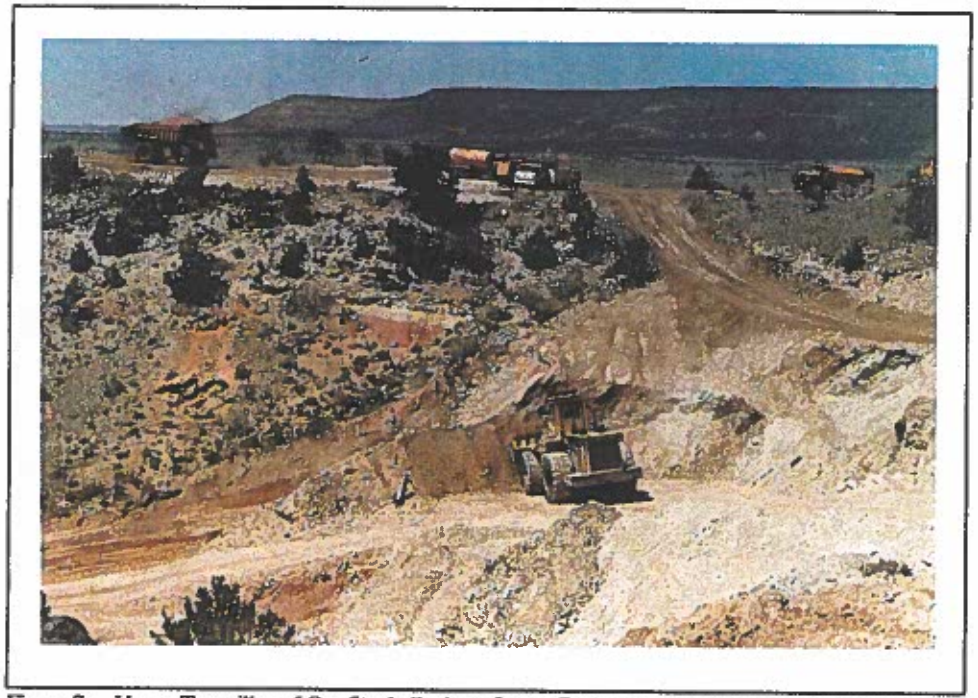


Figure 7 Upper Topsoiling of Ore Stockpile Area; Lower Removal of Mining Waste Portal No. 4 Area

Figure 8 Backfilling of Mining Waste Against Cut Face

Figure 9 Removal of Mining Waste Portal No. 4 Area

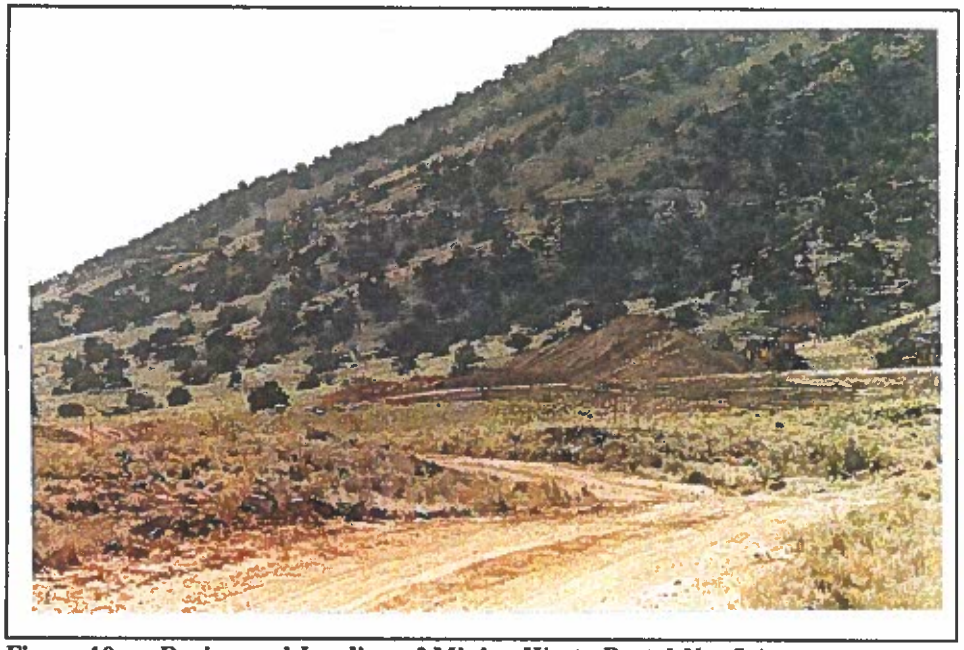


Figure 10 Dozing and Loading of Mining Waste Portal No. 5 Area

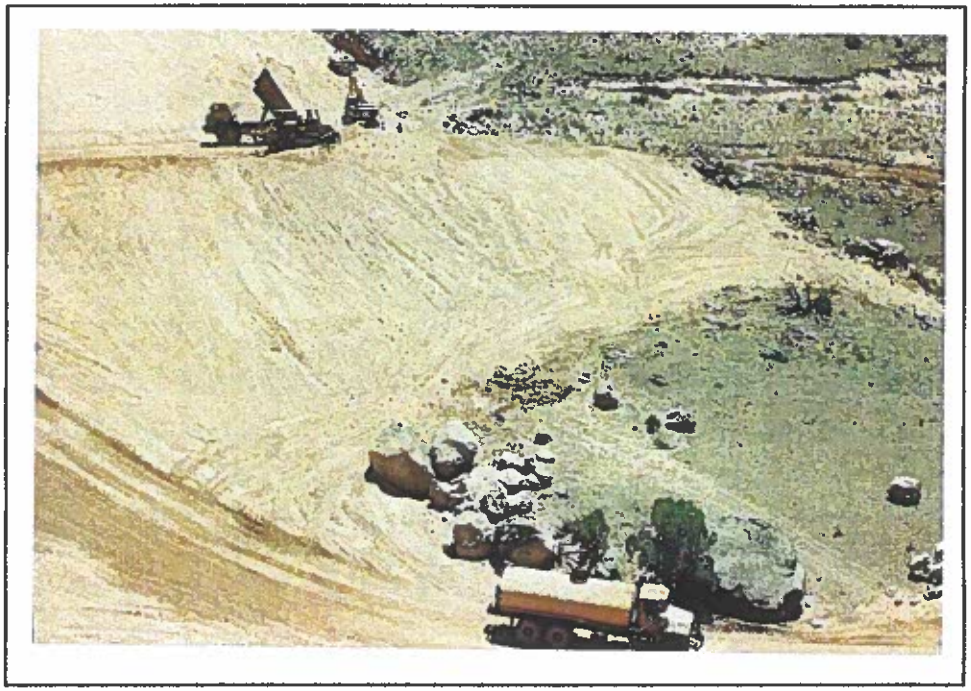


Figure 11 Land Shaping Portal No. 4

Figure 12 Loading Topsoil at Borrow Area

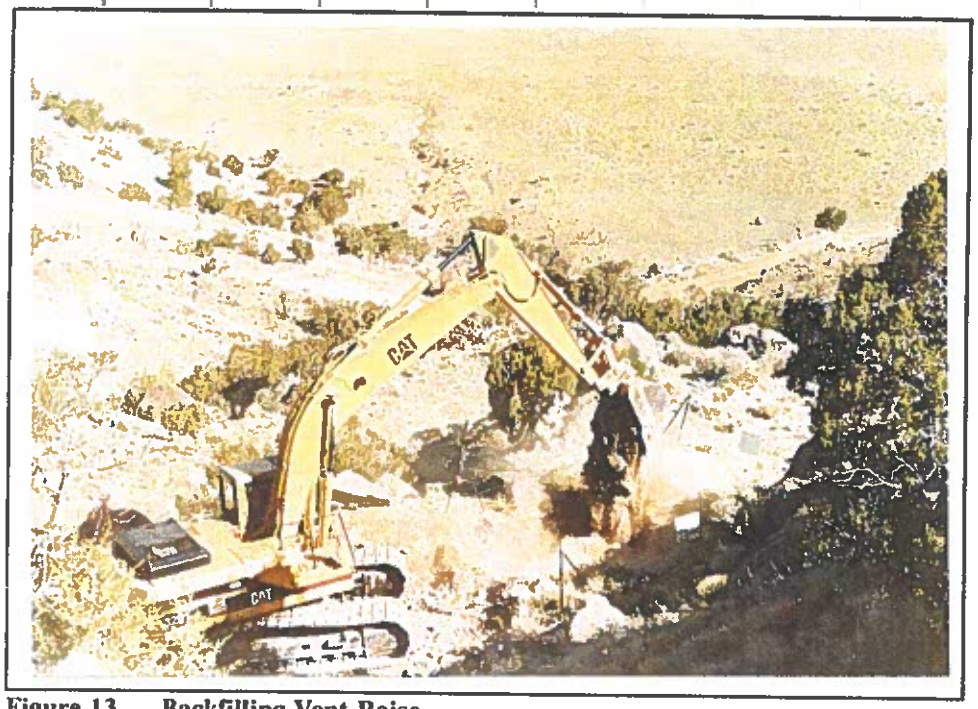


Figure 13 Backfilling Vent Raise

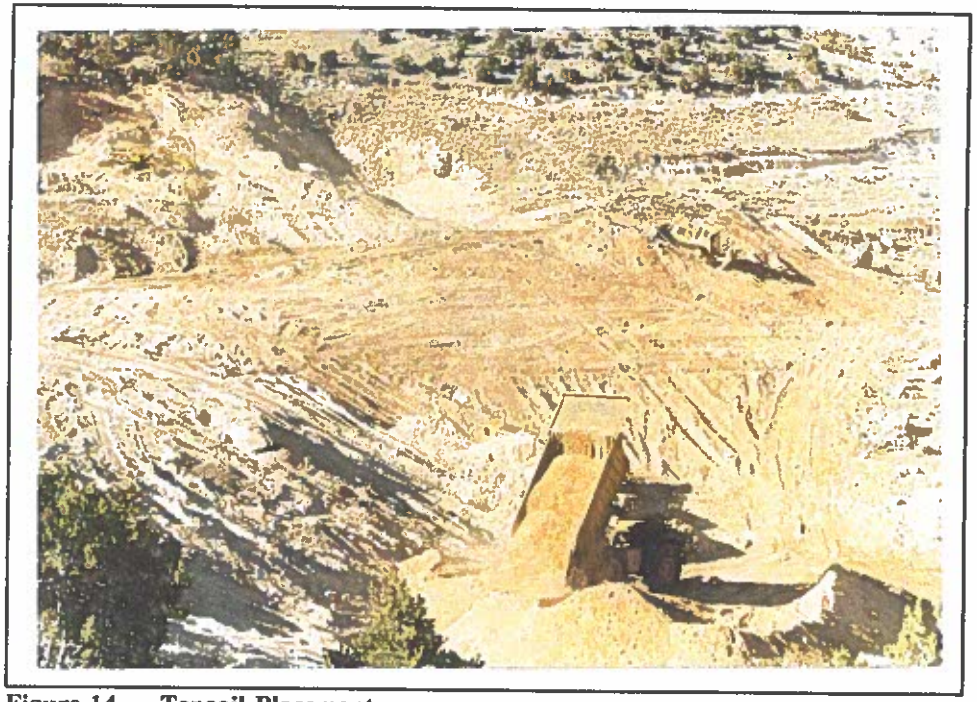


Figure 14 Topsoil Placement

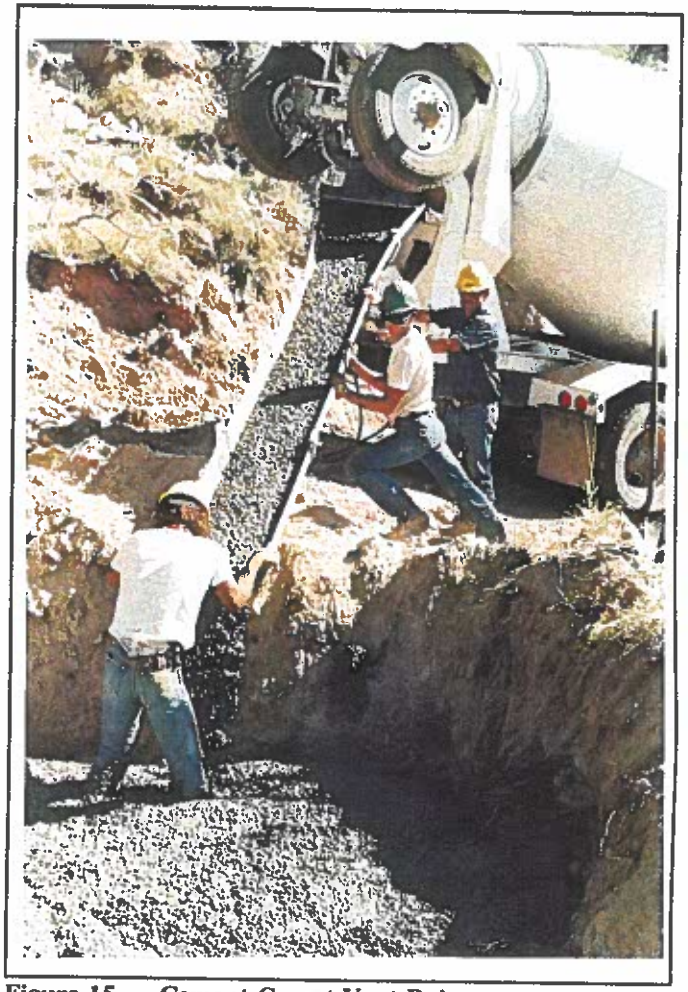


Figure 15 Cement Cap at Vent Raise

Figure 16 Revegetation Activities

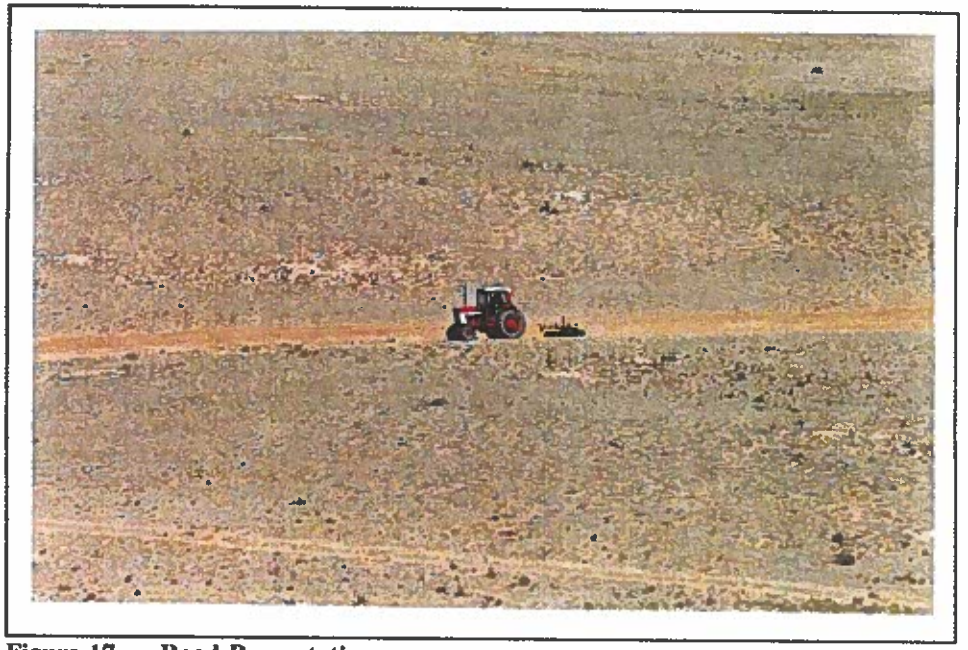


Figure 17 Road Revegetation

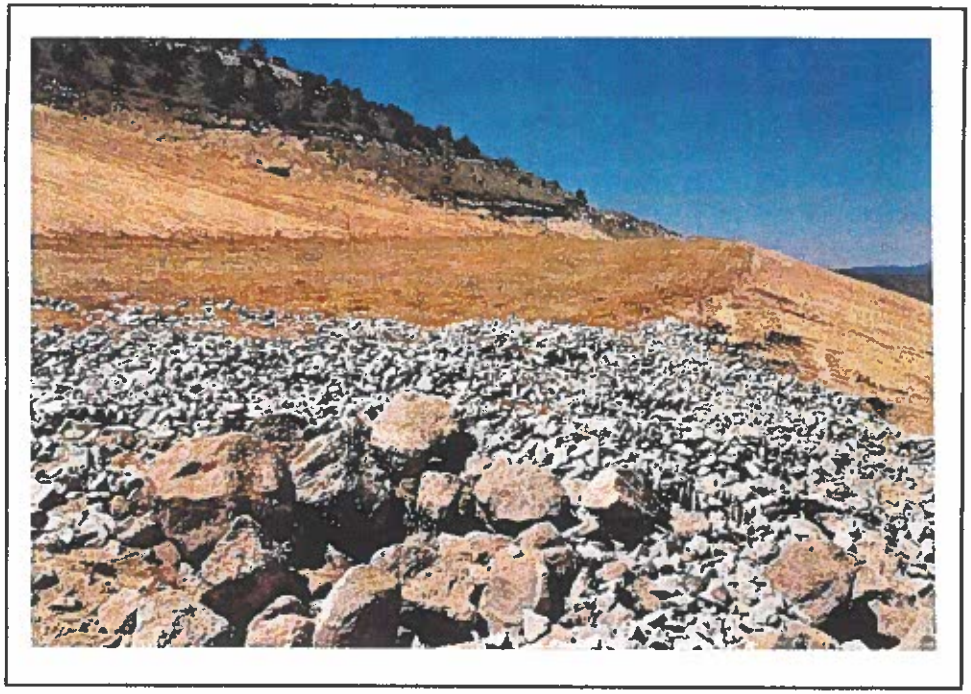


Figure 18 Placed Rip Rap

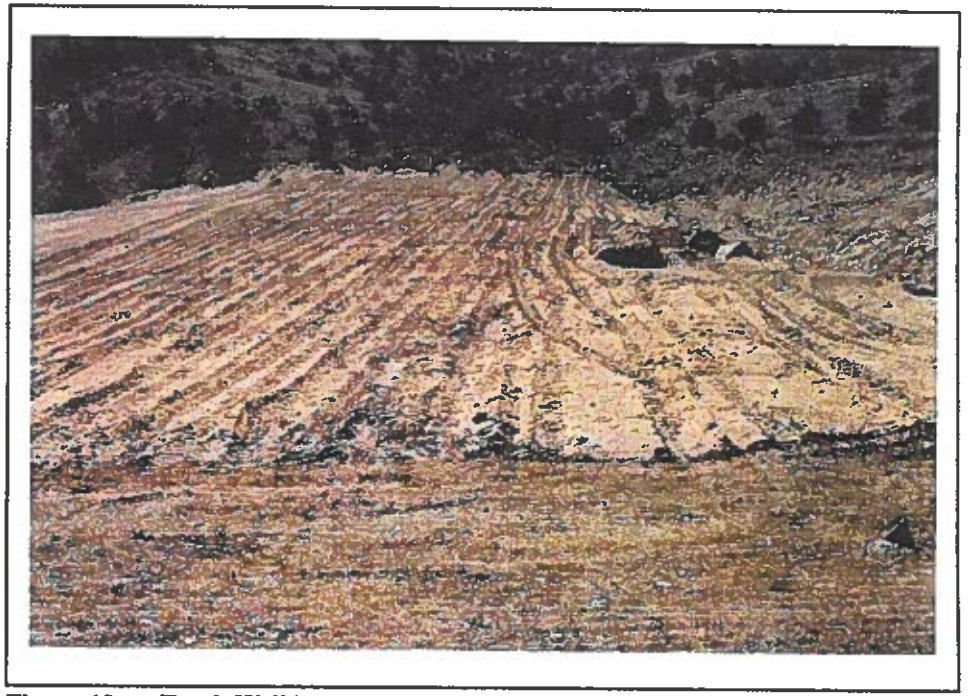


Figure 19 Track Walking of Slopes - Erosion Control

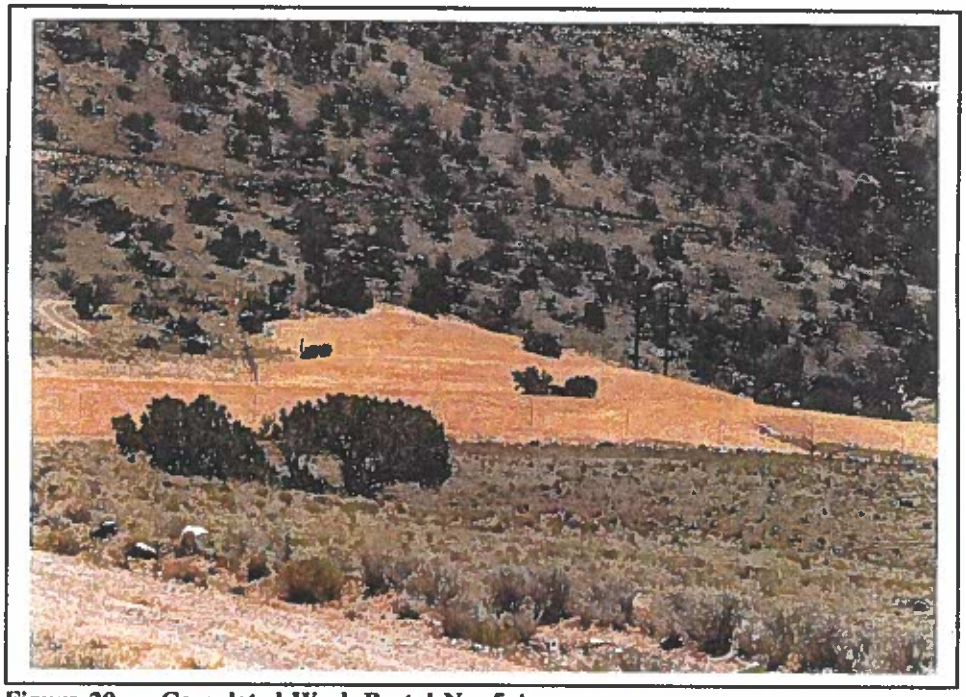


Figure 20 Completed Work Portal No. 5 Area

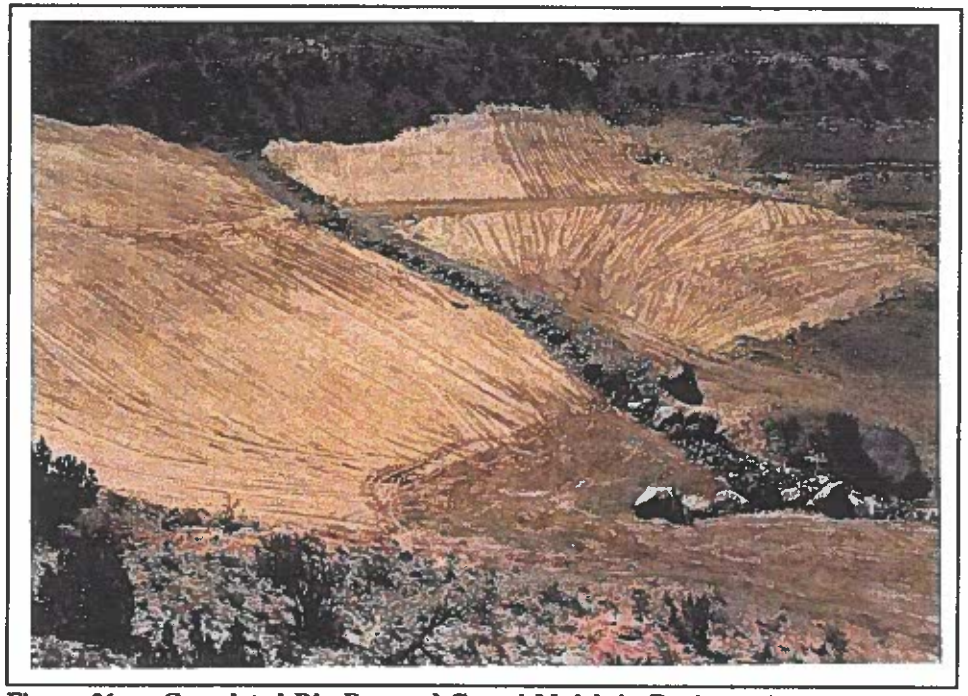


Figure 21 Completed Rip Rap and Gravel Mulch in Drainage Area

F-33 MINE RECLAMATION REPORT
APPENDIX

GRANITE SEED CO.
P.O. BOX 177
LEHI, UTAH 84043
801-768-4422

)3/94

SOLD TO:
HEAD DEVELOPMENT
P.O. BOX 2038
MILAN, NEW MEXICO 87021

PROJECT NAME: ARCO-F33 MINE SITE - BROAD
EED MIX NUMBER: 10312

LETTER OF CERTIFICATION

his memo is written to certify that this seed mix is true to label and
a been duly tested by a fully accredited seed testing laboratory using
u es sanctioned by the Association of Official Seed Analysts. The
specifications of the seed used in the mix are as follows:

MON NAME	VARIETY	ORIGIN	LOT#	PURITY	GERM + DORM.	%PLS
IS BLUE FLAX	APPAR	ID	LILE -14362	99.85	81	80.88
ND DROPSEED	VNS	NM	SPCR -14482	96.22	92	88.52
LKALI SACATON	VNS	NM	SPAI -14610	99.92	91	90.93
NTERFAT	VNS	NM	CELA -14692	79.38	63	50.01
ARLET GLOBEMALLOW	VNS	UT	SPCO -14729	87.37	33	28.83

:thermore, we certify that said seed was packaged as follows:

NUMBER OF BAGS	BULK LBS PER BAG
4	30.00
1	20.82

he number of pounds and percent of bulk for this mix are as follows:

MMON NAME	LOT #	TOTAL BULK LBS	TOTAL PLS LBS	% BULK LBS
WIS BLUE FLAX	LILE -14362	5.56	4.50	3.95
ND DROPSEED	SPCR -14482	0.68	0.60	0.48
ALKALI SACATON	SPAI -14610	2.31	2.10	1.64
NTERFAT	CELA -14692	114.58	57.30	81.37
ARLET GLOBEMALLOW	SPCO -14729	17.69	5.10	12.56

If you have any questions, please call.

Sincerely,

Granite Seed Co.

120
20.82
30 | 140.82 |
12
208
180
28

GRANITE SEED CO.
P.O. BOX 177
LEHI, UTAH 84043
801-768-4422

03/94

SOLD TO:
HEAD DEVELOPMENT
P.O. BOX 2038
MILAN, NEW MEXICO 87021

PROJECT NAME: ARCO-F33 MINE SITE - DRILL
SEED MIX NUMBER: 10311

LETTER OF CERTIFICATION

This memo is written to certify that this seed mix is true to label and has been duly tested by a fully accredited seed testing laboratory using methodologies sanctioned by the Association of Official Seed Analysts. The specifications of the seed used in the mix are as follows:

COMMON NAME	VARIETY	ORIGIN	LOT#		PURITY	GERM + DORM.	%PLS
INDIAN RICEGRASS	NEZPAR	C MT	ORHY	-14030	99.71	99	98.71
BLUE GRAMA	VNS	TX	BOGR	-14261	51.20	87	44.54
FOURWING SALTBUSH	HIGH ELEV.	NM	ATCA	-14384	96.72	55	53.20
WESTERN WHEATGRASS	ARRIBA	C CO	AGSM	-14405	93.41	94	87.81
GALLETA GRASS	VIVA	TX	HIJA	-14906	72.99	86	62.77

Furthermore, we certify that said seed was packaged as follows:

NUMBER OF BAGS	BULK LBS PER BAG
3	50.00
1	19.96

The number of pounds and percent of bulk for this mix are as follows:

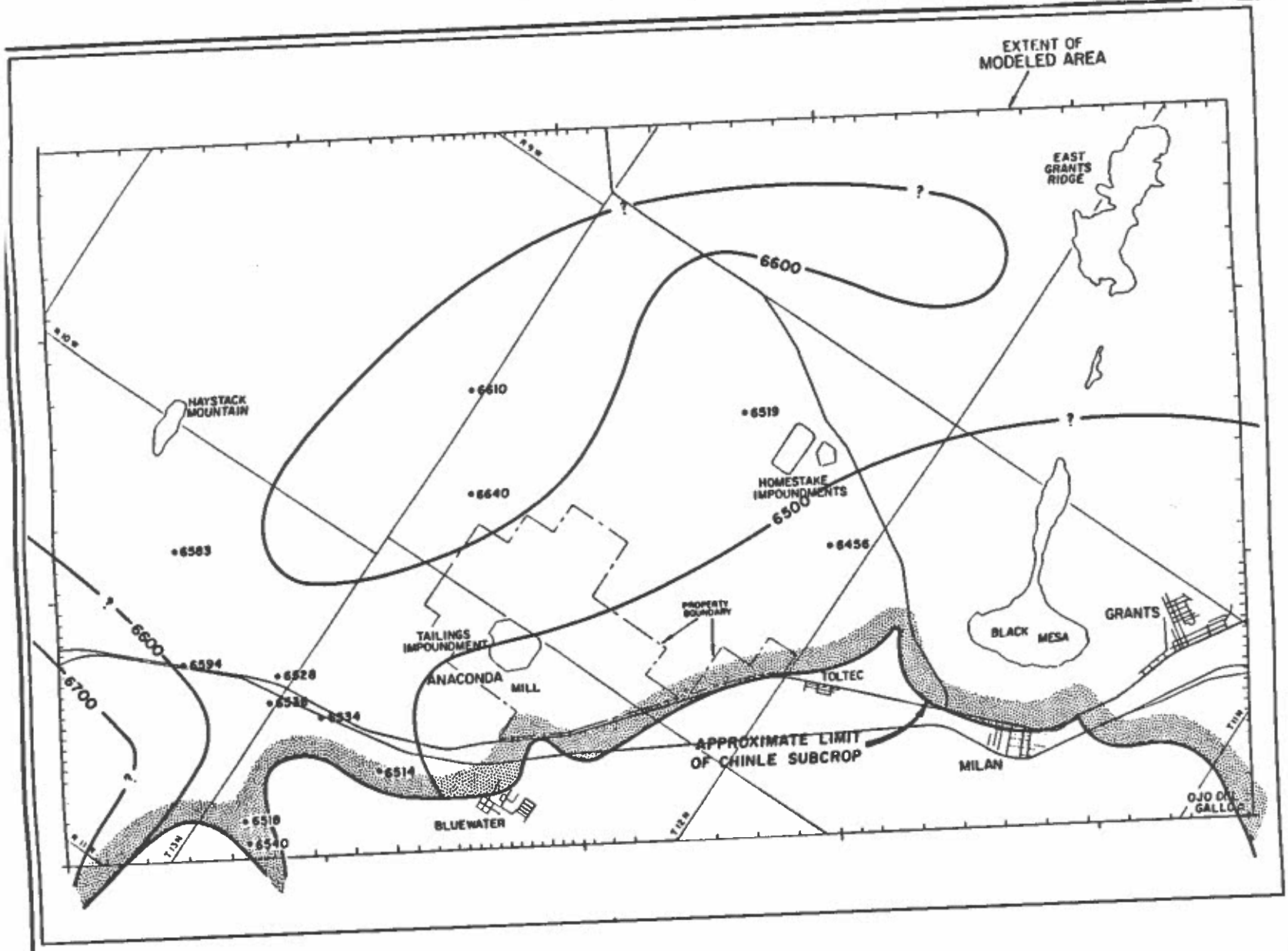
COMMON NAME	LOT #		TOTAL BULK LBS	TOTAL PLS LBS	% BULK LBS
INDIAN RICEGRASS	ORHY	-14030	53.79	53.10	31.65
BLUE GRAMA	BOGR	-14261	17.51	7.80	10.30
FOURWING SALTBUSH	ATCA	-14384	46.80	24.90	27.54
WESTERN WHEATGRASS	AGSM	-14405	34.16	30.00	20.10
GALLETA GRASS	HIJA	-14906	17.68	11.10	10.40

If you have any questions, please call.

Sincerely,

Granite Seed Co.

150
19.96
30 | 169.96 | 5.66
150
199
150
196



KEY

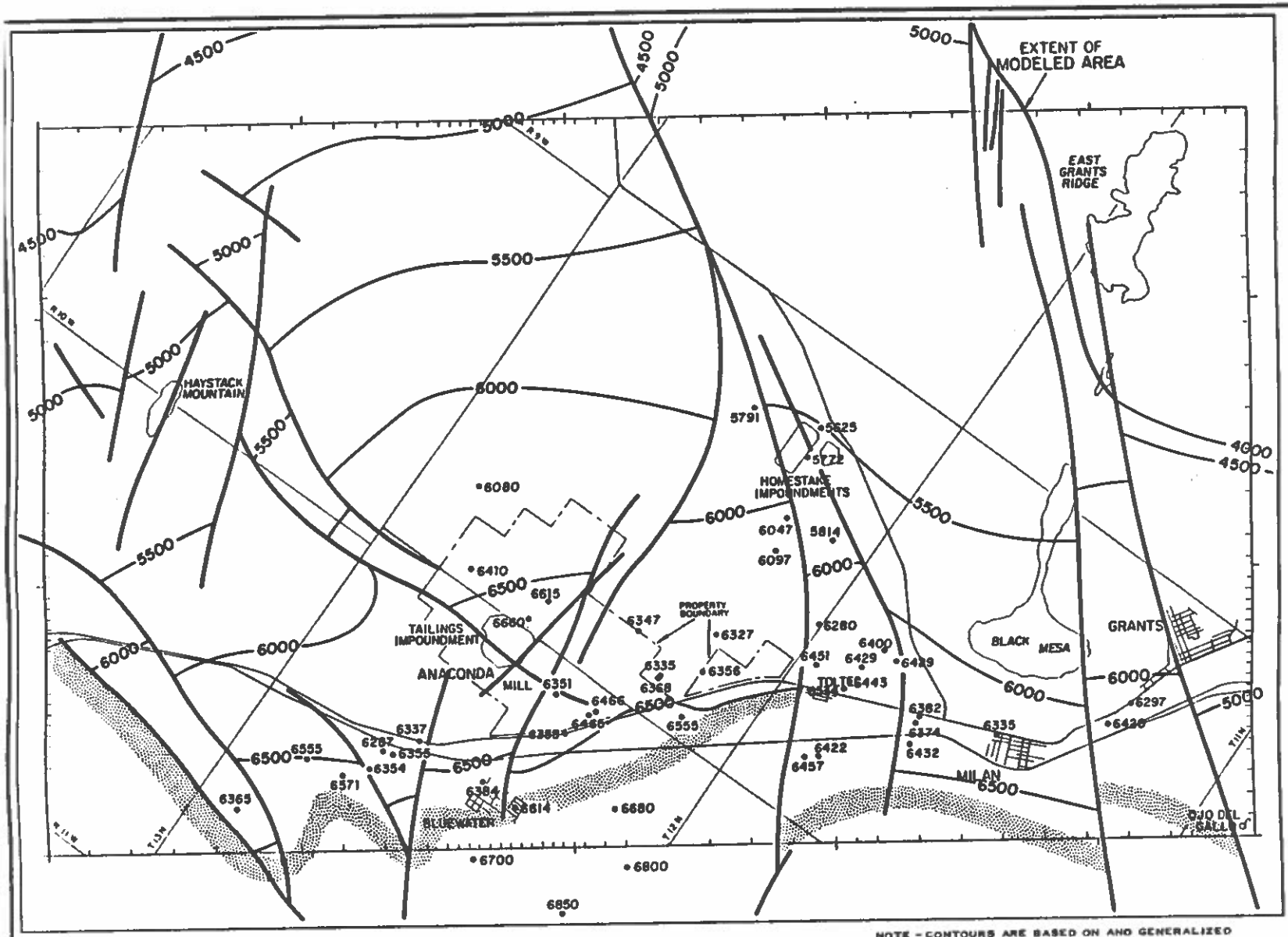
•6610 MEASURED WATER LEVEL ELEVATION (FEET)

CONTOUR INTERVAL – 100 FEET

SCALE IN FEET

4000 0 4000 8000

CONTOURS OF SIMULATED POTENTIOMETRIC GROUND WATER ELEVATION CHINLE FORMATION



KEY

EDGE OF SAN ANDRES FORMATION OUTCROPS

• 5791 ELEVATION – TOP OF SAN ANDRES FORMATION (FROM GORDON, 1961)

—6000— CONTOURS – TOP OF SAN ANDRES FORMATION (INTERVAL 500 FEET)

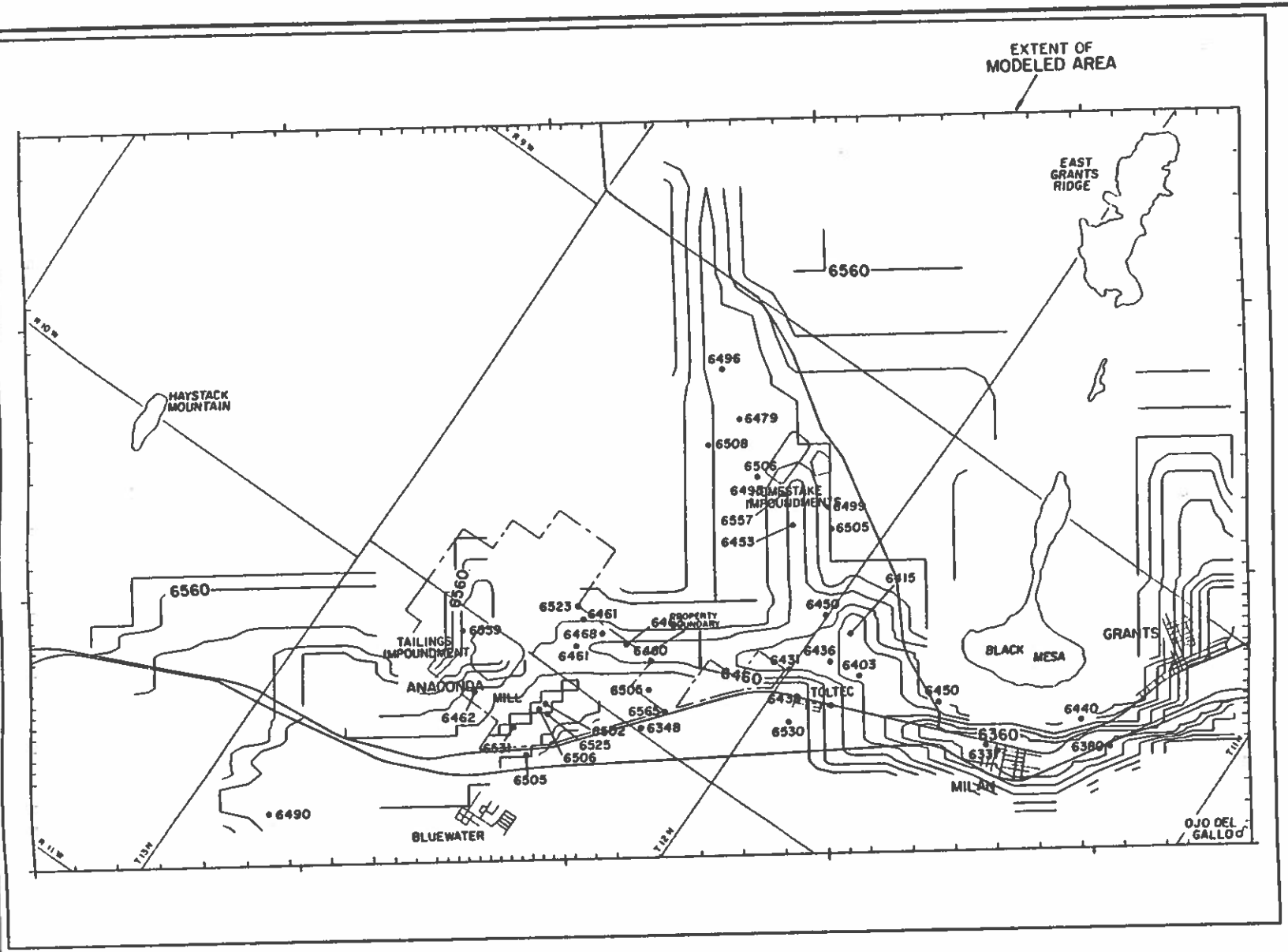
FAULT

NOTE – CONTOURS ARE BASED ON AND GENERALIZED FROM CONTOURS ON TOP OF THE DAKOTA FORMATION SHOWN ON U.S.G.S. QUADRANGLES.

SCALE IN FEET

4000 0 4000 8000

STRUCTURAL CONTOURS
TOP OF SAN ANDRES AQUIFER



KEY

• 6400 ELEVATION OF THE AQUIFER BASE

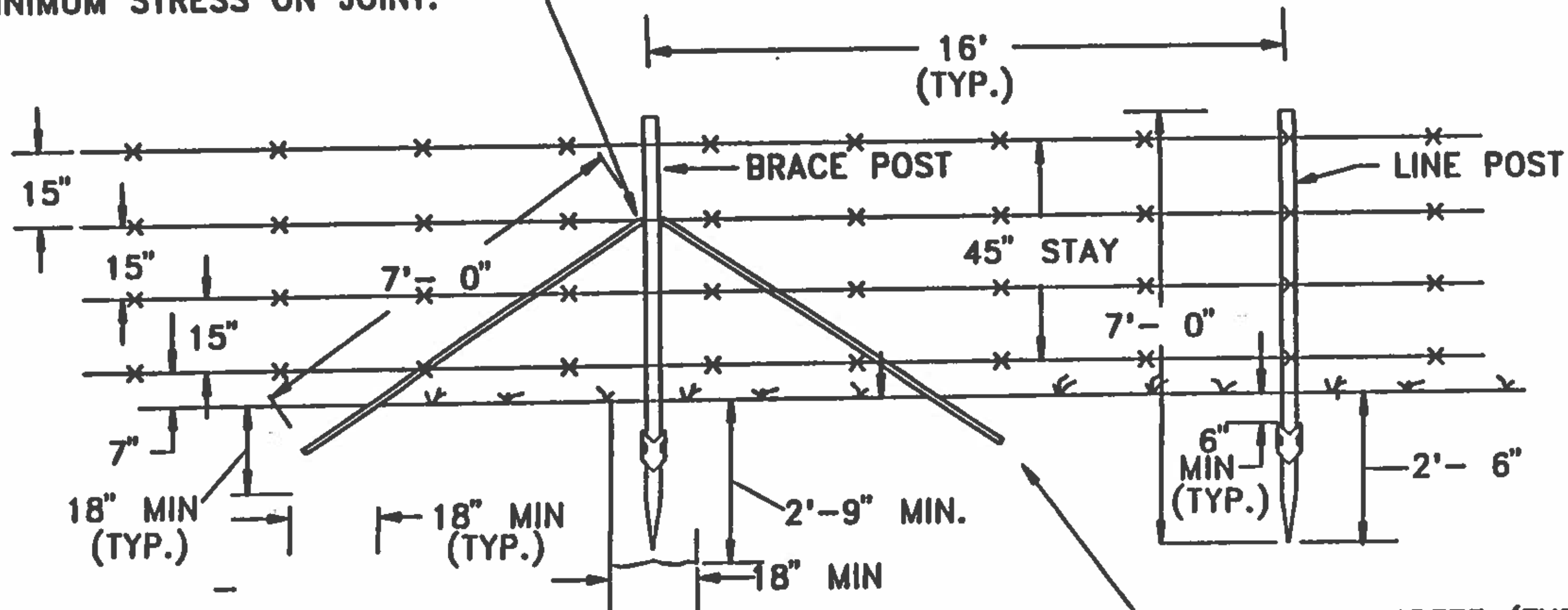
CONTOUR INTERVAL – 20 FEET

SCALE IN FEET

4000 0 4000 8000

SIMULATED CONTOURS OF BASE ALLUVIAL AQUIFER

NOTE: METAL BRACE TO POST JOINT: BRACE SHALL BE SECURELY ANCHORED TO POST BY WELDING, BOLT ASSEMBLY OR OTHER APPROVED JOINING. BRACE IS TO BEAR ON POST WHERE POSSIBLE TO PLACE MINIMUM STRESS ON JOINT.



DOUBLE BRACE PANEL OR CORNER POST

SCALE: N.T.S.

NOTE: USE FOR FENCE LINE DEVIATION OVER 30° AND AT INTERVALS NOT TO EXCEED 500'.

TYPICAL INSTALLATION WITH METAL POSTS

SCALE: N.T.S.

NOTE: LINE POSTS AND BRACES SHALL BE TEE, U, Y, CHANNEL. PIPE, ANGULAR OR OTHER APPROVED SHAPE, AND SHALL BE 7' LONG.

ANDERSON ENGINEERING CO., INC.
Long Beach, California · Salt Lake City, Utah · Grants, New Mexico
Telephone (801) 731-4590 Fax (801) 731-7809
CIVIL ENGINEERS CONSTRUCTION MANAGERS

F-33 MINE RECLAMATION
FENCE DETAILS

ATLANTIC RICHFIELD COMPANY
BLUEWATER MILL
NEW MEXICO

DRAWN BY: CTB
ENGINEER: VDA
APPROVED: CES
DATE: APRIL 1994
HORIZ SCALE: NTS
VERT SCALE: NA
REFERENCE: F33MINE/FENCE

APPENDIX

Calder and Workman - Report on Closure of the F-33 Workings

feet in from the portal. It appears that the entryways were driven alongside the orebody and development proceeded on the side where the ore was located.

The entries extending from Portals 4 and 5 are generally 10 to 15 feet wide. These are the results of underground survey and should give a reasonable measurement of the width of the drifts. There are no cross sections available, so there is no direct information concerning the height of these workings.

Portal 5 is quite straight and shows no workings other than the slashes for cross-cuts mentioned above. The slashes are in the west wall and are spaced 100 feet apart.

Drift 4 is also straight, running WSW to ENE. However, 100 feet in from the portal a small drift leaves the entry, and then returns to it about 200 feet in from the portal. This drift is narrow (6 feet) and may have been exploratory, or provided for equipment and supply storage. It does indicate that there may be developments off the main drift for exploration, underground maintenance and warehousing, etc.

The cross-cuts along entry 4 are quite consistent at 100 feet apart and provide access to the main workings. Cross cut width is quite consistent at 10 feet. The unsupported width across the main workings area can be as much as 60 feet.

Based on the information available from the drifts, which it is assumed are similar to the one to be closed, the following is assumed for the F-33 main entry:

Entry Width	12 feet
Cross-Cut Width	10 feet
Entry Height	Unknown (10 feet assumed)
Cross-Cut Interval	100 feet
Pillar Dimensions	Irregular

It is further assumed that the entry is fairly level in elevation. Obviously the slope of the drift would have followed the vein, but there is no information to say what that might have been.

It is further assumed that major mine-development began about 200 feet in from the portal. The first cross-cut slash in Portal 5 is 180 feet in. Initial development on entry 4, other than the side drift mentioned above began 200 feet in from Portal 4.

7.2 FACTORS INVOLVED IN CLOSING OLD WORKINGS

To date we have performed research and development blasting of old coal mine workings. This has included the closure of

regular, well defined rooms and cross-cut, irregular, poorly defined workings and individual sinkholes. A small, short adit has also been closed during these field research projects.

To close rooms and cross-cuts the general procedure has been to drill one or two rows of holes above the room to a depth that intersect the roof. The holes are deck loaded and the decks independently delayed to crater down into the void below. Overall, good success has been had with this approach.

Figure 7.2.1 shows a collapsed room where the swell of the material was sufficient to fill the void and the area above the void. Figure 7.2.2 shows a case where there was not enough strata above the void so a trough was formed. The room is completely collapsed and closed off however. In both cases the nominal room dimensions are 22 feet wide by 10 feet high. Actual dimensions were affected by prior collapse.

When closing individual sinkholes the approach was to drill holes around the void and throw material into it to close the void and fill it as close to surface as possible. Holes were again deck loaded and each deck independently delayed to limit vibration levels at surrounding workings. The patterns were designed with a suitable scaled depth of burial off the side to break and throw overburden into the centrally located sinkhole.

Figure 7.2.3 shows an open sinkhole before blasting. Figure 7.2.4 shows the void after closure. Figure 7.2.5 shows the blast pattern (using 6-inch diameter holes and ANFO) used to close this large, open sinkhole.

A short horizontal adit has also been closed. This entry was collapsed at the outcrop but had a small open crawl space at the roof of the adit. The feature was successfully closed using holes spaced around the sides of the adit, with a few holes over it as well.

In the case of holes drilled above an entry to intersect the void the approach has been to deck load the holes with a series of independently delayed charges. A scaled depth of burial is chosen such that each deck will successively crater down to the void below. In this manner the bulk of the rock is broken and directed down into the workings.

The scaled depth of burial should be smaller in the bottom deck and can be large for the remaining decks. For blasting in the F-33 adit the lower deck should have a scaled burial of 1.5 $ft/lb^{1/3}$. The remaining decks can be at 2.0 $ft/lb^{1/3}$.

For cratering the explosive decks should be 2 feet long in 3-inch holes and contain 3.83 lbs/foot of a small diameter emulsion in cartridge form having a density of 1.25 gm/cc.

FIGURE 7.2.1

EXAMPLE OF A COLLAPSED ROOM WHERE THE SWELL OF THE OVER-BURDEN WAS SUFFICIENT TO FULLY FILL THE WORKINGS AND THE VOLUME ABOVE THE VOID

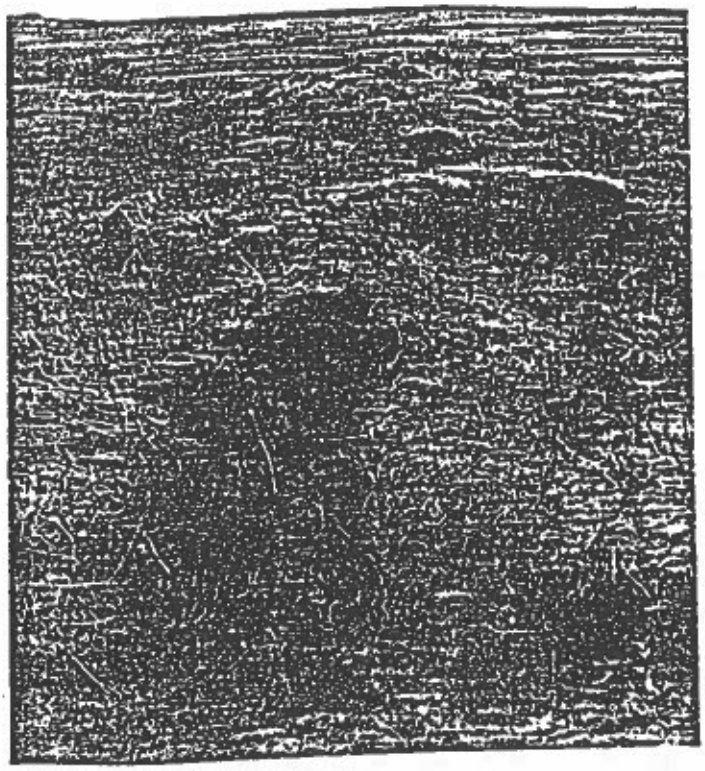


FIGURE 7.2.2

THE SWELL OF THE OVERBURDEN WAS NOT SUFFICIENT TO FILL THE ROOM AND THE VOLUME ABOVE, HOW-EVER THE WORKINGS ARE SEALED

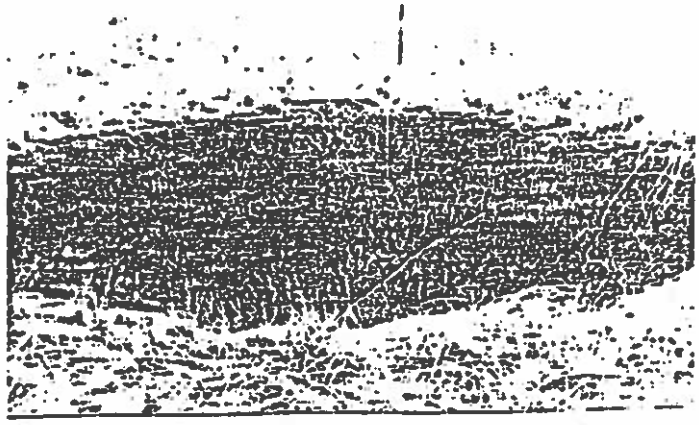


FIGURE 7.2.3: EXAMPLE OF AN OPEN SINKHOLE BEFORE BLASTING

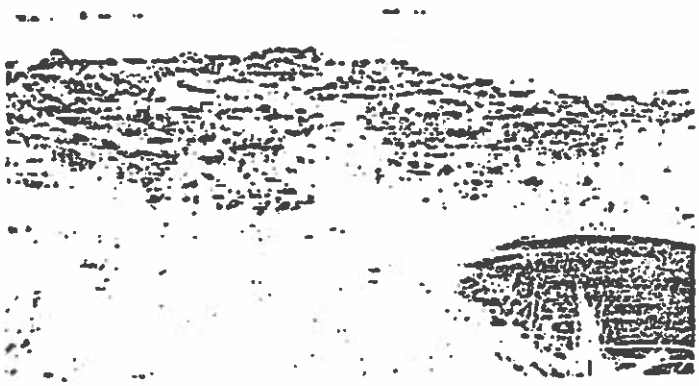


FIGURE 7.2.4: SAME SINKHOLE AFTER SUCCESSFUL CLOSURE

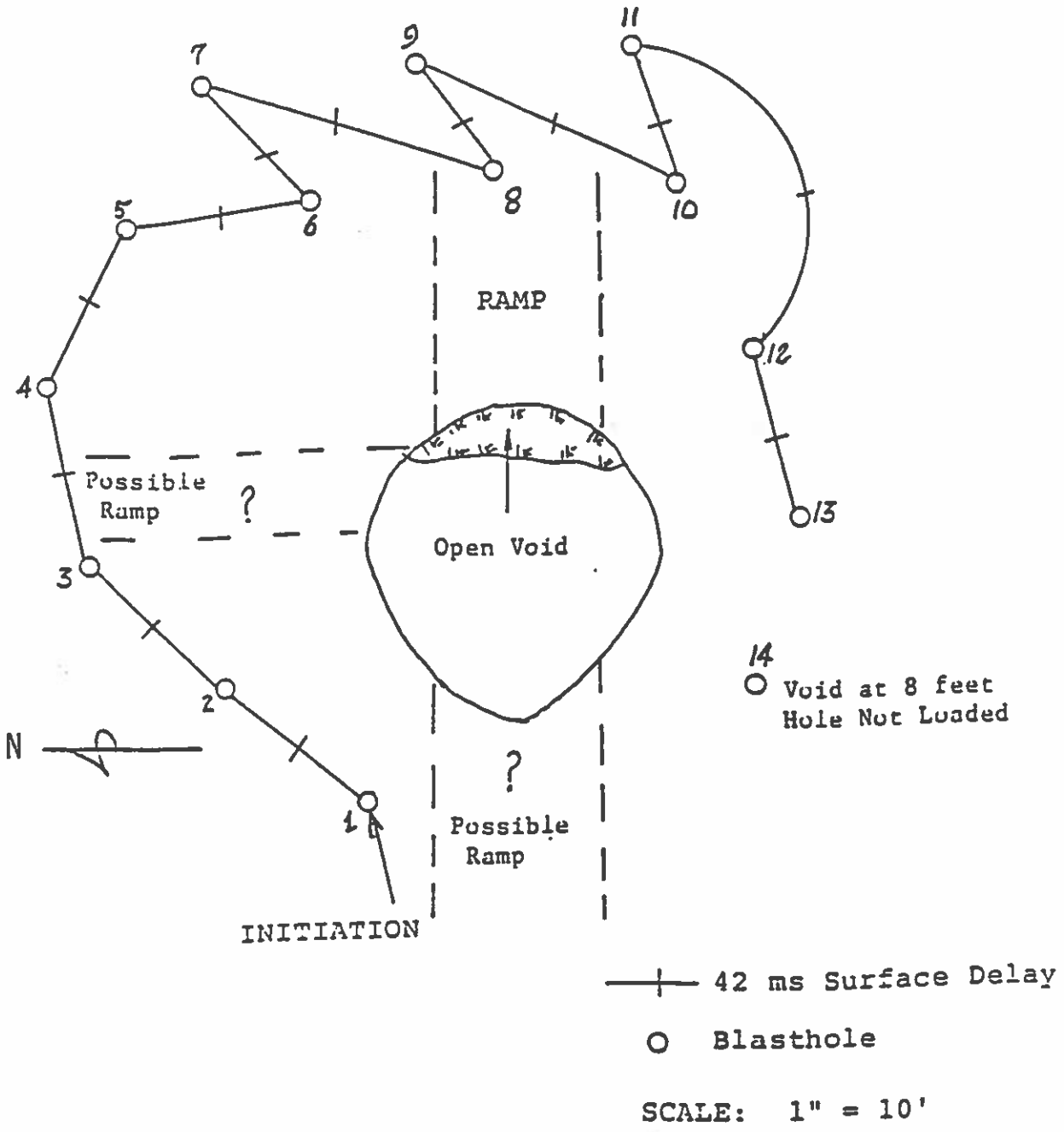


FIGURE 7.2.5: BLAST LAYOUT AND TIE-IN USED TO CLOSE A LARGE SINKHOLE

However, due to the depth of the holes the explosive deck lengths will have to vary to account for the given geometry. For holes 35 feet deep it will be necessary to use 3 foot collar lengths. The depths of burial, however, are still calculated on a two foot charge as this is the longest charge that will approximate a cratering charge in 3-inch diameter.

For this work one typically likes to use larger diameter holes so that short, squat cratering charges can be employed over the workings, while still maintaining sufficient charge to give wider patterns. For this reason we have commonly used 6-inch diameter holes and have experimented with some at 8-inch diameter. However, for F-33 the terrain is rugged and it is unlikely that drills capable of drilling holes of this diameter can be utilized. Therefore, it is assumed that an airtrack drill is used and 3-inch diameter holes are recommended.

The holes drilled to the void have to be plugged before loading begins. We have round plastic hole plugs used in seismic work suitable for this purpose. These can be attached to baling twine and then pushed to the bottom of the hole using tamping rods. The twine can be tied off at surface to secure the plug.

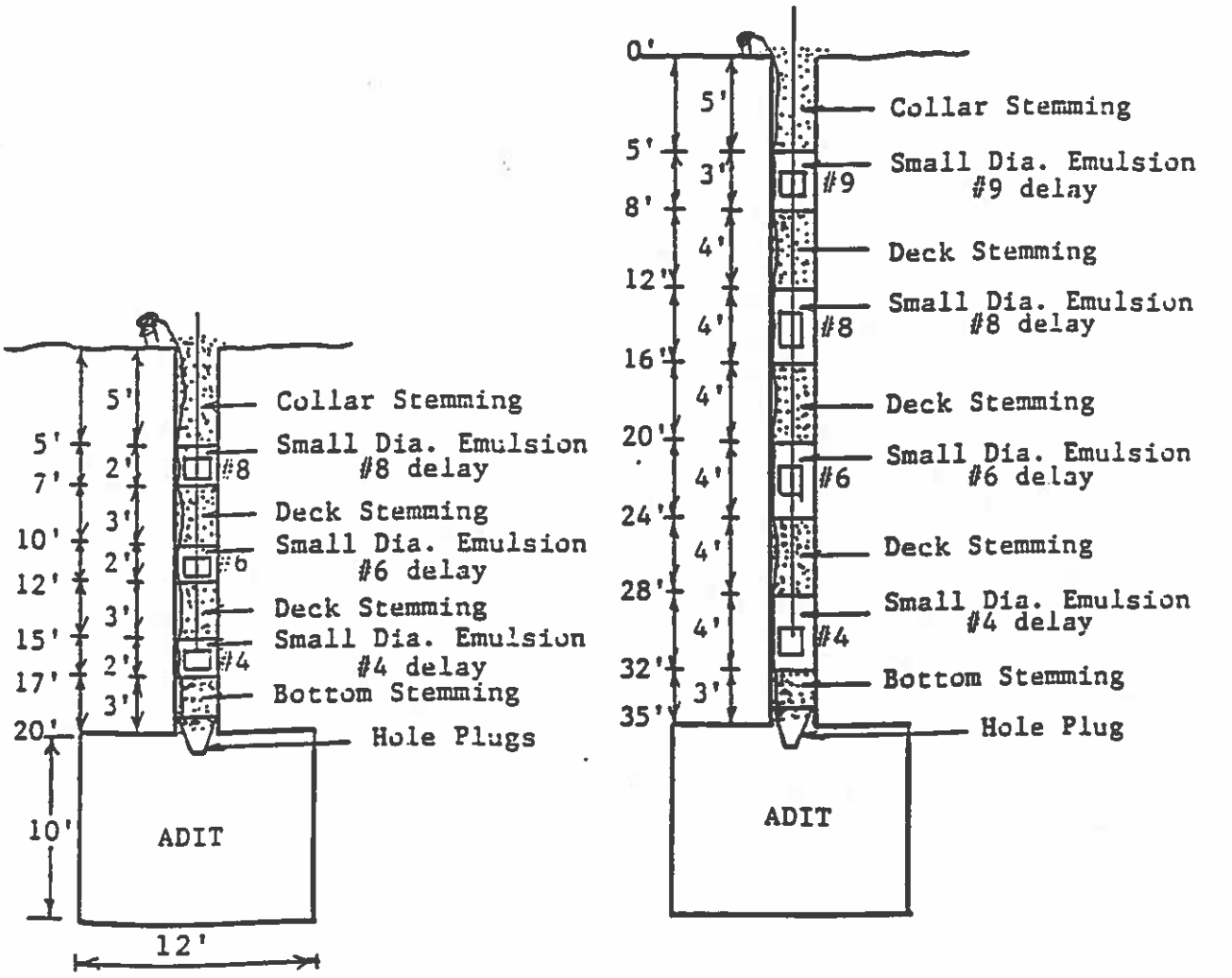
Once the plug is in place 3 feet of stemming would be placed directly above it followed by the first emulsion deck. It may be necessary to cut an emulsion stick to get the correct rise for the hole geometry. Four feet of deck stemming should then be added followed by the next deck and so forth.

Each deck is independently delayed, to give the successive cratering action. We have used both 25 ms and 50 ms between decks. The best results were obtained when 50 ms was used between decks. Where 4 decks are used this can be achieved by using period 4, 6, 8 and 9 (100 ms, 150 ms, 200 ms and 250 ms) of the Nonel down-hole system. For the case of shorter holes with fewer decks eliminate the higher numbered delays.

Figure 7.2.6 shows the recommended hole load, for holes drilled over the void, for holes 20 feet and 35 feet deep.

For the F-33 closure it is recommended that a row of holes be drilled up each side of the adit as well as two rows of holes over the adit. These holes will provide added volume to fill and seal the adit. Secondly they are likely to intersect any development to the sides of the drift, the presence of which may not be known. Such development will have to be taken into consideration if encountered.

The design of these holes will be for the purpose of casting rock in toward the void off the side of a linear charge. The recommended scaled depth of burial is 2.5 $ft/lb^{1/2}$ for explosive loaded at 3.83 lbs/ft which gives a



Scale: 1" = 10'

FIGURE 7.2.6: EXAMPLES OF HOLE LOADING FOR HOLES OVER THE ADIT DESIGNED TO CRATER DOWN INTO THE ADIT

burial depth of 4.89 feet. Thus each row should be placed 5 feet back from the edge of the drift, giving a 5 foot burden.

For these holes the spacing should be 1.5 times the depth of burial. This gives a 7 foot spacing between the holes on the line.

The holes along the side may be loaded as a continuous column. For the delay sequence recommended above, for holes over the void, the side holes should have a number 9 (250 ms) down-hole delay.

The scaled depth of burial at the top of the charge should be 3.0 $ft/lb^{1/3}$. This will break to the surface, while avoiding excessive flyrock. For 3-inch holes 5 feet of stemming are required to achieve this design. This stemming height should be used for both the holes along the side and those over the void. For holes over the void the length of the upper deck may need to be varied, as the hole depth varies, to obtain the recommended 5 feet of stemming.

Figure 7.2.7 shows the hole loading for holes along the side of the adit for 20 and 35 foot hole depth.

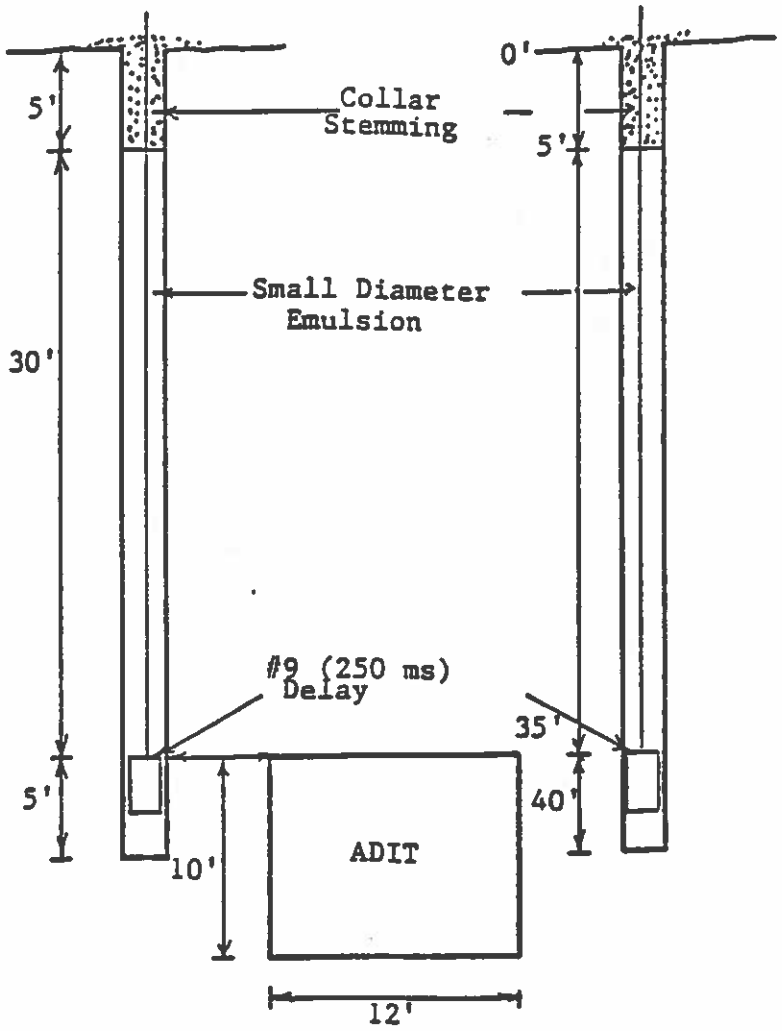
Regarding the holes over the void, the spacing between holes on a row should be 7 feet, which is about 1.75 times the depth of burial of individual decks. This has worked well for us in the past. Assuming the adit is 12 feet wide on average there should be two rows of holes over the adit. These rows are to be 6 feet apart. Each row is then 3 feet from the edge of the drift. It is important that all these holes intersect the void otherwise the material will not be free to move down into the void and the results may well suffer.

Finally, one has the question as to what volume of rock must be broken to completely fill the adit and rise to near the original surface. The swell of the material must be accounted for in performing these calculations.

In past work, blasting overconsolidated clays with weak sandstone layers, we studied the swell in the collapsed strata. The average result was a 20 percent swell in these materials. These measurements were made less than six months after blasting.

If we assume an opening that is 12 feet wide and a full 10 feet high the volume of void per foot of advance is 120 $ft^{1/3}$. The goal then is to blast sufficient rock such that the swelled strata will fill the void plus the column above it.

For the blast patterns given above the width from one outside row to the next is 22 feet. The swell factor needed to



Scale: 1" = 10'

FIGURE 7.2.7: HOLE LOADING FOR HOLES ALONGSIDE THE ADIT

close the workings, for a given depth of overburden can then be calculated. Results of these calculations are found in table 7.2.1.

TABLE 7.2.1: SWELL FACTOR REQUIRED TO FILL THE ADIT PLUS THE COLUMN ABOVE FOR DIFFERENT OVERBURDEN HEIGHTS AND ADIT DIMENSIONS OF 12'X10'

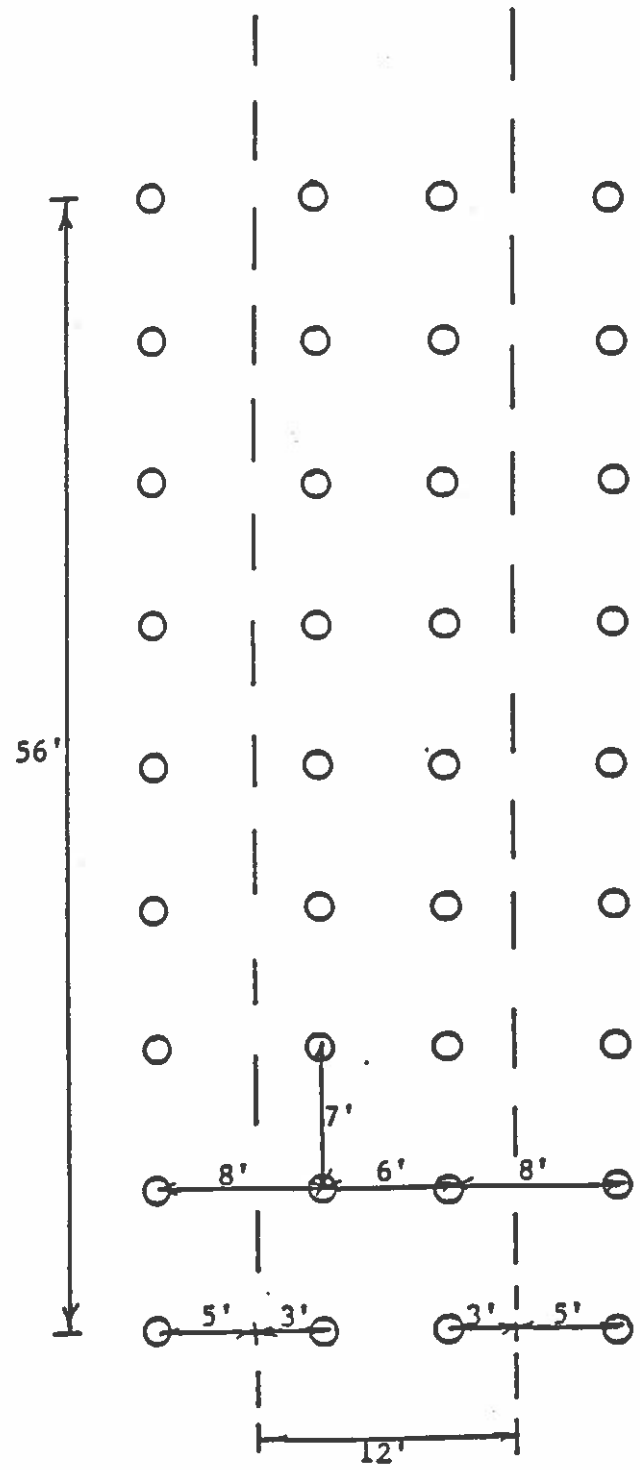
Overburden Height (feet)	Swell Factor (1+S)
15	1.36
20	1.27
25	1.22
30	1.18
35	1.16
40	1.14
45	1.12
50	1.11

For the strata overlying the F-33 adit the rock may swell as much as 28-30% upon initial breakage. However observation of this material leads to the conclusion that a good deal of it may weather and the swell factor reduce. Therefore to allow for this and some settlement of the rock it is recommended that a 16% swell be considered. Then the table shows that 35 feet of cover are needed over the entry to fully collapse this feature and fill the void.

It is difficult to say how much cover is over the adit, at the portal, currently. If we assume 10 feet and further assume that the hillside slope is 25° the distance back along the adit, from the outcrop, required to obtain 35 feet of cover over the adit can be calculated. These assumptions will have to be checked by exploratory drilling and survey prior to blasting the overburden thereby obtaining exact values for the design.

For the stated conditions it will be necessary to drill back 55 feet from the current location of the portal to obtain 35 feet depth and assurance of filling the void and area above it.

Four rows of holes would be drilled with two rows directly above the void and one on either side of the adit. Figure 7.2.8 is a diagram showing the blast design for the given assumptions with appropriate dimensions.



SCALE 1" = 10'

FIGURE 7.2.8: BLAST LAYOUT TO CAVE AND FILL F-33 ADIT

7.3 DELAY TIMING FOR THE BLAST

Given the current assumptions the plan would be to shoot the blast row by row beginning next the outcrop. The holes over the void would shoot first in a row with 17 ms between them. There would be 25 ms to the outside holes on the row from the adjacent hole over the void. The delay between rows is 42 ms.

This approach allows the strata over the void to collapse down into the entry initially and then material is thrown in from the sides to finish the filling. Added relief for the collapse is provided by the row to row delay.

Figure 7.2.9 shows the blast tie-in with detonation times.

7.4 EXPLORATORY WORK

It is clear that exploratory drilling will be needed to complete the detailed design. Drilling needs to be conducted to establish the heading and width of the adit. A series of holes every 20 feet back from the portal will give good definition.

Drilling should also be done to determine the nature of any development off the portal. As stated above development appears to start about 200 feet in from portals in the area. However, we don't know how far back the adit has already collapsed.

If there is unexpected development in the blast, there may be a large depression left after the blast, due to the unexpected void. This can likely be rectified by a second blast, but the problem can be avoided if the existence of the development is known in advance.

A test blast, using the design above should be fired initially. This would be a small blast and allow us to determine how the planned approach performs in the specific strata found at F-33. Then, any adjustments could be made to optimize the plan.

The test blast could comprise the first three rows of holes shown in figure 7.2.8. The remaining six rows could then be shot as one, or two additional blasts of three rows could be initiated. Fewer blasts is probably better to minimize the chance of damage behind a shot that would make subsequent drill placement difficult.

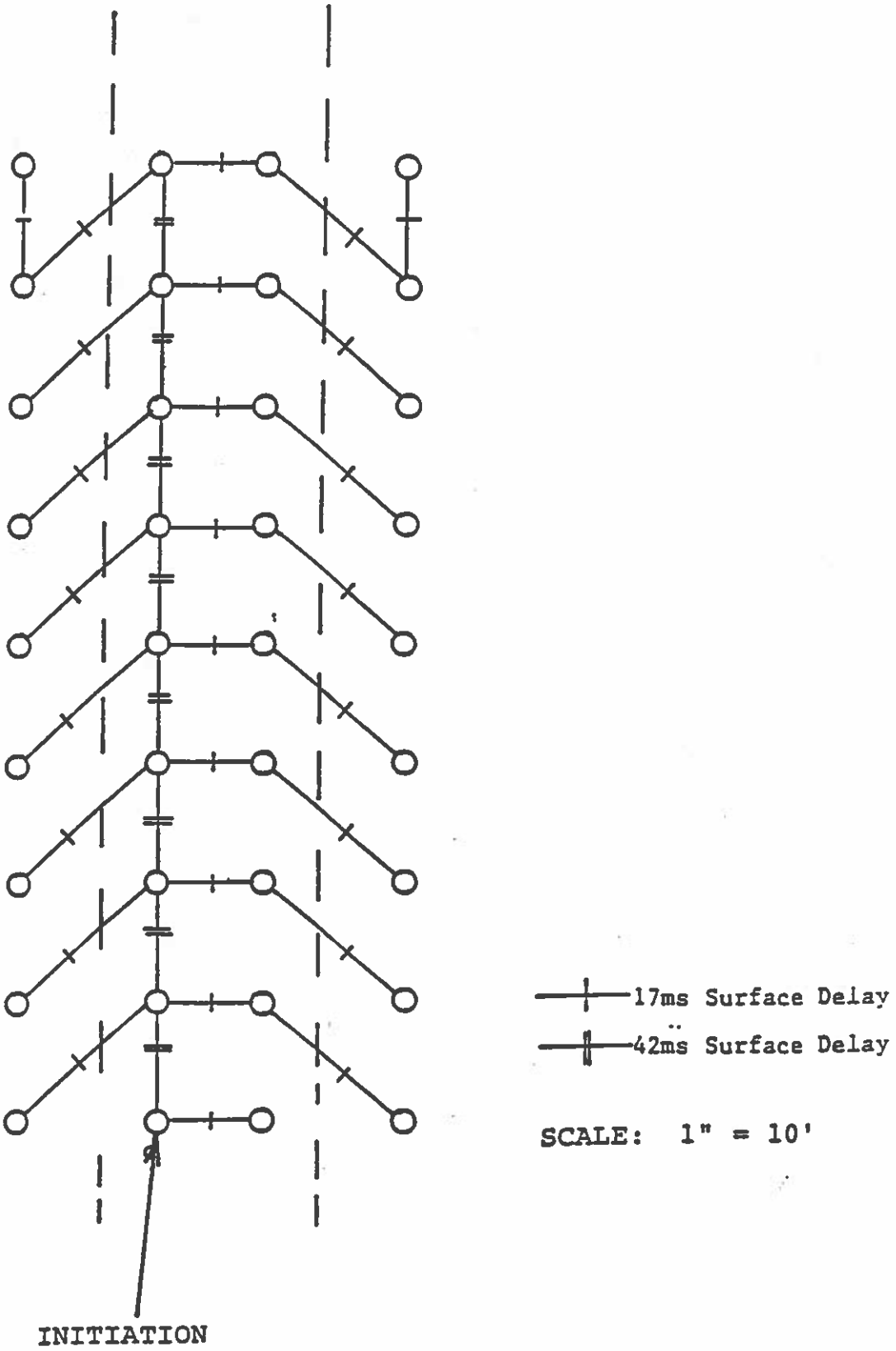


FIGURE 7.2.9: PROPOSED SURFACE TIE-IN FOR BLAST TO CLOSE F-33 ADIT

F-33 MINE RECLAMATION REPORT
PHOTOGRAPHS

PRIOR RECLAMATION INSPECTION REPORT
AND
RECOMMENDATION FOR RELEASE OR PERMIT REQUIREMENT
July 21, 1995

Purpose:

As required by the New Mexico Mining Act Section 69-36-7 U. and the New Mexico Mining Act Rule 5.10, an inspection by the Mining and Minerals Division (MMD) of a prior reclamation site, as defined in the Act, has been conducted on the following site. This report documents the findings of the inspection and a recommendation to the Director to release or require the permitting of the site, as required by the New Mexico Mining Act and Rules.

Inspection Summary:

The inspection of the **F-33 Mine** reclaimed jointly by Atlantic Richfield Corporation (ARCO) and Homestake Mining Co. (Homestake) has been conducted. The inspection was conducted on June 28, 1995. Persons present during the inspection included: Mr. Christopher Sanchez and Mr. Steve Anderson, both representing ARCO; the lead inspector for this prior reclamation inspection was Joe DeAguero, Reclamation Specialist; and other inspectors were Ms. Robyn Tierney, Reclamation Specialist and Ms. Tacy Harling, summer student.

The inspection consisted of review of information submitted by the mine operator, discussion with operator as to reclamation conducted, inspection of overall condition of reclaimed mine site, vegetation sampling, development of a list of species present, reclaimed soil depth analysis, geiger counter transects, and photo documentation. Each specific criteria is described below in the detailed findings portion of this report.

Based on the inspection of the site, review of inspection information with Mining and Minerals Division staff and MMD's resources to conduct the inspection the lead inspector, Joe DeAguero, **recommends release of the F-33 Mine site operated by ARCO and Homestake from further requirements of the New Mexico Mining Act.**

Detailed Findings:

1. Review of information submitted by the mine operator:

A prior reclamation report for the F-33 was submitted by ARCO describing the reclamation activities completed at the mine. Included in the report (attached to original report) are maps of the reclaimed features (photos and field surveys), a discussion of the post-mining land use, detailed description of the reclamation conduction at the site and a description of environmental and safety concerns. The

prior reclamation report submitted is a very comprehensive summary of the reclamation conducted at the site. The maps are of very good quality and detail. There is sufficient detail contained in this report to describe conditions and facilities that occurred at the site prior to reclamation and where these sites were located. Furthermore, the details of the reclamation conducted on site are accurately described as verified on site prior to and during the inspection conducted on June 28, 1995.

2. Discussion with operator as to reclamation conducted:

Two inspections were conducted on August 25, 1994 and February 22, 1995 through a request of the operator. These inspections were to identify the condition of the site prior to reclamation (08/25/94) and post-reclamation (02/22/95) preliminary inspection to identify any potential problems prior to the official inspection. During the post-reclamation inspection, minor rills were identified in at the base of the Portal 4 area as identified in Figure 6.2. of the ARCO reclamation report (Attached). The rills have since been regraded.

Prior to the inspection conducted on June 28, 1995, Joe DeAguero contacted Mr. Christopher Sanchez of ARCO to schedule a time. Mr. Sanchez and Mr. Anderson representing ARCO met with MMD staff and discussed the scope of the inspection. Also, discussed with MMD was a summary of the condition of the site prior to reclamation and what was done during reclamation. During the inspection specific reclamation questions were answered by ARCO representatives. ARCO representatives committed to addressing any potential problems that were identified during the inspection.

3. Inspection of overall condition of reclaimed mine site:

The visual inspection conducted consisted of observation of: 1) vegetation species present; 2) general density of species; 3) soil depth and erosional stability; 4) slope design and configuration; 5) removal of structures and reclamation of site features; and 6) hydrologic stability and features of the reclaimed site.

A) vegetation species:

The following table (Table 1) contains a list of all species identified on the reclaimed site. It should be noted that this list is not all inclusive of all species that may be present currently or at other times of the year. Due to the time of the inspection, last week of June, there are species, especially forbs that are not present during the hotter summer months and those species are commonly dormant during the drought season.

Table 1. List of Species

COMMON NAME	*Genus & species*
Western Wheatgrass	*Agropyron smithii*
Sand dropseed	*Sporobolus cryptandrus*
Crested wheatgrass	*Agropyron cristatum*
Indian ricegrass	*Oryzopsis hymenoides*
Cheatgrass	*Bromus tectorum*
Sandburg bluegrass	*Poa sandbergii*
Blue flax	*Linium lewisii*
Greyweed	*Ambrosia dumosa*
Stickleaf	*Mentzelia albacialis*
Aster	*Aster townsendia*
Sunflower	*Helianthus annuus*
Fleabane	*Erigerion sp.*
Tickseed	*Bidens sp.*
Annual atriplex	*Atriplex powellii*
Hidden flower	*Cryptantha sp.*
Fourwing saltbush	*Atriplex canescens*
Winterfat	*Ceratoides lanata*
Buckwheat	*Eriogonum sp.*

B) general density of species:

Four random vegetation transects were evaluated on the reclaimed lands using the point intercept method along a 50' transect taking cover values at 3' intervals along each transect. A total of 17 points per transect were taken. In addition, a list of species present within a 50' X 6' belt transect. It is critical to note that the vegetation sampling conducted was not directed to achieve sample adequacy. The vegetation sampling was to evaluate typical cover of the

reclaimed land and to evaluate diversity of species within the belt transect. Additional resources would be needed to fully evaluate each prior reclamation site to sample adequacy of which may require over 60 hours per site. The following table (Table 2) is a summary of the vegetation data collected.

Table 2. Summary of Vegetation Data

Transect #1	Value (%)
Perennial Cover:	0
Litter Cover	53
Rock Cover	0
Bare Ground	47
Perennial species present in belt transect	5

Transect #2	Value
Perennial Cover:	12.5
Litter Cover	25
Rock Cover	6.25
Bare Ground	56.25
# of perennial species present in belt transect	4

Transect #3	Value
Perennial Cover:	5.9
Litter Cover	29.4
Rock Cover	5.9
Bare Ground	58.8
# of perennial species present in belt transect	8

Table 2. Summary of Vegetation Data (con't)

Transect #4	Value
Perennial Cover:	0
Litter Cover	41.1
Rock Cover	0
Bare Ground	58.9
# of perennial species present in belt transect	6

The data present above does show the site has been revegetated with sufficient species diversity. Based on the investigated density of species, ground cover present and established species present gives strong indication of suitable reclamation of the site has been performed.

C) soil depth and erosional stability:

The entire site was surveyed for erosion features. During a walkover of the mine site all slopes, areas of water concentration (ponds, diversions and areas where disturbed areas enter undisturbed lands) were evaluated for erosion. All sites appeared to be stable with little potential for development of erosion features. One small erosion feature was identified and has bedrock control beneath the erosion. In the case of this erosion feature, the site has a small watershed and has little potential to develop into a large problem. Sufficient topsoil for the establishment of vegetation had been borrowed and redistributed over the reclaimed area. A series of random and systematic sampling was conducted to identify the soil depth and the potential for any rooting or establishment problems. Random sampling of soil depth was done by digging soil pits approximately 12" deep to determine the depth of topsoil material acquired from a borrow site and distributed on the reclaimed site. A total of 18 soil pits were dug to evaluate the topsoil depth of the reclaimed sites. Topsoil depth varied from 4" to greater than 16" throughout the site. Only one soil pit showed 4" of topsoil with all other 17 pits showing 12" or greater soil depth. Revegetation and topdressing establishment was done very well.

D) slope design and configuration:

The site was graded and slopes were designed and configured to minimize soil loss throughout the site. The eastern portion of the site was graded and reclaimed areas tied in with the surrounding landscape very well. At portal No. 4 the steep slopes were graded to 3:1 slopes and drainage area was also

recontoured. The diversion through the center of the regraded area was rip-rapped with limestone from a quarry in Prewitt, New Mexico. The limestone was evaluated for durability using the L.A. Ware abrasion test.

E) removal of structures and reclamation of site features:

The reclamation report identifies and details the closure of mine openings (portals and vent shafts), Structures and Debris and associated Mine Waste. Full details are addressed in the report and based on the on-site inspection, the closure appears to fully meet the requirements of the New Mexico Mining Act.

F) hydrologic stability and features of the reclaimed site:

The reclaimed site sits on an alluvial fan on the north/northwestern slope of the east grants ridge. The watershed above the reclaimed area drains into and through undisturbed drainages in the area mine portal no. 5. However, in the area of mine portal no. 4 the watershed above the reclaimed area drains into and thorough a reconstructed channel. The reconstructed channel has been rip-rapped with limestone and basalt rock material. At the toe of the slope and along the channel, large basalt rock has been placed in the channel as energy dissipators. There appears to be sufficient and adequate rip-rap for hydrologic stability. Other features include a diversion channel that carries water from the base of mine portal no. 4 to the borrow area. This channel has been seeded and mulched and vegetation is becoming established.

G) Geiger counter transects:

A geiger counter was used to evaluate the levels of radio-activity on and off the reclaimed site. Beginning on undisturbed land, readings were evaluated at approximately 200' intervals with the first three readings on undisturbed land and last three on reclaimed lands. The geiger counter used reads radio activity in micro REMS/hr. Using the 50 scale for sensitivity (see Table 3. Geiger Counter Evaluation) the readings were as follows:

Table 3. Geiger Counter Evaluation

LOCATION AND READING NUMBER	micro REMS/hr.	GENERALIZED LOCATION
1	9	approximately 600' north of reclaimed area, portal 4.
2	9	approximately 400' north of reclaimed area, portal 4.
3	8	approximately 200' north of reclaimed area, portal 4.
4	8	inside of reclaimed area, approximately 50' from northern edge.
5	12	inside of reclaimed area approximately 250' from northern edge
6	9	inside of reclaimed area approximately 450' from northern edge.

H) Surface and Groundwater:

Surfacewater quality has been addressed by topsoiling, seeding and mulching the reclaimed portals, stockpile and waste areas. Based on the reclamation operations conducted, waters from the reclaimed area will flow to ephemeral drainages or to a borrow area serving the post mining land use. The mine operation was situated in a geological strata that was dry and far above any strata that may contain groundwater, thus it is unlikely that impacts to groundwater have or will take place because of mining.

I) Photo/slide documentation:

The following photos/slides were taken the day of the inspection to document the current condition of the reclaimed land. Each photo/slide is date stamped in the lower right hand corner and has an identification number on the slide frame. The below numbered descriptions identify the current condition of the site and descriptions match content of each photo/slide.

#1: This photo was taken in the portal no. 4 area. Looking south, this photo identifies the typical tie-in between disturbed (left) and undisturbed (right).

Natural vegetation has remained undisturbed wherever possible.

#2 & #3: Reclaimed waste dump area near portal no 4. Panoramic view of dump looking southeast (#2) and looking south (#3). Waste dump covers approximately a 3 acre area.

#4: This photo is the reclaimed portal no. 4. Waste material from the dump was placed in the portal ramp and covered with suitable topsoil from the borrow area. The large rock on the top left corner of the photo was left undisturbed.

#5: The west facing slope of reclaimed portal 4. A concrete building slab was removed from an area just left of the power poles and buried in the portal ramp. the reclaimed slopes are quite stable. Power poles and lines are the property of the Plains Electric Co-op.

#6: Reclaimed ore stockpile looking to the northwest. Very good plant establishment. Good establishment of cool, warm and forb species.

#7: Unseeded exploration road looking to the southeast. The MMD recommended that reseeding of the exploration roads did not need additional reclamation. The roads are rocky and quite stable.

#8: An erosion feature found on border of reclaimed site. Has bedrock control and further erosion would be limited.

#9: Looking northwesterly, 3:1 down slope of reclaimed area near portal no. 5. The area has been dozer tracked, seeded and mulched. On this photo, not much perennial vegetation is visible although much is still very juvenile. Good preliminary establishment for 1 years growth.

#10: Juvenile grass plant growing on north facing outslope of portal no. 5 reclamation. Species is Indian ricegrass (*Oryzopsis hymenoides*). Pen used for scale.

#11 & #12: Limestone rip-rap used in the down slope reconstructed channel in the portal no. 5 area has a D_{50} of approximately 6". Incorporated into the limestone rip-rap are larger basalt rock from the area salvaged during reclamation for use in the channel as shown in photos, #9, #14 and #15.

#13: Looking towards northwest, a constructed channel designed to transport water from the portal no. 5 area to the topsoil borrow area, which serves the post mining land use of domestic grazing and wildlife use.

#14: Reconstructed slopes and portal no. 5 after closure. Photo taken looking south.

#15: Photo of reconstructed slopes and down slope reconstructed channel to east (left) of portal no. 5.

Maintenance Item(s):

1. None.

Recommendation to the Director:

Based on the information submitted to the MMD, the communications with the operator, both written and oral and the condition of the reclamation completed by ARCO and Homestake Mining Co. and documented by this inspection report, it is my recommendation that the operator has completed all required reclamation has met the substantive requirements for reclamation. **I recommend, to the Director, that the MMD release the Atlantic Richfield Co. and Homestake Mining Co. from further responsibilities under the New Mexico Mining Act and Rules for the F-33 mine site.**

Signature of Inspector
Joe DeAguero

7/21/95
Date

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
Director
Mining and Minerals Division
2040 South Pacheco St.
Santa Fe, New Mexico 87505
Telephone: (505) 827-5970

MINING INSPECTION REPORT

Name of Operator: Atlantic-Richfield Company	
Name of Mine: F-33	
Address: P.O. Box 638, Grants, New Mexico 87020	
Permit Number: Prior Reclamation	
Type of Mine: Uranium	___SURFACE _X_UNDERGROUND
Date of Inspection:	August 25, 1994
Time of On-Site Inspection:	3:30 p.m. to 5:30 p.m.
Weather Conditions:	Sunny, warm with moist soil conditions.
Purpose of Inspection: Non-official preparatory inspection for prior reclamation site. The purpose was to identify general hydrological, soil and revegetation efforts. An official inspection will be scheduled after August 31, 1994.	
Inspector: **Present During Inspection:**	Joe DeAguero, MMD Alan Jager, Fernando Martinez, Holland Shepherd, MMD Fred Craft, Homestake Mining Co. Christopher Sanchez, ARCO
ENFORCEMENT ACTION TAKEN: None **NOTICE OF VIOLATION: #**_____ **YES:**___ **NO:**_X_ **CESSATION ORDER:** **YES:**___ **NO:**_X_	
Time: On-Site: 2 **Permit Review:** 0 **Travel:** .5 **Report Writing:** 1 **TOTAL INSPECTION TIME:** 3.5 **HOURS**	
NOTE: The F-33 mine, portholes 1, 2, 4 & 5, reclamation is a joint reclamation venture between ARCO and Homestake Mining Co.	

NON-OFFICIAL PREPARATORY INSPECTION FOR PRIOR RECLAMATION
AUGUST 26, 1994
F-33 RECLAIMED URANIUM MINE
ARCO AND HOMESTAKE MINING COMPANY

NARRATIVE:

The inspection began at the Homestake Mining Company's office off of Hwy. 605. Representing Atlantic-Richfield Co. was Christopher Sanchez. Representing Homestake Mining was Fred Craft. MMD was represented by Joe DeAguero, Alan Jager, Fernando Martinez and Holland Shepherd.

The site to be submitted as prior reclamation is the F-33 mine operation which consists of portal 1, 2 and 4 at the west portion of the reclaimed site and portal 5 at the east portion of the reclaimed site. Total reclamation is approximately 30 acres disturbance including the topsoil borrow area.

The site was reclaimed by burring the waste ore materials and other associated mine wastes. The entire disturbed area was covered with approximately 12" of topsoil borrowed from the alluvial area below the mine site. All areas had been seeded with a native seed mix and the area mulched with approximately 2 ton per acre mulch.

The slopes, 3:1 and 4:1 slopes on the northwest facing side of the disturbed area were seeded, hydromulched and tracked with a dozer, forming a surface with micro-relief.

The entire perimeter of the reclaimed area, minus the access roads, were fenced using four strand barb wire with T-posts on sixteen foot centers.

The site as a whole looked very good. The reclamation included a drainage area where rip-rap was placed to reduce the erosion potential. Large rock was placed near the center of the channel with six inch limestone rip-rap lining the remainder of the 8-12' wide channel. Large boulders were placed at the base of the slope and channel to reduce the water velocity as it enters the diversion leading into the alluvial bottom land.

The potential for successful reclamation appears to be quite good. There should be no major obstacles in releasing this site based on the quality of planning and actual reclamation conducted at this site.

INSPECTOR'S SIGNATURE: Joe DeAguero

F-33- Mvu.   6/28

Steve Anderson, Chris Sanchez, JD, RT, TH

Species List

Cela	Brte Phelicia
Atca	dyc 1
Agsm	Mentzelia Albaricalis
LiLe	Atpo
sp Linearia (?)	Aster sp - Townsendea erigeron
Sper	Bidens
Agcr	Af?
grey weed	Eriogonum sp.
Orhy	Cryptantha

Transect #1 - S. side of Reclaim Reading W/TO

		Belt sp
1) Litter	12) Litter	Brome/Canada
2) Bare	13) Litter	Celeria
3) Bare	14) Bare	Kosia
4) Litter	15) Bare	Crested
5) Bare	16) Bare	Buckwheat
6) Litter	17) Litter	Mustard
7) Litter		Sandburgs?
8) Bare		Atca
9) Litter		[illegible]
10) Litter		
11) Bare		

Transect #2	Read W to East				
1) Bare	Bent				
2) Bare	Brome				
3) Bare	ATCA				
4) Brome sp.	POSA				
5) Brome sp.	Mustard				
6) Bare	AgCr				
7) Bare	Sa/Ja/A				
8) Rock					
9) Litter					
10) Litter					
11) Bare					
12) Bare					
13) Litter					
14) Bare					
15) Litter					
16) Bare					

Transect # 3 Read NW to SE

1) Bare
2) Poa secund. ?
3) Litter
4) Litter
5) Litter
6) Bare
7) Bare
8) Bare
9) Bare
10) Bare
11) Litter
12) Bare
13) Bare
14) Rock
15) Bare
16) Bare
17) Litter

Mustard #2 - really an Aster
KosiA
Salsola
AtcA
Ag sp
grey weed
Agcr
Sunflower
POSA
Mustard #1
At sp? Annual
Br sp
Lile

Photos

#1
Western edge of Reclaim w/ Native
Veg to Right - Reclaim to ~~East~~ (Left)

#2 & 3 - Waste dump area
Panoramic of Reclaim #2 SEast facing
(3 acre area) #3 South facing

#4 Portal area - Note lg. rock
on top ~~right~~ left.

#5 West Facing slope: Note
location of Poles & Lg rock

Machine set at 50 micro-roentgens/hr
1) 4.5 - 5.0 start N of mine heading SE
2) 200' 4.5 - 5.0
3) 200 4.0
4) 200' 4.0
5) 200' 6.0
6) 200' 4.5 top of slope
Note: Wind is blowing from NW - the Homestake
Mill is to the NW of this site

Top of Mesa - Transect #4 S to N

1) L.A	Ikegrass ✓	Ginger
2) Bare	POSA	25 Scale
3) Bare	Spco	5-9
4) L.H	Atca	50 Scale
5) L.A	Salsola	8
6) Bare	Wheatgrass (sp?)	
7) Bare	Mustard 1	(only)
8) Bare	Li Le	
9) Bare	Opuntia	
10) Litter	Aster	
11) Bare	Dyc1	
12) Bare		
13) Litter		
14) Litter		
15) Litter		
16) Bare		
17) Bare		

PHOTO

#6 - Mesa Top SE to NW good establishment

#7 - Unseeded road looking NW to SE rocky & stable

#8 erosion feature ± 17" deep 12' 7" long At worst point

Slopes - west facing | Photo
Viny Sphaeralcia | #9 Eastern
ATCA | Slope Top → down
Lile
Aster sp. | #10 -
Bidens | Small
Orhy | Orhy w/ Ants
Hija
Bogr | #11 & 12
Annual Atriplex | Rip-Rap
Sunflower | Screws
Buckwheat sp.
6-weeks fescue - Vulpia Octoflora

Rip rap - Limestone
Pruitt Quarry - L.A. Ware
Score - 83

Photos
#13 - Undulating diversion
#14-15 - Slopes

ARCO

Bluewater Mill
Post Office Box 638
Grants, New Mexico 87020
Telephone 505 876 2211
Facsimile 505 876 2772

July 27, 1995

Joseph DeAgueo, Reclamation Specialist
Coal Mine Reclamation Bureau
Mining and Minerals Division
Energy, Minerals and Natural Resources Department
Santa Fe, New Mexico 87505

Dear Mr. DeAguero:

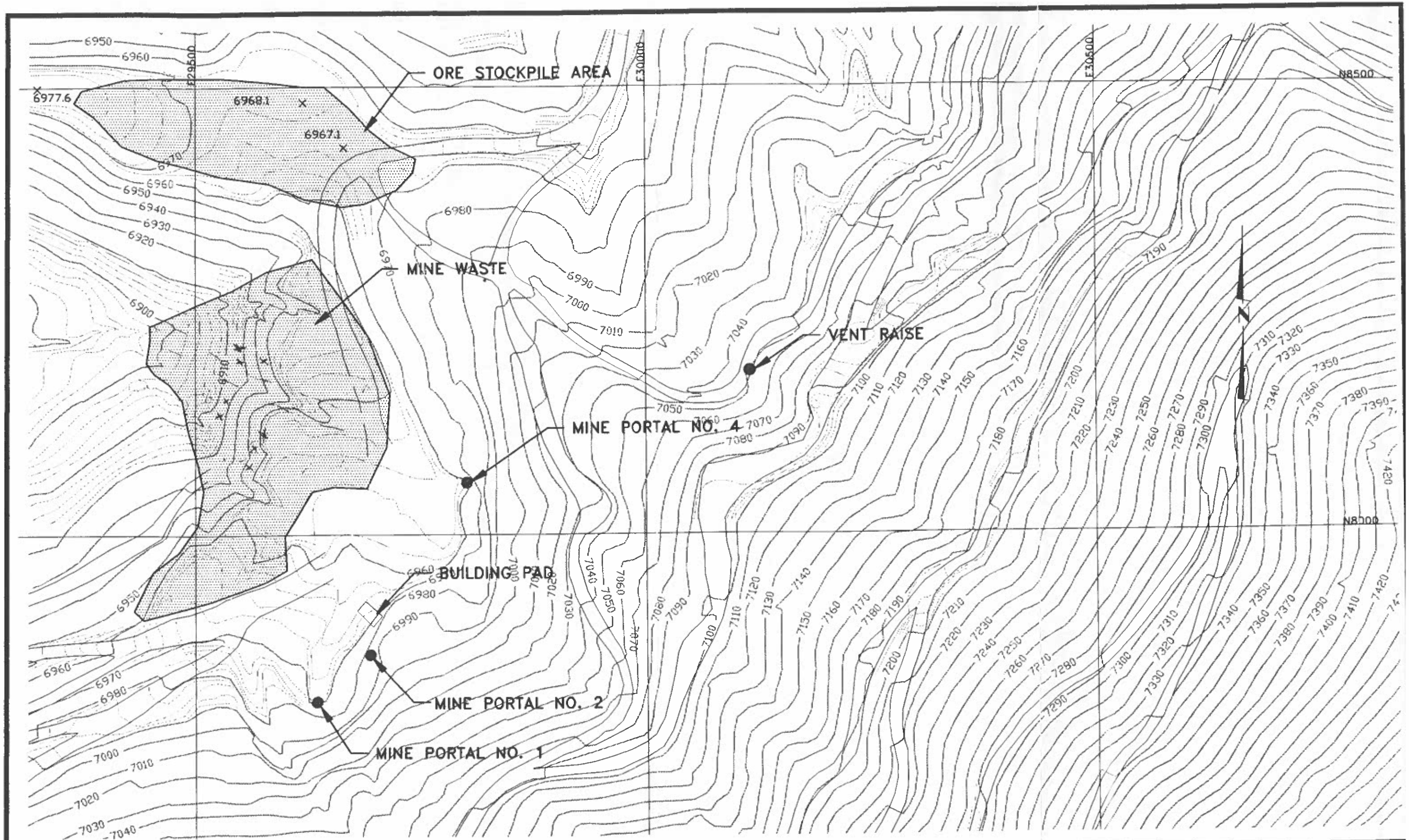
Per your request, please find the enclosed copy of rock test results for the Tenaja Pit. This was the source of the erosion protection rock used for F-33 Mine reclamation.

Please contact me if you have any questions.

Sincerely,

Christopher E. Sanchez,
Project Manager / Project Engineer

CES/jm
cc: file



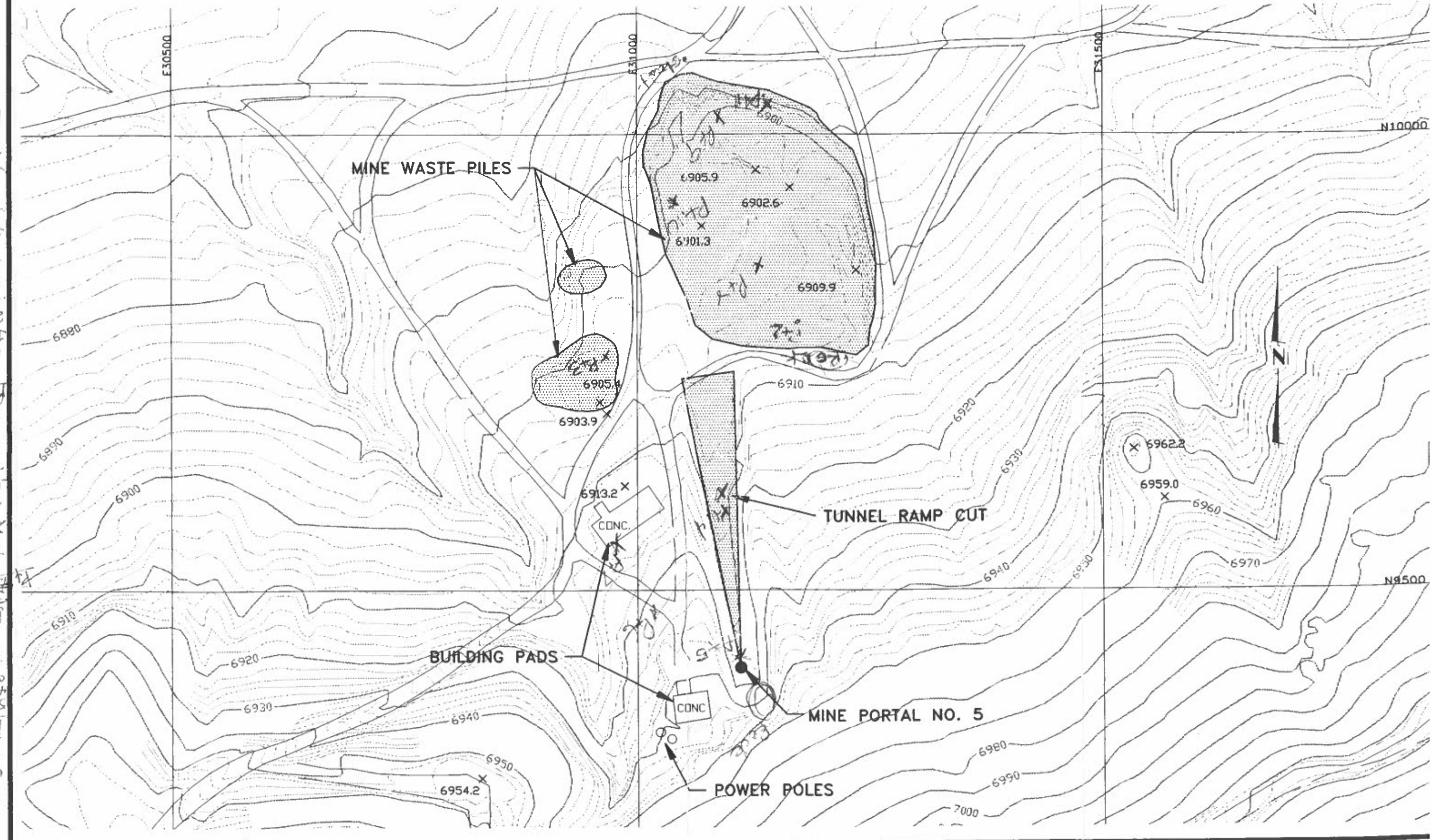
DATE	REVISION	NO.	DATE	REVISION	NO.
				All pts. ≥ 12"	

ANDERSON ENGINEERING CO., INC.
Long Beach, California · Salt Lake City, Utah · Grants, New Mexico
Telephone (801) 972-6222 Fax (801) 972-6235
CIVIL ENGINEERS CONSTRUCTION MANAGERS

ARCO/HMC F-33 MINE
PORTAL 4 AREA
PRE-RECLAMATION CONDITION
FIGURE 4.2

ATLANTIC RICHFIELD COMPANY
HOMESTAKE MINING COMPANY

DRAWN BY:	PRT
ENGINEER:	SDA
APPROVED	CES
DATE:	AUGUST, 1994
HORIZ.SCALE:	1" = 100'
VERT.SCALE:	N/A
REFERENCE	F-33\DRAWINGS\STATE\PH1\ASBUILT\P41



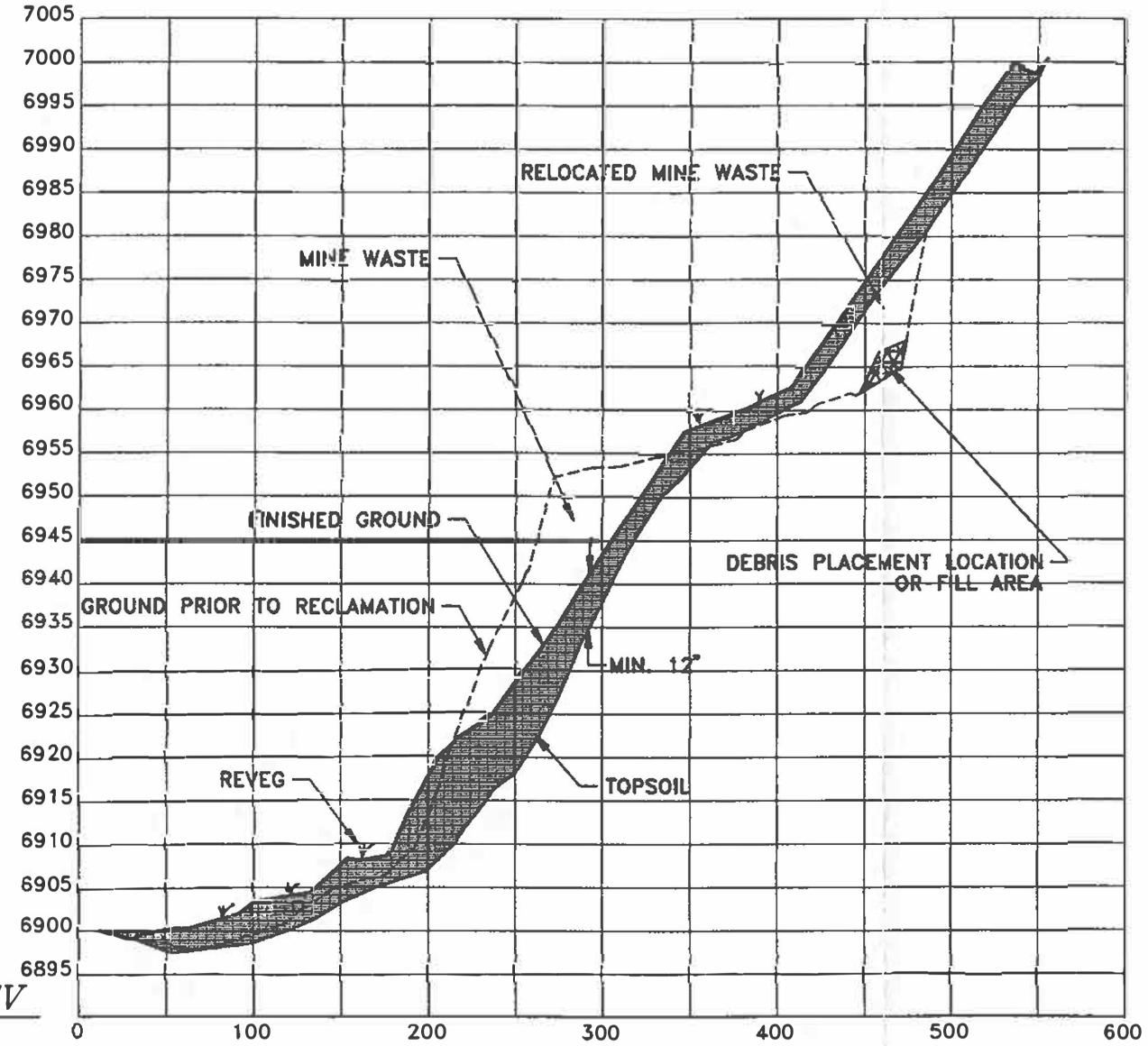
DATE	REVISION	NO.	DATE	REVISION	NO.

ANDERSON ENGINEERING CO., INC.
Long Beach, California · Salt Lake City, Utah · Grants, New Mexico
Telephone (801) 972-6222 Fax (801) 972-6235
CIVIL ENGINEERS CONSTRUCTION MANAGERS

ARCO/HMC F-33 MINE
PORTAL 5 AREA
PRE-RECLAMATION CONDITION
FIGURE 6.1

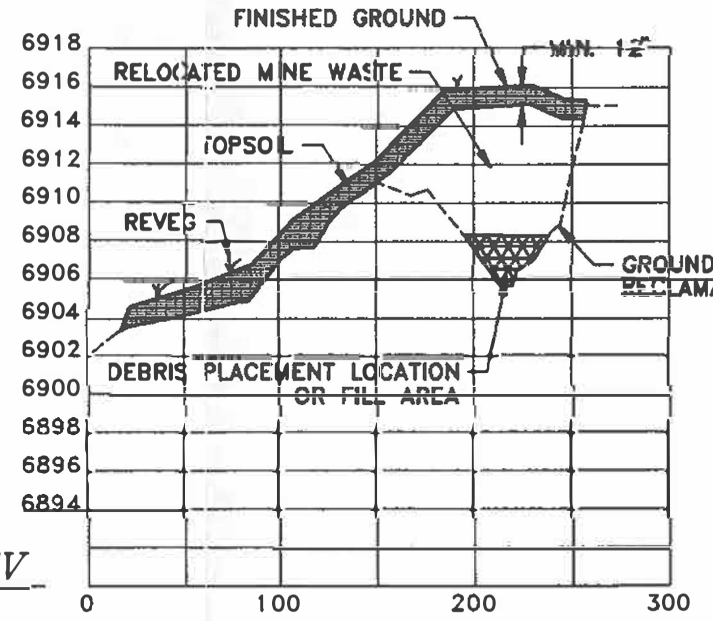
ATLANTIC RICHFIELD COMPANY
HOMESTAKE MINING COMPANY

DRAWN BY:	FKT
ENGINEER:	SDA
APPROVED	CES
DATE:	AUGUST, 1984
HORIZ.SCALE:	1" = 100'
VERT.SCALE:	N/A
REFERENCE	F-33\DRAWINGS\STATE84\A



PORTAL NO. 4
VERT 1"=20'

DATUM ELEV
6890.00
GROUP F-33
SECTION A-A



PORTAL NO. 5
VERT 1"=10'

DATUM ELEV
6890.00
GROUP F-33
SECTION B-B

DATE	REVISION	NO.	DATE	REVISION	NO.

ANDERSON ENGINEERING CO., INC.
Long Beach California · Salt Lake City Utah · Grants New Mexico
Telephone (801) 972-6222 Fax (801) 972-6235
CIVIL ENGINEERS CONSTRUCTION MANAGERS

ARCO/HMC F-33 MINE
CROSS SECTIONS
FIGURE 6.4

ATLANTIC RICHFIELD COMPANY
HOMESTAKE MINING COMPANY

DRAWN BY:	RKT
ENGINEER:	SDA
APPROVED:	CES
DATE:	AUGUST, 1994
HORIZ. SCALE:	1" = 100'
VERT. SCALE:	N/A
REFERENCE	F-33\DRAWINGS\STATE894\ASBUILT[P4]

WESTERN TECHNOLOGIES INC.

8305 Washington Place, N.E.
Albuquerque, New Mexico 87113
(505) 823-4488 • fax 821-2963

LABORATORY REPORT

Client C & E CONCRETE
P. O. BOX 2547
MILAN, NM 87021

Job No. 32430215
Lab./Invoice No. ____
Date of Report May 3, 1993
Reviewed By ____

Project Proposed Aggregate Erosion Protection
Location Albuquerque Laboratory
Material/Specimen Rock Samples — Sampled By Hays, S./WT — Date 3-18-93
Source Teneja Pit — Submitted By Hays, S./WT — Date 3-18-93
Test Procedure See Below — Authorized By Walter Lee Meech — Date 3-18-93

RESULTS

Test Description, designation	Result	Score
Specific Gravity, (ssd) ASTM C127	2.693	8.8
Absorption, ASTM C127	0.2	9.5
Sodium Sulfate Soundness, ASTM C88 *	2.1	9.5
Abrasion, ASTM C131 (100 Revolution)	4.5	8.2
Schmidt Hammer, ISRM Method **	52.0	6.8
Tensile Strenth, ISRM Method ***	1456.0	10.0

* 5 Cycles
** Average of 20 Readings
*** Average of 5 Specimens

ROCK QUALTIY SCORE
(Using Table 02278-A)

Weighting Factor - Limestone
Total Score = 400.1

Copies to:

ARCO
Bluewater Mill
Post Office Box 638
Grants, New Mexico 87020
Telephone 505 876 2211
Facsimile 505 876 2772

July 27, 1995

Joseph DeAgueo, Reclamation Specialist
Coal Mine Reclamation Bureau
Mining and Minerals Division
Energy, Minerals and Natural Resources Department
Santa Fe, New Mexico 87505

Dear Mr. DeAguero:

Per your request, please find the enclosed copy of rock test results for the Tenaja Pit. This was the source of the erosion protection rock used for F-33 Mine reclamation.

Please contact me if you have any questions.

Sincerely,

Christopher E. Sanchez,
Project Manager / Project Engineer

CES/jm
cc: file

WESTERN TECHNOLOGIES INC.
8305 Washington Place, N.E.
Albuquerque, New Mexico 87113
(505) 823-4488 • fax 821-2963

LABORATORY REPORT

Client C & E CONCRETE
P. O. BOX 2547
MILAN, NM 87021

Job No. 32430215
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Date of Report May 3, 1993
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Tensile Strenth, ISRM Method ***	1456.0	10.0

* 5 Cycles
** Average of 20 Readings
*** Average of 5 Specimens

ROCK QUALTIY SCORE
(Using Table 02278-A)

Weighting Factor -Limestone
Total Score = 400.1

Copies to:

Notes:

Specific Gravity — Acceptable

Absorption — "

Sodium Sulfate Soundness — "

comment → However, test is not as harsh as Magnesium sulfate soundness test

Abrasion — "

Schmidt Hammer — "

comment → Greater than >30 is acceptable
This test is used on concrete
Recomend LA ~~Wheel~~ Wear

Tensile Strength — "

comment → Not applicable

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

BRUCE KING
GOVERNOR

December 14, 1994

ANITA LOCKWOOD
CABINET SECRETARY

Christopher Sanchez
ARCO
P.O. Box 638
Grants, New Mexico 87020

RE: Evaluation Guidelines for Prior Reclamation Sites.

Dear Mr. Sanchez:

The Mining and Minerals Division (MMD) will be conducting inspections for the purposes of prior reclamtion for the site(s) you have requested release. Based on Section 69-36-5 E. of the New Mexico Mining Act, the MMD has developed inventory of items to determine whether the completed reclamation satisfies the requirements of the New Mexico Mining Act and the substantive requirements for reclamation pursuant to the applicable regulatory standards.

This checklist is included for your use to determine if your site meets all of the ten guidelines. Based on site-specific information, the MMD will be using this checklist to establish criterion based decisions to release the site from further responsibilities under the Act or not.

MMD will begin inspection of prior reclamtion sites in early 1995 and will make a determination by September 30, 1995. If you have any questions regarding the checklist or questions regarding the inspection of your reclamation sites, please contact me or Joe DeAguero at 505\827-5970.

Sincerely,

Holland Shepherd
Bureau Chief
Mine Act Reclamation Bureau
Mining and Minerals Division

VILLAGRA BUILDING - 408 Galisteo
Forestry and Resources Conservation Division
P.O. Box 1948 87504-1948
827-5830

Park and Recreation Division
P.O. Box 1147 87504-1147
827-7465

2040 South Pacheco
Office of the Secretary
827-5950

Administrative Services
827-5925

Energy Conservation & Management
827-5900

Mining and Minerals
827-5970

LAND OFFICE BUILDING - 310 Old Santa Fe Trail
Oil Conservation Division
P.O. Box 2088 87504-2088
827-5800

Index of Correspondence

Date	Addressee	Subject
06/16/94	John Lingo/R.S. Ziegler/ARCO	Completed reclamation of the F-33 Underground Mine.
07/22/94	Mark Pelizza/From: Holland S.	Acknowledgement ltr. that we've provided them w/info. instead of Site Asses
07/28/94	RS Ziegler/From: Holland Shepherd	Acknowledgement ltr. that we've provided them w/info. instead of Site Asse

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

July 28, 1994

Mr. RS Ziegler
Project Manager
ARCO
Bluewater Mill
P.O. Box 638
Grants, NM 87020

Dear Mr. Ziegler:

Mr. Christofer Sanchez of ARCO called me the other day and informed me that we had gotten some of the information mixed up on our July 22, letter and one we sent to HRI, Inc. I apologize for the confusion. The following is the corrected text of that letter:

Thank you for your letter informing us of that you have completed reclamation at the F-33 Underground mine, T12N, R9W, Sec. 17, in Cibola County, New Mexico. This letter is an acknowledgement you have provided us with this information instead of a Mining Operation Site Assessment and that your letter was post marked on or before the June 30, 1994, deadline prescribed by State law. We have noted for our records that you have complied with this requirement of the New Mexico Mining Act (NMSA 1987 Section 69-36-5(E)).

Section 5.10 of the New Mexico Mining Commission Rule 94-1, requires that we conduct an inspection of your mine to determine if the prior reclamation "satisfy the requirements of the Act and the substantive requirements for reclamation pursuant to ..." the rules. In this case the Director of the Mining and Minerals Division will make a determination on the adequacy of your reclamation by September 30, 1995.

An application for this inspection must be submitted to us by August 31, 1994. The application must include a $250 inspection fee. In addition, please include the following:

1. a map of 1:24000 or larger scale (1:12000) showing the limits of the reclaimed area and the location, and a description, of any waste units, impoundments, stockpiles, leach piles, open pits or adits that are within this area;

2. a discussion of post-mining land use, for the site reclaimed;

3. a detailed description of the reclamation work performed, including types of reclamation conducted, amount of acres revegetated, the seed mix used, the current condition of the revegetation, etc., and how the reclamation project has been designed to achieve a self-sustaining ecosystem; and,

4. if part of the reclamation, a discussion of how the current reclamation of waste units, impoundments, stockpiles, tailings piles open pits or adits, have been designed to ensure compliance with all applicable federal and state standards for air, surface and ground water protection and to eliminate any future hazards to health and public safety.

Please call me if you have any questions concerning the new regulations, the permit process or any other related issues.

Thank you for your timely submittal of your site assessment.

Sincerely,

Holland Shepherd
Chief, Mining Act Reclamation Bureau

HS

Sainz, Diana M., EMNRD

From: Garcia, Karen, EMNRD
Sent: Thursday, July 19, 2007 4:30 PM
To: Lucero, Stephen A., EMNRD
Cc: Shepherd, Holland, EMNRD; LucasKamat, Susan, EMNRD; Sainz, Diana M., EMNRD
Subject: Todd Sterck

FYI---I spoke with Todd Sterck about our files indicating that the portals for F-33 mine being blasted shut. He said he knew that but thought the decline was not. He said he wanted to come by and look at the prior rec files anyway just to see what we've got.

So he may come by in the next week or so to review the F-33 Prior Reclamation file. CI at PR

Steve, just one loose end we need to tie up on that app:

Todd Sterck is listed as applicant, and Douglas Sterck as the one who is leasing the mining claims from Fred Elkins. Like Western Energy,
we need to connect the dots between Todd and Douglas as Doug giving Todd access. He proves Doug has access b/c Doug has the lease with Fred Elkins but where does it show Todd has access. In an email to him, please ask him for a letter or some documentation showing that he, Todd Sterck has legal access to the site.

Thanks

Karen W. Garcia
Bureau Chief
Mine Reclamation Bureau
Mining and Minerals Division
505-476-3435

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

July 22, 1994

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

Mr. Mark S. Pelizza
Environmental Manager
HRI, Inc.
12750 Merit Drive
Suite 1210, LB12
Dallas, TX 75251

Dear Mr. Pelizza:

Thank you for your letter informing us of that you have completed reclamation at the F-33 Underground Mine, T16N, R16W, Sec. 17, in Cibola County, New Mexico. This letter is an acknowledgement you have provided us with this information instead of a Mining Operation Site Assessment and that your letter was post marked on or before the June 30, 1994, deadline prescribed by State law. We have noted for our records that you have complied with this requirement of the New Mexico Mining Act (NMSA 1987 Section 69-36-5(E)).

Section 5.10 of the New Mexico Mining Commission Rule 94-1, requires that we conduct an inspection of your mine to determine if the prior reclamation "satisfy the requirements of the Act and the substantive requirements for reclamation pursuant to ..." the rules. In this case the Director of the Mining and Minerals Division will make a determination on the adequacy of your reclamation by September 30, 1995.

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3. a detailed description of the reclamation work performed, including types of reclamation conducted, amount of acres revegetated, the seed mix used, the current condition of the revegetation, etc., and how the reclamation project has been designed to achieve a self-sustaining ecosystem; and,

4. if part of the reclamation, a discussion of how the current reclamation of waste units, impoundments, stockpiles, tailings piles open pits or adits, have been designed to ensure compliance with all applicable federal and state standards for air, surface and ground water protection and to eliminate any future hazards to health and public safety.

Please call me if you have any questions concerning the new regulations, the permit process or any other related issues.

Thank you for your timely submittal of your site assessment.

Sincerely,

Holland Shepherd
Chief, Mining Act Reclamation Bureau

ARCO

Bluewater Mill
Post Office Box 638
Grants, New Mexico 87020
Telephone 505 876 2211
Facsimile 505 876 2772

June 16, 1994

Mr. John Lingo
State of New Mexico
Director
Energy, Minerals and Natural Resources Department
Mining and Minerals Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505

Dear Mr. Lingo:

This correspondence is to inform the New Mexico Energy, Minerals and Natural Resources Department that Atlantic Richfield Company (ARCO) and Homestake Mining Company of California (HMC) have completed reclamation of the F-33 Underground Mine. The Mine is located in Sections 33 and 34, T12N, R9W in Cibola County New Mexico. This work has been completed in consultation with the New Mexico Mining and Minerals Division and with the United States Forest Service.

The Mine consisted of four mine openings, several waste dumps, a vent raise, and some building foundations. Reclamation of the Mine has included the following activities:

- Closure of the four mine openings by blasting and collapsing the mine openings. The openings were then further backfilled for permanent closure of the mine openings.
- Filling and concrete capping of the mine vent raise.
- Demolition of building foundations and placement of this material and mining debris into waste dump areas.
- Consolidation and stabilization of the mining waste material.
- Construction of drainage control features to insure protection of reclaimed areas.
- Construction of 3:1 slopes on the waste piles and against the high walls to promote long term stability.

F:\DOCS\ZIEGLER.94\STATENM\ENERMIN.F33

- Placement of a minimum of 12" of topsoil on all waste dump areas and over mine entry backfill.

- Revegetation of all disturbed areas.

ARCO and HMC believe that these reclamation measures comply with the requirements of the New Mexico Mining Act and the proposed regulations. ARCO and HMC are requesting an inspection and approval by the Director of the Department of the mine reclaimed areas as provided for in the regulations as Prior Reclamation.

Contact me or Christopher Sanchez of my staff (505)876-2211 to arrange for an inspection of the site. Should you require additional written information or mapping of the site please contact us. We appreciate your attention to this matter.

Sincerely,

R. S. Ziegler
Project Manager

/jmn

pc: CS
SP
JB
FC (HMC)

ARCO

Bluewater Mill
Post Office Box 638
Grants, New Mexico 87020
Telephone 505 876 2211
Facsimile 505 876 2772

June 16, 1994

Mr. John Lingo
State of New Mexico
Director
Energy, Minerals and Natural Resources Department
Mining and Minerals Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505

Dear Mr. Lingo:

This correspondence is to inform the New Mexico Energy, Minerals and Natural Resources Department that Atlantic Richfield Company (ARCO) and Homestake Mining Company of California (HMC) have completed reclamation of the F-33 Underground Mine. The Mine is located in Sections 33 and 34, T12N, R9W in Cibola County New Mexico. This work has been completed in consultation with the New Mexico Mining and Minerals Division and with the United States Forest Service.

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ARCO
Facsimile Transmission

Cost center	Date
	6-22-94

Outgoing	Incoming
To Holland Shephard	To
Location	Location
From Christopher Sanchez	From
Location	Location
Number of pages 2+Cover	Number of pages
Time	Time ☐ a.m. ☐ p.m.
Comments	Comments
Operator's initials CM	Operator's initials

ARCO-1189-C (12-87)

STATE OF NEW MEXICO
Energy, Minerals and
Natural Resources Department

Mining and Minerals Division
2040 South Pacheco Street
Santa Fe, NM 87505
Telephone: (505) 827-5970
FAX No.: (505) 827-7195

RECEIVED
JUL 16 1993
MINING & MINERALS DIVISION

1993 NEW MEXICO MINING ACT
OWNER/OPERATOR INFORMATION REQUIREMENTS

Pursuant to Section 5D of the 1993 New Mexico Mining Act, prior to July 18, 1993, the operator or owner of a new or existing mining operation or exploration project must submit the following information to the Director of the Mining and Minerals Division of the New Mexico Energy, Minerals and Natural Resources Department. A SEPARATE FORM MUST BE SUBMITTED FOR EACH OPERATION.

Name of Mine or Exploration Project:

F-33 Mine

New Operation___ **Existing Operation** X (Closed / Nonoperational)

Exploration___

Operator Name:

Homestake Mining Co. (1971-1976)

Operator Address:

Homestake Mining Co.

North of NM Highway 53

Grants, NM 87020

Surface Owner:

Atlantic Richfield Co. (ARCO) Successor in interest to the Anaconda Co.

Surface Owner Address:

ARCO - P. O. Box 638, Grants, NM 87020

8 miles west of Grants, NM on State

Road 122.

Mineral Estate Owner:

ARCO

Mineral Owner Address:

ARCO - P.O. Box 638, Grants, NM 87020

8 miles west of Grants, NM on State

Road 122.

Agent/contact and Address where official documents may be served: (NOTE: Registered agent and office must be located within NM. Filing corporation cannot be its own agent. Street address required; P.O. Box is not acceptable.)

Operator: Homestake (see attached)

Owner: ARCO (see attached)

Agent telephone: see attached

The Operator or Owner must provide prompt notification to the Director of the Mining and Minerals Division of any change in the information required on this form.

STATE OF NEW MEXICO
Energy, Minerals and
Natural Resources Department

Mining and Minerals Division
2040 South Pacheco Street
Santa Fe, NM 87505
Telelphone: (505) 827-5970
FAX No.: (505) 827-7195

1993 NEW MEXICO MINING ACT
OWNER/OPERATOR INFORMATION REQUIREMENTS

Pursuant to Section 5D of the 1993 New Mexico Mining Act, prior to July 18, 1993, the operator or owner of a new or existing mining operation or exploration project must submit the following information to the Director of the Mining and Minerals Division of the New Mexico Energy, Minerals and Natural Resources Department. A SEPARATE FORM MUST BE SUBMITTED FOR EACH OPERATION.

Name of Mine or Exploration Project:

F-33 Mine

New Operation___ Existing Operation x

Exploration___

Lessee
~~Operator~~ Name:

Homestake Mining Company of California

Operator Address:

PO Box 98
5 miles North on SR 605
Grants, NM 87020

~~Surface Owner~~ Leased From:

Atlantic Richfield Company

Surface Owner Address:

PO Box 638

Grants, NM 87020

Mineral Estate Owner:

U.S. Government

Mineral Owner Address:

U.S. Forest Service

1800 Lobo Canyon Rd.

Grants, NM 87020

Agent/contact and Address where official documents may be served: (NOTE: Registered agent and office must be located within NM. Filing corporation cannot be its own agent. Street address required; P.O. Box is not acceptable.)

CT Corporation System

217 West Manhattan Ave.

Santa Fe, NM 87501

Agent telephone: (505) 983-9122

The Operator or Owner must provide prompt notification to the Director of the Mining and Minerals Division of any change in the information required on this form.

BR

ARCO REGISTERED AGENT:

Atlantic Richfield Company
c/o CT Corporation System
217 West Manhatten Avenue
Santa Fe, New Mexico 87501
(505) 983-9122

HOMESTAKE MINING CO. REGISTERED AGENT:

To the best of ARCO's present knowledge:
c/o CT Corporation System
217 West Manhatten Avenue
Santa Fe, New Mexico 87501
(505) 983-9122

ARCO

Bluewater Mill
Post Office Box 638
Grants, New Mexico 87020
Telephone 505 876 2211
Facsimile 505 876 2772

July 15, 1993

Mr. John Lingo
Acting Director
Mining and Minerals Division
New Mexico Energy, Minerals and
Natural Resources Department
2040 S. Pacheco Street
Santa Fe, New Mexico 87505

RE: 1993 New Mexico Mining Act (the "Act") - Owner/Operator Information Requirements

Dear Mr. Lingo:

ARCO submits this letter in response to the "Notice of Requirements" from the Department dated May 24, 1993, which ARCO received on June 24, 1993.

Enclosed is the Owner/Operation Information Requirements form for the F-33 mine. Submission of the enclosed form by ARCO with respect to the F-33 mine is not to be construed as an agreement by ARCO concerning the applicability of the New Mexico Mining Act to the F-33 mine or responsibility for compliance with the Act.

ARCO also received with the "Notice of Requirements" from the state a list of the following mines:

P-9-2 Laguna Mine

H-1 Laguna Mine

PW 2/3 Underground Laguna Mine

P-10 Laguna Mine (includes connecting P-7 and P-13)

Jackpile/Paguate Mine

We are also submitting an informational form for the NJ-45 Laguna Mine.

To the best of the present knowledge of ARCO Bluewater Mill staff, each of the above listed mines is owned by the Pueblo of Laguna both as to surface ownership and mineral estate ownership. Under a settlement agreement between ARCO and the Pueblo of Laguna, which was approved by the appropriate federal agencies, the Pueblo has assumed all reclamation obligations related to ARCO's mining leases with the Pueblo of Laguna.

O would be happy to consider a request by the State of New Mexico for a copy of the me if necessary. In addition, many of the Laguna mines were not operated during erioa of time to which the Act applies and, therefore, are not "existing mining tions" under the Act. For these reasons, the above listed mines are not subject to the Act. A completed Owner/Operator Information form is enclosed for each of these for informational purposes only.

e do not hesitate to contact me or Christopher Sanchez of my staff if you have any ons concerning this letter or the enclosed "Owner/Operator Information Requirements"

ely,

Ziegler
t Manager

C. F. George
S. Purdy
R. Virtue
C. Sanchez

EGLE MMINACT.LTR

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

Fax Cover Sheet

Date: 12/20/95

To: Maxine Goad	From: John McKay
Company: NM ED	Agency: Mining and Minerals Division
Telephone: 7-2156	Telephone: (505) 827-~~5970~~ 1167
Fax #: 7-2413	Fax #: (505) 827-7195

Number of Pages: 11 (including cover sheet)

Message:

Maxine –

Here is the ARCO F-33 cover letter + inspection report that you requested. Please let me know if you need anything else.

Thanks,
JM

Original will be sent by mail ___ yes X no

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

July 26, 1995

Mr. Christopher Sanchez
Project Manager
Atlantic Richfield Company
P. O. Box 638
Grants, New Mexico 87020

RE: RELEASE OF THE F-33 MINE FROM FURTHER RESPONSIBILITIES UNDER THE NEW MEXICO MINING ACT

Dear Mr. Sanchez:

The Mining and Minerals Division (MMD) has completed the inspection of reclamation measures completed, as per your request, of the F-33 mine site.

Based on findings enclosed in the attached inspection report, Section 69-36-7 U. of the New Mexico Mining Act and Rule 5.10 of the New Mexico Mining Act Rules, Atlantic Richfield Company (ARCO) and Homestake Mining Company (Homestake) are hereby released from further reclamation requirements on the F-33 mine site. The enclosed inspection reports details the findings of the inspection of reclamation conducted on the F-33 site but does not include the photos/slides contained in the MMD file copy.

If you have any questions regarding this inspection report or letter, please contact Holland Shepherd of the Mining Act Reclamation Bureau at 505-827-5971.

Sincerely,

Kathleen A. Garland, Director
Mining and Minerals Division

Enclosure

VILLAGRA BUILDING - 408 Galisteo
Forestry and Resources Conservation Division
P.O. Box 1948 87504-1948
827-5830
Park and Recreation Division
P.O. Box 1147 87504-1147
827-7465

2040 South Pacheco
Office of the Secretary
827-5950
Administrative Services
827-5925
Energy Conservation & Management
827-5900
Mining and Minerals
827-5970
Oil Conservation
827-7131

August 22, 1995

Ms. Jean Roundy
87 South 400 West
Manti, Utah 84642

Dear Ms. Roundy:

The Mining and Minerals Division (MMD) has completed inspection of reclamation measures of the F-33 Mine site near Grants, New Mexico. MMD has determined that the reclamation measures are consistent with Article 69-36-5 E. of the New Mexico Mining Act and, therefore, the F-33 Mine site is released from further requirements of the Act.

If you have any questions concerning this determination please contact Robert Young of our staff.

Sincerely,

Robert S Young

Robert S. Young
Mining and Minerals Division

July 26, 1995

Mr. Christopher Sanchez
Project Manager
Atlantic Richfield Company
P. O. Box 638
Grants, New Mexico 87020

RE: RELEASE OF THE F-33 MINE FROM FURTHER RESPONSIBILITIES UNDER THE NEW MEXICO MINING ACT

Dear Mr. Sanchez:

The Mining and Minerals Division (MMD) has completed the inspection of reclamation measures completed, as per your request, of the F-33 mine site.

Based on findings enclosed in the attached inspection report, Section 69-36-7 U. of the New Mexico Mining Act and Rule 5.10 of the New Mexico Mining Act Rules, Atlantic Richfield Company (ARCO) and Homestake Mining Company (Homestake) are hereby released from further reclamation requirements on the F-33 mine site. The enclosed inspection reports details the findings of the inspection of reclamation conducted on the F-33 site but does not include the photos/slides contained in the MMD file copy.

If you have any questions regarding this inspection report or letter, please contact Holland Shepherd of the Mining Act Reclamation Bureau at 505-827-5971.

Sincerely,

Kathleen A. Garland, Director
Mining and Minerals Division

Enclosure

July 26, 1995

Mr. Fred Craft
Resident Manager
Homestake Mining Company
P. O. Box 98
Grants, New Mexico 87020

RE: RELEASE OF THE F-33 MINE FROM FURTHER RESPONSIBILITIES UNDER THE NEW MEXICO MINING ACT

Dear Mr. Craft:

The Mining and Minerals Division (MMD) has completed the inspection of reclamation measures completed, as per your request, of the F-33 mine site.

Based on findings enclosed in the attached inspection report, Section 69-36-7 U. of the New Mexico Mining Act and Rule 5.10 of the New Mexico Mining Act Rules, Atlantic Richfield Company (ARCO) and Homestake Mining Company (Homestake) are hereby released from further reclamation requirements on the F-33 mine site. The enclosed inspection reports details the findings of the inspection of reclamation conducted on the F-33 site but does not include the photos/slides contained in the MMD file copy.

If you have any questions regarding this inspection report or letter, please contact Holland Shepherd of the Mining Act Reclamation Bureau at 505-827-5971.

Sincerely,

Kathleen A. Garland, Director
Mining and Minerals Division

Enclosure

PRIOR RECLAMATION INSPECTION REPORT
AND
RECOMMENDATION FOR RELEASE OR PERMIT REQUIREMENT
July 21, 1995

Purpose:

As required by the New Mexico Mining Act Section 69-36-7 U. and the New Mexico Mining Act Rule 5.10, an inspection by the Mining and Minerals Division (MMD) of a prior reclamation site, as defined in the Act, has been conducted on the following site. This report documents the findings of the inspection and a recommendation to the Director to release or require the permitting of the site, as required by the New Mexico Mining Act and Rules.

Inspection Summary:

The inspection of the **F-33 Mine** reclaimed jointly by Atlantic Richfield Corporation (ARCO) and Homestake Mining Co. (Homestake) has been conducted. The inspection was conducted on June 28, 1995. Persons present during the inspection included: Mr. Christopher Sanchez and Mr. Steve Anderson, both representing ARCO; the lead inspector for this prior reclamation inspection was Joe DeAguero, Reclamation Specialist; and other inspectors were Ms. Robyn Tierney, Reclamation Specialist and Ms. Tacy Harling, summer student.

The inspection consisted of review of information submitted by the mine operator, discussion with operator as to reclamation conducted, inspection of overall condition of reclaimed mine site, vegetation sampling, development of a list of species present, reclaimed soil depth analysis, geiger counter transects, and photo documentation. Each specific criteria is described below in the detailed findings portion of this report.

Based on the inspection of the site, review of inspection information with Mining and Minerals Division staff and MMD's resources to conduct the inspection the lead inspector, Joe DeAguero, **recommends release of the F-33 Mine site operated by ARCO and Homestake from further requirements of the New Mexico Mining Act.**

Detailed Findings:

1. Review of information submitted by the mine operator:

A prior reclamation report for the F-33 was submitted by ARCO describing the reclamation activities completed at the mine. Included in the report (attached to original report) are maps of the reclaimed features (photos and field surveys), a discussion of the post-mining land use, detailed description of the reclamation conduction at the site and a description of environmental and safety concerns. The

prior reclamation report submitted is a very comprehensive summary of the reclamation conducted at the site. The maps are of very good quality and detail. There is sufficient detail contained in this report to describe conditions and facilities that occurred at the site prior to reclamation and where these sites were located. Furthermore, the details of the reclamation conducted on site are accurately described as verified on site prior to and during the inspection conducted on June 28, 1995.

2. Discussion with operator as to reclamation conducted:

Two inspections were conducted on August 25, 1994 and February 22, 1995 through a request of the operator. These inspections were to identify the condition of the site prior to reclamation (08/25/94) and post-reclamation (02/22/95) preliminary inspection to identify any potential problems prior to the official inspection. During the post-reclamation inspection, minor rills were identified in at the base of the Portal 4 area as identified in Figure 6.2. of the ARCO reclamation report (Attached). The rills have since been regraded.

Prior to the inspection conducted on June 28, 1995, Joe DeAguero contacted Mr. Christopher Sanchez of ARCO to schedule a time. Mr. Sanchez and Mr. Anderson representing ARCO met with MMD staff and discussed the scope of the inspection. Also, discussed with MMD was a summary of the condition of the site prior to reclamation and what was done during reclamation. During the inspection specific reclamation questions were answered by ARCO representatives. ARCO representatives committed to addressing any potential problems that were identified during the inspection.

3. Inspection of overall condition of reclaimed mine site:

The visual inspection conducted consisted of observation of: 1) vegetation species present; 2) general density of species; 3) soil depth and erosional stability; 4) slope design and configuration; 5) removal of structures and reclamation of site features; and 6) hydrologic stability and features of the reclaimed site.

A) vegetation species:

The following table (Table 1) contains a list of all species identified on the reclaimed site. It should be noted that this list is not all inclusive of all species that may be present currently or at other times of the year. Due to the time of the inspection, last week of June, there are species, especially forbs that are not present during the hotter summer months and those species are commonly dormant during the drought season.

Table 1. List of Species

COMMON NAME	*Genus & species*
Western Wheatgrass	*Agropyron smithii*
Sand dropseed	*Sporobolus cryptandrus*
Crested wheatgrass	*Agropyron cristatum*
Indian ricegrass	*Oryzopsis hymenoides*
Cheatgrass	*Bromus tectorum*
Sandburg bluegrass	*Poa sandbergii*
Blue flax	*Linium lewisii*
Greyweed	*Ambrosia dumosa*
Stickleaf	*Mentzelia albacialis*
Aster	*Aster townsendia*
Sunflower	*Helianthus annuus*
Fleabane	*Erigerion sp.*
Tickseed	*Bidens sp.*
Annual atriplex	*Atriplex powellii*
Hidden flower	*Cryptantha sp.*
Fourwing saltbush	*Atriplex canescens*
Winterfat	*Ceratoides lanata*
Buckwheat	*Eriogonum sp.*

B) general density of species:

Four random vegetation transects were evaluated on the reclaimed lands using the point intercept method along a 50' transect taking cover values at 3' intervals along each transect. A total of 17 points per transect were taken. In addition, a list of species present within a 50' X 6' belt transect. It is critical to note that the vegetation sampling conducted was not directed to achieve sample adequacy. The vegetation sampling was to evaluate typical cover of the

reclaimed land and to evaluate diversity of species within the belt transect. Additional resources would be needed to fully evaluate each prior reclamation site to sample adequacy of which may require over 60 hours per site. The following table (Table 2) is a summary of the vegetation data collected.

Table 2. Summary of Vegetation Data

Transect #1	Value (%)
Perennial Cover:	0
Litter Cover	53
Rock Cover	0
Bare Ground	47
Perennial species present in belt transect	5

Transect #2	Value
Perennial Cover:	12.5
Litter Cover	25
Rock Cover	6.25
Bare Ground	56.25
# of perennial species present in belt transect	4

Transect #3	Value
Perennial Cover:	5.9
Litter Cover	29.4
Rock Cover	5.9
Bare Ground	58.8
# of perennial species present in belt transect	8

Table 2. Summary of Vegetation Data (con't)

Transect #4	Value
Perennial Cover:	0
Litter Cover	41.1
Rock Cover	0
Bare Ground	58.9
# of perennial species present in belt transect	6

The data present above does show the site has been revegetated with sufficient species diversity. Based on the investigated density of species, ground cover present and established species present gives strong indication of suitable reclamation of the site has been performed.

C) soil depth and erosional stability:

The entire site was surveyed for erosion features. During a walkover of the mine site all slopes, areas of water concentration (ponds, diversions and areas where disturbed areas enter undisturbed lands) were evaluated for erosion. All sites appeared to be stable with little potential for development of erosion features. One small erosion feature was identified and has bedrock control beneath the erosion. In the case of this erosion feature, the site has a small watershed and has little potential to develop into a large problem. Sufficient topsoil for the establishment of vegetation had been borrowed and redistributed over the reclaimed area. A series of random and systematic sampling was conducted to identify the soil depth and the potential for any rooting or establishment problems. Random sampling of soil depth was done by digging soil pits approximately 12" deep to determine the depth of topsoil material acquired from a borrow site and distributed on the reclaimed site. A total of 18 soil pits were dug to evaluate the topsoil depth of the reclaimed sites. Topsoil depth varied from 4" to greater than 16" throughout the site. Only one soil pit showed 4" of topsoil with all other 17 pits showing 12" or greater soil depth. Revegetation and topdressing establishment was done very well.

D) slope design and configuration:

The site was graded and slopes were designed and configured to minimize soil loss throughout the site. The eastern portion of the site was graded and reclaimed areas tied in with the surrounding landscape very well. At portal No. 4 the steep slopes were graded to 3:1 slopes and drainage area was also

recontoured. The diversion through the center of the regraded area was rip-rapped with limestone from a quarry in Prewitt, New Mexico. The limestone was evaluated for durability using the L.A. Ware abrasion test.

E) removal of structures and reclamation of site features:

The reclamation report identifies and details the closure of mine openings (portals and vent shafts), Structures and Debris and associated Mine Waste. Full details are addressed in the report and based on the on-site inspection, the closure appears to fully meet the requirements of the New Mexico Mining Act.

F) hydrologic stability and features of the reclaimed site:

The reclaimed site sits on an alluvial fan on the north/northwestern slope of the east grants ridge. The watershed above the reclaimed area drains into and through undisturbed drainages in the area mine portal no. 5. However, in the area of mine portal no. 4 the watershed above the reclaimed area drains into and thorough a reconstructed channel. The reconstructed channel has been rip-rapped with limestone and basalt rock material. At the toe of the slope and along the channel, large basalt rock has been placed in the channel as energy dissipators. There appears to be sufficient and adequate rip-rap for hydrologic stability. Other features include a diversion channel that carries water from the base of mine portal no. 4 to the borrow area. This channel has been seeded and mulched and vegetation is becoming established.

G) Geiger counter transects:

A geiger counter was used to evaluate the levels of radio-activity on and off the reclaimed site. Beginning on undisturbed land, readings were evaluated at approximately 200' intervals with the first three readings on undisturbed land and last three on reclaimed lands. The geiger counter used reads radio activity in micro REMS/hr. Using the 50 scale for sensitivity (see Table 3. Geiger Counter Evaluation) the readings were as follows:

Table 3. Geiger Counter Evaluation

LOCATION AND READING NUMBER	micro REMS/hr.	GENERALIZED LOCATION
1	9	approximately 600' north of reclaimed area, portal 4.
2	9	approximately 400' north of reclaimed area, portal 4.
3	8	approximately 200' north of reclaimed area, portal 4.
4	8	inside of reclaimed area, approximately 50' from northern edge.
5	12	inside of reclaimed area approximately 250' from northern edge
6	9	inside of reclaimed area approximately 450' from northern edge.

H) Surface and Groundwater:

Surfacewater quality has been addressed by topsoiling, seeding and mulching the reclaimed portals, stockpile and waste areas. Based on the reclamation operations conducted, waters from the reclaimed area will flow to ephemeral drainages or to a borrow area serving the post mining land use. The mine operation was situated in a geological strata that was dry and far above any strata that may contain groundwater, thus it is unlikely that impacts to groundwater have or will take place because of mining.

I) Photo/slide documentation:

The following photos/slides were taken the day of the inspection to document the current condition of the reclaimed land. Each photo/slide is date stamped in the lower right hand corner and has an identification number on the slide frame. The below numbered descriptions identify the current condition of the site and descriptions match content of each photo/slide.

#1: This photo was taken in the portal no. 4 area. Looking south, this photo identifies the typical tie-in between disturbed (left) and undisturbed (right).

Natural vegetation has remained undisturbed wherever possible.

#2 & #3: Reclaimed waste dump area near portal no 4. Panoramic view of dump looking southeast (#2) and looking south (#3). Waste dump covers approximately a 3 acre area.

#4: This photo is the reclaimed portal no. 4. Waste material from the dump was placed in the portal ramp and covered with suitable topsoil from the borrow area. The large rock on the top left corner of the photo was left undisturbed.

#5: The west facing slope of reclaimed portal 4. A concrete building slab was removed from an area just left of the power poles and buried in the portal ramp. the reclaimed slopes are quite stable. Power poles and lines are the property of the Plains Electric Co-op.

#6: Reclaimed ore stockpile looking to the northwest. Very good plant establishment. Good establishment of cool, warm and forb species.

#7: Unseeded exploration road looking to the southeast. The MMD recommended that reseeding of the exploration roads did not need additional reclamation. The roads are rocky and quite stable.

#8: An erosion feature found on border of reclaimed site. Has bedrock control and further erosion would be limited.

#9: Looking northwesterly, 3:1 down slope of reclaimed area near portal no. 5. The area has been dozer tracked, seeded and mulched. On this photo, not much perennial vegetation is visible although much is still very juvenile. Good preliminary establishment for 1 years growth.

#10: Juvenile grass plant growing on north facing outslope of portal no. 5 reclamation. Species is Indian ricegrass (*Oryzopsis hymenoides*). Pen used for scale.

#11 & #12: Limestone rip-rap used in the down slope reconstructed channel in the portal no. 5 area has a D_{50} of approximately 6". Incorporated into the limestone rip-rap are larger basalt rock from the area salvaged during reclamation for use in the channel as shown in photos, #9, #14 and #15.

#13: Looking towards northwest, a constructed channel designed to transport water from the portal no. 5 area to the topsoil borrow area, which serves the post mining land use of domestic grazing and wildlife use.

#14: Reconstructed slopes and portal no. 5 after closure. Photo taken looking south.

#15: Photo of reconstructed slopes and down slope reconstructed channel to east (left) of portal no. 5.

Maintenance Item(s):

1. None.

Recommendation to the Director:

Based on the information submitted to the MMD, the communications with the operator, both written and oral and the condition of the reclamation completed by ARCO and Homestake Mining Co. and documented by this inspection report, it is my recommendation that the operator has completed all required reclamation has met the substantive requirements for reclamation. **I recommend, to the Director, that the MMD release the Atlantic Richfield Co. and Homestake Mining Co. from further responsibilities under the New Mexico Mining Act and Rules for the F-33 mine site.**

Signature of Inspector
Joe DeAguero

7/21/95
Date

MEMORANDUM

TO: KATHLEEN GARLAND, DIRECTOR

THROUGH: HOLLAND SHEPHERD, BUREAU CHIEF

FROM: JOE DeAGUERO, RECLAMATION SPECIALIST

DATE: JULY 21, 1995

SUBJECT: PRIOR RECLAMATION INSPECTION REPORT FOR THE ARCO & HOMESTAKE MINING CO. F-33 MINE SITE.

Here is the first inspection report for the prior reclamation inspection of the F-33 mine. Please review and if you agree with the above recommendation, a notification of release will be prepared for your signature.

If you would like to make any suggestions as to the content or details of the inspection report, please let me know and changes will be made. Several inspection reports and recommendations are soon following.

Thanks!!!

ARCO

Bluewater Mill
Post Office Box 638
Grants, New Mexico 87020
Telephone 505 876 2211
Facsimile 505 876 2772

August 30, 1994

Holland Shepherd
Chief, Mining Act Reclamation Bureau
Mining and Minerals Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505

Dear Mr. Shepherd:

Enclosed is the F-33 Mine Reclamation Report covering the items contained in your letter of July 28, 1994. The Report includes a description of the reclamation activities completed at the mine including drawings, photographs and supplemental information.

The four items requested in your letter are addressed in the following Sections of the Report:

1. Mapping of the mine disturbed areas, the site features and the ultimate reclaimed surface topography are included in the Figures of the F-33 Reclamation Report. This mapping was completed by a combination of aerial photogrametry and field surveys.

2. The discussion of the post-mining land use for the reclaimed area is contained in Section 2.0.

3. The detailed description of the reclamation work at the F-33 Mine is contained in Sections 3.0 through 8.0.

4. The discussion of how the current reclamation has been designed to ensure compliance with regulatory standards is contained throughout the document and more closely addressed in Section 9.0.

Also attached with this correspondence is the $250.00 fee for the F-33 Mine Reclamation inspection.

Should you have any questions and need to arrange for the inspection of the reclaimed mine site, please contact me at (505) 876-2211. We appreciate your interest and attention to this matter.

Sincerely,

Christopher E. Sanchez
Project Engineer

PC: RSZ
SP
FC (HMC)

Member FDIC

GRANTS STATE BANK
P.O. BOX 1088
GRANTS, NEW MEXICO 87020

174116

95-193/1022

REMITTER Chraistopher Sanchez

8-31 19 94

PAY TO THE ORDER OF N.M. Mining and Minerals Division $**250.00**

GRANTS STATE BANK 25000

DOLLARS

~~PRESIDENT~~ for CASHIER

CASHIER'S CHECK

Memo: Inspection fee for F.33 Mine

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